The Symbiotic Cosmology of Perennial Conscious Existence

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Consciousness is eternal, life is immortal.
Incarnate existence is Paradise on the Cosmic equator in space-time – the living consummation of all worlds.
But mortally coiled! As transient as the winds of fate!

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2 perennial lasting or existing for a long or apparently infinite time; enduring or continually recurring. From Latin perennis ‘lasting the year through’ + -ial. Oxford languages. The term is used to indicate lasting throughout the lifetime of conscious existence in the universe.
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Dedication

The accompanying articles 1 and 2, generated out of a single quantum change experience on psychedelic mushrooms, breaking a seven year fast, contain the fabled key to life, the universe and everything – the symbiotic cosmology of perennial conscious existence.

All of us go through life wondering what it’s all about, why we are here, and what the meaning and purpose of conscious existence actually is. This is the question always lurking in the back of our minds, driving our mortal anxiety, from which we try to escape, in futile diversions of power, fame and entertainment until our last moments on our death beds, realising all these things were distractions to avoid the inevitable.

Our current world views are suspended between three contradictory and equally devastating scenarios.

1: The materialistic scientific view regards us as merely a collection of atoms and molecules held together by physical, chemical and biological processes. That we are simply our brains and that our decisions are based on our genes and material circumstances over which we have negligible control, because our subjective conscious experiences are simply a model of reality generated by the computational brain, and that free will and personal autonomy are effectively illusions. That there is really no rhyme or reason to existence, and that life is simply an accidental by-product of a universe driven by blind and overwhelming forces, which will eventually annihilate the solar system and all life within it, whether we live a good life, or exploit the others around us and the life of the planet, to our own selfish advantage.

2: The theistic religious view claims the universe is a moral test by God; that we do have free will, but are all accused as sinners by the original sin of Eve, for hearkening unto the serpent. That we endemically fail to heed God’s will and that a Day of Judgment will ensue, when the Lord returns to consign us, either to eternal life in Heaven, or a diabolical fate in Hell Fire, forsaking the late planet Earth and the diversity of God’s creation in the process. Complementing this is a view of humanity having dominion over nature, to exploit the others around us and the life of the planet, to our own selfish advantage.

3: The living planetary view: Both materialistic science and theistic religious views are incorrect and dangerously destructive. We are all becoming acutely aware that neither of these scenarios are viable, that the planet is in a worsening state of crisis induced by human misadventure, exploiting the non-renewable resources and living diversity of the planet, resulting in a climate and habitat crisis, causing a mass extinction of the diversity of evolving life, which risks making the world a literal Hell on Earth for future generations, if not precipitating the extinction of our species, risking serious damage to the health and economic viability of ongoing human life.

We now unite 1 with 3 and 2 with 3 in two articles: 1, 2, overviewed in three introductions: 1, 2, 3. These together show how our conscious autonomy and volitional will can be retrieved, how our lives can be fulfilled, what the actual meaning and purpose of life actually is and how the generations of humanity can come to fulfil ourselves in the flowering of conscious existence on evolutionary and cosmological time scales, returning the Earth to the paradisiacal verdancy it harbours in abundance, before it is irretrievably damaged for millions of years to come.

1: --> 3: The first article scientifically elucidates the symbiotic cosmology of the sentient conscious universe, in which conscious life is the climax manifestation. The meaning and purpose of life is then manifest in the immortal flowering of conscious living existence over evolutionary time scales, realising Heaven on Earth, through our integration with the conscious mind-at-large of the universe. The core cosmology has three principles (1) Biogenic: Conscious life is the complexity climax of the cosmological structural pathway.
(2) Panpsychic: Subjective conscious volition over the physical universe means that the subjective mind is universal.
(3) Symbiotic: Life reaches immortal complexity climax through symbiosis, not dominance of one cultural species.

All eukaryote higher organisms are an endosymbiosis between complementary bacterial and archaeal life forms. Survival under natural selection is how all species maintain perennial symbiosis with the biosphere. Symbiosis is essential for human survival. Symbiosis with entheogenic species, expands spiritual approaches to consciousness, realising the consummation of conscious existence, at the edge of chaos as visionary sexual organisms. Through psychic symbiosis, we can achieve moksha, which in the Eastern traditions signals the escape from the cycle of birth and death, and in the monotheistic traditions constitutes the mystical God-consciousness that has inspired all the founding religious visionaries from Yeshua, through Buddha, to countless shamans and sages who have known and appreciated the same secret oracle of existence. Realising cosmological symbiosis.

2: --> 3: The second article’s religious exegesis shows the monotheistic eschatological world view leads to an Armageddon destruction of the diversity of life and why Christianity has been, since Yeshua’s death, acting in contradiction to his actual vision, perpetuating a false religion based on the dying Son of God, whose flesh and blood we must eat, reappearing as avenging Lord in the Revelation — impeding a paradigm shift from unfulfilled apocalypse to the planetary resplendence of the Tree of Life — evolving Paradise on Earth, the abundant heritage that is our creative destiny, as guardians of the flowering of conscious existence in the universe at large.
The Core of Symbiotic Existential Cosmology

Saving the Diversity of Life from Mass Extinction

The central purpose of symbiotic existential cosmology is not just to reveal the cosmology of the universe in which we consciously exist, but to save the diversity of life on Earth from a human-induced mass extinction (Leakey & Lewin 1995, Kolbert 2014, Dawson 2016). It sets out a cosmology which shows humanity that our central and sacred purpose in existence is protecting and unfolding the diversity of conscious life.

The Conscious Universe

Symbiotic Existential Cosmology transcends both materialism and theism because it complements quantum cosmology with conscious volition. It has three core cosmological principles, biogenic, panpsychic and symbiotic. Life exists in the universe because the laws of nature arising from cosmic symmetry-breaking are fractal, giving rise to living systems as an interactive climax. It is consistent with empirical neuroscience but says that subjectively conscious physical volition is real, and this implies some matter – our brains – have physically efficacious subjectivity and hence all matter, because brains obey the same laws and forces as other normal matter. Primitive subjectivity thus occurs in quanta and butterfly effect systems which amplify quanta, like storms, and in bacteria and archaea. But a discrete emergent transition occurs with the eucaryote endosymbiosis between archaea and bacteria, with the sequestering of respiration in the mitochondria freeing up the cell membrane for excitable sentience and social signalling, when consciousness arises in the first single-celled amoeba-flagellates, forming societies communicating by neurotransmitter molecules such as serotonin. This evolved into our conscious brains as societies of $10^{30}$ tightly coupled amoeboid cells communicating by the same processes.

The inclusion of subjectivity opens up the spectres of panpsychism, animism and the spiritual/religious impulse in the physical universe, because these are all cosmological views, in which conscious volition is fundamental. But life is symbiotic, because natural selection occurs in the biosphere and all species depend on it for survival, so it’s a case of survival of the fittest biospheric symbionts, not species dominance. Instead of going to hell in a basket towards a human extinction, as we are now as a dominant species violating biospheric symbiosis, by regaining symbiosis over evolutionary time scales, humanity ends up inheriting its true cosmological meaning and purpose to protect life immortal, to ensure our own evolutionary survival, regaining the perennially immortal future of our 3.5 billion year tenure in the universe.

This is the Weltanshauung of Immortality, which flips the Copernican principle of science, because the privileged view of the universe is conscious life in paradise on the cosmic equator in space-time, not the Sun-centred cosmos. But it also flips religion inside out because the sacred purpose of existence is to protect the diversity of life throughout our generations forever, so that conscious life can flower to the point where the universe becomes fully conscious of its own existence through the living biota that form its interactive climax.

Humanity and the Biosphere

Humans evolved to be an environmentally destructive dominant species, because of our evolving Machiavellian social intelligence, after a long period of increasingly rich evolution to climax diversity following the Tertiary-Cretaceous extinction. This shaped our minds to be strongly egotistical to succeed against one-another. In the gatherer-hunter phase, this tendency was moderated by two factors: (1) the mating mind – astute female reproductive choice for smart resourceful entertaining and protective males who can do good sex to demonstrate genuine indicators of fitness and sensitivity and (2) original virtue – the evolution of verifiable trust through long-term personal judgment of good character. However, with the growth of large urban societies, this became overthrown by the imposition of patriarchal domination of woman and nature. Humanity is thus still a dominant species wrecking the biosphere through egotistical tragedy of the commons. Moreover gene-culture co-evolution, with the emergence of language, religion, commerce and science hasn’t resolved this, because cultural evolution is even more rapid than genetic evolution and has produced no stabilising factors. Only a cosmology in which gene-culture-biosphere co-evolution is embraced can resolve this.

Enter the biospheric response. The same climax period gave rise to plant and fungal species ‘salting’ the Earth with variants of neurotransmitter molecules which tweak key pathways modulating human mood and survival. In particular, the serotonin analogues called psychedelics – “psyche-revealing” – paradoxically cause (1) a sensory flood, in which the brain begins to develop an internal model of its own processing and (2) quantum change experiences in which the default mode goes silent, resulting in ego loss and the experience of either God or “ultimate reality”, leading to alleviation of mortal angst in terminal illness and a deep sense of integration with life and nature in the healthy. Hence these are critical to planetary survival, along with other forms of nature meditation and conservation activism.
Symbiotic Existential Cosmology – A Scientific Overview

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To Erwin Schrödinger for the unitary singularity of the conscious mind, and Charles Darwin for the evolutionary diversity of free will.

Abstract:
This overview summarises the quantum and cosmological physics, evolutionary biology and neuroscience involved in the work “Symbiotic Existential Cosmology” King (2021), conceived during a quantum change experience on psychedelic mushrooms.

Symbiotic existential cosmology retains the core features of physical quantum cosmology, while augmenting it to restore the role of conscious purposive life in a biodiverse universe into its correct position in the scheme of quantum cosmology. It is thus the actual cosmology of the universe in which we consciously exist, inverting the Copernican principle that conscious life does not have a privileged view of the universe. Its symbiotic basis forms a central protection for the future of the diversity of life on Earth.

It advances on an interlocking set of three cosmological descriptions with incontrovertible evidence, significant consequences and cosmological conclusions:

(a) Biogenic: Life exists cosmologically as a fractal consequence of the symmetry-breaking of the forces of nature reaching interactive climax. This gives a correct portrayal of the cosmological structural pathway leading from cosmic symmetry breaking to the fractal structure of living matter:

• Incontrovertible evidence: Life exists on Earth because the four core quantum forces of nature arising from cosmological symmetry-breaking are non-linear, leading to 100+ chemical elements and fractal molecular structures, from atoms through molecules, molecular complexes such as the ribosome, cell organelles, such as the membrane, cells, tissues, organs, organisms and biospheres, also supported by detailed research in biogenesis (King 2020).

• Consequences: Life exists in the epoch of paradise on the cosmic equator in space-time, as the climax manifestation of the structural interaction pathway after first generation stars have made the chemical elements and multicellular evolution has passed the threshold of symbiosis between archaea and bacteria, to eucaryotes and conscious multi-cell animals.

• Conclusions: Life has a key cosmological role, enabling the universe to manifest itself, through the subjective consciousness emergent in the biota.

(b) Panpsychic: Subjectively conscious volitional will has efficacy over the physical universe. This forms a minimal augmentation of quantum cosmology to include conscious volition acting on the physical universe, consistent with Erwin Schrödinger’s position: “the number of minds in the universe is one” and Charles Darwin’s statement on the existence of free will, down to the “polype”:

• Incontrovertible evidence: Live conscious human beings experience volitional intent and its consequences in human decision-making acts and behaviour affecting the physical world. A veridical affirmation of this between conscious human beings leads directly to the conclusion that at least some states of matter, (our brains) are complemented by a subjective aspect having a physical affect (the conscious volitional mind).

• Consequences: Affirmation of human subjectively conscious physical agency and legal responsibility. Occam’s razor is reversed, eliminating pure materialism, as inconsistent with conscious physical volition. Brain dynamics is not causally closed due to quantum uncertainty, enabling subjective consciousness to seamlessly participate in the uncertain instabilities of coherent processing without resulting in neurodynamic causal conflict.

• Conclusions: (1) Because brains are normal matter, obeying the four core quantum forces of nature, even if they display additional properties such as quasi-particle states, the subjective aspect of reality is a property of normal matter, and thus complementary to the universe as a whole, extending wave-particle complementarity. Primal subjective thus exists in quanta, unstable edge of chaos quantum systems, biogenesis and prokaryotes. (2) Conscious sentient volition arises in eucaryotes in a discrete emergent transition, due to the archaeal-bacterial endosymbiosis freeing the cell membrane for sentient excitability and social signalling.

(c) Symbiotic: The planetary biosphere survives and achieves climax diversity through ecosystemic symbiosis, upon which human survival is dependent. This details how edge of chaos quantum dynamics results in organicism, biopsychic, psychic and cosmological symbiosis as a biodiverse consummative climax:

• Incontrovertible evidence: Humans and all eucaryotes are multiply symbiotic organisms by (i) mitochondrial endosymbiosis between the root archaeal and bacterial lineages, (ii) sexually antagonistic genetic coevolution, (iii) nuclear-transposable element genetic symbiosis, and (iv) symbiosis with our co-dependent food, and medicinal co-species, in biospheric symbiosis, which humanity is now breaching in a mass extinction of life.

• Consequences: First person visionary experience in psychic symbiosis with our psychadelic co-species.

• Conclusion: The universe becomes able to manifest, know and realise itself consciously, in cosmological symbiosis, through entheogenic experiences complemented by meditative practices.

(d) Survival Necessity: Biospheric symbiosis is necessary and essential for human survival. Homo sapiens can survive on evolutionary time-scales only by being evolutionarily successful as a biospheric symbiot. Currently it is not. This is the motivating urgency to act, imbued by the mushroom experience and is manifestly true.

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* efficacy – the ability to produce a desired or intended result. Latin: efficere accomplish.
Introduction:

The Symbiotic Cosmology of Perennial Conscious Existence solves (a) the hard problem of consciousness – how and why we have subjective conscious experiences, (b) the problem of volitional will – how conscious intentionality can have real effect in the physical world and (c) the central enigma of existential cosmology – the cosmological role of life and conscious experience in the universe.

In pure materialistic physical cosmology, consciousness is a passive epiphenomenon of material brain function, as a biological computational mechanism. Volitional will is thus an illusion in a putatively causally-closed objective universe. In theistic cosmology, people possess free will, but the universe is created by God as a moral test of “sin” with divine punishments, in which the ‘real’ life is in eternal Heaven or diabolical Hell, discarding the “late planet Earth”.

Although we are fully aware of the existence of the physical universe and are obliged to accept the laws of nature and their impacts on our biological bodies and lives to survive, the entirety of our access to the world comes sine qua non through our subjective conscious experience, both consensually in our shared everyday experiences of the physical world around us and individually through dreams, memories, reflections and visions. Moreover absolutely critical is the fact that subjectively conscious agency is expressed in conscious volitional will affecting the world around us through our actions, via our physical brain. To be valid, cosmology must successfully explain both the objective and subjective aspects of experiential reality.

Symbiotic existential cosmology makes a minimal augmentation to the standard model of quantum cosmology to fully incorporate subjective decision-making to form a concise, complete and consistent description of existential reality consistent with quantum reality, biological evolution and neuroscience.

Because it is centrally based on a universe in which the structural interaction pathway leads to edge of chaos climax, it has very significant implications for the biodiverse future of planet Earth in a time of climate and biodiversity crisis involving am immanent human-caused mass extinction of life (Leakey & Lewin 1995, Kolbert 2014, 2021), which could seriously compromise or even extinguish the future of the human species.

It also has very significant implications for society as whole because it supplants both a purely materialistic scientific cosmology and the monothestic, religious model, in favour of a fully biodiverse cosmology critical to planetary survival. Its validity is established veridically by conscious observers, by Occam’s razor, to be the only class of cosmology consistent with subjective decision-making autonomy.

The cosmology has three interlocking components: (1) biogenic (2) panpsychic and (3) symbiotic.

1. Fractal Biocosmology: This constitutes an indisputable empirical fact of cosmological evolution.
While the energetic pathway of the cosmological process leads to galaxies, stars and solar systems driven by the most powerful of the four forces, leading eventually to a big crunch, cosmic bounce or expanding heat death, the structural interaction pathway of the four quantum forces together in full integration on the negentropic planetary surface, leads to fractal molecular structures, organelles, cells, multicellular tissues and organs such as the brain, organisms and the evolving biosphere. This sequence is the pathway to quantum complexity induced by the cosmic symmetry breaking of the forces of nature, complementing the energy pathway – paradise on the cosmic equator (fig 2 right).

Research has also revealed natural pathways to biogenesis, fully discussed in King (2020). Fig 2 illustrates three features of this research ongoing worldwide, illustrating the diversity of organics found in primitive syntheses and carbonaceous chondrites whose elementary components are also evidenced in the HCN and HCHO clouds in fig 1, the lost city vents which demonstrate a far-from equilibrium process on the ocean floor capable of supporting molecular biogenesis and concentrating the ingredients 1000 fold to biological concentrations and an example one-pot reaction producing a complementary suite of nucleosides.

This means that life is a central cosmological phenomenon and not irrelevant to physical cosmology.

2. Darwinian Panpsychic Cosmology is a minimal revision of physical cosmology consistent with quantum mechanics, in which the subjective aspect of reality is complementary to the universe as a whole.

Fig 3: Overview of classification of graduated subjective aspects of existential cosmology.

In this picture (a) all wave-particle quanta, (b) highly unstable quantum processes, including edge of chaos, self-organised criticality, and biogenesis (c) prokaryote archaean and bacterial excitable cells, (d) eucaryote cells with
signalling membranes capable of sentience (e) living organisms with excitable neurodynamics and (f) evolution, where each mutation is a quantum instance, all inherit subjective aspects and (g) the universe does also through the biota as the most complex physical manifestations of the four forces acting together with conscious edge of chaos coherence. In philosophical terms, primitive phenomenal consciousness (a) – (c) is universally panpsychic but the transitive structure of sentient consciousness (d) – (e) is emergent.

It is named after Charles Darwin because it is an evolutionary classification pivoting on the eucaryote endosymbiosis, which is consistent with Darwin’s own view of free will:

“To see a puppy playing [one] cannot doubt that they have free-will” and if “all animals, then an oyster has and a polype.” (Darwin)

It is the only class of cosmology in which subjective experience and volitional will are fully included and correctly represented. Once we accept subjective autonomy and volitional will into the description, the fact that subjective mind interacts with the objective brain to realise decisions means that the subjective mind acts upon the physics of the universe. But the brain also obeys the core model of the four quantum forces of physics, so subjectivity becomes a feature of the universe as a whole. Thus personal conscious autonomy implies panpsychism. This implies the complementary subjective aspect – the mind at large – is a single entity, complementary to the universe in the multiple encapsulations we experience as organismic consciousness having volitional will to affect the world around us, consistent with a Tantric – mind complementing matter – origin.

“There is obviously only one alternative, namely the unification of minds or consciousnesses. Their multiplicity is only apparent, in truth there is only one mind. ... I should say: The overall number of minds is just one” (Erwin Schrödinger).

In a single quantum, panpsychism arises from the wave function implicitly encoding the well of quantum entanglement of the quantum’s past and future under special relativistic quantum mechanics and quantum will is the uncertain idiosyncrasy of a single quantum instance, as illustrated by Schrödinger’s cat.

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5 The cosmic web has also been raised as a possible source of fractal complexity (Vazza & Feletti 2020).
In the pilot wave interpretation (Bohm 1952), the wave guides the particle, which is in an arbitrary but definite extant position. In standard quantum mechanics the position of the particle is uncertain and the amplitude of the wave function determines the probability of the particle being in any position. In the panpsychic description, uncertainty is not irreducible randomness but is a measure of deep quantum entanglement, complemented by the subjective aspect. This determines the position in the pilot wave model and defines “collapse” of the wave function in standard quantum mechanics and is thus consistent with both.

Fig 4 illustrates two experiments pertinent to this point of view. While closed quantum systems whose classical variants, such as the stadium billiard, are chaotic with ergodic unstable orbits, the quantum version shows suppression of chaos in the wave function probability distribution clumping around unstable periodic orbits. However when the quantum system is able to interact with other modes, as in the kicked top, the chaotic regime results in entanglement with additional factors, in this case nuclear spin, showing that quantum chaos induces entanglement. This shows us that all forms of decoherence due to interaction with other wave-particles at non-zero temperatures simply generate further forms of quantum entanglement.

In the second experiment, surrealistic Bohmian trajectories under weak quantum measurement where the delay to the retrodictive (time backwards) observation is varied, show that there is no inconsistency between the Bohm interpretation and standard QM because the surreal orbits in Bohm’s interpretation correspond to entangled states in QM. This provides a basis for the panpsychic interpretation to be consistent with both.

Coherently unstable edge-of-chaos quantum systems, biogenesis and the dynamics of excitable archaea and bacteria inherit coherent forms of quantum panpsychism in a primitive form of subjectivity, prior to attentive consciousness, coherent with the description of Hunt & Schooler J (2019). Many natural phenomena, take the form of edge-of-chaos processes, such as wind, waterfalls, thunder and lightning storms, from turbulent mountain summits to the ocean, which from the point of view of symbiotic panpsychism are strong candidates for primitive coherent subjectivity, consistent with animistic views.

These systems and the ensuing ones in single-celled eucaryotes and multicelled animals all inherit the capacity to avoid approach to the classical, macroscopic limit as they are processes which are not IID systems generated by independent and identically distributed measurements (Gallego & Dakić (2021). Similarly, in the approach of stochastic electrodynamics (SED) (de la Peña et al. 2020), in which the stochastic aspect corresponds to the effects of the collapse process towards the classical limit 6, consciousness has been proposed to be is represented by the zero point field (ZPF) (Keppler 2018, 2021).

Subjective consciousness is emergent in a single discrete transition, occurring as a result of eucaryote endosymbiosis, when respiratory energy was sequestered in the mitochondria (Wan & Jékely 2021), and the excitable cell membrane became available for signalling and perception of quantum modes, including vision (photons), hearing (phonons), smell (chemical orbital perturbations) and touch (physical torsion). This became preserved and elaborated by evolution because it anticipated threats to survival, in an excitable organism lacking a computational nervous system.

This process is illustrated in detail in fig 5, where the free-living excavate Naegleria gruberi, regarded as a candidate organism close to the eucaryote root, demonstrates the presence of excitability, adaptive behavioural modes, including amoeboid and flagellate habits, key signalling processes including G-protein-linked receptors, kinases and second messengers characteristic of higher animal nervous systems, cryptic sexuality, actin and microtubule activity.

This process takes another quantum leap at the interface between social single-celled social eucaryotes and multicellularity, where membrane excitability, neurotransmitters, action potentials and synaptic genes arose in single celled eucaryotes in parallel by the time of the transition from choanoflagellates to metazoa, with the action potential arising as a response to existential crisis, shared by flagellar eucaryotes spanning all branches of the eucaryote tree along with synaptic genes involved in membrane binding in colony formation in choanoflagellates and related protists (Burkhardt & Sprecher 2017). Each of these cells can release transmitters that act on receptors in nearby cells to produce movements of the whole colony. A similar response in sponges causes release of GABA and nitric oxide (NO).
We can also sense the awareness of more diverse species, for one another. We also use “theory of mind” to impute that other humans are conscious and by extrapolation other mammals, and volitional will is evident behaviourally. We can also sense the awareness of more diverse species, for volitional will is also evident in our capacity to put conscious intent into physical decision-making activity, and we can exchange recognition of this with one another as a foundational veridical transaction affirming this in ourselves and one another. We also use “theory of mind” to impute that other humans are conscious and by extrapolation other mammals, and volitional will is evident behaviourally. We can also sense the awareness of more diverse species, for
example in crickets singing in the long grass and coordinated flashing of fireflies. Darwin said free will goes down to the “polypes” and the symbiotic cosmology says attentive consciousness goes to the eucaryote endosymbiosis. When we watch individual Dictyostelium amoebae they act purposefully just like our neutrophil phagocytes and have individual EEG-like excitations. Pivotaly they make a transition point because they have two excitation modes, one individual and the other coherently organismic at the motile worm stage, so they demonstrate that subjectivity is a function of the coherent physical phenomenon encapsulating the process.

Although it is very difficult for us to see or understand the “consciousness” in single-celled species, they do have purposive behaviour and the active excitable behaviour of single-celled eucaryotes and their biological homology with our own brain excitations and synaptic neurotransmitters indicates the same physical processes are operating.

This means that the foundations of subjective consciousness are cosmological and that the universe is conscious as a whole, manifest in and through the biota. This solves the hard problem, because the subjective aspect is integral to coherent excitable brain processes. The easy objective problems of consciousness thus do not solve the hard problem, which is neither confined to neuroscience, nor philosophy, but requires a cosmological paradigm shift.

Uncertainty and mind: The action of mind on brain necessarily arises from modulating the "random" aspect of quantum uncertainty in edge of chaos brain processing. This enables volitional will to intervene in the brain without disrupting the partial causal closure in brain processing in the uncertain quantum universe. In this sense, classical causality is replaced by quantum consciousness. It provides plenty of room to affect the computationally-intractable uncertain outcomes in evolutionary survival, using both subjective anticipation inherited from single celled eucaryotes a billion years before neural systems evolved and historical experience generated by cognitive processes.

Darwinian panpsychism thus has similarity to Tononi et al.’s (2015) integrated information theory (IIT) by widening the scope of subjectivity to all systems having coherent forms of quantum instability, along with attentive consciousness in all eucaryotes. However it differs from IIT in that it is not seeking simply an abstract formulation of consciousness as an integrated informational system, which on its own has no subjective aspect, but uses dynamical criteria of coherent instability that interface smoothly with quantum reality, introducing a genuine subjective aspect. It also has similarities to Graziano’s (2016, 2017, Webb & Graziano 2015) attention schema theory (AST), particularly in regard to the key role of conscious attention being to anticipate threats to survival. It naturally acknowledges the strength of Graziano’s argument that a model of attention itself as a form of self-consciousness is central to this process, but as a vehicle to anticipative conscious volition, not a mechanistic contrivance that fools us into thinking we have conscious volition when it exists in AST only as an AI capable algorithm.

Fig 7 illustrates some of the neurophysiological processes perceived to underlie conscious processing. Walter Freeman’s model of olfaction consists of an electroencephalogram (EEG) dynamic oscillating via excitatory glutamate and inhibitory GABA neurons entering higher energy chaos as the animal sniffs. This then falls into one or another attracting basin, as the energy engaged by attention is reduced, thus identifying the odour. In the case of a new stimulus, learning alters the potential energy landscape to produce a new attractor. This type of process, involving an edge of chaos transition to a more ordered state, can be generalised to decision-making situations where the global
brain dynamic has an instability between possible outcomes, in which a transition from higher energy chaos leads to the decision/solution. Because edge of chaos dynamics invoke the butterfly effect, this raises the spectre of an unstable global state becoming sensitive to instabilities on descending scales of neural assembly to a single neuron and potentially the quantum level of the ion channel in a neuron crossing its sigmoidal threshold. The concept of stochastic resonance has also been demonstrated to promote such hand-shaking fractal scale transitions in the energetics. This is simply a descriptive overview of possible processes involved, in the face of the failure of promissory materialistic neuroscience (Popper & Eccles 1984) to demonstrate physical causal closure of brain function, so Occam’s razor cuts in a direction which avoids conflict with empirical experience of conscious volitional efficacy over the physical universe.

Fig 7: (1) Edge of chaos transitions model of olfaction (Freeman 1991). (2) Joachim Keppler’s (2018) view of conscious neural processing uses the framework of stochastic electrodynamics (SED), a branch of physics that affords a look behind the uncertainty of quantum field theory (QFT), to derive an explanation of the neural correlates of consciousness, based on the notion that all conceivable shades of phenomenal awareness are woven into the frequency spectrum of a universal background field, called zero-point field (ZPF), implying that the fundamental mechanism underlying conscious systems rests upon the access to information available in the ZPF. This gives an effective interface description of how dynamical brain states correspond to subjective conscious experiences, but like the other dynamical descriptions, does not solve the hard problem itself of why the zero point field becomes subjective. (3) Stochastic resonance as a hand-shaking process between the ion channel and whole brain states (Liljenström & Svedin 2005). (4) Illustration of micro-electrode recordings of local wave phase precession (LFP) enabling correct spatial and temporal encoding via discrete action potentials in the hippocampus (Qasim et al. 2021).

This is complemented by a second process earlier noted by Karl Pribram (1975, 1993), in which centrally attended (conscious) processes are distinguished from background noise of peripheral processing by the phase coherence of their excitations rising and falling together. Decoherent oscillations are relegated to the periphery of attention while coherent excitations are central. This is again consistent with competing peripheral excitations vying for central attention in an evolutionary process of natural selection favoured by several neuroscience ideas. This process of phase coherence has striking similarities to quantum uncertainty, where a measurement of energy requires a non zero time interval defined by Planck’s constant h to count the wave beats against a reference wave. This model became clearer experimentally, in that the discrete action potentials of single neurons were found to be statistically modulated by the phase precession of the overall voltage wave associated with the EEG (Qasim et al. 2021), thus bringing in a discrete cellular response to the continuous local wave potential, also characteristic of quantum phenomena in the probability interpretation of the particle’s position within the wave.

Joachim Keppler (2018, 2021) presents an analysis drawing conscious experiences into the orbit of stochastic electrodynamics (SED) a form of quantum field theory. The SED is based on the conception that the universe is imbedded with an all-pervasive electromagnetic background field, the zero-point field (ZPF), which, in its original form, is a homogeneous, isotropic, scale-invariant and maximally disordered ocean of energy with completely uncorrelated field modes and a unique power spectral density. This is basically a simplification of the uncertainty associated with the quantum vacuum in depictions such as the Feynman approach to quantum electrodynamics (fig 4). This provides a basis to discuss the brain dynamics accompanying conscious states in terms of two hypotheses concerning the zero-
point field (ZPF): “The aforementioned characteristics and unique properties of the ZPF make one realize that this field has the potential to provide the universal basis for consciousness from which conscious systems acquire their phenomenal qualities. On this basis, I posit that all conceivable shades of phenomenal awareness are woven into the fabric of the background field. Accordingly, due to its disordered ground state, the ZPF can be looked upon as a formless sea of consciousness that carries an enormous range of potentially available phenomenal nuances. Proceeding from this postulate, the mechanism underlying quantum systems has all the makings of a truly fundamental mechanism behind conscious systems, leading to the assumption that conscious systems extract their phenomenal qualities from the phenomenal color palette immanent in the ZPF.”

This provides a basis confluent with the description invoked in this article, and with the dissipative quantum model of brain dynamics (Freeman & Vitello 2007, Sabbadini & Vitello 2019). It demonstrates the kind of boundary conditions in brain dynamics likely to correspond to subjective states and thus provides a good insight into the stochastic uncertainties of brain dynamics of conscious states that would correspond to the subjective aspect, and it even claims to envelop all possible modes of qualitative subjectivity in the features of the ZPF underlying uncertainty. But it would remain to be established that the ZPF can accommodate all the qualitative variations spanning the senses of sight, sound and smell, which may rather correspond to the external quantum nature of these senses. Also the ZPF as a physical manifestation does not itself solve the hard problem as such.

However Keppler makes this question clear as well: A detailed comparison between the findings of SED and the insights of Eastern philosophy reveals not only a striking congruence as far as the basic principles behind matter are concerned. It also gives us the important hint that the ZPF is a promising candidate for the carrier of consciousness, suggesting that consciousness is a fundamental property of the universe, that the ZPF is the substrate of consciousness and that our individual consciousness is the result of a dynamic interaction process that causes the realization of ZPF information states. ... In that it is ubiquitous and equipped with unique properties, the ZPF has the potential to define a universally standardized substratum for our conscious minds, giving rise to the conjecture that the brain is a complex instrument that filters the varied shades of sensations and emotions selectively out of the all-pervasive field of consciousness, the ZPF. (Keppler, 2013).

This picture is consistent overall with neural processing being a causally incomplete dynamical system, interfacing with quantum reality at points of environmental, and dynamical instability amid tipping points, making it possible for the subjective aspect associated with conscious volition to interact with the physical brain by forms of internal quantum measurement, without disrupting the extent to which neurodynamical processing is causally determined by the brain.

3. Symbiotic Cosmology arises because symbiotic systems achieve optimal complexity and evolutionary persistence and diversification.
(a) The eucaryote endosymbiosis between the two founding branches of life, archaea and bacteria, resulting in a complexity catastrophe leading to cell organelles and informational excitable membranes communicating through social signalling molecules, with fundamental energy processes sequestered internally in the mitochondria. This results in cellular sentence through interaction with external quantum modes forming the senses.

(b) At the same time asymmetric sexuality evolved as a genetic symbiosis between complementary strains, enabling indexed recombination of large genomes.

(c) In parallel, cell-virus/TE symbiosis occupying up to 46% of the human genome, although some members are astill actively reproducing in the germ line they have also given rise to modular gene expression. In terms of the selfish gene (Dawkins 1976), transposable elements not withstanding, organism genomes are one huge genetic symbiosis, through organismic survival and selection.

Organismic symbiosis is then realised in biospheric symbiosis of each species within the biosphere as a whole, in which natural and sexual selection is a measure of survival of the most successfully symbiotic species within the biosphere, whether parasites, prey, predators or hosts.

Ultimately, society and culture are also examples of symbiotic survival, however human emergence has been fraught with species-focused selection, leading to egotistical consciousness, tribal and civil warfare, as well as sexual wars of dominance between the male and female sexes, in which patriarchy has compromised the sexual prisoners’ dilemma, inhibiting female reproductive choice essential for XY-based evolution and breaching human equilibrium with the biosphere, in exponeniating devastation of the natural habitats of the planet, climate crisis and resource crisis. The prosocial effects of psilocybe species have also been proposed to have played a role in the emergence of human culture (Rodríguez Arce & Winkelman 2021). The natural correction to this scenario comes from the complex sensitivity of conscious existence not being the exclusive dominant possession of a single species Homo sapiens, but is achieved in psychic symbiosis.

A critical feature of the cosmology is that it was discovered by a mathematician with a research interest in biocosmology, neurodynamics and chaotic quantum processes, as a result of an experience on psychedelic mushrooms, which brings us to the final stage of psychic and cosmological symbiosis.

Fig 9: (a) Reductions in alpha (8-15 Hz) and delta (1-4 Hz) MEG power for psilocybin (Muthukumaraswamy et al. 2013), consistent with greater signal desynchronisation on psilocybin. (b) BOLD Variance time courses (obtained over a 1 min. sliding window) for the psilocybin and the placebo infusion (Tagliazucchi et al. 2014) showing greater variance on psilocybin. (c) Increased functional connectivity between the default mode network (DMN0 and r-fronto-parietal cortex after psilocybin (Carhart-Harris et al. 2013), consistent with the “unconstrained mind” (Lifshitz et al. 2018). (d) Decreased low frequency power (LF) and power spectrum scaling exponent α after psilocybin infusion (Tagliazucchi et al. 2014). (e) Persistence homological scaffolds for placebo (left) and psilocybin (right) showing greater inter-connective persistence on psilocybin (Petri et al). (f) Reduced BOLD activity after psilocybin in areas related to the DMN (f) A recording during the 12 minutes after intravenous administration of psilocybin 2mg (~15 mg orally), which shows reduced activity in medial frontal cortex (mPFC), posterior cingulate cortex (PCC) and other areas. (Carhart-Harris et al 2012). (g) Two indicators of beneficial spiritual and social effects of psilocybin at 6-months after the experience Griffiths et al. (2018).

Psychic symbiosis. The end result of this process is that biospheric evolution has led to certain species, such as several cacti, mushroom species, and a variety of plant species producing neurotransmitter analogues which act as paradoxical agonists, currently having the umbrella name of classic psychedelics. These send the dynamical processes evoking subjective consciousness, perceptual processes and particularly the default mode and associated networks supporting
individual ego dynamics for organismic survival, in organismic consciousness into a deeper form of primary consciousness, in which these dynamics revert more closely back towards collective survival, or even deeper into a form of abstract consciousness, which the experiencer identifies with “ultimate reality”, expressed by Aldous Huxley as the mind at large, associated with the merging of personal identity with the compassionate totality of existence. Individual consciousness is then an encapsulation of the mind at large filtered through the coherent brain activations associated with organismic consciousness. Thus while more elementary levels of subjectivity are not perceivable to human observers, organismic and primary consciousness are, making the cosmology verifiable. Multiple papers by the Johns Hopkins team (Griffiths et al. 2006, 2007, 2011, 2018) and others, attest to a building statistical validation.

This type of deep psychedelic experience has deep parallels with the mystical states of moksha, satori, epiphany, immanence and enlightenment spanning both Eastern and Western spiritual and religious traditions and planet-wide traditions of shamanism. In reductionistic science, where consciousness is regarded merely as an epiphenomenon, this is regarded as hallucination, or psychosis, of no external significance. In religious traditions it is regarded as either negative possession or positive emanation of holy spirit. In the Upanishads it is accepted as the ultimate reality in the union of Brahman with the atman, or inner self, in the manifestation of cosmic consciousness.

This is an almost unattainable objective for most people, leading to wishful reincarnation, where enlightenment is delayed to a future lifetime. Symbiotic cosmology is also the realisation of the tantric origin of Shakti-Shiva as mind and world, and of the Yin/Yang of the Tao. The key that psychedelics provide is that, among their diverse phenomena, there is a portal called the nierika by the Huichol, which leads to a state of deep cosmic consciousness sometimes described as the “spirit world”. It is also reflected in Yeshua’s saying:

“It is I who am the All. From me did the All come forth, and unto me did the All extend”.

The common elements of peak psychedelic experience are of a consistently mystical quality, established in recent scientific research, invoking the experiencing of “ultimate reality” and the consistently transformative effect on peoples lives suggest they do have a common aetiology, consistent with cosmic consciousness and that this process is real. This provides evidential data, in the form of veridical reports having statistical significance in the same way that objective scientific measurements do. This places psychedelics as the subjective complement of the LHC in physics.

The symbiotic cosmology provides a completely different solution from both a purely materialistic cosmology, in which the universe is described as a causal process, in which consciousness life is passive, meaningless and irrelevant; and a theistic cosmology in which life on Earth is a disposable moral trial created by a non-evidential external third party called God for a future life of eternal bliss or hellish punishment. Both these cosmologies devalue the role of the evolving diversity of conscious life perennial in the universe, leaving us with a wasteland of apocalypse and Armageddon. The symbiotic cosmology invokes immortal paradise, so long as Earth shall live and beyond Earth to the stars, if we can learn to survive in evolutionary time. It is the real cosmology of the living universe while religious and materialistic cosmologies are tragic fallacies of the imagination.

Cosmological symbiosis: In symbiotic cosmology the purpose of the cosmological process is so that the universe can reach edge of chaos climax and manifest, experience and know itself, through the structural cosmological pathway leading to fractal complexity, life and consciousness, in which the biota, and Homo sapiens as a climax species, comes to experience forms of awareness, realising and manifesting cosmological self-consciousness.

This is a scientific cosmology, which imparts an even greater responsibility and urgency on humanity than religious cosmologies – to act as conscious guardians of the biosphere, to cherish and protect the living universe as sentient cosmological manifestations of it. This also has profound spiritually fulfilling implication, in which conscious beings become both immanent and transcendent guardians of the diversity of conscious life – i.e. becoming as Gods in terms of Genesis, regaining the mythical Tree of Life hidden since the foundation of the world:

Behold, the man is become as one of us, to know good and evil: and now, lest he put forth his hand, and take also of the tree of life, and eat, and live for ever: Therefore the LORD God sent him forth from the garden of Eden. (Genesis 3:22).

7 I am not suggesting that everyone should take these agents to achieve such states, but just that they need to be respected as having these potentials for existential insight by society as a whole. Neither am I recommending that people take them without expert guidance, at least at the outset. Neither am I suggesting they be taken by minors, until the age of full adult legal consent.
This in turn imparts to us a “galvanising” responsibility, as cosmological manifestations of sentience to use our lives fruitfully to preserve and ensure the passage of the generations of conscious life in overflowing abundance. To protect the planet from mass extinctions, while experiencing the full deep abyss of conscious awareness, so that the evolving manifestation of consciousness is able to unfold. We are the agents of transformation and the decisions we make will shape the universe around us, making a paradisiacal, purgatorial or hellish history as we speak. Our lives are then truly connected to the immortal web, through intimate conscious identification with the flow of life as a whole, solving the dilemma of organismic mortality in the physical world. This again is why psychedelics are therapeutic for people in depression and terminal illness (Carhart-Harris R et al. 2016, 2017, Griffiths R. et al. 2016) and why they are also conducive to increased nature-relatedness (Lyons & Carhart-Harris 2018).

Symbiosis and Human Survival: Put very simply, a biosphere cannot survive in evolutionary time if there is a dominant species whose emergence remains tribal in basis. But that is the natural condition for any emerging dominant species like Homo sapiens. So the fully evolved expression is not species dominance, but biospheric symbiosis. So called classic psychedelics provide a core pathway to achieve this, because their effects on ego, particularly in a state of meditative withdrawal, or trance fixation, can undergo a transition to the ‘abstract’ state of consciousness that Aldous Huxley denoted “the mind at large”. Cosmological symbiosis is consistent with a fully technological civilisation, in which science and vision can both flourish, because it engenders a symbiotic civilisation, which can survive on cosmological time scales. A dominant species-driven technological civilisation is not sustainable because it is self-destructive through biospheric exploitation and collapse. Religious cultures are likewise prone to self-destruct through lethal theistic misadventure.

Fig 10: Physical cosmology and the cosmology of mental states illustrated by lead ion collisions in the LHC and “Curandero” Luke Brown’s illustration of psychedelic experience. Natural psychedelics in traditional use.

References


Symbiotic Existential Cosmology – Discovery and Philosophy

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Paradoxical Asymmetric Complementarity

Fig 11: Cosmology is a paradoxical complement of two manifestations – quantum reality and subjective consciousness. The classical world around us arises from consciousness collapsing the overlapping parallel worlds of quantum reality, to evoke the historical process via our intentional will. We are thus personally responsible for the fate of existence.

The Existential Condition and the Physical Universe

The human existential condition consists of a complementary paradox. To survive in the world at large, we have to accept the external reality of the physical universe, that we bleed if cut and may become unconscious or die if hit on the head, but we gain our entire knowledge of the very existence of the physical universe through our conscious experiences, which are entirely subjective and are complemented by other experiences in dreams and visions which also sometimes have the genuine reality value we describe as veridical. The universe is thus in a fundamental sense a description of our consensual subjective experiences of it, experienced from birth to death, entirely and only through the relentless unfolding spectre of subjective conscious existence. Thus although we scientifically associate subjective consciousness with integrated dynamical brain states, the physical universe manifests through conscious experience. Materialists attempt to defer this by saying that this is just the way it appears to a biological organism imprisoned in their own internal model of reality, which will seem like this, but is only a feature of their subjectively confined point of view. This is incorrect because it then leads to the hard problem of consciousness and the failure to recognise volition.

We are thus subjectively conscious beings possessing volitional will over a physical universe we know only through our conscious experience of it, and our creation myths and scientific descriptions attempt to make sense of our predicament. The universe in turn becomes manifest only through its conscious sentient beings, the biota, so the meaning of existence is created through our journey of discovery as conscious agents transforming the universe by our insights and actions. We thus in turn inherit a foundational responsibility for our actions cosmologically.

When we confine our discourse to dealing with the properties of external physical reality, we end up with what has become the exceedingly complex scientific description of the natural universe. This appears on macroscopic scales to be a giant causal mechanism made of atoms and molecules, leading to our complex brains and the way brain processing leads to the decisions we make in the physical world. This in turn leads to the notion that our subjective

conscious minds are just an internal model of reality created by the computational brain to sum up the outstanding features of the world around us and that our personal sense of volition and subjective agency – the experienced ability to make decisions affecting the world around us – is a delusion, because it is the causal processes in our brains that did this, not our conscious volition.

The trouble with this point of view is the hard problem of consciousness – the fact that there is no conceivable way any physically objective brain process or a set of easier functional problems about integrative properties of brain function can explain something as intrinsically subjective as conscious experience. As Jerry Fodor said: “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.” This is the dilemma that the easy problems of consciousness cannot be contrived into an objective structural description that solves the hard problem. At best, we end up with pure informational models identifying human consciousness with integrated biological forms of artificial computational intelligence.

Fig 12: Constructing our description of reality based on the external physical world since Copernicus carries incredible explanatory power because nature is complex and provides a detailed physical and biological description, but in terms of subjective experience and conscious existence, relying exclusively on the external objective details paints us into a corner where we cannot solve the hard problem of consciousness, because the external objective description is categorically incapable of modelling or manifesting intrinsic subjectivity.

There is also a fatal flaw in the dependence of physical neuroscience on classical notions of casual closure as a mechanism. The discovery of quantum reality at the beginning of the 20th century has shown us that the universe is not causally closed and that quantum uncertainty and its spooky features of quantum entanglement can intervene throughout. The reason for the incredible technological success of science is thus not the assumption of macroscopic causality at all, but the fact that the quantum particles come in two kinds. The integral spin particles, like photons, called bosons, can all cohere together, as in a laser and thus make forces and radiation, but the half-integer spin particles called fermions, like protons and electrons, which can only congregate in pairs of complementary spin, form matter, inducing a universal fractal complexity, via the non-linearity of the electromagnetic force. Given the quantum universe and the fact that brain processes are highly uncertain, given changing contexts and unstable tipping points at the edge of chaos, objective science has no real basis to claim the brain is causally closed and thus falsely conclude that we therefore have no agency to apply our subjective and consciousness to affect the physical world around us.

So what if we reverse the cosmological argument and begin with the foundations of conscious existence, in the form of subjective consciousness affecting the physical world around us through our veridical experience of our conscious intent – our volitional will affecting the world around us, as we witness in everything we do behaviourally in the world? By veridical, I mean we are telling the actual truth about our conscious experience and our consciously experienced volitional intent to make decisions and execute physical actions. I use the term veridical because when we do anything physical we have an unswerving conscious impression that we have genuinely intended something and executed a physical action whose consequences we are responsible for as active agents. We are consciously aware that we are intending a physical action we are undertaking. This is the veridical perception of our intention that materialistic neuroscience is denying when the conscious mind is treated as an epiphenomenon having no physical affect. Organismic perception of the real world is described as “veridical perception” 9, because it is designed to give an accurate portrayal of the world, realer than the incoming sensory data, in our case in binocular 3-D, with size preservation, conducive to an accurate detailed view, ensuring evolutionary survival in the wild. The key aspect of

9 Natural selection has shaped our perceptions to be, in the typical case, accurate depictions of reality, especially of those aspects of reality that are critical for our survival. “People could not orient themselves to their environments, unless the environmental information reaching them through the various sense organs offered a perception of space that corresponds to their physical “reality.” Such perception is called veridical perception – the direct perception of stimuli as they exist. Veridical perception also causes a person to experience changing stimuli as if they were stable: even though the sensory image of an approaching tiger grows larger, for example, one tends to perceive that the animal’s size remains unchanged. One perceives objects in the environment as having relatively constant characteristics despite considerable variations in stimulus conditions” (Britannica, APA).
consciousness us that we are aware that we are aware. Materialistic neuroscience denies that our perception of our volition is veridical, contradicting the fact that this is as necessary to survival as our veridical perception of the world.

Existential cosmology has the opposite effect from reducing consciousness to mere information, by contrast imbuing at least some forms of matter, such as brains, with an extra complementary subjective aspect that we witness and execute as conscious experience and volitional intent. Although this is counter-intuitive to pure materialism, it is a vastly more plausible and realistic approach than denying human agency by a fatal reductio ad absurdum of existence. Rather than ghosting us as walking AI machines lacking free will, it introduces profoundly exciting new properties into the physical universe, explaining conscious existence in the material realm!

Enter existential cosmology, which starts from the conscious level as we all do, and develops our cosmological world view as a transaction between subjectively conscious live human beings, to discover and deduce the cosmological conditions of the world around us as living conscious agents affecting the natural world. This leads to a very different conclusion from materialistic physical cosmology, although it is entirely consistent with both quantum cosmology and empirical neuroscience – while materialism denies conscious volition, veridical experience implies matter has psyche.

![Diagram of validation types](image)

**Fig 13:** A: **Objective physical verification** proceeds by two agents or groups recording consistent outcomes from independent empirical experiments or one group verifying the theoretical prediction of another. B: **Subjective conscious veridical affirmation:** Two conscious agents confirm a common truth through affirmation by empirical experience. e.g. in sworn testimony, political agreements and entrusted relationships. C: **Belief through prescriptive faith** in religious doctrine involves conviction of a doctrinal truth without actual knowledge or experiential or objective evidence of the proposal or phenomenon. **Symbiotic existential cosmology** utilises A objectively and B subjectively. It also encompasses visionary experiences consistent with C but only if they satisfy B, alleviating the explanatory gap of “soul” being equated with belief (Freeman 2008).

**Existential cosmology is thus verified as a conscious transaction of volitional agency between live human beings, in a veridical affirmation:** As you read this passage, you are becoming consciously aware that I have, as a live human being, **consciously and intentionally committed this communication to physical electronic form,** thus affirming that my **subjective conscious volition has had a physical effect on the universe.**

Normally this would be a mutual affirmation between two conscious agents in one another’s presence of their veridical efficacy over the world. It is almost absurd to have to make this claim explicitly because it is assumed in all our interactions! Some less materialistic people may wonder why this needs to be stated, but the scientific era has brought it into question and it is pivotal to establishing the conscious volitional paradigm.

By consciously comprehending the truth of your self-evident affirmation of my volition above on receipt of this, you are empirically, by your own experience confirming the core thesis of existential cosmology, which asserts that subjective conscious volition is physically realisable. This also implies that at least some physical matter, including the brain, has a complementary subjective aspect, but the brain is ordinary matter subject to the four core quantum forces, so this means the physical universe has a complementary subjective aspect, from which the evolutionary implications of Darwinian pannpsychism and Symbiotic cosmology as a whole follow. Existential cosmology is thus a subjectively verifiable discovery, in the creative commons, which can be affirmed empirically by experience 10.

By veridically affirming the author’s volitional agency and noting this fact physically, you are also affirming your own volitional agency over the physical world. Therefore, on receipt of this communication, we each become consciously responsible and fully accountable for the discovery’s consequences, as conscious human beings whose volition affects

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10 *empirical* based on, concerned with, or verifiable by observation or *experience* rather than theory or pure logic.

Etym. Greek *empeirikos*, from *empeiria* ‘experience’. Observational empiricism is appropriate for verifiable physical investigation and experiential empiricism for veridical conscious affirmation.
the world. This is not a moral responsibility but a responsibility, as a conscious agent, to the veridical truth of what you have experienced and its implications about your own volition upon the world as a conscious human being.

No unverifiable claim that awareness of volition is correlation, not causation, and my physical brain wrote this passage, or developed the entire cosmology on its own, without my conscious volition affecting the physical universe, and at the same time fooled my conscious experience into believing I had done it consciously, as a passive epiphenomenon will suffice as an avoidance of your duty of care as a conscious human being, to affirm its experienced veridical truth.

You are free to transmit this work to others in intact form, to critique it, or to communicate a critical flaw to the author, but you cannot escape the duty of care to be honest about the veridical truth of the transaction and its thesis and to communicate it honestly to others. In a sense this is not asking anything more from the reader than the simple cognisance that I have subjectively applied my conscious volitional will to commit this consciously discovered thesis to physical form, as all live consciously active human beings do every day, by their actions. However the responsibilities are acute and pivotal to the capacity of the cosmology to ensure human survival over evolutionary time scales.

The process of mutual affirmation also has profound social implications because it leads to a social paradigm where decisions are made by autonomous mutual agreement, rather than hierarchical structures and institutions. It leads to new social models of fractal ecosystemic democracy, or lateral democracies by mutual consent such as holacracy and sociocracy.

![Fig 14: The social evolution of sociocracy models of society.](image)

Symbiotic existential cosmology, as explained in the scientific overview, consists of three interlocking realities:
1. **Biogenic**: Life exists cosmologically as a fractal consequence of the symmetry-breaking of the forces of nature reaching interactive climax.
2. **Panpsychic**: Subjectively conscious volitional will has efficacy over the physical universe.
3. **Symbiotic**: The planetary biosphere survives and evolves through ecosystemic symbiosis, upon which human survival is dependent. Biospheric symbiosis is thus essential for human survival.

The cosmology arose as a result of an experience on psychedelic mushrooms, but the significance of the cosmology itself extends far beyond entheogenic visions. It is in fact the actual cosmology of the universe in which we consciously exist. It is fully consistent with both quantum cosmology and with empirical neuroscience, and it has truly extraordinary implications that are in no way dependent on psychedelics themselves:

1. **It restores human conscious volitional agency**, currently denied by materialistic neuroscience and morally bound by religious belief, and returns ethical and legal responsibility for our actions back to the human species, and does it in the cosmological context, revealing the key role of life in the universe, as shown at \( \Sigma \) in fig 15, thus imbuing humanity with a clear responsibility to protect and unfold conscious life over evolutionary time scales.
2. **It has the direct capacity to save the biosphere and humanity from mass extinction**. Its symbiotic implications form a central remedy to avoid a climate and biodiversity crisis which could cause a mass extinction of the diversity of life, setting humanity back 50 million years and very likely causing the extinction of Homo sapiens, due to a failure to live symbiotically with the biosphere upon which we co-depend for our survival.
3. **It realises the existential quest of human meaning and purpose in the universe**, as a cosmological climax phenomenon, enabling the physical universe to manifest and know itself, while giving each and every one of us the capacity to experience states of cosmological symbiosis in reunion with the conscious universe as a whole.
4. **It transcends both the scientific and theistic world views**: 
   (a) It transcends scientific cosmology because it completes the scientific description of nature by fully incorporating subjective consciousness and the ability of volitional will to affect the physical universe.

\( \Sigma \) efficacious – the ability to produce a desired or intended result.
(b) It transcends religious cosmology by transferring cosmological agency directly back to humanity and natural life verified by conscious affirmation of our volitional agency, rather than being dependent on supplicant beliefs.

Symbiotic existential cosmology can be empirically verified in **five principal ways**:

1. The key role of life in the universe is incontrovertibly manifest in the biosphere as a climax edge-of-chaos dynamical system resulting from the four non-linear quantum forces of nature, mid way through the universe in space-time.
2. Existential cosmology as an interaction between subjective consciousness and physical reality, is verified through affirmation by empirical experience between conscious human volitional agents, in the same manner that legal transactions, such as sworn evidence, fiduciary duties of care and terms of trust are veridically affirmed. This is necessary for applying Occam’s razor to eliminate materialistic cosmologies failing the volitional efficacy test fundamental to human decision-making autonomy and personal responsibility for our actions upon the world.
3. The extent of subjective volitional consciousness across the evolutionary tree can be verified through empirical observation of volitional purposiveness in eucaryotes.
4. Organismic and biospheric symbiosis are irrevocably manifest properties of all eucaryote species and the biosphere as a whole as a climax system. Psychic symbiosis has become a cultural practice of diverse human societies.
5. Cosmological symbiosis is verified by statistical evaluation of quantum change experiences of “ultimate reality”, in psychedelic and meditational states, as demonstrated in studies by the Johns Hopkins team and others.

**Turning Copernicus Inside Out**

The current human weltanshauung, since an exilic writer wrote the sabbatical Genesis 1, started out as a flat Earth with beaten domes (firmaments) in which the plants were created before the sun and moon. Until Copernicus, this was an anthropocentric view of God’s creation. Copernicus then flipped it to the heliocentric objective universe, causing our thinking to turn inside out and become obsessed with describing everything, including our most subjective realities, in objective mechanical terms, until quantum reality intervened.

Symbiotic Existential Cosmology doubly inverts the Copernican principle: That humanity does not have a privileged view of the universe. SEC does a double flip on this as well. Firstly the universe is NOT heliocentric. The structural interaction pathway goes through two cycles. Firstly younger hotter stars generate the chemical elements from hydrogen and helium and supernova them into galactic gas clouds which are then swept up into smaller longer lived sun-like stars with solar accretion discs, where a second long period of biogenesis and then biological evolution ensues. Thus we end up at picture three on the right, paradise on the cosmic equator in space time. We are not 4.5 billion years old but our stuff is much older, say 10 billion out of the universe’s 13 billion year lifetime, so the cosmic equator is now about half way through in space-time, with a good 5 billion to go before we red giant. But there is the second flip. Due to the eucaryote endosymbiosis between archaea and bacteria, life became complex conscious organismic life and the cosmic equator has become conscious flipping the privileged view of the universe right back to consciousness itself, so we are nearly back to square one, the Garden of Eden in Genesis 2 and 3, except that we are in dire straights from human misadventure! That’s precisely what the Brahmanic quantum change experience I had on mushrooms was saying! What a hell of a fix! So we really do need to act to avoid the extinction!
This in turn resulted in the rise of classical materialism defined by Newton’s laws of motion, after watching the apple fall under gravity, despite Newton himself being a devout Arian Christian who used scripture to predict the apocalypse.

This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent Being. ... This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called "Lord God" παντοκρατωρ [pantokratōr], or "Universal Ruler". ...

The Supreme God is a Being eternal, infinite, [and] absolutely perfect (Issac Newton).

Nevertheless the classically causal Newtonian world view, and Pierre Simon Laplace’s view of mathematical determinism “that if the current state of the world were known with precision, it could be computed for any time in the future or the past”, came to define the universe as a classical mechanism in the ensuing waves of scientific discovery in classical physics, chemistry and molecular biology, climaxing with the decoding of the human genome. By contrast with Newton, it is said that when Napoleon asked Laplace, who was called “the weathercock” for his political survival skills, why he had never even mentioned its Creator in his work, he answered bluntly, Je n’avais pas besoin de cette hypothèse-là – “I had no need of that hypothesis”.

This classical causal view has extended to a view in neuroscience that our subjective conscious experiences, which are the sole avenue we have to experience the physical universe are simply an internal model of reality generated by the brain, viewed as a causally closed physical mechanism preventing volitional will having any efficacy. This view still pertains, despite the discovery of quantum reality at the beginning of the 20th century, in which causality is overshadowed by quantum uncertainty and its effects, on the basis that these do not apply to a warm wet brain. However, this claim is empirically unprovable and is likely to remain so. The end result is that the central arena of our subjective experience and our volitional agency over the physical world have been treated by neuroscience as null and void, leaving neuroscience with no way to elucidate how the objective brain can generate something intrinsically subjective by any causal mechanism conceivable – otherwise called “the hard problem of consciousness”. This leaves our conscious existence in an orphan status and our sense of agency and living meaning and purpose in the universe non-existent.

Fig 16. Symbiotic Existential Cosmology stands centrally between two degenerate descriptions of nature, fully confirming the autonomy of human conscious volitional will to affect the universe and for human beings to have full responsibility over our physical actions. Monotheism, left invokes free-will but binds it to eternal punishment by a super-conscious agent. Physical materialism, right lacks any conscious human agency, regarding subjective conscious experience as simply an internal model of reality generated by the physical brain as a passive epiphenomenon, lacking any capacity of conscious volitional will to affect the physical universe. Physical Materialism and Monotheism are both fated to lead to a mass extinction of the diversity of life and eventual human extinction, due to apocalyptic destruction in favour of an imagined Heaven/Hell bifurcation on the religious side and, on the materialist side, the complete failure to accept conscious life has a cosmological role in the universe which humans, as conscious volitional agents affecting the world have become responsible for, by our impact on Earth’s climate, habitats and biodiversity. Only by affirming symbiotic existential cosmology does the human species have a consistent cosmological basis and a good chance of long-term survival in the biosphere over evolutionary time scales.
In figure 16, symbiotic existential cosmology occupies the central place between theistic cosmology, dominated by a superconscious agent creating the universe and physical materialism in which the universe is described as a giant causal mechanism, although it has been more recently been found to be also subject to quantum uncertainty on the scale of wave-particles and their ensuing "spooky" properties in quantum entanglement. Both the theistic and pure materialistic descriptions are degenerate in complementary ways.

Symbiotic existential cosmology corrects this fatal flaw in the scientific model elegantly, by starting from our conscious ability to apply volitional will to affect the universe and making a minimal augmentation of quantum cosmology to include the subjective aspect. This immediately inverts the Copernican principle, because it deduces that subjective consciousness in the advanced biota and hence humanity is the climax phenomenon of the biogenic interactive pathway, giving us not only a privileged view but the central experiential view of the universe, as a manifestation of a consciously purposive cosmos. Copernicus is turned inside out because the world outside regains its complement, the mind-at-large inside, through which the universe can perceive and manifest itself.

Symbiotic cosmology is absolutely pivotal to the human species regaining volitional autonomy and the ability to take responsibility of ensuring our species learns to respect our symbiotic relationship with the biosphere essential for our long-term survival. Without this, the prospect of a mass extinction event setting us back 50 million years and possibly causing our own extinction is almost inevitable.

Pure physically materialistic cosmology leads to a meaningless universe, in which life is an ineffectual byproduct, the brain is a biochemical machine, consciousness is a functionless epiphenomenon, volitional will is a delusion, and society is reduced to abstract information systems, with no ethical reason to preserve conscious life, or the diversity of natural life, predisposing to biospheric collapse, ultimately subject to AI catastrophe due to a failure to distinguish conscious life from mere information.

Fig 17: Physical materialists who, by their expressed position, are religiously unaffiliated, count only a diminishing 16% diminishing to 12.5% of the world population by 2060 (Pew Research 2017). This means that unproven assumptions that life lacks conscious volition and is just a causal computational mechanism in the brain have no credible chance of success in advancing the scientific description of nature to the human population at large in the coming century.

Patriarchal theistic cosmology by contrast, discards the late planet Earth in envy of Heaven and fear of Hell, in an apocalyptic tumult of life's destruction, and of the universe itself, as God's disposable creation, or in the Eastern mind-sky view a degenerating Kali yuga again leading to human extinction. Figure 17 shows that, despite the incredible nature of theistic cosmology in the natural universe, far more people adhere to a religious view than are unaffiliated, partly because it does provide a realistic although moralistic view of human consciousness and free-will. This means that the scientific world view and particularly materialistic neuroscience, in the absence of an acceptance of the central place of conscious existence and volitional will has no hope of gaining widespread acceptance this century.

Symbiotic existential cosmology, transcends both these corrupt descriptions. The unfolding diversity of conscious life is central to the cosmic process, also realising the visionary core of spiritual traditions through first-person transcendent consciousness, superseding both naive belief in a creator deity, for which no conceivable evidence actually exists and a physical universe lacking meaning, purpose, and awareness of its own existence.

“...The world is a construction of our sensations, perceptions, memories. It is convenient to regard it as existing objectively on its own. But it certainly does not become manifest by its mere existence” ...

*The reason why our sentient, percipient and thinking ego is met nowhere within our scientific world picture can easily be indicated in seven words: Because it is itself that world picture”*

(1889 Schrödinger 44).

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12 This use of Kali is as a demon distinct from the Goddess Kālī, who like Brahman is conceived of as “ultimate reality.”
Discovering Life, the Universe and Everything

I have experienced every type of hallucinogenic agent known to science and communed with sacred mushrooms for half a century and have faithfully kept my visionary covenant with them both before and since the key event I now describe. Last June, after a seven-year break, due to nearly being blinded by acute closed angle glaucoma, exacerbated by dilating my pupils on psychedelics, recently cured by total lens replacement, I took another plunge, using a mild dose suitable for a healthy 76 year old, in an activity-enhancing mushroom lemon tea. At the peak, I sank into deep meditation, framing the ultimate question: “What is the answer to life, the universe and everything”? I fell deep down into the entheogenic abyss, which opened out into the moksha epiphany of being, of transfiguring intensity, utterly compassionate of the mortal coil. This comes by many names, the mind-at-large to Aldous Huxley, Brahman-atman to the Upanishads, and the All in Yeshua’s words, in the Gospel of Thomas. I emerged, galvanised and invigorated by a seemingly impossible task – literally saving the diversity of conscious life of the entire universe, not to neglect, in passing, the lost sheep of Israel! Here’s how it can be done!

As a researcher in quantum chaos and neuroscience, I struggled to reassemble the scattered shards of my physical worldview. Over weeks, this metamorphosed into “The Symbiotic Cosmology of Perennial Conscious Existence”, a creative commons monograph on Research Gate – augmenting physical cosmology with its universal complement in conscious existence, in three interlocking components, biogenic, panpsychic and symbiotic.

This cosmology is fully consistent with quantum physics and neuroscience but resolves the three central paradoxes of conscious existence: (1) The hard problem of consciousness (why subjective experience exists); (2) the physical efficacy of conscious volitional will (can our subjective experience of purposive intent, that we depend on to do anything, actually affect the world around us) and (3) the cosmological role of conscious life in the universe.

This discovery is of critical importance for humanity’s survival, although it may seem paradoxical, given its source, because the diversity of conscious life becomes the consummating climax of cosmic evolution – in an all-encompassing biological, psychic and cosmological symbiosis. And this comes with the same urgent galvanising responsibility, amid an acute planetary crisis of climate, habitat and biodiversity, to save the diversity of life from an impending human-caused mass extinction, which could well precipitate our own demise, through failing to live symbiotically within the biosphere on which we depend. Species need to not just survive, but survive in sufficient genetic diversity, to prosper and evolve. Humanity’s survival over evolutionary time scales as a fit species, in the biosphere, requires returning half
the Earth’s natural habitats to the several million species with which we co-depend. As noted on the cover, it also requires ending the mutually assured destruction of the nuclear arsenal which leaves the Earth on a hair trigger instability of accidental annihilation.

The discovery is also about hard real world reality, because it gives us back conscious volitional autonomy over the world – our integral sense of personal “agency” that materialistic science stole from us in the Copernican revolution, enshrined in Newton’s laws of motion, now relentlessly entangled in the teeming uncertainty of the quantum universe. Making our scientific description consistent with our conscious autonomy also makes it consistent with civil and criminal law, in which intent, as intelligent volition, is pivotal to accountability for our actions. Incorporating conscious volition into cosmology also gives empirical science back its ethical and existential validity over prescriptive religious belief, in the true pursuit of knowledge.

The key role of life in the universe is clearly expressed in the first component – fractal biogenic cosmology. We know by our very existence that life is capable of emerging and existing in the physical universe, but there is an underlying reason. The four forces of nature, emergent from cosmological symmetry-breaking, give rise to interactive chain reactions which compound quarks, into baryons, atomic nuclei and fractal molecular structures, because of non-linearities associated with nuclear and chemical bonding. While the energetics of biology is dwarfed to insignificance by the strongest cosmological forces, resulting in galaxies, black holes and stars, the quantum structural pathway to full interaction of the four forces leads to atoms, fractal biomolecules, organelles, cells, tissues and the conscious brain – paradise on the cosmic equator in space-time, once a first generation of stars have made the chemical elements and evolution has had time to result in conscious organisms.

Living in the quantum universe, we have no idea whether complex unstable phenomena, such as brain processes, are causally closed. We can’t assume mechanism rules when uncertainty enters into the equation and processes at the edge of chaos can amplify it. This applies particularly to unstable brain processes, which are assumed, without real evidence, to be causally closed. Pure materialism, particularly in neuroscience, has become an unscientific doctrinal “publish or perish” belief system, having little more evidential credibility than religious fundamentalism. Conscious experience is our sole avenue to know and understand the physical universe. Although we have to respect the fundamental nature of physical existence, to survive in the world, the totality of our knowledge of the physical reality of the world around us is established exclusively through our subjective consciousness, as a consensual experience of conscious participants, complementing our individual dreams and visions.

Since we all believe and act on the basis that we have autonomous conscious volition, we need to determine what type of cosmology is consistent with conscious decision-making in the universe we inhabit. It must be one in which the subjective conscious mind can affect the objective physical brain, so by Occam’s razor, we eliminate all cosmologies which fail this veridical test, and out the window goes pure materialism! The brain may have some low energy quantum physics going on to support conscious processing, but it is just some ordinary organic matter that clearly obeys the four quantum forces – colour, weak, electromagnetic and gravity, so we immediately have a situation where, in at least some forms of matter – (a) physical causality is not closed and (b) the physics has a complementary subjective aspect. Conscious volitional autonomy thus implies natural panpsychism!

This is already a panpsychic cosmology, because subjectivity has become a fundamental property of nature. This is why the hard problem is cosmological, not just a neuroscience problem and this is not a form of dualism! Just as the wave and particle aspects of physics are complementary rather than distinct, so are the physical universe and subjective mind. Gilbert Ryle’s Cartesian “ghost in the machine” thus does not apply!

In the second component, Darwinian panpsychism – which I coined from Charles Darwin’s comment that free will could run all the way from the “puppy” to the “polypes”, the subjective aspect becomes complementary to the universe as a whole, encapsulated in the many and various forms we experience as organismic consciousness, echoing Erwin Schrödinger’s statement: “The number of minds in the universe is one”.

The quantum universe is a causal process punctuated by quantum uncertainty. To enable subjective consciousness to influence brain function without disrupting causal closure, means subjective consciousness applies to situations where uncertainty is key – for example at unstable global tipping points in brain dynamics, where ion channel thresholds are crossed at the quantum level in a way the brain becomes sensitive to, through edge of chaos dynamics and stochastic resonance. This is precisely what is required to make sometimes split-second intuitive decisions, in exactly the
situations where consciousness is key – avoiding uncertain threats to our survival, through environmental crises that can be irreducibly intractable to compute.

What then is quantum subjectivity? Each particle is “latently conscious” – probabilistically moulded by its wave function, expressing its entangled quantum history and future under special relativity. Each single quantum instance is also a single idiosyncratic event, in which the particle is randomly expressed within the wave function amplitude. This idiosyncrasy corresponds to its free will. Unstable quantum processes, including edge-of-chaos, biogenesis and excitable prokaryote cells, likewise inherit this latent complementary subjective aspect.

What about the emergence of consciousness? In the eucaryote endosymbiosis, when an archaean species engulfed respiring bacteria to form our energetic mitochondria, there was a discrete transition to “cellular sentience”, because the cell membrane became freed from energy transduction and became available for sensitivity to quantum “sense” modes and social signalling, with coordinated excitability functioning as a “conscious” organiser using the same cellular processes and receptors as in neurons. Subjective consciousness thus predates nervous system computation by a good billion years. Informational models of consciousness, such as IIT integrated information theory and AST attention schema theory, thus incorrectly have the cart before the horse. The ensuing story, from the amoeba to humanity, is bridged by the social amoeba Dictyostellium, which has both individual cellular and coordinated organismic modes.

The brain later evolves as a massively parallel organ, processing experience, operating as a tightly-coupled society of social amoebae communicating seamlessly with pre-existing sentient consciousness via a coordinated form of organismic edge-of-chaos excitability, using the same social signalling molecules that evolved in single celled species.

Existential cosmology is empirically verifiable. Objective empiricism has become technologically facile, on all scales, from the quantum to the universe. By contrast, subjective empiricism comes from subjective experiential reports of both everyday mental states and deeper transformative experiences, as well as volitional will evident in behaviour. All three are well established and as old as human culture, complemented by our awareness of purposive sentient activity in animal behaviour, indicating volition down as far as founding single celled eucaryotes. The success of psychedelics in alleviating depressive and terminal illness and documented genuine spiritual experiences, described as either religious, or of “ultimate reality” by the subject, attests to their validity and statistical significance as empirical scientific findings.

The third component is symbiosis – genetic, cellular, organismic, biospheric, psychic and cosmological. Complex life evolved through a complementary endosymbiosis between the two prokaryote kingdoms – archaea and bacteria. Eucaryote endosymbiosis is necessary for complex life to exist, demonstrating that symbiosis, as an edge-of-chaos climax, transcends living systems lacking such complementation. Sexuality, foundational to eucaryotes, is also a form of genetic symbiosis, in which two or more strains are locked into a symbiotic role, asymmetric in sperm-ovum fertilisation in animals, also called sexually antagonistic co-evolution, due to differing male and female reproductive strategies, as in the human sex wars of patriarchal domination. The human genome is also in functional genetic symbiosis, with 46% being endogenous viral and transposable elements which, although selfish, have become key to coordinated gene regulation and evolution. Symbiosis is also biospheric. Life is not just a competitive capitalistic struggle of tooth and claw, but survival of the most effective biospheric symbionts, in which predator, prey, parasite and host, moderate boom and bust dynamics, in edge-of-chaos biodiversity climax.

Founding gatherer-hunter cultures responsible for human emergence, from the San Bushmen to the Pygmies of the Congo have achieved biospheric symbiosis through an animistic view of nature as interconnected relationships, in which animals and natural forces are conceived as having agency and personhood. Panpsychist existential cosmology shares these symbiotic features of animism which also underlies the later emergence of religious systems. Both materialistic science, and its technological development and religions asserting dominion over nature and a direct prisoners’ dilemma tragedy of the commons (Hardin 1968) have brought about the impending human-induced mass extinction of life, so the interconnectedness with nature of the animistic/panpsychic world view becomes pivotal to our future survival, as a cultural expression of symbiosis between natural diversity and human culture.

Symbiosis is also psychic and cosmological. The natural correction to human induced mass extinction of life due to our tribally-based species dominance is conscious existence reaching edge-of-chaos climax, in which planetary guardianship is not the exclusive possession of a single dominant species Homo sapiens, but is achieved in psychic

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13 animism – the belief that all things – animals, plants, rocks, rivers, weather systems etc. possess a distinct spiritual essence – as animated and alive.
symbiosis with entheogenic species, which have evolved in such a way as to return egotistical consciousness to the primary consciousness noted in research studies. By opening the doors of perception to the deeper cosmic reality subjective consciousness contains, psychedelics manifest psyche, thus constituting the subjective complement to the LHC in cosmological physics, also enabling the universe to come alive and know itself in us, in cosmological symbiosis. It remains categorically unclear that the universe is able to manifest its existence in the absence our conscious experience of it.

The lesson from the prisoners’ dilemma and evolutionary game theory is that, to advance this theory in adequate time to mitigate and alleviate a mass extinction of life, I can’t afford to adopt a simple polite cooperative stance. Human motivation is not going to simply accept a veridical theory of symbiotic existence that comes out of deep left field. This is going to take a lionesses claws to succeed in time to have any chance of a soft landing for the diversity of life on our planet. I will thus try to be firm but fair, but invoking tit-for-tat as a fall-back response, in the face of consistent defection, against protecting the diversity of life from mass extinction.
Introduction to the Monograph

So what is this key to life, the universe and everything about? I’m going to explain all this, but first we need to take stock of the actual situation we are all facing in raw acute terms of planetary survival.

Although a visionary, I am first and foremost a scientist, who has spent my life lecturing in mathematics, with a research specialty in quantum cosmology, chaos theory, fractal processes, neuroscience and biocosmology. This means that my entheogenic journey, the bubbling Dionysian spring I am going to intoxicate you with, is founded on a real, verifiable, scientific cosmology, not just some kind of spiritual pipe dream, but this cosmology is putting consciousness, and our free will to affect the world around us, right back into the driving seat, and that is going to upend the Copernican principle that humanity does not have a privileged view of the universe at large.

The Three Faces of Symbiotic Existential Cosmology

The symbiotic cosmology solves (1) the hard problem – why subjective consciousness exists, (2) the problem of conscious intent – how volitional will acts on the world, and (3) the central enigma of existential cosmology – the role of conscious life in the universe. It does this simply and directly, without invoking any spooky features of panspsychism, by applying objective physical and biological criteria to define complementary subjective modes, by the coherent forms of instability involved, so it uses objective science to qualitatively classify subjective phenomena.

(1) Fractal biocosmology: The fact that life is a consequence of quantum cosmology is blindingly obvious! Just look around you! Life exists! It does so because it is an interactive manifestation of the laws of nature. While the cosmological energy pathway leads to the cosmic web, galaxies, black holes and stars; the structural pathway of the four symmetry-broken forces of nature leads to a fractal universe – quarks, composite baryons, atomic nuclei, atoms, fractal molecules, molecular complexes, cell organelles, cells, tissues, organs, the conscious brain, organisms and biospheres.

(2) Darwinian panspsychism: This is again irrefutable that we all as subjective conscious agents, are consciously aware that we have volitional will over the physical universe in our decision-making and actions. But this means matter including brains have a hidden subjective aspect. This implies panspsychism. There thus follows a spectrum of graduated manifestations of subjectivity, from quantum to edge-of-chaos to cell to organism and biosphere, based on the biological and physical criteria giving rise to these systems. It is faithful to Darwin’s own statement that free-will extends to the cnidaria, further extending it to all eucaryotes.

A. Primitive subjectivity: The ability of the subjective mind to affect the physical brain means the natural world has to have a primitive subjective aspect – autonomous volitional will thus implies natural panspsychism. Individual quanta, quantum-sensitive “butterfly effect” systems and prokaryote cells thus each inherit a primitive subjective aspect, although not attentive consciousness as such.

B. Sentient consciousness arose in a discrete transition in single-celled eucaryotes, accompanying the endosymbiosis between archaea and bacteria, when respiration became internalised in the mitochondria, leaving the cell membrane free for sensory functions through edge-of-chaos membrane excitation and social signalling via primal neurotransmitters such as serotonin, to anticipate threats and aid survival. This “experiential anticipation” predated multi-cellular nervous systems by a billion years.

C. Organismic consciousness emerged in multi-celled animals using the same edge-of-chaos excitability and social signalling molecules as in single-celled species as neurotransmitters. This explains why animals continue to be subjectively conscious through natural selection for survival, with nervous system phase coherent parallel processing seamlessly incorporated much later, but never replacing experiential anticipation.

D. Uncertainty and mind: The action of mind on brain necessarily arises from modulating the “random” aspect of quantum uncertainty in edge of chaos brain processing. This enables volitional will to intervene in the brain without disrupting the partial causal closure in computational brain processing. This provides plenty of room to affect the uncertain outcomes in evolutionary survival using both subjective anticipation and historical experience.

E. Biosphere and universe, in turn, inherit an indirect form of consciousness through the conscious biota that exist within them, as the most complex interconnected climax manifestations of sentient consciousness in the universe.

(8) Symbiotic Cosmology: The universe is symbiotic biologically, psychically, and cosmologically, throughout.

A. Organismic: All higher (eucaryote) organisms are multiply-symbiotic species, by archael-bacterial endosymbiosis, sexual symbiosis, and viral/TE symbiosis.

B. Biospheric: Survival of the fittest is survival of the fittest biospheric symbiont, not the most dominant species, or the fastest reproduce. All species, including humans, whether parasites, hosts, predators or prey, evolve to symbiotic climax and inherit their cosmological role in conscious existence through symbiosis with the diversity of life over evolutionary time scales, rather than exploiting it, causing a mass extinction, as humans are currently doing. Lions are predators but they kill the herbivore strangers ensuring the herbivores don’t go to boom and bust. Species which fail the test like humans become extinct.

C. Psychic: Psychedelics play a critical role in this symbiotic evolutionary process. Huxley’s “mind at large”, perceived through psychedelics play a critical role in this symbiotic evolutionary process, as the perceptual mind of the unconstrained brain reflecting the psychic symbiosis of inner cosmological climax edge-of-chaos dynamics, transcending tribal egotism, in what the Upanishads call moksha. This enables the individual to experience from the cosmic viewpoint and the universe to become self-aware. Humans thus inherit an existential responsibility, as climax manifestations of fractal biogenesis, to sustain the evolutionary diversity of life over the cosmological time scales we have inherited and need to preserve and unfold.

D. Cosmological: The climax of cosmology – conscious paradise on the cosmic equator in space-time arises not from the dominance of one conscious species, but at the edge of chaos, in symbiosis.
Given the fact that it is consistent with the views of both Charles Darwin, the founder of biological evolution and Erwin Schrödinger the discoverer of the quantum wave function equation determining the structure of quantum chemistry, it behoves us to take their advice and take this cosmology seriously:

“There is obviously only one alternative, namely the unification of minds or consciousnesses. Their multiplicity is only apparent, in truth there is only one mind. .... I should say: The overall number of minds is just one” (Schrödinger).

"To see a puppy playing [one] cannot doubt that they have free-will" and if "all animals, then an oyster has and a polype." (Darwin)

Panpsychism also makes it possible for quanta to “observe” and hence collapse superpositions of other quanta, so the universe is how we perceive it to be, not a shadow multiverse, with ghostly cats flung all over it, but the physicists still need to sort this unresolved interactive “collapse” problem out. Special relativity, the most classical part of quantum reality, is implicitly retrocausal as well as causal, as in Feynman diagrams, so quantum reality is implicitly anticipatory.

Consciousness thus exists to anticipate existential threats, as Graziano's AST – attention schema theory highlights, although incorrectly thinking free will is a delusion. Darwinian panpsychism is also very like Tononi and Koch's IIT – integrated information theory, except it's based on edge-of-chaos dynamics, which fits with the quantum world, through the butterfly effect, while IIT is a classical computational theory about Markov processes, so phi doesn’t capture the root phenomenon, of subjective awareness since sentient consciousness preceded computation, not the reverse.

Taking the Planetary Pulse

First we need to take the therapeutic pulse of the world condition. Although we conceive of ourselves as living in a world of scientific, social and medical sophistication, in which technology is enabling us to reach for the stars, the majority of people on the planet adhere to fixed beliefs in archaic religions which are cosmological fallacies in frank and violent conflict with the natural world. In 2020 56% of the population of Earth belonged to one of the monotheistic religions, Judaism, Christianity and Islam. All of these religions have belief systems focussing on the natural world and entire physical universe we exist in being merely a temporary moral test for a tumultuous end-of-days Armageddon apocalypse. In the resulting day of judgment, all of humanity will be consigned either to eternal life in Heaven, or an endless diabolical torment in Hell, shedding the verdant Earth and its billions of years of evolving diversity as a kind of skin to be sloughed off, in what Christians call the Rapture. This is compounded by a literalistic belief in creationism, or intelligent design by God, assigning evolution and the diversity of life to being disposable assets. Rather than make the world a better place, this cosmological fallacy abets the worst in human instincts for business-as-usual to exploit the living and non-renewable resources of the planet, in a patriarchal regime of dominion over nature that leads to an accelerating impact on the habitats of all the other species, and pushes the natural environment to potentially irreversible tipping points.

Compounding this is an even more ancient crisis that happened to humanity during the transition from gatherer-hunter coexistence with nature to civilisations based on agriculture and animal husbandry that is confessed in the Fall from Eden. The male fear of paternity uncertainty caused mankind to condemn the female sex to subservience, in an assertion of patriarchal dominance, reinforced by the monotheistic religions, although widely shared across all cultures sealed into our genome from around 10,000 years ago. This is clearly laid out in Genesis, in Eve being cursed for seeking the wisdom of the Tree of Life, being accused instead of eating the fruit of the tree of the knowledge of good and evil, destroying their paradisiacal innocence, sexually declared to God by the fig leaf. Humanity was cursed and driven out of Paradise by God, with the Tree of Life hidden behind a flaming sword. Man and woman alike were doomed to the mortal coil of sexual existence. Women were cursed as the “devil’s gateway”, to be obedient to their husbands and suffer the pains of travails childbirth, with mankind condemned to a life of struggle against nature to survive against the thorns, to till the ground in human dominion over nature, delineating the transition from gatherer-hunter paradise to the lost innocence of agricultural civilisation.

This in turn has led to a world in which major religions use the patriarchal imperative to increase their populations to achieve social dominance, leading to population explosion, suppressing female reproductive choice under dire
penalties, from stoning for adultery, to female genital mutilation, veiling, chaperoning and denying jobs and education and escalating human impact on nature through the invocation to dominion over nature, in denial of Earthly Paradise.

I am a child of nuclear apocalypse. On Christmas Day 1944 the first radiated plutonium slugs began to roll out of Hanford, signalling the real beginning of the apocalyptic age of Planet Earth. My birth was 12 days later on the Epiphany 1945. Los Alamos received its first plutonium from Hanford on February 2. Consecrating this patriarchal apocalypse, the Trinity explosion of this plutonium occurred on July 16. The uranium Hiroshima bomb was named “little boy” and the plutonium Nagasaki bomb dropped on August 9 from the same Hanford material was “fat man”.

Michael Ortiz Hill in “Dreaming the End of the World: Apocalypse as a rite of Passage” describes the first words following the Trinity test:

It is striking that, following Oppenheimer’s lead of naming the site of the first nuclear test “Trinity,” Weisskopf and William Laurence - both Jews - saw in the Bomb the glory of Christ. In the Jewish tradition, the character of the Messiah has distinctly human dimensions, a “Son of Man” rather than the “Son of God” of Christian eschatology, while the Christ metaphor speaks to an experience that dwarfs the human realm. Ferenc Szasz notes, “Others whispered, more in reverence than otherwise: ‘Jesus Christ’ “. Known to be something of a mystic, I. I. Rabi described Trinity by the overwhelming light that engulfed him: “Suddenly, there was an enormous flash of light, the brightest light I have ever seen or that I think anyone has ever seen. It blasted; it pounced; it bored its way right through you. It was a vision which was seen with more than the eye. It was seen to last forever. You would wish it would stop; altogether it lasted about two seconds... Oppenheimer said, “We waited until the blast had passed, walked out of the shelter and then it was extremely solemn. We knew the world would not be the same. A few people laughed, a few people cried. Most were silent” He recalled the terrible and ecstatic eleventh chapter of the Bhagavad-Gita, where the warrior Arjuna requests that Vishnu display the nakedness of his transcendent form. Arjuna is cowed in holy terror as the god visits upon him “the radiance of a thousand suns” “Now I am become Death, the destroyer of worlds” Oppenheimer quoted the Gita. “I suppose we all felt that, one way or another,” he continued. Three weeks later, the pilot of Enola Gay, Paul Tibbets, requested God’s blessing upon the Bomb that would initiate the citizens of Hiroshima into the darkest consequences of this ecstatic presence. “Be with those who brave the heights of Thy heaven intoned the chaplain, “and carry the battle to our enemies”.

Another striking theme that repeats again and again in the “dreaming up” of the Bomb is that of birth and paternity. On the mythic level, it is clear that the Bomb was not invented as much as “born.” Some people recognized the godlike epiphany of light and fire - so long anticipated - as the birthing of something or “someone” new. We can discern a specifically paternal pride and even hints of tenderness toward the Bomb. William Laurence called the rumblings of the Trinity explosion the “first cry of a newborn world”.

However, our true apocalyptic disaster, more tumultuously destructive, over time than any fantasy that Revelation can throw at us, is planetary biocrisis – our impending biodiversity and climate crises, driven by a patriarchal culture of dominion over nature and woman alike, that seeks to exploit the Earth and its living natural diversity rather than sustain it as the immortal living Paradise that has sustained us for three billion years of evolutionary emergence, in an unbroken line of inheritance to our own existence. A survey conducted in several countries as I write (Hickman et al. 2021) has found that 56% of young people believe “humanity is doomed”, because of climate and biodiversity crisis 14. Current evidence indicates that the climate crisis alone could send our planet back 50 million years to the Eocene maximum, shortly after the dinosaur extinction. The damage caused by a mass extinction of biodiversity can never be recovered, but in raw terms would take another 50 million years to recover from in purely quantitative terms.

Planetary Reflowering

We urgently need to learn to let life overflow in abundance again, and give space on the planet for life to do so and rapidly correct the climate crisis we are causing that also lays waste to natural habitats, so that we shall survive as a species. This is the key to our living future. It’s as simple as that. I am a scientist dedicated to preserving the biodiversity of planet Earth from the almost unstoppable human stupidity of causing a mass extinction of life which could cause the end of humanity as we know it, if we don’t come rapidly to our senses and achieve three active priorities to protect the living dharma 15 of the sentient cosmos:

1. Biodiversity and Climate:
   (a) Dedicate half the Earth and its habitats to natural wilderness so that the millions of other species we co-

14 “Humanity is doomed” All countries 56%, Australia 50%, Brazil 67%, France 48%, Finland 43%, India 74%, Nigeria 42%, Phillippines 73%, Portugal 62%, UK 51%, USA 46%

15 dharma – the eternal and inherent nature of reality, regarded in Hinduism as a cosmic law and in Buddhism the nature of reality regarded as a universal truth.
depend with can survive and flourish (Wilson E O 2016). Half the planet has to be enough for one species *Homo sapiens* alone among 3.8 million others to entertain and fulfil ourselves. This is literally the only way evolution can flourish and humanity can survive, because we need genetic diversity for species survival. If we don’t do this, our probability of long term survival is bleak and, while we might repair climate, biodiversity remains in mortal danger. (b) *Fix the climate crisis* as quickly as possible by converting to renewable energy before the climate ‘fixes’ us. This is fully achievable and inevitable. No further financial investment, or subsidies in CO₂ emitting energy sources.

(2) **Nuclear/Mass Destruction:** *Cease production of nuclear weapons* and weapons for biological warfare for military use. Devote the technology to protecting the Earth from astronomical impacts that could cause a mass extinction.

(3) **Patriarchy and Population:** End the Epoch of patriarchal dominion over woman and nature that has lasted for the last 4000 years and profoundly exacerbated the population crisis, in the *reunion of woman and man* in reproductive freedom, i.e. the Sacred Reunion, or Hieros Gamos  the fertile foundation of human cultural emergence and super-intelligence in sexual paradox (Fielder & King 2004).

### Scepticism, Belief and Consciousness

The sceptical approach of objective science, which has revealed all the confounding detail of the physical universe and natural world we live in, is founded on the opposite of affirmative belief, that nothing we imagine to be true can be established to be so, unless every empirical test we make in the universe is replicable and contradicts the sceptical assumption that the idea is false. Thus the doubling of the bending of light around the Sun due to the Sun’s gravitational field, confirmed Einstein’s theory of general relativity.

But science, for all its inscrutable and meticulous care and veracity, has one terrible shortcoming, the elephant in the room of subjective consciousness itself. Key to my journey of visionary discovery has been the realisation that subjective consciousness has a central role in cosmology and that the entire universe is not just a physical nightmare of unrestrained forces of nature creating galaxies and black holes, populated by mindless atoms and molecules and biological organisms that are simply chemical machines and that the sun is doomed to eventually destroy the Earth and eventually the entire universe will destroy itself in a heat death, cosmic rip, or big crunch. Bertrand Russell’s overwhelming pessimism sums this tragic fallacy in *precise words of doom*.

In this materialistic scientific view, consciousness comes to be identified as a mere epiphenomenon of brain activity, which is at best a potentially unreliable, internal model of the reality of the world around us, which has no ability to effect any causal change on the physical circumstances of the universe. Thus conscious existence is deemed to be a mirage, and free will is an illusion, possibly evolved so as to convince us to continue to act as if we have the will to continue, because all human decisions are just a consequence of brain functions determined by our genes and the specific circumstances of the decision we are striving to make at the time. This classical world denial of free will leaves us with the status of automatons deluding ourselves into believing we have choice, leaving all questions of ethical or moral responsibility in the dust. But the quantum universe teaches otherwise, as I shall come to explain.

Religious believers of virtually every kind find this world view completely unsatisfying for very good reasons. While traditional religious cosmologies are archaic and wildly inconsistent with the reality of the universe as we now know it to be, they exist in a conscious condition of projected fantasy, where Heaven and Hell are conceived as all-too-real experiential realms, in which a sentient being can either live an eternal life in heavenly bliss, or suffer in the endless horrors of damnation. They also go halfway to allowing free will as long as we use it to obey the will of God. A scientific view, even if it has experimental verification, that claims consciousness and free will are self-fulfilling delusions holds no candle to a myth that places this real Earthly life to be a mere temporary forerunner to a moral judgment for all eternity.

This means that we, the world and its living future, are living trapped in a schizophrenic existence, in which we treat the practical details, as if we are living in the physical universe with its physical laws and material boundaries, but underlying it, for most of us, is a contradictory belief that the real world is just a delusion, or a temporary place to undergo a moral trial by God, and the true realities that solve life, the universe and everything lie in the afterlife. This is the existential crisis that we are going to heal in this discussion to unveil and reflower the *Tree of Life*.

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16 *Hieros gamos* or Hierogamy (Greek ἱερὸς γάμος, ἱερογαμία “holy marriage”) is a sacred marriage that plays out between a god and a goddess, especially when enacted in a symbolic ritual where human participants represent the deities.
The full scope of this contradiction becomes apparent if we examine our living experience of the world around us. We are all forced to concede the existence of a shared physical reality, that the table I am writing on is solid, and if I crack my knuckles on it, they will hurt, if I get hit on the head, I may pass out and lose consciousness, or if I eat a poisonous plant or catch a disease I may get sick, and if I am hit by a vehicle in the street, or shot, I may die, so we are forced to concede the existence of the objective world around us and know that it is part of a physical universe of galaxies, stars and planets, composed of particles, including atoms and molecules that also make up biology and ourselves.

But on the other hand, 100% of everything we experience, including our experience of the physical world, of our dreams and of our visions, including those on mind-altering substances, occur through and only through our subjective conscious experiences. So the world, as we see it, is actually a consensus view of subjective conscious experiences between people, which we are confident is shared with other conscious beings around us, from their lively engaging demeanour, although we don’t generally have any direct access to anyone else’s subjective experience.

We also have a basic belief in our personal autonomy – to make subjective decisions that affect the world around us, many as simple as getting a cup of coffee, or going to the toilet, but also critical decisions that may seriously impact on our lives, or the world at large. The sanctity of the legal system depends on the notion that we are accountable for our actions as conscious sentient beings and do have conscious intent. This is what we call ‘free will’ although we know all our decisions are partially determined by their circumstances and can be influenced to a certain extent by our genes.

In Galileo’s error, the panpsychic philosopher Philip Goff (2019) notes that what has subtly happened is that the scientific method, from Galileo through Newton, converted the perceivable universe into a set of dispositions codified in mathematical equations, demoting the qualitative aspect of reality to irrelevance. This is fundamentally a patriarchal scheme of dispositional dominion over nature, reducing the phenomenal world to a set of equations. Gather-hunter societies arose from the women classifying plants and defining culture through language, while the men hunted, often silently. Thus males generally have good mental rotation and tend to navigate by vector dispositions as hunters exploring alien terrain “take the first left and then second on the right” rather than the qualitative features used by females from their careful classificatory gathering “it’s opposite the pay centre after the gas station”.

In the Newtonian universe, the patriarchal approach of analytic quantification came to dominate the description of nature, just as the patriarchal religious description dominated nature and woman alike to humanity’s detriment. The end result has been that the entire subjective descriptive aspect of reality has been eliminated from the scientific world view, resulting in an inability of science to understand what subjective consciousness is and does although it is everything we experience. Patriarchal science has literally lost the subject of the case.

Belief in materialism, because of its adroit use of the sceptical principle, to correct naive assumptions and elucidate properties of the natural universe that were at first sight very counter-intuitive, has since become a belief system exactly like a religion, so that researchers cannot afford to take any other position in peril of being shunned by the dominant scientific community and losing recognition altogether. This has grown to counterproductive proportions where the very researchers showing the benefits of psychedelics scientifically are bound to declare that psychedelics have no demonstrable value in solving the central problems of conscious experience, when it is obvious they are sine qua non the most consistent modulators of the depths of conscious experience available to science.

**Psychedelics – The Edge of Chaos Climax of Consciousness**

This is where psychedelics and their apotheosis, in the term entheogens, when used for spiritual purposes, come centrally into the arena. Psychoactive substances have always had a formative role in the emergence of spiritual and religious viewpoints. Cannabis, which plays a central role in Shiva worship, has been consumed in ritual spiritual practices for several millennia. Hindu religion owes a portion of its Upanishadic cosmology of the atman and Brahman

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17 Galileo despite being excommunicated for his science, was still a devoted Catholic and a traditional patriarch. He never married his children’s mother and deemed his daughters unmarriageable, and soon after Virginia’s thirteenth birthday he placed both girls at the Convent of San Matteo, where they lived the rest of their lives in poverty and seclusion. By contrast Galileo’s son Vincenzo, who was born in Padua like his two sisters: Virginia and Livia, was named after his grandfather, and after his mother’s death, his birth was legitimised by the Grand Duke of Tuscany. Virginia was Galileo’s first child, born in Padua, Italy the same year that the Dominican friar Giordano Bruno was burned at the stake in Rome for insisting that the Earth travelled around the Sun instead of remaining motionless at the centre of the universe. Although none of Galileo’s letters are known to have survived, 120 of Maria Celeste’s exist. These letters, written from 1623 to 1634, depict a woman with incredible brilliance, industry, sensibility and a deep love for her father (Sobel 1999).
as the cosmic mind to cannabis and the Rig Veda to the mythical soma of the Aryans. Traces of cannabis used for ritual purposes have been found at an ancient Judaic temple (700-900 BCE) in Arad Israel (Arie, Rosen & Namdar 2020) and also in China (500 BC). Opium likewise has an ancient medicinal and spiritual use.

However long term spiritual use of the most significant of the psychoactive species, those bearing the classic psychedelics, have largely been confined to the pre-Colombian cultures of America, where there is evidence of spiritual use of mushrooms from the Mayan culture (1000 BCE), the use of peyote among the Zapotec (500 BCE) and long term use of ayahuasca and tryptamine snuffs in South America. These substances have much more profound affects on consciousness which lead directly to a vortical abyss of visionary states renowned for their intensity and transcendence. But their relative absence from existing historical traditions outside he Americas means their significance has been bypassed by the classical world, with the possible exception of Greek mystery cults.

The discovery of LSD and the later discovery of the continuing sacred use of psilocybe mushrooms in Mexico in the mid twentieth century brought the use of hallucinogenic visionary substances back into the focus of Western culture. Although peyote use had continued by the Huichol since Columbus and had been re-established in the Native American Church at the end of the 19th century, and ayahuasca had been consumed as a sacrament in the Amazon, these had remained marginal to mainstream Western awareness. But the advent of LSD as a recreational drug supported by prominent proponents in the US, from Timothy Leary in the East Coast to the Merry Pranksters and Grateful Dead in California, advancing a counter-cultural agenda, supported by devoted chemists who were prepared to synthesise vast numbers of doses of LSD at little or no charge, conceived in the “public good”, set the stage for a cultural confrontation. Accompanied by disquieting media awareness that psychedelics were laying siege to consumer culture and values, amid some troubling incidents with their use, a campaign of frank misinformation ensued from the authorities. The result was that the US and then the world introduced a total clampdown on their use that initiated the unending war on drugs, and stopped all human scientific research in its tracks.

Given the long history of sacred use of entheogens, this constitutes the most benighted quasi-religious piece of authoritarian counter-reaction in Western culture since the Inquisition and Witch Hunts, in a complete mockery of the scientific age of discovery. Penalties for psychedelic use rose to schedule 1 sentences similar to murder, reflecting the perception that this was regarded as a deadly sin rather than any scientific evidence of significant harm, but a threat to the very consumption society that is driving the planet into ecological and climatic crisis. It is only now around fifty years later that the very tentative reopening of scientific research into these substances detailed in section 1 has been able to begin to set the record straight, while still largely confining them to therapeutic use in terminal and psychiatric conditions, while their recreational use has continued, although hidden from the mainstream and somewhat trivialised as a merely a recreational rather than a deeply formative spiritual experience, as their historical use attests.

What the psychedelics provide is a negotiable transcendental experience in the vortical abyss of conscious existence comparable with and potentially more profound than the peaks of meditative and contemplative experiences in mystical and meditative traditions. They constitute a/the central vehicle for us to explore and discover the innermost nature of the subjective mind. They differ from meditation, in that they have pronounced visionary qualities that challenge existing conceptions, rather than enabling a relatively featureless repose, from renunciation and careful top down mindfulness, that is reflected in the formless void of Buddhist thinking, outside the more spontaneous satori of Zen. Likewise they transcend contemplative mysticism, which tends to reinforce preconceived theistic beliefs. They also provide a more consciously explorable complementary condition to lucid states of dreaming associated with REM sleep because these are difficult, or impossible to maintain physiologically.

**Discovering Cosmological Symbiosis**

This is where we come to the *symbiotic cosmology* that solves life, the universe and everything summarised here. The existential role of consciousness in the universe is the central enigma of existential cosmology, as we have seen. That’s the key thing that everyday existence, no matter how meditative we may be, or whatever preconceived beliefs we may hold, misses out on the true enormity of, so that we will go through life in a state of distraction trying to fill it with habitual purpose until it’s too late and we are gone.

Around the beginning of June just over two months ago, I summoned up the will to take a sacred mushroom trip after a seven year fast due to closed angle glaucoma, recently corrected by lens replacement. In the midst on the peak, I settled into meditating on the silent question of the central enigma and let go. As I descended deep into the abyss, at
a certain point, everything opened out into what I noted later that evening to be “the epiphany of being in the existential centre of the cyclone, where everything comes into focus in the transfixing presence of complete transfiguration”. “Not an event, but a state of knowing, as we always have known, from time immemorial, as if we have always been conscious of this knowing, forever compassionate of the mortal coil”. I have experienced this many times before on mushrooms but not in this iconic way. The result was “a sheer calm, unmitigated experiential awakening, as if the Big Bang of the universe is discovering itself in this very moment of illumination and is realising with irresistible intensity, the urgency and vitality of this state of knowing, which, the moment one experiences it, means saving the precious universe, the biosphere and the diversity of life within it from mortal risk to its survival”. This being true, despite the overwhelming reassurance of overflowing compassion for the mortal coil emanating from the apotheosis.

Psychedelic trips can be plagued by all manner of sensory and visionary experiences, from the sublime to the ridiculous or even alarming, but there is a name for this. The Huichol call it the Nierika, the visionary portal to the non-ordinary reality of the spirit world and the ancestors.

There is a doorway within our minds that usually remains hidden and secret until the time of death.
The Huichol word for it is nierika – a cosmic portway or interface between so-called ordinary and non-ordinary realities. It’s a passageway and at the same time a barrier between the worlds” (Halifax 242).

Emerging renewed and revitalised from this experience, accompanied as I moved and breathed by the lingering shadow of the apotheosis compassionately caring for me and encouraging me to put this whole illumination together into an account for the world, I began feverishly assembling this work.

What the experience brought home to me, above all was the veridical reality of the cosmic mind, even though it was evoked in a human brain on sensory withdrawal under a hallucinogenic experience. This is a turning point from many past experiences, where I have witnessed the same compassion for the mortal coil as a visionary impression of the other – transforming it from perception into reality – the actuality of Brahma-atman unification in the form extolled in the Upanishads (Purohit & Yeats 1937).

This brings us back to the hard problem of consciousness research. The advent of neuroscience has provided us with genuine insights into how the brain processes information, including sensory and cognitive tasks associated with conscious attention and resting, or meditative states. We can then associate a variety of conscious states with activity, either by electroencephalographic portraits of brain waves, by functional magnetic resonance images of blood flow to specific regions, or by positron emission tomography of radioactive glucose, and even by invasive studies of actual neurons and connections in animals. Various researchers can then attempt to deduce how these excitations give rise to the conscious experience, e.g. by the activities of certain frequency bands, such as gamma from 30-100 Hz.

The classical deterministic view of brain function, denying a role for subjective consciousness and making free will impossible, is undermined by two additional factors in the physics of brain function. The first is edge-of-chaos dynamics, which at tipping point instabilities associated with critical decision-making watersheds can enable a fractal handshaking between instabilities at the quantum level of the ion channel and changes in overall brain state. The second is the intrinsic uncertainty of quantum events and their entanglement, which is closely paralleled by phase coherence in wave processing associated with coherent conscious states – that brain states which rise and fall together in synch rise to consciousness while others constitute the unconscious ground of neurodynamic processing.

The trouble with the entire sweep of the objective description of brain dynamics is that no objective state, no matter how the brain does it, even if by edge-of-chaos instability and quantum entanglement, is anything other than objective, so it never solves the question of how subjective states actually arise. This is the so-called ‘hard problem of consciousness’ coined by David Chalmers (1995). Essentially, there is no way to get a ghost out of the objective biological machine of the brain by combining non-conscious components, whether molecules, neuronal excitations, edge of chaos dynamics, quantum phenomena or brain states, if none of these components have any subjective status.

The sceptical basis of the scientific description depends on Occam’s razor, the idea that, given two views describing the same phenomenon, the simplest, most concise one is likely to be correct. Materialists thus try to claim that any

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18 veridical — coinciding with reality (Oxford Languages). Mid 17th century: from Latin veridicus (from verus ‘true’ + dicere ‘say’) + -al. In psychology – of or relating to revelations in dreams, hallucinations, etc, that appear to be confirmed by subsequent events
reference to consciousness and volitional will is extraneous in a supposedly classical macroscopic world where causal decision making processes defined by brain function can in principle have a detailed mechanistic basis without reference to fuzzy vitalistic notions like mind, consciousness or will. They will then claim the hard problem is a distraction to be finessed away in steps, as more discoveries of how the physical brain processes information become revealed. However the materialist case is not established and it isn’t necessarily fulfilling Occam’s razor at all. What has happened is that materialists have restricted the domain of evidence to be circumstantial physical fact, ignoring veridical truths stated by conscious observers and actors as mere personal opinions or beliefs, in fundamental conflict with legal situations, where sworn subjective testimony is evidential in the absence of contrivance.

For example Erwin Schrödinger’s statement “the overall number of minds is just one”, which coincides with the conclusions of this monograph, is discounted as just being his idiosyncratic belief in Advaita Vedanta, despite that fact that we depend on his wave equation to understand quantum chemistry, and his devising of the cat paradox to understand quantum observation. Taken at face value, this is a veridical teaching by a founder of quantum mechanics.

So we need to take a big step back and reassess the way Occam’s razor best cuts a real swathe through existence. When confronted by a description of reality which denies our subjective consciousness is anything more than an epiphenomenon, and insists that our volitional will to make any sort of autonomous decision at all is a delusion contrived by evolution to ensure we survive and replicate, that debilitates any sense of personal autonomy, responsibility and confidence to act in the real world, we need to make a succinct determination. Should we just accept this is a scientifically proven fact, when the evidence doesn’t exist that the brain is a causally-closed deterministic machine and looks increasingly to be a complex, messy claim that may never be confirmed? Or should we take the much simpler concise volitional choice to allow Occam’s razor to cut the Gordian knot of this contrived belief that we are helpless automata, and assert that it contradicts our decision-making autonomy, and rule out of hand this fatalistic myth-making? How can we resolve this existential impasse?

The answer is both ridiculously simple and counter-intuitive – to move the elephant in the room – consciousness itself – into a new place on the cosmological chessboard, that of complementing the entire physical universe. This is a direct consequence of affirming volitional will, because will implies the conscious mind affects the physical universe physically in terms of the forces of nature. This means in the way the brain processes unstable tipping points, and may involve quantum phenomena akin to solid state physics, but it is still a physical process following the forces of nature under the core model of physics. But this means the physics of the universe itself is sensitive to mind and that mind plays an essential role in intentionality in the universe, manifest in the biosphere as a whole and in the universe at large. This is then a form of pan-psyche cosmology. Panpsychism is thus the clean veridical Occam’s razor cut.

Consciousness, as an expression of a more generalised pan-psyche, then has a role in quantum uncertainty and in collapsing the wave functions of the multiverse, as we see in Schrödinger’s cat paradox, which we know appears to be specifically associated with conscious measurement of the wave function. This gives us back both subjective consciousness and its ability to autonomously apply free will in the same process determining the course of history in the universal wave function. This solves the dilemma of science denying free conscious choice and gives us full freedom as sentient beings, unlike the bondage of moral religions, where we are given free will only to find that if we use it autonomously on our own best judgment, we would be likely to end up in hell. Instead of moral compulsion, giving us back autonomy also gives us subjective divinity in our union with the cosmic mind.

This solves the moral problem another way by showing us that our mortal existence is part of the immortal web of life and that there is no future in selfish activity because when we come to the end of our lives, any activities other than

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19 Vitalism is the belief that “living organisms are fundamentally different from non-living entities because they contain some non-physical element or are governed by different principles than are inanimate things”. Where vitalism explicitly invokes a vital principle, that element is often referred to as the “vital spark”, “energy” or “élan vital”, the vital force or impulse of life, a creative principle held by Bergson to be immanent in all organisms and responsible for evolution, which some equate with the soul.

20 Arthur Schopenhauer concluded that the inner reality of all material appearances is Will. Where Immanuel Kant had concluded that ultimate reality – the “thing-in-itself” (Ding an sich) – lay beyond being experienced, Schopenhauer postulated that the ultimate reality is one universal will.

21 Intentionality – the fact of being deliberate or purposive. Mental states (e.g. thoughts, beliefs, desires, hopes) which consist in their being directed towards some object or state of affairs. Intentionality is chosen rather than causality to include the effect of will complementing physical causes.
giving our all to life as a whole is futile. It also solves the problem for divinity i.e. the mind at large, because now it has a sentiently intelligent vehicle for conscious manifestation.

Since we are universally subjectively sentient conscious beings and have no knowledge of the physical world except through subjective consciousness, the only valid conclusion is that the subjective aspect is a cosmological property complementing the objective physical universe. This means a form of panpsychism, in which all quantum phenomena also have a complementary aspect. This seems counterintuitive, because we seem to be replacing a succinct objective description with something elusive and fuzzy, but that is because we aren’t making the right test. The test of objective cosmology is empirical investigation. The test of subjective cosmology is veridical affirmation in which each conscious observer affirms verification.

There are alongside its foundational subjectivity a number of features of our conscious experience which ‘colour’ the nature of experience and are features or ‘qualia’ of our consciousness rather than its existential status. For example vision and hearing, smell and touch all differ qualitatively. These differences are partly due to the quantum modes of the senses and partly to do with the neuroreceptors and cerebral excitations eliciting conscious states. So we need to factor these out when addressing panpsychism and the ground roots of subjectivity.

However there are some features in the conscious brain that are clearly universal and hold the key to understanding what consciousness is and how it arises. While individual details of brain structure and dynamics are shared extensively with other mammals, leading to our empathy with our pets, the differences between us and arthropods and molluscs such as cephalopods are much more exotic and somewhat alien.

The fundamental basis of consciousness arises in coordinated edge-of-chaos membrane excitability in prokaryote cells, dating back to the first cells of our last universal common ancestor LUCA. However a key transition point to sentient consciousness arose in our last eucaryote common ancestor LECA, the founding single celled eucaryote. Here is the transition point where symbiotic cosmology really begins to kick in. This was a hugely significant event in the form of a deep symbiosis between the two existing procaryote kingdoms some 2 billion years ago, in which an Asgard archaean and a proteobacterium, similar to our intestinal bacterium Escherichia coli, became symbiotically interdependent. This freed the cell membrane from core energy processing, which was now handled by the bacterial mitochondrial respiration and made the new cell membrane able to become focussed on information processing. This meant that the eucaryote cell became sentient life form responding to quantum modes – sight, sound, chemical and electrical, in its environment sensitively due to the edge-of-chaos dynamics of its excitabile membrane. At the same time these cells, across the board use the same molecules as the key repertoire of our neurotransmitters to facilitate the social signalling essential for survival of the collective single celled organism.

This is the point where panpsychism becomes consciousness as we know it and the entire rest of the story is simply elaborating on this theme, so the human brain ends up being a very ornately and closely coupled collection of amoebae communicating through these same social signalling molecules in their synapses to produce the highly coordinated form of cellular consciousness that we experience as subjective reality.

This turns what might seem to be specious vitalism into a clear-cut biological theory in which the development of subjective consciousness has a clear evolutionary trace from the punctuated equilibrium of eucaryote symbiosis, consistent with the physiology of chaotically excitabile cells in a quantum entangled universe. Because this subjective product of excitability enhanced survival by avoiding lethal outcomes, it has been selected by evolution throughout. This in turn attests to the effectuality of conscious will on the physical universe.

One can then find evidential support for this conclusion. A key point of transition is that from single celled eucaryotes to the metazoa – multicelled animals. A highly-studied example is the myxamoeban slime-mould Dictyostelium discoideum. This is a free-living single-celled amoeba that having eaten out its local bacterial habitat, aggregates, forming an excitabile slug and then a sporulating fruiting body, to spread it to new habitats. It does this by using a combination of the same molecules that we use as neurotransmitters and second-signalling molecules – cyclic AMP, glutamate, GABA and serotonin pivotal to psychedelic activity and human mood. It turns out that an interplay between serotonin and its catabolic enzyme MAOa is key to maintaining development of the spore-forming tip of the fruiting body. In the same way, serotonin plays a key role not just in neurotransmission in the mature brain but evoking stages of brain development in the human embryo, for the neural groove at one extreme, to coordinating the correct
formation of the layers of other neurons in the cerebral cortex, through serotonin-secreting fibres ascending from the basal brain that are later used in the moderating mood in the mature brain, to mediate organismic social survival.

Several of these molecules are primal in their simplicity and cosmological in their origin. Both glutamate and GABA both of which are key neurotransmitters are prominent components of comets and carbonaceous chondrites. Others are the amines of biological amino acids. Serotonin is 5-hydroxy-tryptamine, derived from tryptophan.

This goes a good way toward providing an immediate explanation of how psychedelics can cause a retreat from egotistical attentive consciousness into a primary consciousness, in which ego loss occurs, consistent with an underlying dynamic to secure collective survival, rather than personal survival of the individual, when the psychedelic state dissolves the distinction between self and other in a peak experience.

But the eucaryote symbiosis is not the only manifestation of symbiosis in Homo sapiens. As far as we know, all existing eucaryotes are sexual, or at least capable of intermittent (cryptic) sexuality. Dyadic sex is one of the most altruistic genetic acts an organism can commit to, by giving only half its genes, along with half the partners genes to make what is essentially a new life form never before conceived. All sexual species thus consist of two sexes each with their own genetic history (or more – Dictyostelium has three and some fungi fertilising by conjugation lots more).

Sexual symbiosis in animals is highly asymmetric with the female contributing all the cytoplasm, ostensibly to avoid a mitochondrial genetic war, and the males contributing essentially only their DNA in the sperm, giving rise to sexually antagonistic co-evolution i.e. the sex wars of reproductive investment.

Humans are also extensively symbiotic with their endogenous transposable elements, which constitute over half of the human chromosomal genome, that arose originally as selfish genes, co-travellers that run back to the first multicelled animals and retroviruses related to HIV that became incorporated into our germ lines. These can cause mutations but also have key roles in coordinated gene expression and chromosomal processing.

Finally all species are co-dependent with the other species populating their ecological niches in biospheric symbiosis. This is what we capitalistically call survival of the fittest by natural selection, but really it is symbiotic co-evolution with the biosphere as a whole, even though individual species, including Homo sapiens have evolved to maintain strategic survival in their own right, leading to the egotistical expression of human character.

In the context of humanity, we are manifestly symbiotic with our food and medicinal species and likewise with our entheogenic species. The plant components of ayahuasca, the opium poppy, cannabis, coca and the herb of the shepherdess, Salvia divinorum have all been symbiotic with the human species for millennia, as has the yeast Saccharomyces cerevisiae responsible for bread, but also alcohol. Peyote and sacred mushrooms have been collected from the wild for millennia but some species of Psilocybe mushrooms are the most easily cultivated entheogens, now in symbiotic use.

This brings us to the final component of the symbiotic universe, symbiosis with the mind at large. Humans consider ourselves to be the species that invented culture. We tend to define ourselves as reaching to the stars themselves, as a dominant species that stoops to no other, as the highest form of consciousness, apart form God himself and thus free to determine the destiny of all living species on Earth. This is a tragic failacy in conflict with all the evidence.

Human attempts to seek moksha – escape from the egotistical and mortal round of birth and death are singularly rare enough that the Eastern traditions of both Buddhism and Vedanta have arrived at a fallacious notion of enlightenment through many reincarnations, essentially because the experience of cosmic reunion is so rare as to be essentially unattainable. The monotheistic faiths have abandoned any hint of such achievement. Christianity considers human nature fatally flawed by original sin and hence the only hope is faith in God, prayer and fear of the punishments of Hell in the day of judgment, while mystical experiences are rare and generally contemplative, rather than illuminative. Any idea that a person can manifest actual identity with God is blasphemous across all monotheistic paths. Islam regards it as a death penalty, just as Yeshua was condemned to death by the High Priests for blasphemy.

This leads to the conclusion that human consciousness is not the cosmological pinnacle of conscious existence, but we are a/the key active vehicle for cosmological symbiosis incarnate, and that the entheogenic state, by virtue of the very symbiosis induced by the entheogenic relationship takes us closer to the union with the mind at large that is the consummating manifestation of the cosmos in self-awareness. The biota are the only entities we know of in the
universe that possess consciousness. They are thus the central candidates for the interactive emergence of cosmological consciousness from the Big Bang. This experience of union is also the only phenomenon we know of that comes anywhere close to the actual realisation of deity.

This finally solves the dilemma of God as a third agent outside the physical universe. The missing component explaining the creation of the observable universe is not God but consciousness itself. It is the missing piece in the puzzle and the manifestation of deity is thus realised in the subjective, not in a miraculous third party.

And although it seems counterintuitive to think that consuming entheogenic species is a/the key to saving the planet, there is a symbiotic truth in this because, the entheogenic relationship in Maria Sabina’s words a way of “the sap and the dew” heightens our deep sense of inter-connecteness with nature and deep solace in our relationship with life as a whole, rather than delusory and damaging supremacy over it that leaves us in moral isolation, so in the longer evolutionary time scale, given the current biospheric dominance of Homo sapiens, this is cosmologically pivotal.

A Visionary Journey

The other side of the coin of this transmission is that I am what I would call a true visionary. That is, I am transparent and simply give you the keys to resolve the existential enigma to use for yourself. I have no doctrine about what other people need to do spiritually, or should do to gain illumination and I am true to the pursuit of the vision quest. I don’t follow any religion and don’t ask anyone to believe in me, but I encourage you to find out for yourselves with an open mind. And to ensure everyone has love and support to keep the process tranquil. The reason is that the cure for the mortal condition is moksha not moral punishment and moksha heals and informs the ego. The true realities that matter to the meaning of sentient existence in the mortal coil are not found in the material world, but in accepting our transience within the eternal entanglement and realising that the only meaningful acts we can perform are to ensure the passage of the living generations continues to flourish. Therefore true enlightenment redeems the mortal condition. I have sourced my vital inspiration and literally navigated my life course through first person visionary experiences on entheogenic species that have propelled my life and its urgency and activism.

The intensity of these experiences could have consumed me and driven the most stalwart to the brink of messianic insanity, were it not for my intent to be true to nature and the universe at large, as well as my loved ones. I may have no religious or spiritual assumptions, or doctrine, but I do have one clear natural priority sine qua non and that is a mandate to save the living planet, its biodiversity and its largely beneficent, nurturing climate from a hard landing, irreversible tipping points, a mass extinction of life which would place our living future and the future of all life in serious jeopardy.

I was born on 6th Jan – the Epiphany of the advent, appearance and miraculous dread of Dionysus, who became Dhushara of the Nabateans in Yeshua’s time. This event later became usurped by Hellenistic-Jewish gospel writers as Yeshua’s Triple Epiphany: (1) of his visitation by the Magi, (2) in his baptism by John and (3) in his turning water into wine at Cana at the request of his mother, in an all-too Dionysian display of the god of wine and altered states.

The “feathery part” of my vision quest is summed up in “The Plumed Serpent” (Lawrence 1974):

"I am lord of two ways. I am master of up and down. I am as a man who is a new man, with new limbs and life, and the light of the Morning Star in his eyes. Lo! I am II! The lord of both ways. Thou wert lord of the one way. Now it leads thee to the sleep. Farewell! So Jesus went on towards the sleep."
I was christened Christopher Cyril King, but I don’t answer to Christopher and I am not a cross-bearer. I won’t carry a cross for anyone, or stand in anyone’s shadow, least of all a dying and resurrecting saviour, who I admire as a brilliant innovator, but also lament for his self-destructive heritage of violence. We each come from a three billion year line of evolution, that has honed us to be conscious beings taking responsibility for our own lives and futures, so I have honed my vision quest as a journey – the trip of a lifetime – the trip of all trips together, till death us do part!

For those of us seeking psychic phenomena from visionary experiences, I’ve had these too, although, while they do affect my world view, I neither take any of these for granted and consider them deeply natural rather than supernatural.

I have had repeated precognitive dreams and precognitive creative experiences. When I was living on a canal boat we built in England, I read J W Dunne’s (1934) “An Experiment with Time”. According to Dunne, our wakeful attention prevents us from seeing beyond the present moment, whilst when dreaming that attention fades and we gain the ability to recall more of our timeline. This allows fragments of our future to appear in pre-cognitive dreams, mixed in with fragments or memories of our past. Other consequences include the phenomenon known as deja vu and life after death. At the time of its publication, not to have read him became a "mark of singularity" in society.

I have also had lucid dreams combined with out of the body experiences. After practicing looking at the backs of my hands in dreams as outlined in and after having many dreams in which I saw them but failed to respond, I suddenly realised in my first lucid dreaming encounter that I was aware and all hell broke loose. Firstly, I was being thrust up faster and faster like a rocket ship, in the manner of levitating and flying dreams. But I was also standing in the dream on an exceedingly bright promenade by the sea. A gust of wind blew some sea spray at my light muslin India shirt. I was in a super-sensory state. I could simultaneously sense every one of the droplets separately touching my skin like the stars in the sky. But that didn’t concern me. I looked up at the azure sky and the stratospheric clouds passing over and realised I was trapped in another world. I saw a woman standing gazing at me with dark eyes and rushed towards her, grabbing her by the shoulders staring deeply down into her eyes framing the silent urgent question where is the way back to Ixtalan echoing Carlos Castaneda’s (1972) allegories 22 of the sorcerer Don Juan. She just looked at me and smiled knowingly and shook her head. But at the same time, I was out of my body floating just by the ceiling looking down at myself lying on the bed, totally reassured that it was all okay “You are just down there sleeping”. I thus awoke with these three parallel streams of consciousness re-entwining together. Again, I have had many lucid dreams but none so graphic as this first experience.

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22 No not take too much stock by Castaneda’s writings. His accounts of mushrooms and peyote are unreliable and he gathered a cult following of a troupe of woman writers, who appear to have died or committed suicide in Death Valley after he died.
The difficulty with lucid dreaming is that the very act of becoming lucid rapidly tends to cause one to awaken because the triggers in the base of the brain flip towards wakefulness the moment we become lucid because neurotransmitters for vigilance such as nor-epinephrine kick in and flip the orexin neurons to wake the brain up. This is different from the visionary experiences induced by entheogenic species where a waking person can descend into a deep visionary abyss where other realities quite distinct from dreaming can occur, although returning from the depths of these other states can leave on in a similar situation of trying to recall the ineffable that has now receded, as Don Hose Matsuwa the Huichol shaman makes clear.

This brings us to psychedelics, or entheogens as the natural species are called, that possess psychedelic substances and are used, and have been used for millennia as visionary sacraments for healing, sorcery and spiritual realisation.

My relationship with psychedelic agents began as soon as I arrived in the UK to take a graduate mathematics degree in topology, with my first somewhat devastating experiences on LSD, still decanted with a dropper onto whole sugar cubes. The first trip was really awesome, but a week later a double dose of two cubes left me with the absolute certainty I had literally died (the most extreme form of ego death) and left me with shimmering after effects for weeks. At the same time, orchestrated by the US drug authorities, contrived reports were circulated that LSD split your chromosomes, which left me with five years of anxiety before I would take my next trip.

After that began a regular round of recreational tripping to try to get to the bottom of what these agents were showing us. I have always been devoted to my family which has now become a loving and caring extended whanau as relationships between partners have evolved and changed. For several years we held court, hosting a free-love establishment in the city, in which I ended up in three double partnerships in open ‘marriages’, spanning decades. Attesting to my consistency, I have lived with my current partner, Christine for over 50 years, despite times apart on world journeys, and all my offspring and grand children are nearby, so I must be doing something right, in spite of all.

On my first academic sabbatical, I split my efforts between a scientific investigation in the West to get first hand knowledge of what some of the famous scientists, including Nobel prize winners, made of the role of life in the universe. I spent the rest of my time imbibing the Eastern spiritual traditions, wandering India as a sadhu and taking Tibetan Buddhist initiations with Yeshe Dorje the Ningmapa exorcist who kept the rain off the Dalai Lama when he walked and Rangjung Rigpe Dorje the 16th Karmapa the head of the Karma Kagyu lineage, at the same time exploring sources of the world’s power plants, from the poppy fields of the Golden Triangle, through the Ganga fields of India and Afghanistan, eventually to take peyote with the Native American Church in New Mexico, where I also encountered my first sacred mushroom experience.

On my return to Aotearoa, I began a symbiotic relationship with sacred mushrooms, both because of their genetic purity, by comparison with synthetic drugs and because, although not as overpowered as LSD, they provide, in my view, a more deeply spiritual experience, which is also a deep expression of conscious symbiosis, without some of the transient casualties of LSD trips that occurred among our friends. This doesn’t mean taking mushrooms all the time. In fact I will sometimes go for years simply making sure they survive. Symbiosis means being faithful to their preservation. Their spores will live for decades if correctly stored at 5% humidity in a cool place and they can be cultivated in a chilly bin, with careful sterile techniques. I also brought species recognition to psilocybe aucklandii, and conserve a collection of species spanning each of the classic entheogens, to safeguard the visionary heritage for humanity, as a symbiotic duty of care.

Fig 27: A panorama of Opuhi, our wilderness land in Aotearoa. The meeting house is just visible on the right up the path.

In 1970 we had established a windswept coastal wilderness conservation community, which provided endless opportunities to hold mushroom veladas in the moonlight, listening to the crickets and moreporks and the distant ocean below, either alone, in “solitario”, which I prefer, or together in the meeting house, which has since become a heritage building. These experiences have become pivotal to my life’s work.
Other waking experiences, both on sacred mushrooms and during creative experiences have assumed a prophetic quality that can be alarming or even devastating. On one particular velada in the 1980s I suddenly became aware that the mushroom was telling me that if the world failed to show adequate signs of arresting the human impact causing a mass extinction of living diversity, I would need to make a vision quest to the Amazon, as our figurative Garden of Eden paradise and to Yerushalayim as the nexus of the religious impulse to undertake a rite of passage to make a transition to the immortal epoch of the Tree of Life, hidden since the foundation of the world in Eden by a flaming sword. Around the same time on another trip, I had a horrific vision that my eldest daughter would have an obstruction to her fertility, as some twisted kind if sacrificial outcome of my undertaking this mission. Some years later she became pregnant and her first of three sons was born with Down syndrome. He is great, but the episode was very disturbing, and a triple chromosome 21 is a genetic obstruction to fertility, affirming the vision’s veridical, or prophetic character.

In 1980 I made a second journey on unpaid leave to research the chemical origins of life in the US, later returning to Mexico and collecting and consuming peyote from the high desert below Wirikuta, the sacred mountain of the Huichol and then travelling to Yarinacocha lagoon at Pucallpa in Peru, where I took a powerful and formative ayahuasca trip with Snr. Trinico, a leprous curandero living at the extreme end of the slums around the lagoon. In 1992 I again returned on sabbatical and took peyote with the Native American Church in Taos with Tellus Goodmorning, my original roadman who was 92 and had lost one eye, but was still in fighting form chanting all night in the teepee.

In the two years spanning the millennium I made another sabbatical journey to the Amazon to document one of the worst burning seasons on record and returned to Yarinacocha for a second ayahuasca session with Trinico who was elderly, but now in good health.

Following this, with my sabbatical partner Jane King, we completed our Millennial vigil to Jerusalem, pronouncing as Bride and Bridegroom the rite of passage of the of the immortal Tree of Life of living diversity in the Gaia anointing of the Jubilee passage of Isaiah 61, completed on the Epiphany by declaring the Gates of Mercy open at the Eastern wall and celebrating the Sacred Reunion of woman and man in the Song of Songs at the Western (Wailing) Wall.

This served two key purposes to address foundation issues in the collective unconscious, manifest in the Weltanschauung, the archaic formative world view driving patriarchal monotheism expressed in the Yahwistic Genesis, firstly in Eve being cursed for heeding the serpent, to be obedient to her husband under pain of childbirth, appeasing male paternity uncertainty, confessing an archaic conflict with the matriliny and female reproductive integrity and secondly with dominion over nature, in the Tree of Life in Paradise hidden from humanity behind a flaming sword, dooming us to conflict with the thorns of the wilderness sweat of human dominance.

In 2015 I had a near-death experience when involved in a cycle accident which knocked me unconscious and left me with temporary amnesia from ensuing concussion. This made me acutely aware of the risks I was taking not fulfilling the pact with the mushroom, by kicking the bucket before my time had come. This resulted in the notion of planetary resplendence transcending religion as a way of life protecting the biosphere in perpetuity. Resurrection Revelation
Finally after a seven year hiatus, I took the mushroom trip that became this entire work.

On 19-7-2001, a month before 9-11, I published the lyrics of a song I had composed – Big Brother – The Song of the Biosphere – video. A key line invoked jihad: ‘When it comes to the final struggle, jihad of the biosphere, there's only one true rogue nation: the great American shaitan’, because George H W Bush had refused to sign the 1992 Rio Convention on Biodiversity. (As of 2016, the convention has 196 parties. All UN member states – with the exception of the United States – have ratified the treaty. The US still only has observer status as I write this in 2021, 29 years later!). The lyrics continue with a lament for the dark canyons of lower Manhattan among the fallen towers: ‘walking in the twilight, down in the valley of shadows’, and then the plane: ‘We’ll fly so high well pass right to the other side and never fall in flames again’.

Just under two months later, at one in the morning on a continuous BBC news broadcast, I watched in horror, as firstly one and then two planes crashed through the twin towers of the World Trade Center in flames and the towers fell, turning the streets of lower Manhattan into a literal vale of the shadow of death.

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23 Weltanschauung – a particular philosophy or view of life; the world view of an individual or group: Welt “world” (see world) + anschauung “perception” (related to English show). William James (1868)
Fig 28: A: Extracts from the lyrics posting of 20th July 2001 (http://dhushara.com/nino/19julyjihad.jpg). B: Passenger plane collides with one of the twin towers. C: Rudi Giuliani Mayor of New York the number of casualties will be more than any of us can bear (http://youtu.be/xhBYWDy4m9M). For the complete song video containing the 9-11 documentary footage, see: (http://youtu.be/g-gjgTW4_YQ).

The lyrics contain an uncanny ‘prophetic’ reverse echo of the event a month before it occurred:

First we have the jihad of against the U.S., but now it is not of the biosphere, but Islamic fundamentalism on 9-11:

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you told us global warming was a litany of lies
factory chimneys were the prize
when it comes to the final struggle - jihad of the biosphere
there's only one true rogue nation - the great American shaitan
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Next we have an echo of the streets of New York amid the smoke and haze of fallen masonry amid a deadly massacre.

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walking in the twilight, down in the valley of shadows
when will you comprehend - the damage you have wrought in your indiscretion?
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Then the amazing, outstanding, caring efforts of those on the ground, to begin the process of recovery.

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can we undo - the death trance you have set in motion?
will you discover - the fabric of love that ignites us?
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We have the two planes flying through the towers in flames.

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can we fly so high we'll pass right to the other side
and never fall in flames? will we ever be the same again?
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To become the shining goal in the beginning and end of life - reminiscent of a martyr seeking the face of God.

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we'll become the living soul, the primal source, the shining goal
the beginning and the end of life, the happiness and the pain
can we bear it all again?
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So finally, a shadow of Rudy Giuliani’s statement as Mayor: The “casualties will be more than any of us can bear”.

I apologise to all Americans for comparing your country to the Shaitan, but saving biodiversity is saving ourselves. Refusing to sign the Rio Convention on Biological Diversity is counter to the entire planetary future, so it was/is satanic, just as Donald Trump’s pulling out of the Paris accord was satanic. These are not the acts of a responsible superpower.
So what are we supposed to make of this? It’s just a coincidence isn’t it? There is more to this tale caught up in the quantum entanglement of past, present and future. It’s a completely non-replicable non-IID event. Is it a coincidence? What’s the probability of that? My father used to marvel at coincidence, repeatedly astounded.

How come, a month or more before 9-11 did I get it into my head to write these lines? Yes it’s the same life-protecting motive that brought the SEC into existence. But no one remotely conceived this was going to happen. The lyrics are an allegory not conceived to be literal future fact, just poetry, but they are nevertheless written from an apocalyptic viewpoint. But they are also a stream of consciousness account of everybody and everything that happened. The minds of the martyrs thinking they’ll fly so high they’ll pass right to the other side and it’s also the consciousness of the people who went in to deal with the destruction in the smoke and dust of Manhattan’s dark corridors and the spirit of those who came to light their candles for life and the uncanny “can we bear it all again?” whose words Giuliani echoed on TV.

What does this all mean about consciousness?

In Plato’s allegory of the cave, our state of knowledge is like that of prisoners chained together in a cave watching an illusory drama. Behind the prisoners is a fire, and between the fire and the prisoners are people carrying puppets or other objects, casting shadows on the cave wall. The prisoners watch these shadows, believing them to be real. One prisoner finally sees the fire and realises the shadows are fake. This prisoner escapes from the cave and discovers there is a whole new world outside that they were previously unaware of, but he becomes blinded because his eyes are not accustomed to actual sunlight, so when he returns to free them, his fellows do not trust his new knowledge.

Ruth Kastner has coined the analogy that quantum land hiding in the transactional interpretation of quantum mechanics, connecting all the potential absorbers to the emitter determining how quantum reality manifests, is the real reality and that physical reality we see in space-time is just the false image on the wall of Plato’s cave. I have a different view of this which I’ll describe, but Ruth’s view has true reality value in suggesting that the foundations of consciousness lie outside physical space-time in the quantum land of incipient possibilities she calls potentia. In a fundamental sense, this gives a true account of consciousness as the primary reality underlying the necessity of the physical universe, as the consensual illusion that binds together our conscious experiences of the world at large.

My view of this goes as follows:

**Firstly** 100% of people are subjectively conscious human beings, all of whose understanding of the physical universe has come from their conscious experiences, while only a subset believe in physical causality.

**Secondly** our experience of conscious volition is that we have autonomous intent and can perceive this intent veridically being manifest in our intentional actions. Therefore the physicalist description which sees consciousness as a mere internal model and volition as non-existent is empirically false.

**Thirdly** our conscious experience of volition is not like Plato’s cave, because we are not passively watching a movie allegory, we are participating in it. The intervention of conscious volition is what actually causes history to emerge from the multiverse, so we are right there by the fire manipulating the images cast on the cave wall. To do this effectively we have to do it predictively.

One of the most central aspects of consciousness is that it is an extended space-time representation of our dynamical relationship with existence on an uncertain trajectory from the immediate past into the uncertain future. This looks convincingly like an entangled quantum representation of the now, i.e. the absolute instant of the present expanded into both the immediate past and immediate future – i.e. the uncertain quantum of the present. When this becomes extended as in the above example of 9-11 which is a strongly felt apocalypse in my vision that is going to become a world apocalypse in everyone’s experience the two get caught in a Faustian space-time pact.

To a certain extent our relationship with time is a little like Plato’s cave in the sense that the future is harder to see and we are stuck with the past in all our memories, dreams and reflections as Jung said. But this isn’t the whole story. The brain-mind is a dynamical predictor as flash-lag illusions show it doing creating space-time artefacts. We experience this facing forwards into the unknown using consciousness as our cubic centimetre of chance to address uncertainty, so my bet is that consciousness is space-time transactionally predictive and has to be for evolution to retain it over a purely physical computational brain.
For consciousness to have any affect on physical outcomes that is useful to evolution, it has to be able to anticipate reality. The mind can do this logically or intuitively. But for conscious intuition to do it, it has to be in a sense precognitive.

What about life immortality and the eternal? Is the “ground” of consciousness a universal subjective phenomenon? If so, is it itself in any way connected to the death of the brain. The answer to this is probably yes, because the brain, at the very least is an immensely complex defining condition on the way human organismic consciousness manifests subjectively. This is where a scientist’s comment the the brain “makes” consciousness is largely correct, even if the brain is not causally closed, so that conscious volition is efficacious physically.

But subjective conscious ground of being as a universal phenomenon is then something that is not confined to a mortal organism’s lifetime. In fact it is not even confined to biological evolutionary immortality, so it stands as a principal candidate for being eternal or existing outside space-time, as space-time is an entirely physical construct.

So where does this leave us?

Well, religious people, Psi people and reincarnation people and mediums all have to reconsider all monolithic assumptions about the afterlife. At the same time scientific materialists need to recognise consciousness is cosmological and stop insisting our conscious volition is just a product of the computational brain.

Frankly I think biological mortality is the key to conscious existence sine qua non, because it’s the only way complex conscious existence can become physically manifest in sexual evolution. This is the incarnate focal point of conscious existence. I want to be effectual in my biological existence. I can already experience the immortality of evolving life and the eternal nature of the ground of conscious being and the so called spirit world of disembodied consciousness.

My take on this other world is entirely different from any other description of it I have seen in scripture, mediumistic accounts although is an extension of NDEs – rather as an integral transform of the entire conscious experience of the universe aware of itself, both as the mind at large and as the disembodied entities that constitute it, not some winged angels in “heaven” dancing on the head of a pin and not the tormented in eternal suffering in “hell”.

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'Elohim
We are whispering ... across the heavens
and all the creatures ... they echo in reply.
We are the very blood ... of the tree of life.
We are the void and the shining light.

We are the eternal gypsy spirits of the universe.
We have been here since it all began.
We will outlast its final passing.
We are here to free the heart of man.
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Adding further assumptions, in my not-so-humble opinion, leads to all manner of egotistical traps, as serious in the subjective world, as the human desire for cyborg immortality does in the physical universe.

William Shakespeare’s Macbeth, in despair at the death of his queen, casts the whole of life as a tale told by an idiot:

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Out, out, brief candle.
Life’s but a walking shadow, a poor player That struts and frets his hour upon the stage,
And then is heard no more. It is a tale Told by an idiot, full of sound and fury, Signifying nothing.
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This is not the outcome we seek for the living planet, so please listen to the sound and fury of a hallucinogen-consuming voice from the wilderness. It is not me, but the direction human life is taking, and all of us with it, that is idiotic beyond comprehension. That is a tale full of apocalyptic sound and fury, both religious and biospheric which, far from signifying nothing, might kill us all if we don’t accept the three priorities for reflowering the planet above.

To quote Yeshua from the Gospel of Thomas (70):

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"That which you have will save you if you bring it forth from yourselves.
That which you do not have within you [will] kill you if you do not have it within you."
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Abstract:
This article resolves the central enigma of existential cosmology – the nature and role of subjective experience – thus providing a direct solution to the “hard problem of consciousness”. This solves, in a single coherent cosmological description, the core existential questions surrounding the role of the biota in the universe, the underlying process supporting subjective consciousness and the meaning and purpose of conscious existence. This process has pivotal importance for avoiding humanity causing a mass extinction of biodiversity and possibly our own demise, instead becoming able to fulfil our responsibilities as guardians of the unfolding of sentient consciousness on evolutionary and cosmological time scales.

The article overviews cultural traditions and current research into psychedelics and formulates a panspsychic cosmology, in which the mind at large complements the physical universe, resolving the hard problem of consciousness and the central enigmas of existential cosmology, and eschatology, in a symbiotic cosmological model. The symbiotic cosmology is driven by the fractal non-linearities of the symmetry-broken quantum forces of nature, subsequently turned into a massively parallel quantum computer by biological evolution (Darwin 1859, 1889). Like Darwin’s insights, this triple cosmological description (pp 50-64) is qualitative rather than quantitative, but nevertheless accurate. Proceeding from fractal biocosmology and panspsychic cosmology, through edge of chaos dynamical instability, the excitable cell and then the eucaryote symbiosis create a two-stage process, in which the biota capture a coherent encapsulated form of panspsychism, which is selected for, because it aids survival. This becomes sentient in eucaryotes due to excitable membrane sensitivity to quantum modes and eucaryote adaptive complexity. Founding single-celled eucaryotes already possessed the genetic ingredients of excitable neurodynamics, including G-protein linked receptors and a diverse array of neurotransmitters, as social signalling molecules ensuring survival of the collective organism. The brain conserves these survival modes, so that it becomes an intimately-coupled society of neurons communicating synaptically via the same neurotransmitters, modulating key survival dynamics of the multicellular organism, and forming the most complex, coherent dynamical structures in the physical universe.

This results in consciousness as we know it, shaped by evolution for the genetic survival of the organism. In our brains, this becomes the existential dilemma of ego in a tribally-evolved human society, evoked in core resting state networks, such as the default mode network, also described in the research as “secondary consciousness”, in turn precipitating the biodiversity and climate crises. However, because the key neurotransmitters are simple, modified amino acids, the biosphere will inevitably produce molecules modifying the conscious dynamics, exemplified in the biospheric entheogens, in such a way as to decouple the ego and enable existential return to the “primary consciousness” of the mind at large, placing the entheogens as conscious equivalents of the LHC in physics. Thus a biological symbiosis between Homo sapiens and the entheogenic species enables a cosmological symbiosis between the physical universe and the mind at large, resolving the climate and biodiversity crises long term in both a biological and a psychic symbiosis, ensuring planetary survival.

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24 This article and the complementary one “Natty Dread and Planetary Resplendence” were co-conceived out of a quantum change experience evoked by psilocybe mushrooms. Taken together they inform a sacramental paradigm shift towards planetary survival.

25 *psychedelic* “mind-manifesting” ψυχή (ψυχή, “soul”), δηλοῦν (δηλοῦν, “to make visible, to reveal”), as opposed to *hallucinogenic* – inducing hallucinations and *psychotomimetic* (psycho- mind + mimētikós, imitative) mimicking psychotic behaviour/personality.
1 The Cosmological Problem of Consciousness

The human existential condition consists of a complementary paradox. To survive in the world at large, we have to accept the external reality of the physical universe, but we gain our entire knowledge of the very existence of the physical universe through our conscious experiences, which are entirely subjective and are complemented by other experiences in dreams and visions which also sometimes have the genuine reality value we describe as veridical. The universe is thus in a fundamental sense a description of our consensual subjective experiences of it, experienced from birth to death, entirely and only through the relentless unfolding spectre of subjective consciousness.

Fig 29: (a) Cosmic evolution of the universe (WMAP King 2020b). Life has existed on Earth for a third of the universe’s 13.7 b ya lifetime. (b) Symmetry-breaking of a unified superforce into the four wave-particle forces of nature, colour, weak, electromagnetic and gravity with the first three forming the standard model and with the weak-field limit of general relativity (Wilczek 2015) comprising the core model. (c) quantum uncertainty defined through wave coherence beats, (d) Schrödinger cat experiment. Schrödinger famously said “The total number of minds in the universe is one”, preconceiving Huxley’s notion of the mind at large used as this monograph’s basis for cosmological symbiosis. Quantum theory says the cat is in both live and dead states with probability 1/2 but the observer finds the cat alive or dead, suggesting the conscious observer collapses the superimposed wave function. (e) Feynman diagrams in special relativistic quantum field theories involve both retarded (usual) and advanced (time backwards) solutions because the Lorenz energy transformations ensuring the atom bomb works have positive and negative energy solutions \( E = \pm \sqrt{p^2 + m^2} \). Thus electron scattering (iv) is the same as positron creation-annihilation \(^{26}\). (f) Double slit interference shows a photon emitted as a particle passes through both slits as a wave before being absorbed on the photographic plate as a particle. The trajectory for an individual particle is quantum uncertain but the statistical distribution confirms the particles have passed through the slits as waves. (g) Cosmology of conscious mental states (King 2021a). Kiiten’s Cradle a love song.

The Physical Viewpoint

The religious anthropocentric view of the universe was overthrown, when Copernicus, in 1543 deduced that the Earth instead of being in the centre of the cosmos instead, along with the other solar system planets, rotated in orbits around the Sun. Galileo defended heliocentrism based on his astronomical observations of 1609. By 1615, Galileo’s writings on heliocentrism had been submitted to the Roman Inquisition which concluded that heliocentrism was

26 Feynman notes in his Nobel address: “I received a telephone call one day at the graduate college at Princeton from Professor Wheeler, in which he said, ’Feynman, I know why all electrons have the same charge and the same mass’ ’Why?’ ‘Because, they are all the same electron!’ ‘Suppose that the world lines which we were ordinarily considering before in time and space – instead of only going up in time were a tremendous knot, and then, when we cut through the knot, by the plane corresponding to a fixed time, we would see many, many world lines and that would represent many electrons, except for one thing. If in one section this is an ordinary electron world line, in the section in which it reversed itself and is coming back from the future we have the wrong sign to the proper time — to the proper four velocities — and that’s equivalent to changing the sign of the charge, and, therefore, that part of a path would act like a positron.’ “But, Professor”, I said, “there aren’t as many positrons as electrons.” This became the basis of his representation of positrons as electron holes and for the entire Feynman diagram approach to quantum field theories.
foolish, absurd, and heretical since it contradicted Holy Scripture. He was tried by the Inquisition, found "vehemently suspect of heresy", and forced to recant. He spent the rest of his life under house arrest.

The Copernican revolution in turn resulted in the rise of classical materialism defined by Isaac Newton’s laws of motion (1642 – 1726), after watching the apple fall under gravity, despite Newton himself being a devout Arian Christian who used scripture to predict the apocalypse. The classically causal Newtonian world view, and Pierre Simon Laplace’s (1749 – 1827) view of mathematical determinism “that if the current state of the world were known with precision, it could be computed for any time in the future or the past”, came to define the universe as a classical mechanism in the ensuing waves of scientific discovery in classical physics, chemistry and molecular biology, climaxing with the decoding of the human genome, validating the much more ancient atomic theory of Democritus (c. 460 – c. 370 BC). The classically causal universe of Newton and Laplace has since been fundamentally compromised by the discovery of quantum uncertainty and its “spooky” features of quantum entanglement.

In counterposition to materialism, George Berkeley (1685 – 1753) is famous for his philosophical position of "immaterialism", which denies the existence of material substance and instead contends that familiar objects like tables and chairs are ideas perceived by our minds and, as a result, cannot exist without being perceived. Berkeley argued against Isaac Newton’s doctrine of absolute space, time and motion in a precursor to the views of Mach and Einstein. Interest in Berkeley’s work increased after 1945 because he had tackled many of the issues of paramount interest to 20th century philosophy, such as perception and language.

The core reason for the incredible technological success of science is not the assumption of macroscopic causality, but the fact that the quantum particles come in two kinds. The integral spin particles, called bosons, such as photons, can all cohere together, as in a laser and thus make forces and radiation, but the half-integer spin particles, called fermions, such as protons and electrons, which can only congregate in pairs of complementary spin, are incompressible and thus form matter, inducing a universal fractal complexity, via the non-linearity of the electromagnetic and other quantum forces. Given the quantum universe and the fact that brain processes are highly uncertain, given changing contexts and unstable tipping points at the edge of chaos, objective science has no evidential basis to claim the brain is causally closed and thus falsely conclude that we therefore have no agency to apply our subjective and consciousness to affect the physical world around us.

The nature of conscious experience remains the most challenging enigma in the scientific description of reality, to the extent that we not only do not have a credible theory of how this comes about but we don’t even have an idea of what shape or form such a theory might take. While physical cosmology is an objective quest, leading to theories of grand unification, in which symmetry-breaking of a common super-force led to the four forces of nature in a big-bang origin of the universe, accompanied by an inflationary beginning, the nature of conscious experience is entirely subjective, so the foundations of objective replication do not apply. Yet for every person alive today, subjective conscious experiences constitute the totality of all our experience of reality, and physical reality of the world around us is established through subjective consciousness, as a consensual experience of conscious participants.

The hard problem of consciousness (Chalmers 1995) is the problem of explaining why and how we have phenomenal first-person subjective experiences sometimes called “qualia” that feel “like something”, and more than this, evoke the entire panoply of all our experiences of the world around us. Chalmers comments (201) “Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does.” By comparison, we assume there are no such experiences for inanimate things such as a computer, or a sophisticated form of artificial intelligence.

Although there have been significant strides in both electrodynamic (EEG and MEG), chemodynamic (fMRI) and connectome imaging of active conscious brain states, we still have no idea of how such collective brain states evoke the subjective experience of consciousness to form the internal model of reality we call the conscious mind, or for that matter volitional will. In Jerry Fodor’s words: “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.”

Nevertheless opinions about the hard problem and whether consciousness has any role in either perception or decision-making remain controversial and unresolved. The hard problem is contrasted with easy, functionally definable problems, such as explaining how the brain integrates information, categorises and discriminates environmental stimuli, or focuses attention. Subjective experience does not seem to fit this explanatory model. Reductionist
materialists, who are common in the brain sciences, particularly in the light of the purely computational world views induced by artificial intelligence, see consciousness and the hard problem as issues to be eliminated by solving the easy problems. Daniel Dennett (2005) for example argues that, on reflection, consciousness is functionally definable and hence can be corralled into the objective description. Arguments against the reductionist position often cite that there is an explanatory gap (Levine 1983) between the physical and the phenomenal. This is also linked to the conceivability argument, whether one can conceive of a micro-physical “zombie” version of a human that is identical except that it lacks conscious experiences. This, according to most philosophers (Howell & Alter 2009), indicates that physicalism, which holds that consciousness is itself a physical phenomenon with solely physical properties, is false.

David Chalmers (1995), speaking in terms of the hard problem, comments: “The only form of interactionist dualism that has seemed even remotely tenable in the contemporary picture is one that exploits certain properties of quantum mechanics.” He then goes on to cite (a) David Eccles’ (1986) citing of consciousness providing the extra information required to deal with quantum uncertainty thus not interrupting causally deterministic processes, if they occur, in brain processing and (b) the possible involvement of consciousness in “collapse of the wave function” in quantum measurement. We next discuss both of these loopholes in the causal deterministic description.

Two threads in our cosmological description indicate how the complementary subjective and objective perspectives on reality might be unified. Firstly, the measurement problem in the quantum universe, appears to involve interaction with a conscious observer. While the quantum description involves an overlapping superposition of wave functions, the Schrödinger cat paradox, fig 29(d), shows that when we submit a cat in a box to a quantum measurement, leading to a 50% probability of a particle detection smashing a flask of cyanide, killing the cat, when the conscious observer opens the box, they do not find a superposition of live and dead cats, but one cat, either stone dead or very alive. This leads to the idea that subjective consciousness plays a critical role in collapsing the superimposed wave functions into a single component, as noted by John von Neumann, who stated that collapse could occur at any point between the precipitating quantum event and the conscious observer, and others (Greenstein 1988, Stapp 1995, 2007).

Wigner & Margenau (1967) used a variant of the cat paradox to argue for conscious involvement. In this version, we have a box containing a conscious friend who reports the result later, leading to a paradox about when the collapse occurs – i.e. when the friend observes it or when Wigner does. Wigner discounted the observer being in a superposition themselves as this would be preceded by being in a state of effective “suspended animation”. As this paradox does not occur if the friend is a non-conscious mechanistic computer, it suggests consciousness is pivotal.

While systems as large as 2000 atoms (Fein et al. 2019) that of gramicidin A1, a linear antibiotic polypeptide composed of 15 amino acids (Shayeghi et al. 2020), and even a deep-frozen tardigrade (Lee et al. 2021) have been found in a superposition of states resulting in interference fringes, indicating that the human body or brain could be represented as a quantum superposition, it is unclear that subjective experience can. More recent experiments involving two interconnected Wigners’ friend laboratories also suggest the quantum description “cannot consistently describe the use of itself” (Frauchiger & Renner 2018). An experimental realisation (Proietti et al. 2019) implies that there is no such thing as objective reality, as quantum mechanics allows two observers to experience different, conflicting realities. These paradoxes underly the veridical fact that conscious observers make and experience a single course of history, while the physical universe of quantum mechanics is a multiverse of probability worlds, as in Everett’s many worlds description, if collapse does not occur. This postulates split observers, each unaware of the existence of the other, but what kind of universe they are then looking at seems inexorably split into multiverses, which we do not experience.

In this context Barrett (1999) presents a variety of possible solutions involving many worlds and many or one mind and in the words of Saunders (2001) in review has resonance with existential cosmology:

Barrett’s tentatively favoured solution [is] the one also developed by Squires (1990). It is a one-world dualistic theory, with the usual double-standard of all the mentalistic approaches: whilst the physics is precisely described in mathematical terms, although it concerns nothing that we ever actually observe, the mental – in the Squires-Barrett case a single collective mentality – is imprecisely described in non-mathematical terms, despite the fact that it contains everything under empirical control.

Other notions of collapse (see King 2020 for details) involve interaction with third-party quanta and the world on classical scales. All forms of quantum entanglement (Aspect et al. 1982), or its broader phase generalisation, quantum discord (Ollivier & Zurek 2002) involve decoherence (Zurek 1991, 2003), because the system has become coupled to other wave-particles. However recoherence (Bouchard et al. 2015) can reverse the entanglements, supporting the
notion that all non-conscious physical structures can exist in superpositions. Another notion is quantum darwinism (Zurek 2009), in which some states survive because they are especially robust in the face of decoherence. Spontaneous collapse (Ghirardi, Rimini, & Weber 1986) has a similar artificiality to Zurek’s original decoherence model, in that both include an extra factor in the Schrödinger equations forcing collapse. In the approach of SED (de la Peña et al. 2020), the stochastic aspect corresponds to the effects of the collapse process into the classical limit, but here consciousness can be represented by the zero point field (ZPF) (Keppler 2018). Finally we have pilot waves 27 (Bohm 1952), which identify particles as having real positions, thus not requiring wave function collapse, but have problems with handling creation of new particles.

Another key interpretation which extends the Feynman description to real particle exchanges is the transactional interpretation TI (Cramer 1986, King 1989, Kastner 2012) where real quanta are also described as a hand-shaking between retarded (usual time direction) and advanced (retrocausal) waves from the absorber, called “offer” and “confirmation” waves. TI arose from the Wheeler-Feynman (WF) time-symmetric theory of classical electrodynamics (Wheeler and Feynman 1945, 1949), which proposed that radiation is a time-symmetric process, in which a charge emits a field in the form of half-retarded, half-advanced solutions to the wave equation, and the response of absorbers combines with that primary field to create a radiative process that transfers energy from an emitter to an absorber.

Fig 30: (1) In TI a transaction is established by crossed phase advanced and retarded waves. (2) The superposition of these between the emitter and absorber results in a real quantum exchanged between emitter P and future absorber Q. (3) The origin of the positive energy arrow of time envisaged as a phase reflecting boundary at the cosmic origin. (4) Pair splitting entanglement can be explained by transactional handshaking at the common emitter. (5) The treatment of the quantum field in PTI is explained by assigning a different status to the internal virtual particle transactions (Kastner 2012). (6) A real energy emission in which time has broken symmetry involves multiple transactions between the emitter and many potential absorbers with collapse modelled as a symmetry breaking, in which the physical weight functions as the probability of that particular process as it ‘competes’ with other possible processes (Kastner 2014). (7) Space time emerging from a transaction (Kastner 2021a). (8) Entanglement experiment with time varying analysers. A calcium atom emits two entangled photons with complementary polarisation each of which travels to one of two detectors oscillating so rapidly there is no time to travel between the two detector pairs. (9) The blue and yellow photon transitions. (10) The quantum correlations blue exceed Bell’s limits of communication between the two at the speed of light. The experiment is referred to as EPR after Einstein, Podolsky and Rosen who first suggested the problem of spooky action at a distance.

27David Bohm’s (1952) pilot wave theory posits a real position and momentum for a particle such as a photon guided by a particular non-local form of pilot wave. It illustrates a form of hidden variable theory which does not require collapse of the wave function, but the predictions hold only for a situation where no new particles are created with new degrees of freedom during the trajectory. Its interpretation is thus inconsistent with the Feynman approach, where the transition probability includes all paths and all possible virtual particles created and annihilated during the transition. To the extent that its predictions coincide with those of quantum mechanics, phenomena, from weak quantum measurement (Kocsis et al. 2011) to surreal Bohmian trajectories (Mahler et al. 2016) can also be interpreted correctly by entanglement using standard quantum mechanics.
Ruth Kastner comments in private communication in relation to her development of the transactional interpretation:

The main problem with the standard formulation of QM is that consciousness is brought in as a kind of ‘band-aid’ that does not really work to resolve the Schrodinger’s Cat and Wigner’s Friend paradoxes. The transactional picture, by way of its natural non-unitarity (collapse under well-quantified circumstances), resolves this problem and allows room for consciousness to play a role as the acausal/volitional influence that corresponds to efficacy (Kastner 2016). My version of TI, however, is ontologically different from Cramer’s and it also is fully relativistic (Kastner 2021a,b). For specifics on why many recent antirealist claims about the world as alleged implications of Wigner’s Friend are not sustainable, see Kastner (2021c). In particular, standard decoherence does not yield measurement outcomes, so one really needs real non-unitarity in order to have correspondence with experience. I have also shown that the standard QM formulation, lacking real non-unitarity, is subject to fatal inconsistencies (Kastner 2019, 2021d). These inconsistencies appear to infect Everettian approaches as well.

Kastner (2011) explains the arrow of time as a foundational quantum symmetry-breaking:

Since the direction of positive energy transfer dictates the direction of change (the emitter loses energy and the absorber gains energy), and time is precisely the domain of change (or at least the construct we use to record our experience of change), it is the broken symmetry with respect to energy propagation that establishes the directionality or anisotropy of time. The reason for the ‘arrow of time’ is that the symmetry of physical law must be broken: ‘the actual breaks the symmetry of the potential.’ It is often viewed as a mystery that there are irreversible physical processes and that radiation diverges toward the future. The view presented herein is that, on the contrary, it would be more surprising if physical processes were reversible, because along with that reversibility we would have time-symmetric (isotropic) processes, which would fail to transfer energy, preclude change, and therefore render the whole notion of time meaningless.

Kastner (2012, 2014b) sets out the basis for extending the possibilist transactional interpretation or PTI, to the relativistic domain in RTI. This modified version proposes that offer and confirmation waves (OW and CW) exist in a sub-empirical, pre-spacetime realm (PST) of possibilities, and that it is actualised transactions which establish empirical spatiotemporal events. PTI proposes a growing universe picture, in which actualised transactions are the processes by which spacetime events are created from a substratum of quantum possibilities. The latter are taken as the entities described by quantum states (and their advanced confirmations); and, at a subtler relativistic level, the virtual quanta. PTI proposes a growing universe picture, in which actualised transactions are the processes by which spacetime events are created from a substratum of quantum possibilities.

The basic idea is that offers and confirmations are spontaneously elevated forms of virtual quanta, where the probability of elevation is given by the decay rate for the process in question. In the direct action picture of PTI, an excited atom decays because one of the virtual photon exchanges ongoing between the excited electron and an external absorber (e.g. electron in a ground state atom) is spontaneously transformed into a photon offer wave that generates a confirming response. The probability for this occurrence is the product of the QED coupling constant a and the associated transition probability. In quantum field theory terms, the offer wave corresponds to a ‘free photon’ or excited state of the field, instantiating a Fock space state (Kastner 2014b).

In contrast, with standard QFT where the amplitudes over all interactions are added and then squared under the Born rule, according to PTI, the absorption of the offer wave generates a confirmation (the ‘response of the absorber’), an advanced field. This field can be consistently reinterpreted as a retarded field from the vantage point of an ‘observer’ composed of positive energy and experiencing events in a forward temporal direction. The product of the offer (represented by the amplitude) and the confirmation (represented by the amplitude’s complex conjugate) corresponds to the Born Rule.

Kastner (2014a, 2021c,d) deconstructs decoherence as well as quantum Darwinism, refuting claims that the emergence of classicality proceeds in an observer-independent manner in a unitary-only dynamics, noting that quantum Darwinism holds that the emergence of classicality is not dependent on any inputs from observers, but that it is the classical experiences of those observers that the decoherence program seeks to explain from first principles:

“in the Everettian picture, everything is always coherently entangled, so pure states must be viewed as a fiction -- but that means that it is also fiction that the putative ‘environmental systems’ are all randomly phased. In helping themselves to this phase randomness, Everettian decoherentists have effectively assumed what they are trying to prove: macroscopic classicality only ‘emerges’ in this picture because a classical, non-quantum-correlated environment was illegitimately put in by hand from the beginning. Without that unjustified presupposition, there would be no vanishing of the off-diagonal terms”

She extends this to an uncanny observation concerning the Everett view:

“That is, MWI does not explain why Schrodinger’s Cat is to be viewed as ‘alive’ in one world and ‘dead’ in another, as opposed to ‘alive + dead’ in one world and ‘alive – dead’ in the other.”
Kastner (2016a) notes that the symmetry-breaking of the advanced waves provides an alternative explanation to von Neumann’s citing of the consciousness of the observer in quantum measurement:

\[ \text{Kastner, Kauffman & Epperson (2018) formalise the relationship between potentialities and actualities into a} \]

\[ \text{modification of Descartes res cogitans (purely mental substance) and res extensa (material substance) to res potentiae} \]

\[ \text{and res extensa comprising the potential and actual aspects of ontological reality. Unlike Cartesian dualism these are} \]

\[ \text{not separable or distinct but are manifest in all situations where the potential becomes actual, particularly in} \]

\[ \text{the process of quantum measurement in PTI, citing (McMullin 1984) on the limits of imagination of the res potentiae:} \]

\[ \text{... imaginability must not be made the test for ontology. The realist claim is that the scientist is discovering the structures of the world; it is not required in addition that these structures be imaginable in the categories of the macroworld.} \]

\[ \text{They justify this by noting that human evolutionary survival has depended on dealing with the actual, so the potential} \]

\[ \text{may not be imaginable in our conscious frame of reference, however one can note that the strong current of animism} \]

\[ \text{in human cultural history suggests a strong degree of focus on the potential, and its capacity to become actual in} \]

\[ \text{hidden unpredictable sources of accident or misfortune. In addition to just such unexpected real world examples, they} \]

\[ \text{they note the applicability of this to a multiplicity of quantum phenomena:} \]

\[ \text{Thus, we propose that quantum mechanics evinces a reality that entails both actualities (res extensa) and potentia (res potentia),} \]

\[ \text{wherein the latter are as ontologically significant as the former, and not merely an epistemic abstraction as in classical mechanics.} \]

\[ \text{On this proposal, quantum mechanics IS about what exists in the world; but what exists comprises both possibles and actuals. Thus,} \]

\[ \text{while John Bell's insistence on “beables” as opposed to just “observables” constituted a laudable return to realism about quantum} \]

\[ \text{theory in the face of growing instrumentalism, he too fell into the default actualism assumption; i.e., he assumed that to ‘be’ meant} \]

\[ \text{‘to be actual’, so that his ‘beables’ were assumed to be actual but unknown hidden variables.} \]

\[ \text{What the EPR experiments reveal is that while there is, indeed, no measurable nonlocal, efficient causal influence between A and B,} \]

\[ \text{there is a measurable, nonlocal probability conditionalization between A and B that always takes the form of an asymmetrical} \]

\[ \text{internal relation. For example, given the outcome at A, the outcome at B is internally related to that outcome. This is manifest as a} \]

\[ \text{probability conditionalization of the potential outcomes at B by the actual outcome at A.} \]
Nonlocal correlations such as those of the EPR entanglement experiment below can thus be understood as a natural, mutually constrained relationship between the kinds of spacetime actualities that can result from a given possibility – which itself is not a spacetime entity. She quotes Anton Zellinger (2016):

…it appears that on the level of measurements of properties of members of an entangled ensemble, quantum physics is oblivious to space and time.

Kastner (2021b), considers how the spacetime manifold emerges from a quantum substratum through the transactional process (fig 30(i)), in which spacetime events and their connections are established. The usual notion of a background spacetime is replaced by the quantum substratum, comprising quantum systems with non-vanishing rest mass, corresponding to internal periodicities that function as internal clocks defining proper times and in turn, inertial frames that are not themselves aspects of the spacetime manifold.

Three years after John Cramer published the transactional interpretation, I wrote a highly speculative paper, “Dual-time Supercausality (King 1989), based on John’s description which says many of the same things emergent in Ruth Kastner’s far more comprehensive development. Summing up the main conclusions we have:

(1) **Symmetric-Time:** This mode of action of time involves a mutual space-time relationship between emitter and absorber. Symmetric-time determines which, out of the ensemble of possibilities predicted by the probability interpretation of quantum mechanics is the actual one chosen. Such a description forms a type of hidden-variable theory explaining the selection of unique reduction events from the probability distribution. We will call this bi-directional causality transcausality.

(2) **Directed-time:** Real quantum interaction is dominated by retarded-time, positive-energy particles. The selection of temporal direction is a consequence of symmetry-breaking, resulting from energy polarization, rather than time being an independent parameter. The causal effects of multi-particle ensembles result from this dominance of retarded radiation, as an aspect of symmetry-breaking.

Dual-time is thus a theory of the interaction of two temporal modes, one time-symmetric which selects unique events from ensembles, and the other time-directed which governs the consistent retarded action of the ensembles. These are not contradictory. Each on their own form an incomplete description. Temporal causality is the macroscopic approximation of this dual theory under the correspondence principle. The probability interpretation governs the incompleteness of directed-causality to specify unique evolution in terms of initial conditions.

Quantum-consciousness has two complementary attributes, sentence and intent:

(a) **Sentence** represents the capacity to utilise the information in the advanced absorber waves and is implicitly transcausal in its basis. Because the advanced components of symmetric-time cannot be causally defined in terms of directed-time, sentence is complementary to physically-defined constraints.

(b) **Intent** represents the capacity to determine a unique outcome from the collection of such absorber waves, and represents the selection of one of many potential histories. Intent addresses the two issues of free-will and the principle of choice in one answer – free-will necessarily involves the capacity to select one out of many contingent histories and the principle of choice manifests the essential nature of free-will at the physical level.

A key point here is that subjective conscious volition needs to have an anticipatory property, or it will be neutral to natural selection, even if we do have free will, and would not have been selected for, all the way from founding eucaryotes to *Homo sapiens*. The transactional interpretation, by involving future absorbers in the collapse process, provides just such an anticipatory feature, except that we still don’t have a complete model of how the potential of all handshaking emitter-absorber pairs can collapse into a single real exchange.

There are two parts to this question (1) How does a symmetry breaking go from all absorbers to one e.g. in a one emitter context? and (2) How does it guarantee to conform to the Born asymptote?

It is one thing to have free will and it’s another to use free will on the basis of (conscious) quantum prediction, or anticipation which is what absorbers are providing in their confirmation waves. Our consciousness is striving to be predictive to the extent that it is subject to flash-lag illusions (Eagleman & Sejnowski 2000), so the question is pivotal. Predicting the future is key to how we evolved as conscious organisms, and it’s pivotal over short immediate time scales, like the snake’s or tiger’s strike we survive. Anticipating reality in the present is precisely what subjective consciousness is here to do.

The hardest problem of consciousness is thus that, to be conserved by natural selection, consciousness (a) has to be volitional i.e. affect the world physically to result in natural selection and (b) it has to be predictive as well. Free-will without predictivity is neutral to evolution, just like random behaviour and it will not be selected for. If we are dealing
with classical reality, we could claim this is merely a computational requirement, but why then do we have subjective experience at all? Why not just recursive predictive attention schemas with no subjectivity?

When we turn to the role of consciousness in quantum uncertainty, this comes back to not just opening the box of Schrödinger’s cat, but to predicting, or anticipating the uncertain cat’s fate more often than not in real life situations. That’s where the transactional approach comes in, because the absorbers are all in an emitter’s future so there is a musical chairs dance happening in the future. And those candidates may also be absorbers of other emitters and so on, so one can’t determine the ultimate boundary conditions of this problem. Somehow the “collapse”, which we admit violates retarded causality, results in one future choice. This means that there is no prohibition on this being resolved by the future affecting the outcome because the actual choice has no relation to classical causality. The reason for the Born asymptote could be that the symmetry-breaking transaction, like entanglement, involves everything there is – the ultimate pseudo-random optimisation process concealing a predictive hidden variable theory!

Schreiber (1995) sums up the case for consciousness collapsing the wave function as follows:

“The rules of quantum mechanics are correct but there is only one system which may be treated with quantum mechanics, namely the entire material world. There exist external observers which cannot be treated within quantum mechanics, namely human (and perhaps animal) minds, which perform measurements on the brain causing wave function collapse.”

Henry Stapp’s (2001) comment is very pertinent to the cosmology I am propounding, because it implies the place where collapse occurs lies in the brain making quantum measurements of its own internal states:

“From the point of view of the mathematics of quantum theory it makes no sense to treat a measuring device as intrinsically different from the collection of atomic constituents that make it up. A device is just another part of the physical universe... Moreover, the conscious thoughts of a human observer ought to be causally connected most directly and immediately to what is happening in his brain, not to what is happening out at some measuring device... Our bodies and brains thus become ... parts of the quantum mechanically described physical universe. Treating the entire physical universe in this unified way provides a conceptually simple and logically coherent theoretical foundation...”

Quantum entanglement is another area where consciousness may have a critical role. Einstein, Podolsky and Rosen (1935) proposed a locally causal limitation on any hidden variable theories describing the situation when two particles were entangled coherently in a single wave function. For example an excited calcium atom, because of the two electrons in its outer shell, can emit two (yellow and blue) photons of complementary spin in a single transition from zero to zero spin outer shells. Bell’s (1966) theorem demonstrated a discrepancy between locally-causal theories, in which information between hidden sub-quantum variables could not be transferred faster than light. However, multiple experiments using Bell’s theorem have found the polarisations, or other quantum states of the particles, such as spin, are correlated in ways violating local causality which are not limited by the velocity of light (Aspect et al. 1982). This “spooky action at a distance” which Einstein disliked shows that the state of either particle remains indeterminate until we measure one of them, when the other’s state is the instantaneously determined to be complementary. This cannot however be used to send logical classical information faster than light, or backwards in time, but it indicates that the quantum universe is a highly entangled system in which potentially all particles in existence are involved.

In an experiment to test the influence of conscious perception on quantum entanglement (Radin, Bancel & Delorme 2021), explored psychophysical (mind-matter) interactions with quantum entangled photons. Entanglement correlation strength measured in real-time was presented via a graph or dynamic images displayed on a computer monitor or web browser. Participants were tasked with mentally influencing that metric, with particularly strong results observed in three studies conducted at the Institute of Noetic Sciences (p < 0.0002).

Summing up the position of physicists in a survey of participants in a foundations of quantum mechanics gathering, Schlosshauer et al. (2013) found that, while only 6% of physicists present believed consciousness plays a distinguished physical role, a majority believed it has a fundamental, although not distinguished role in the application of the formalism. They noted in particular that “It is remarkable that more than 60% of respondents appear to believe that the observer is not a complex quantum system.” Indeed on all counts queried there were wide differences of opinion, including which version of quantum mechanics they supported. Since all of the approaches are currently consistent with the predictions of quantum mechanics, these ambiguous figures are not entirely surprising.

The tendency towards an implicitly classical view of causality is similar to that among neuroscientists, with an added belief in the irreducible nature of randomness, as opposed to a need for hidden variables supporting quantum
entanglement, rejecting Einstein’s disclaimer “God does not play dice with the universe.” Belief in irreducible randomness means that the principal evidence for subjectivity in quanta – the idiosyncratic unpredictable nature of individual particle trajectories – is washed out in the bath water of irreducible randomness, converging to the wave amplitude on repetition, consistent with the correspondence principle, that the behaviour of systems described by the theory of quantum mechanics reproduces classical physics in the limit of large quantum numbers.

In Born’s (1920) correspondence principle, systems described by quantum mechanics are believed to reproduce classical physics in the limit of large quantum numbers – if measurements performed on macroscopic systems have limited resolution and cannot resolve individual microscopic particles, then the results behave classically – the coarse-graining principle (Kofler & Brukner 2007). Subsequently Navascués & Wunderlich (2010) proved that in situations covered by IID (independent and identically distributed measurements) in which each run of an experiment must be repeated under exactly the same conditions and independently of other runs, we arrive at macroscopic locality. Similarly, temporal quantum correlations reduce to classical correlations and quantum contextuality reduces to macroscopic non-contextuality (Henson & Sainz 2015).

However Gallego & Dakić (2021) have shown that, surprisingly, quantum correlations survive in the macroscopic limit if correlations are not IID distributed at the level of microscopic constituents and that the entire mathematical structure of quantum theory, including the superposition principle is preserved in the limit. This macroscopic quantum behavior allows them to show that Bell nonlocality is visible in the macroscopic limit.

"The IID assumption is not natural when dealing with a large number of microscopic systems. Small quantum particles interact strongly and quantum correlations and entanglement are distributed everywhere. Given such a scenario, we revised existing calculations and were able to find complete quantum behavior at the macroscopic scale. This is completely against the correspondence principle, and the transition to classicality does not take place" (Borivoje Dakić).

"It is amazing to have quantum rules at the macroscopic scale. We just have to measure fluctuations, deviations from expected values, and we will see quantum phenomena in macroscopic systems. I believe this opens the door to new experiments and applications” (Miguel Gallego).

This means that in (a) neural system processing, where the quantum unstable context is continually evolving as a result of edge-of-chaos processing, and so no repeated measurements are made and (b) biological evolution, where a sequence of unique mutations become sequentially fixed by natural and sexual selection, which is consciously mediated in eucaryote organisms, both inherit implicit quantum non-locality in their evolution.

The Neuroscience Perspective

Complementing this description of the quantum world at large is the actual physics of how the brain processes information. By contrast with a digital computer, the brain uses both pulse coded action potentials and continuous gradients in an adaptive parallel network. Conscious states tend to be distinguished from subconscious processing by virtue of coherent phase fronts of the brain’s wave excitations. Phase coherence of beats between wave functions fig 29(c), is also the basis of quantum uncertainty.

In addition, the brain uses edge-of-chaos dynamics, involving the butterfly effect – arbitrary sensitivity to small fluctuations in bounding conditions – and the creation of strange attractors to modulate wave processing, so that the dynamics doesn’t become locked into a given ordered state and can thus explore the phase space of possibilities, before making a transition to a more ordered state representing the perceived solution. Self-organised criticality is also a feature, as is neuronal threshold tuning. Feedback between the phase of brain waves on the cortex and the discrete action potentials of individual pyramidal calls, in which the phase is used to determine the timing of action potentials, creates a feedback between the continuous and discrete aspects of neuronal excitation. These processes, in combination, may effectively invoke a state where the brain is operating as an edge-of-chaos quantum computer by making internal quantum measurements of its own unstable dynamical evolution, as cortical wave excitons, complemented by discrete action potentials at the axonal level.

Chaotic sensitivity, combined with related phenomena such as stochastic resonance, mean that fractal scale-traversing handshaking can occur between critically poised global brain states, neurons at threshold, ion-channels and the quantum scale, in which quantum entanglement of excitons can occur (King 2014). At the same time these processes underpin why there is ample room in physical brain processing for quantum uncertainty to become a significant factor...
in unstable brain dynamics, fulfilling Eccles (1986) notion that this can explain a role for consciousness, without violating any classically causal processes.

This means that brain function is an edge-of-chaos quantum dynamical system which, unlike a digital computer, is far from being a causally deterministic process which would physically lock out any role for conscious decision-making, but leaves open a wide scope for quantum uncertainty, consistent with a role for consciousness in tipping critical states. The key to the brain is thus its quantum physics, not just its chemistry and biology. This forms a descriptive overview of possible processes involved rather than an empirical proof, in the face of the failure of promissory materialistic neuroscience (Popper & Eccles 1984) to demonstrate physical causal closure of brain function, so Occam’s razor cuts in the direction which avoids conflict with empirical experience of conscious volitional efficacy over the physical universe.

Hameroff and Penrose (2014) have also proposed a controversial theory that consciousness originates at the quantum level inside neurons, rather than the conventional view that it is a product of connections between neurons, coupling orchestrated objective reduction (OOR) to hypothetical quantum cellular automata in the microtubules of neurons. The theory is regarded as implausible by critics, on multiple physical and neuroscience grounds. OOR would force collapse but would not retrieve volitional will.

Earlier John Eccles proposed a brain mind identity theory involving psychon quasi-particles mediating uncertainty of synaptic transmission to complementary dendrons cylindrical bundles of neurons arranged vertically in the six outer layers or laminae of the cortex. Eccles proposed that each of the 40 million dendrons is linked with a mental unit, or "psychon", representing a unitary conscious experience. In willed actions and thought, psychons act on dendrons and,
for a moment, increase the probability of the firing of selected neurons through quantum tunnelling effect in synaptic exocytosis, while in perception the reverse process takes place. This model has been elaborated by a number of researchers (Eccles 1990, 1994, Beck & Eccles 1992, Georgiev 2002, Hari 2008). The difficulty with the theory is that the psychons are then physical quasi-particles with integrative mental properties. So it’s a contradictory description that doesn’t manifest subjectivity except by its integrative physical properties.

Joachim Keppler (2018, 2021) presents an analysis drawing conscious experiences into the orbit of stochastic electrodynamics (SED) a form of quantum field theory. The SED is based on the conception that the universe is imbued with an all-pervasive electromagnetic background field, the zero-point field (ZPF), which, in its original form, is a homogeneous, isotropic, scale-invariant and maximally disordered ocean of energy with completely uncorrelated field modes and a unique power spectral density. This is basically a stochastic treatment of the uncertainty associated with the quantum vacuum in depictions such as the Feynman approach to quantum electrodynamics (fig 29(e)). In the approach of SED (de la Peña et al. 2020), in which the stochastic aspect corresponds to the effects of the collapse process into the classical limit 28, consciousness is represented by the zero point field (ZPF) (Keppler 2018). This provides a basis to discuss the brain dynamics accompanying conscious states in terms of two hypotheses concerning the zero-point field (ZPF):

“...The aforementioned characteristics and unique properties of the ZPF make one realize that this field has the potential to provide the universal basis for consciousness from which conscious systems acquire their phenomenal qualities. On this basis, I posit that all conceivable shades of phenomenal awareness are woven into the fabric of the background field. Accordingly, due to its disordered ground state, the ZPF can be looked upon as a formless sea of consciousness that carries an enormous range of potentially available phenomenal nuances. Proceeding from this postulate, the mechanism underlying quantum systems has all the makings of a truly fundamental mechanism behind conscious systems, leading to the assumption that conscious systems extract their phenomenal qualities from the phenomenal color palette immanent in the ZPF.”

His description demonstrates the kind of boundary conditions in brain dynamics likely to correspond to subjective states and thus provides a good insight into the stochastic uncertainties of brain dynamics of conscious states that would correspond to the subjective aspect, and it even claims to envelop all possible modes of qualitative subjectivity in the features of the ZPF underlying uncertainty. But it would remain to be established that the ZPF can accommodate all the qualitative variations spanning the senses of sight, sound and smell, which may rather correspond to the external quantum nature of these senses.

The ZPF as a physical manifestation does not itself solve the hard problem as such, however Keppler makes this link clear as well: A detailed comparison between the findings of SED and the insights of Eastern philosophy reveals not only a striking congruence as far as the basic principles behind matter are concerned. It also gives us the important hint that the ZPF is a promising candidate for the carrier of consciousness, suggesting that consciousness is a fundamental property of the universe, that the ZPF is the substrate of consciousness and that our individual consciousness is the result of a dynamic interaction process that causes the realization of ZPF information states. ...In that it is ubiquitous and equipped with unique properties, the ZPF has the potential to define a universally standardized substratum for our conscious minds, giving rise to the conjecture that the brain is a complex instrument that filters the varied shades of sensations and emotions selectively out of the all-pervasive field of consciousness, the ZPF (Keppler, 2013).

This provides a basis confluent with the description invoked in this article, as does the dissipative quantum model of brain dynamics (Freeman & Vitielo 2007, Sabbadini & Vitielo 2019), which uses the infinite number of ground states in quantum field theory, as opposed to quantum mechanics to thermodynamically model memory states.

Summarising the state of play, we have two manifestations of consciousness at the interface with objective physical description, (a) the hard problem of consciousness and (b) the problem of quantum measurement, both of which are in continual debate. Together these provide complementary windows on the abyss in the scientific description and a complete solution of existential cosmology that we shall explore in this article.

Challenging the decision-making role of consciousness, Libet (1983, 1989) asked volunteers to flex a finger or wrist. When they did, the movements were preceded by a dip in the brain signals being recorded, called the "readiness potential". He interpreted this RP a few tenths of a second before the volunteers said they had decided to move, as the

28 The approach of SED is guided by the hypothesis of the existence of the (random) zero-point radiation field, ZPF. This rather more elaborate approach goes through a statistical evolution equation in phase space, to arrive at a description in x-space, in which the dissipative and diffusive terms are seen to bring about a definitive departure from the classical Hamiltonian dynamics.
brain preparing for movement. Libet concluded that unconscious neural processes determine our actions before we are ever aware of making a decision. Since then, others have quoted the experiment as evidence that free will is an illusion.

This assumption has been undermined by more recent studies. Instead of letting volunteers decide when to move, Trevena and Miller (2010) asked them to wait for an audio tone before deciding whether to tap a key. If Libet’s interpretation were correct, the RP should be greater after the tone when a person chose to tap the key. While there was an RP before volunteers made their decision to move, the signal was the same whether or not they elected to tap. Miller concludes that the RP may merely be a sign that the brain is paying attention and does not indicate that a decision has been made. They also failed to find evidence of subconscious decision-making in a second experiment. This time they asked volunteers to press a key after the tone, but to decide on the spot whether to use their left or right hand. As movement in the right limb is related to the brain signals in the left hemisphere and vice versa, they reasoned that if an unconscious process is driving this decision, where it occurs in the brain should depend on which hand is chosen, but they found no such correlation.

Schurger and colleagues (2012) have a key explanation. Previous studies have shown that, when we have to make a decision based on sensory input, assemblies of neurons start accumulating evidence in favour of the various possible outcomes. The team reasoned that a decision is triggered when the evidence favouring one particular outcome becomes strong enough to tip the dynamics – i.e. when the neural noise generated by random or chaotic activity accumulates sufficiently so that its associated assembly of neurons crosses a threshold tipping point. The team repeated Libet’s experiment, but this time if, while waiting to act spontaneously, the volunteers heard a click they had to act immediately. The researchers predicted that the fastest response to the click would be seen in those in whom the accumulation of neural noise had neared the threshold - something that would show up in their EEG as a readiness potential. In those with slower responses to the click, the readiness potential was indeed absent in the EEG recordings.

"We argue that what looks like a pre-conscious decision process may not in fact reflect a decision at all. It only looks that way because of the nature of spontaneous brain activity." Schurger and Uithol (2015) specifically note the evidence of a sensitively dependent butterfly effect (London et al. 2010) as a reason why nervous systems vary their responses on identical stimuli as an explanation for why it could be impossible to set out a deterministic decision making path from contributory systems to a conscious decision, supporting their stochastic accumulator model. Hans Liljenström (2021) using stochastic modelling concludes that if decisions have to be made fast, emotional processes and aspects dominate, while rational processes are more time consuming and may result in a delayed decision.

Alexander et al. (2016) establish the lack of linkage of the RP to motor activity:

"The results reveal that robust RPs occurred in the absence of movement and that motor-related processes did not significantly modulate the RP. This suggests that the RP measured here is unlikely to reflect preconscious motor planning or preparation of an ensuing movement, and instead may reflect decision-related or anticipatory processes that are non-motoric in nature."

Catherine Reason (2016), who presents an intriguing logical proof that computing machines, and by extension physical systems, can never be certain if they possess conscious awareness, undermining the principal of computational equivalence (Wolfram 2002, 2021) and counterintuitively, that this implies that human consciousness is associated with a violation of energy conservation, has another objection to Libet:

"even if the readiness potential can be regarded as a predictor of the subject’s decision in a classical system, it cannot necessarily be regarded as such in a quantum system. The reason is that the neurological properties underlying the readiness potential may not actually have determinate values until the subject becomes consciously aware of their decision".

In a counterpoint to this Travers et al. (2020) suggest the RP is associated with learning and thus reflects motor planning or temporal expectation, but neither planning nor expectation inform about the timing of a decision to act:

"Participants learned through trial and error when to make a simple action. As participants grew more certain about when to act, and became less variable and stochastic in the timing of their actions, the readiness potential prior to their actions became larger in amplitude. This is consistent with the proposal that the RP reflects motor planning or temporal expectation. ... If the RP reflects freedom from external constraint, its amplitude should be greater early in learning, when participants do not yet know the best time to act. Conversely, if the RP reflects planning, it should be greater later on, when participants have learned, and know in advance, the time of action. We found that RP amplitudes grew with learning, suggesting that this neural activity reflects planning and anticipation for the forthcoming action, rather than freedom from external constraint."
Fifel (2018) reviewing the state of the current research described the following picture:

Results from Emmons et al. (2017) suggest that such ramping activity encodes self-monitored time intervals. This hypothesis is particularly pertinent given that self-monitoring of the passing of time by the experimental subjects is intrinsic to the Libet et al. (1983) experiment. Alternatively, although not mutually exclusive, RP might reflect general anticipation (i.e., the conscious experience that an event will soon occur) (Alexander et al., 2016) or simply background neuronal noise (Schurger et al., 2016). Future studies are needed to test these alternatives. ... Consequently, we might conclude that: Neuroscience may in no way interfere with our first-person experience of the will, it can in the end only describe it ... it leaves everything as it is.

The difficulty of the hard problem, which remains unresolved 26 years later, is also tied to the likewise unresolved problem of assumed causal closure of the brain at the basis of pure materialistic neuroscience. Until it is empirically confirmed it remains simply a matter of opinion that has grown into a belief system academically prejudiced against hypotheses not compliant with the physical materialistic weltanshauung.

While some neuroscientists (Johnson 2020) imply the hard problem is not even a scientific question, the neuroscience concept of causal closure (Chalmers 2015) based on classical causality, or quantum correspondence to it, not only remains empirically unverified in the light of Libet, Schurger and others, but it is unclear that a convincing empirical demonstration is even possible, or could be, given the fact that neuronal feedback processes span all scales from the organism to the quantum uncertain realm and the self-organised criticality of brain dynamics. Finally, it is in manifest conflict with all empirical experience of subjective conscious volitional intent universal to sane human beings.

The status of the neuroscience perspective of causal closure has led to an ongoing debate about the efficacy of human volition and the status of free will (Nahamias 2008, Mele, 2014), however Joshua Shepherd (2017) points out, that the neuroscientific threat to free will has not been causally established, particularly in the light of Schurger et al. (2015).

For this reason, in treating the hard problem and volitional intent, I will place the onus on proof on materialism to demonstrate itself and in defence of volition have simply outlined notable features of central nervous processing, consistent with an in principle capacity to operate in a quantum-open state of seamless partial causal closure involving subjectively conscious efficacy of volitional will physically in decision-making (in the brain) and behaviour (in the world). From this point of view, efficacy of volition is itself a validated empirical experience which is near universal to sane conscious humans, thus negating causal closure by veridical affirmation in the framework of symbiotic existential cosmology, where empirical experience has equally valid cosmological status to empirical observation.

Libet’s experiment purported to demonstrate an inconsistency, by implying the brain had already made a decision before the conscious experience of it, but Trevena and Miller and Schurger’s team have deprecated this imputation.

**Cartesian Theatres and Virtual Machines**

Reductionistic descriptions attempting to explain subjective experience objectively frequently display similar pitfalls to creationist descriptions of nature, and those in Biblical Genesis, which project easy, familiar concepts, such as human manufacture breath, or verbal command onto the natural universe. In his reductionist account in “Consciousness Explained” Daniel Dennett (1991) cites his “multiple drafts” model of brain processing, as a case of evolutionary competition among competing neural assemblies, lacking overall coherence, thus bypassing the need for subjective consciousness. This exposes a serious problem of conceptual inadequacy with reductionism. Daniel is here writing his book using the same metaphors as the very activities he happens to be using – the message is thus the medium. He can do this as a subjectively conscious being only by suppressing the significance of virtually every form of coherent conscious experience around him, subjugating virtually all features of his conscious existence operating for 100% of his conscious life, in favour of a sequence of verbal constructs having little more explanatory value than a tautology. This is what I call the psychosis of reductionistic materialism, which is shared by many AI researchers and cognitive scientists.

Despite describing the mind as a virtual machine, Dennett & Kinsbourne (1995) do concede a conscious mind exists at least as an observer:

“Wherever there is a conscious mind, there is a point of view. A conscious mind is an observer, who takes in the information that is available at a particular (roughly) continuous sequence of times and places in the universe. ... It is now quite clear that there is no single point in the brain where all information funnels in, and this fact has some far from obvious consequences.”
But neuroscience has long ceased talking about a single point or single brain locus responsible for consciousness, which is associated with coherent “in phase” activity as a whole. Nevertheless Dennett attempts to mount a lethal attack on any coherent manifestation of subjectivity, asserting there is no single, constitutive “stream of consciousness”:

“The alternative, Multiple Drafts model holds that whereas the brain events that discriminate various perceptual contents are distributed in both space and time in the brain, and whereas the temporal properties of these various events are determinate, none of these temporal properties determine subjective order, since there is no single, constitutive “stream of consciousness” but rather a parallel stream of conflicting and continuously revised contents” (Dennett & Kinsbourne (1995)).

“There is no single, definitive “stream of consciousness,” because there is no central Headquarters, no Cartesian Theatre where “it all comes together” for the perusal of a Central Meaner. Instead of such a single stream (however wide), there are multiple channels in which specialist circuits try, in parallel pandemoniums, to do their various things, creating Multiple Drafts as they go. Most of these fragmentary drafts of “narrative” play short-lived roles in the modulation of current activity but some get promoted to further functional roles, in swift succession, by the activity of a virtual machine in the brain. The seriality of this machine (its “von Neumann-esque” character) is not a “hard-wired” design feature, but rather the upshot of a succession of coalitions of these specialists.” (Dennett 1991)

However we know and shall discuss in the context of the default mode network in the context of psychedelics, the balance between top-down processes of control and integration, against just such a flood of competing regional bottom-up excitations, which become more able to enter consciousness, because of lowered barriers under the drug.

Yet the ghost Dennett claims to have crushed just keeps coming back to haunt him:

“Cartesian materialism is the view that there is a crucial finish line or boundary somewhere in the brain, marking a place where the order of arrival equals the order of “presentation” in experience because what happens there is what you are conscious of. ... Many theorists would insist that they have explicitly rejected such an obviously bad idea. But ... the persuasive imagery of the Cartesian Theater keeps coming back to haunt us—laypeople and scientists alike—even after its ghostly dualism has been denounced and exorcized.”

Fig 32 Baars’ (1997) view of the Cartesian theatre of consciousness has genuine explanatory power about the easy problem of the relation between peripheral unconscious processing and integrated coherent states associated with consciousness.

Bernard Baars’ (1997) global workspace theory, in the form of the actors in the Cartesian theatre of consciousness, is creatively provocative of the psyche, and concedes a central role for consciousness. His approach suggests that consciousness is associated with the whole brain, in integrated coherent activity and is thus a property of the brain as a whole functioning entity, in relation to global workspace, rather than arising from specific subsystems.

Furthermore, the approach rather neatly identifies the distinction between unconscious processing and conscious experience, in the spotlight of attention, accepts conscious experience as a central arena consistent with whether a given dynamic is confined to asynchronous regional activity or is part of a coherent global response. But again this description is an imaginative representation of Descartes’ homunculus in the guise of a Dionysian dramatic production, so it is also a projection onto subjective consciousness, albeit a more engaging one.

Another discovery pertinent here (Fernandino et al. (2022)) is that a careful neuroscientific study has found that lexical semantic information can be reliably decoded from a wide range of heteromodal cortical areas in the frontal, parietal,
and temporal cortex, but that in most of these areas, they found a striking advantage for experience-based representational structures (i.e., encoding information about sensory-motor, affective, and other features of phenomenal experience), with little evidence for independent taxonomic or distributional organisation. This shows that experience is the foundational basis for conceptual and cognitive thought, giving it a primary status over rational or verbal thought.

The traditional view of subjective consciousness stemming from Thomas Huxley is that of epiphenomenalism – the view that mental events are caused by physical events in the brain, but have no effects upon any physical events. Huxley (1874) held the view, comparing mental events to a steam whistle that contributes nothing to the work of a locomotive. William James (1879), rejected this view, characterising epiphenomenalists’ mental events as not affecting the brain activity that produces them “any more than a shadow reacts upon the steps of the traveller whom it accompanies” – thus turning subjective consciousness from active agency to being a mere passenger. Besides containing the analogy of the steam-whistle Huxley’s essay compares consciousness to the sound of the bell of a clock that has no role in keeping the time, and treats volition simply as a symbol in consciousness of the brain-state cause of an action. Nonefficacious mental events are referred to in this essay as “collateral products” of their physical causes.

Free will is the notion that we can make real choices which are partially or completely independent of antecedent conditions. Determinism denies this and maintains that causation is operative in all human affairs. Increasingly, scientists argue that their discoveries challenge the existence of free will. Studies indicate that informing people about such discoveries can change the degree to which they believe in free will and subtly alter their behaviour, leading to a social erosion of human agency, personal and ethical responsibility.

Philosophical analysis of free will divides into two opposing responses. Incompatibilists claim that free will and determinism cannot coexist. Among incompatibilists, metaphysical libertarians, who number among them Descartes, Bishop Berkeley and Kant, argue that humans have free will, and hence deny the truth of determinism. Libertarianism holds onto a concept of free will that requires the agent to be able to take more than one possible course of action under a given set of circumstances, some arguing that indeterminism helps secure free will, others arguing that free will requires a special causal power, agent-causation. Instead, compatibilists argue that free and responsible agency requires the capacities involved in self-reflection and practical deliberation; free will is the ability to make choices based on reasons, along with the opportunity to exercise this ability without undue constraints (Nadelhoffer et al. 2014). This can make rational acts or decisions compatible with determinism.

Our concern here is thus not with responsible agency, which may or may not be compatible with determinism, but affirming the existence of agency not causally determined by physical processes in the brain. Epiphenomenalists accept that subjective consciousness exists, as an internal model of reality constructed by the brain to give a global description of the coherent brain processes involved in perception attention and cognition, but deny the volitional will over our actions that is central to both reasoned and creative physical actions. This invokes a serious doubt that materialistic neuroscience can be in any way consistent with any form of consciously conceived ethics, because invoking moral or ethical reasoning is reduced to forms of aversive conditioning, consistent with behaviouralism, and Pavlov’s dogs, subjectively rationalised by the subject as a reason. This places volition as being a delusion driven by evolutionary compensation to mask the futility of any subjective belief in organismic agency over the world.

Defending subjective volitional agency thus depends centrally on the innovative ability of the subjective conscious agent to generate actions which lie outside the constraints of determined antecedents, placing a key emphasis on creativity and idiosyncracy, amid physical uncertainty, rather than cognitive rationality, as reasons are themselves subject to antecedents.

Reductionist approaches are epitomised by Gilbert Ryle’s (1949) claim in “The Concept of Mind” that “mind” is “a philosophical illusion hailing from René Descartes, and sustained by logical errors and category mistakes which have become habitual”. Ryle rejects Descartes’ theory of the relation between mind and body, on the grounds that it approaches the investigation of mental processes as if they could be isolated from physical processes. The rationalist theory that there is a transformation into physical acts of some purely mental faculty of “Will” or “Volition” is therefore a misconception because it mistakenly assumes that a mental act could be and is distinct from a physical act, or even that a mental world could be and is distinct from the physical world. This theory of the separability of mind and body is described by Ryle as “the dogma of the ghost in the machine.”
would be a perceptual delusion, contradicting the manifest nature of veridical perception generally.

Consciously aware of our volitional intent and of its affects both in our purposive decision-making and acts affecting the world around us. For causal closure to be true, all our purposive decision upon which we depend for our survival would be a perceptual delusion, contradicting the manifest nature of veridical perception generally. 

Symbiotic cosmology based on complementary, unlike a dualist one, is coherent. This coherence – forming a complete whole without discrete distinction – is manifestly true in that we can engage either a subjective discourse on our experiences or an objective account of their material circumstances in every situation in waking life, just as the wave and particle aspects of quanta are coherent and cannot be separated, as complementary manifestations. We thus find that the human discourse on our existential condition has two complementary modes, the one fixed in the objective physical description of the world around us using logical and causal operations and the other describing our subjective conscious experiences, as intelligent sensual beings, which are throughout our lives, our sole source of personal knowledge of the physical word around us, without which we would have no access to the universe at large, let alone to our dreams, memories and reflections (Jung 1963), all of which are conscious in nature, and often ascribed to be veridical, rather than imaginary, in the case of dreams and visionary states.

In Erwin Schrödinger’s words (1944): “The world is a construction of our sensations, perceptions, memories. It is convenient to regard it as existing objectively on its own. But it certainly does not become manifest by its mere existence” … “The reason why our sentient, percipient and thinking ego is met nowhere within our scientific world picture can easily be indicated in seven words: Because it is itself that world picture”.

A central problem faced by detractors of the role of consciousness in both the contexts of the brain and the quantum universe is that many of the materialist arguments depend on an incorrectly classical view of causality, or causal closure, in the context of brain dynamics, which are fundamentally inconsistent with quantum reality. In the brain context, this is purported to eliminate an adaptive role for consciousness in human and animal survival, reducing it to a form of epiphenomenalism, in which volitional will would be a self-serving delusion. This follows lines of thinking derived from computational ideas that interfering with a computational process would hinder its efficiency.

In relation to volitional will, Chalmers & McQueen (2021) note: “There are many aspects to the problem of consciousness, including the core problem of why physical processes should give rise to consciousness at all. One central aspect of the problem is the consciousness-causation problem: It seems obvious that consciousness plays a causal role, but it is surprisingly hard to make sense of what this role is and how it can be played.”

The problem with the idea of objective brain processing being causally closed is fivefold. Firstly the key challenges to organismic survival are computationally intractable, open environment problems which may be better served by edge of chaos dynamics than classical computation. Secondly, many problems of survival are not causally closed at all because both evolution and organismic behaviour are creative processes, in which there are many viable outcomes, not just a single logically defined, or optimal one. Thirdly, quantum uncertainty and its deeper manifestations in entanglement, are universal, both in the brain and the environment, so there are copious ways for consciousness to intervene, without disrupting causally deterministic processes, and this appears to be its central cosmological role. Fourthly, the notion runs headlong into contradiction with our everyday experience of volition in which we are consciously aware of our volitional intent and of its effects both in our purposive decision-making and acts affecting the world around us. For causal closure to be true, all our purposive decision upon which we depend for our survival would be a perceptual delusion, contradicting the manifest nature of veridical perception generally. Fifthly, the work
of Libet through to Schurger et al. demonstrates causal closure is unproven and is unlikely to remain so given the edge-of-chaos instability of critical brain processes in decision-making in the quantum universe.

**Consciousness and Surviving in the Wild**

Real world survival problems in the open environment don’t necessarily have a causally-closed or even a computationally tractable solution, thus requiring sensitive dependence on the butterfly effect and intuitive choices. Which route should the antelope take to reach the water hole when it comes to the fork in the trail? The shady path where a tiger might lurk, or the savannah where there could be a lion in the long grass? All the agents are conscious sentient beings using innovation and stealth and so the subtest sensory hints of crisis amid split-second timing is also pivotal. There is thus no tractable solution. Integrated anticipatory intuition, combined with a historical knowledge of the terrain, appears to be the critical survival advantage of sentient consciousness in the prisoners’ dilemma of survival, just as sexuality is, in the Red Queen race (Ridley 1996) between hosts and parasites. This coherent anticipation appears to be the evolutionary basis for the emergence and persistence of subjective consciousness as a quantum-derived form of anticipation of adventitious risks to survival, not the higher cognitive processes of verbal discourse.

Michael Graziano’s attention schema theory, or AST, self-described as a mechanistic account of subjective awareness (2016, 2017, Webb & Graziano 2015), which emerged in parallel with my own work (King 2014), gives an account of the evolutionary developments of the animal brain, taking account of the adaptive processes essential for survival to arrive at the kind of brains and conscious awareness we experience: “We propose that the top–down control of attention is improved when the brain has access to a simplified model of attention itself. The brain therefore constructs a schematic model of the process of attention, the ‘attention schema,’ in much the same way that it constructs a schematic model of the body, the ‘body schema.’ The content of this internal model leads a brain to conclude that it has a subjective experience – a non-physical, subjective awareness and assigns a high degree of certainty to that extraordinary claim”.

![Fig 34: Which route should the antelope take to reach the water hole when it comes to the fork in the trail? The shady path where a tiger might lurk, or the savannah where there could be a lion in the long grass?](image)

Real world survival problems require intuitive multi-option decisions, creativity and and often split-second timing requiring anticipatory consciousness. Thus modelling the existence of subjective consciousness or otherwise based only on causal concepts and verbal reasoning processes gives a false evolutionary and cosmological view. Here is where the difference between a conscious organism and an AI robot attempting to functionally emulate it is excruciatingly laid bare in tooth and claw.

However, this presents the idea that subjective consciousness and volitional will are a self-fulfilling evolutionary delusion which the author believes could in principle be extended to a machine: “Such a machine would “believe” it is conscious and act like it is conscious, in the same sense that the human machine believes and acts”. However it remains unclear that a digital computer, or AI process can achieve this with given architectures. Ricci et al. (2021) note in concluding remarks towards one of the most fundamental and elementary tasks, abstract same-different discrimination: “The aforementioned attention and memory network models are stepping stones towards the flexible relational reasoning that so epitomizes biological intelligence. However, current work falls short of the — in our view, correct — standards for biological intelligence set by experimentalists like Delius (1994) or theorists like Fodor (1988)”.
AST is also a type of filter theory similar to Huxley’s ideas: “Too much information constantly flows in to be fully processed. The brain evolved increasingly sophisticated mechanisms for deeply processing a few select signals at the expense of others, and in the AST, consciousness is the ultimate result of that evolutionary sequence.”

The overall idea of a purely physical internal model of reality representing its own attention process, thus enabling it to observe itself, is an astute necessary condition for the sort of subjective consciousness we find in the spread of metazoa, but it is in no way sufficient to solve the hard problem or address any more than one of the easy problems. However its description, of fundamental changes in overall brain architecture summarised in Graziano (2016) highlights the actual evolutionary forces shaping the development of the conscious mind lie in the paranoia of survival the jungle as noted in fig 34, rather than the verbal contortions of philosophical discourse:

“If the wind rustles the grass and you misinterpret it as a lion, no harm done. But if you fail to detect an actual lion, you’re taken out of the gene pool” (Michael Graziano 2016).

However Graziano (2020), in claiming why AST “has to be right”, commits to desubjectifying consciousness in favour of an AI analysis of recursive attention systems. In relation to the reality of consciousness in his words, the claim that: “I have a subjective, conscious experience. It’s real; it’s the feeling that goes along with my brain’s processing of at least some things. I say I have it and I think I have it because, simply, I do have it. Let us accept its existence and stop quibbling about illusions”, he attempts a structural finesse based on recursive attention:

Suppose the brain has a real consciousness. Logically, the reason why we intuit and think and say we have consciousness is not because we actually have it, but must be because of something else; it is because the brain contains information that describes us having it. Moreover, given the limitations on the brain’s ability to model anything in perfect detail, one must accept that the consciousness we intuit and think and say we have is going to be different from the consciousness that we actually have. I will make the strong claim here that this statement – the consciousness we think we have is different from, simpler than, and more schematic than, the consciousness we actually have – is necessarily correct. Any rational, scientific approach must accept that conclusion. The bane of consciousness theorizing is the naive, mistaken conflation of what we actually have with what we think we have. The attention schema theory systematically unpacks the difference between what we actually have and what we think we have. In AST, we really do have a base reality to consciousness: we have attention – the ability to focus on external stimuli and on internal constructs, and by focusing, process information in depth and enable a coordinated reaction. We have an ability to grasp something with the power of our biological processor. Attention is physically real. It’s a real process in the brain, made out of the interactions of billions of neurons. The brain not only uses attention, but also constructs information about attention – a model of attention. The central hypothesis of AST is that, by the time that information about attention reaches the output end of the pathway …, we’re claiming to have a semi-magical essence inside of us – conscious awareness. The brain describes attention as a semi-magical essence because the mechanistic details of attention have been stripped out of the description.

This is a huge fudge of lateral conspiracy theories that are simply opinions of a hidden underlying information structure, confusing experience itself with the recursive attention structures that any realistic description has to entail to bring physical brain processing into any kind of concordance with experiential reality. His inability to distinguish organismic consciousness from AI is evidenced in Graziano (2017) where he sets our AST as a basis for biologically realisable artificial intelligence systems.

Some anticipatory aspects of our conscious experience of the world make it possible for the brain to sometimes construct a present that has never actually occurred. In the “flash-lag” illusion, a screen displays a rotating disc with an arrow on it, pointing outwards. Next to the disc is a spot of light that is programmed to flash at the exact moment the spinning arrow passes it. Instead, to our experience, the flash lags behind, apparently occurring after the arrow has passed (Westerhoff 2013). One explanation is that our brain extrapolates into the future, making up for visual processing time by predicting where the arrow will be, however, rather than extrapolating into the future, our brain is actually interpolating events in the past, assembling a story of what happened retrospectively, as was shown by a subtle variant of the illusion (Eagleman and Sejnowski 2000).

Given the complementary roles of conscious quantum measurement and edge-of-chaos coherence dynamics, far from being an ephemeral state of a biological organism’s brain dynamics that is irrelevant to the universe at large, the symbiotic cosmology asserts that consciousness has a foundational role in existential cosmology, complementary to the entire phenomenon of the physical universe. The conscious brain may also literally be a/the most complex functional system in the universe, so manifests emergent properties undeveloped in other physical processes. This is not dualistic, but an extension of quantum wave-particle complementarity to a larger complementarity, in which mind...
is complementary to the universe as a whole. It is thus non-local in a more complete way than the quantum wave aspect is in complementation to the localised particle aspect.

**Panpsychism and its Critics**

This perspective naturally leads towards panpsychism, the idea that the fundamental constituents of the universe – i.e. quanta – have both a subjective existence and objective behaviour, just as they have both a wave and particle aspect physically. We can't see this subjective existence or "inessness" directly, just as we have difficulty seeing one another's consciousness directly, so objective behaviour becomes the default core description. However we know that the quantum wave function shapes where each particle ends up in a way which remains unpredictable for a single quantum and only becomes determined in the average, in terms of the probability (amplitude squared) of the wave function. This individual idiosyncrasy of a single quantum, when viewed as a particle within its wave function could be interpreted as its free will, as its location in the probability space modulated by the wave function amplitude is completely arbitrary and unbiased, just as it is able to have a determined position in the pilot wave theory if the Feynman implications of particle creation and annihilation are ignored. Likewise one could interpret its consciousness as its integrated “awareness” of the universal quantum entanglement through its wave function. One could thus conclude that the consciousness of the observer is apperceptive of the free-will of the quantum particle, since we are not asserting that the observer is applying their will to determine that Schrödinger’s cat is alive or dead, but simply that our subjective consciousness is perceiving it to be in one of the two states. In either case we are dealing with what appears to be subjectively conscious observation of a quantum displaying psychic behaviour exerting an equivalent of volitional will masked by irreducible randomness.

Panpsychism doesn't just apply to any physical object such as a spoon (Goff 2019, Seth 2021a), where there is no manifest form of active behaviour one can associate with the object. It can be associated with single quanta, where idiosyncratic quantum uncertain behaviour is manifest. Panpsychism might also be associated with other adventitious quantum events such as evolutionary mutation, and might also become manifest in edge of chaos quantum processes in the open environment where chaos can lead to further entanglements (Chaudhury et al. 2009, Steck 2009), which are not subject to the suppression of chaos noted in closed quantum systems. Evolution is particularly sensitive because adventitious mutations form a chain of idiosyncratic single collapses in sequence, in which no convergence to the probability interpretation actually takes place.

To generate a succinct account of the emergence of subjective consciousness from quantum panpsychism, we thus have a sequence, individual quanta, edge-of-chaos and self-organised criticality with quantum sensitivity due to the butterfly effect, biogenesis, prokaryotes, and eucaryote cells and organisms. I shall associate consciousness as such only with a discrete transition to coherent excitability of single cells with the eucaryote endosymbiosis and the evolution of this into the coordinated excitability of organismic nervous systems, in a clear-cut biological model of subjective consciousness. This dispatches Seth’s “combination problem” – how to combine small conscious entities such as quanta into larger ones, mischaracterised as a problem of panpsychism’s own making, because the types of coordination are a product of physical dynamical processes with respect to which the subjective conscious aspect is complementary.

Anil Seth, in “Being You” (2021b) provides a provocative account of the “exhilarating new science of consciousness”.

When asked if we will ever fully understand consciousness, and if we do what will that mean for our understanding of ourselves and our place in the world, he says:

“It’s a very good question, but it’s a hypothetical situation. The reason I am hesitating is that some people who are new to the idea of scientifically explaining conscious feel threatened by it. … This attitude is especially true when you come to topics such as free will. People say “But no, I decided what I want to do”, thus claiming this is a residue of the age-old belief in human exceptionalism that we are at the centre of the universe and distinct from all the other creatures. “Having got rid of those exceptionalist ideas, I think that the picture of the universe is infinitely richer, more beautiful, more rewarding. “ (Dixon 2022).

However this is incorrect, as Darwin’s view was that free will spanned the metazoans “down to the polype”. There is thus simply no connection between human exceptionalism and free will and it leads to an incorrect claim that a true understanding of consciousness suggests that free will is an illusion. He nevertheless has an insightful view of the evolutionary basis of consciousness within nature with which I agree:
We're going through this transition where we will begin to understand consciousness as part of the wider tapestry of nature. "Now that is threatening if you're still hanging on to your experience of being you as something apart from nature, separate from it. But I think that's exactly the way Copernicus and Darwin were ultimately incredibly enriching. It will be and it already is incredibly enriching to understand consciousness within the wider patterns of the universe and the natural world (Dixon 2022).

But Copernicus is here conflated with Darwin when the extended view of subjective consciousness as a privileged view appears to be cosmologically accurate as a climax conscious phenomenon providing precisely this privileged view and what he is saying is that the analytical view of objective science has revealed nature's true and confounding detail to the exclusion of subjective experience. While it may be true of religious cosmologies such as the Sabbatical Creation and Heaven and Hell, this view of the exclusive primacy of objective empiricism is fundamentally incorrect.

Seth cites Thomas Nagel as a basis for his naturalistic materialism, who in "What's it like to be a Bat" (1974) contended that while humans could never experience what a bat experiences, there would nevertheless be something it was like for the bat to be a bat, thus invoking subjective phenomenology as part of the discourse on consciousness.

However in this he cites the brain as a “complex prediction machine rather than a mere computer”. This is insightful because it recognises the key function of consciousness shared by all animals to predict existential threats and sources of opportunistic hunting, feeding and sex through environmental prediction which is an established neurophysiological fact. But it is still exploring animal conscious as an implicitly mechanistic phenomenon, which he extends to three key areas: Levels of consciousness, the content of consciousness and the self.

This then tallies with his research approach, to set aside the hard problem of why subjective consciousness exists at all, if a prediction machine can do it well or better, to the easier problems relating brain functionality to states of mind through experimental neuroscience. According to his “real problem of consciousness” the primary goals of consciousness science are to explain, predict and control the phenomenological properties of conscious experience. In short, addressing the real problem requires explaining why a particular pattern of brain activity, or other physical process, maps to a particular kind of conscious experience, not merely establishing that it does.

This is something well established in neuroscience, as much of the research on psychedelic states reviewed in this work attests for one of the most complex and difficult of these states to assess. However, correspondence between brain states and conscious states do not explain whether the brain states cause the conscious states and in particular do not come anywhere close to empirically concluding that conscious volition, or free will, are merely subjective delusions of causal function of a prediction machine.

This approach leads to a series of mantras such as “I predict therefore I am”, implying that conscious mental states are just controlled hallucinations to predict circumstances and are thus not real and that the self is just a construct having no intrinsic of even volitional meaning or value. Yes we know conscious experience is also an internal model of reality constructed by the brain to make sense of the world, but it is although an evolved model, a superbly veridical model enhancing reality, which outside is an indecipherable flux of photons, atoms, electrons and other quanta having no phenomenal characteristics apart from mass, wavelength and/or position and energy and/or time.

These hallucinogenic conclusions simply don’t follow and stylistically devalue veridical experience and create a mystique of consciousness research as successfully unravelling the subjective foundations of our existential condition in favour of an occluded, albeit sophisticated mechanism. In the absence of solving the hard problem, this is a dangerous appeal to promissory materialism which diminishes and invalidates the human experience of natural reality, we depend on to survive as a species.

Seth (2021a), in critiquing panpsychism, advances the case that the success of materialistic science is based on explanation, prediction, and control (EPC), the criteria by which many scientific enterprises are assessed, thus reducing biological 'vitalism' in a demystifying dissolution into molecular biology. Goff has countered that some scientific advances such as Darwin's theory of evolution “emerged from a dramatic insight, rather than incremental dissolution”. But the objection to EPC is fundamental, because, at the very climax of biology, neuroscience has currently no idea of how to solve the hard problem or how the easy problems might be combined to evoke consciousness either. Goff argues that quantitative science does not capture qualitative properties characteristic of subjective qualia. The intrinsic difficulty with Seth's "real" problem of consciousness — how to distinguish different types of qualia e.g. red and blue sneakers, is that it completely fails to address the root question of subjectivity, which is by nature entirely different
from the localisable, analysable, distinguishable and separable properties of objective reality and arises in both quantum observation in physics and the hard problem in neuroscience in complementary ways.

But Seth’s final criticism is that “Worst of all for panpsychism is that it is not itself testable, and that it does not lead to testable predictions”. The problem is not about testability as such but how to make a test in a subjective regime that is by definition not objectively observable by others except by their demeanour and behaviour. This claim shows an inability to determine appropriate criteria for subjective testability. Legal decisions do not just depend on circumstantial (physical) evidence, but on sworn conscious testimony of a veridical nature. While this may be difficult for a single photon because it can only report from its behavioural trajectory, it is certainly possible and accepted scientifically at the high end of the scale in human subjective reports, each of which counts as a statistically verifiable data point. However the details of just what the ultimate nature of conscious experience is in the cosmology of mental states illustrated in Fig 29 is as yet uncharacterised, pivotally due to legislation against psychedelics.

This problem is significant. Albert (1992 82-3) in the context of quantum measurement, cites the objection to consciousness collapsing the wave function from imprecision about what consciousness actually is: “How the physical state of a certain system evolves (on this proposal) depends on whether or not that system is conscious; and so in order to know precisely how things physically behave, we need to know precisely what is conscious and what isn’t”.

Fig 35: Wheeler (1983) delayed choice experiment shows that different forms of measurement after light from a distant quasar has been gravitationally lensed around an intervening galaxy can be determined to have passed one or the other way around it or a superposition of both, depending on whether detection of one or other particle, or an interference is made when it reaches Earth.

We have also discovered that quantum entanglement between particles is both critical and universal to how the universe works. In special relativistic quantum theories, wave functions are coupled in both directions in time, with advanced and retarded solutions providing handshaking between future absorbers and past emitters (King 1989). This is evidenced in the Wheeler delayed choice experiment, confirmed by communication between satellites in Earth orbit (Vedovato et al. 2017). Multi-particle entanglement is just the tip of the iceberg, because even in a one quantum wave function, the particle can be detected only once in its wave function whether it occurs at earlier or later times, so collapse of the wave function has to occur simultaneously throughout past and future space-time.

In a trend that indicates just how inscrutable the “well” of quantum entanglement between two quantum systems can be, a paper on quantum complexity theory (Ji et al. 2020) shows that it is impossible to calculate the amount of correlation that two quantum systems can display across space when entangled (Castelvecchi 2020). The work concerns a game-theory problem, with a team of two players who are able to coordinate their actions through quantum entanglement, even though they are not allowed to talk to each other. This allows both players to ‘win’ much more often than they would without quantum entanglement. But the paper concludes that it is intrinsically impossible for the two players to calculate an optimal strategy. This implies that it is impossible to calculate how much coordination they could theoretically achieve. Thus there is no algorithm that is going to tell you what is the maximal violation you can get in quantum mechanics.

Consciousness as Integrated Information

Fig 36: variations in recursive connectivity result in varying $\Phi$.

Tonioni and Koch’s (2015, Tononi et al. 2016) integrated information theory IIT, suggests a similar classification to the dynamical classification above running through states of limited human consciousness such as ketamine anaesthesia down to cephalopods and then Siri, thus invoking AI as putatively conscious if it has the right integrative algorithms. IIT constructs its model by starting from experience itself, establishing its classification via five
phenomenological axioms: intrinsic existence, composition, information, integration and exclusion. It predicts that consciousness is graded, is common among biological organisms and can occur in some very simple systems. It will thus discount purely computational AI systems as non-conscious and makes a similar set of distinctions to those in the symbiotic cosmology. However, despite being based on characteristics of conscious behaviour, IIT becomes an abstract study of discrete probabilistic Markov systems, rather than subjectivity itself.

However the ground of the theory is probabilistic information, as indicated by its axiomatic definitions: **Mechanism** – Any subset of elements within a system that has cause–effect power on it (that is, that constrains its cause–effect space). **Cause–effect repertoire** – The probability distribution of potential past and future states of a system that is specified by a mechanism in its current state. **Cause–effect space** – A space with each axis representing the probability of each possible past and future state of a system. **Cause–effect structure** – The set of cause–effect repertoires specified by all the mechanisms of a system in its current state. **Integrated information** (Φ): Information that is specified by a system that is irreducible to that specified by its parts. It is calculated as the distance between the conceptual structure specified by the intact system and that specified by its minimum information partition.

Yaden et al. (2021) point out some of the problems with this kind of model in the context of psychedelics: “Although it would be interesting to investigate how psychedelic states relate to Φ, it is not clear how this would improve our understanding of the hard problem of consciousness.” They note, for example, that relatively simple digital logic gates (e.g., XOR gate), which intuitively seem non-conscious, can generate large amounts of Φ (Cerullo, 2015) stating “It is also not clear that the assertion of complexity itself being a measure of consciousness is tenable.” This is a natural critique of the IIT model in that despite being an attempt to reason in the subjective sole basis being stochastic information cannot solve the hard problem.

Bayne and Carter (2018) also critique the model, in dealing with whether conscious states can be assigned levels, exemplified by the idea that psychedelics induce a “higher” state of consciousness. “Advocates of IIT are explicitly committed to the unidimensional view of conscious states, for they equate a creature’s conscious state with its level of consciousness, and degrees of consciousness, according to IIT, are in turn understood in terms of the amount of integrated information Φ. The considerations advanced in this paper raise questions about the plausibility of this view, for we have seen that global states cannot be ordered along a single dimension.”
The only dominant theory we have of consciousness says that it is associated with complexity — with a system’s ability to act upon its own state and determine its own fate. Theory states that it could go down to very simple systems. In principle, some purely physical systems that are not biological or organic may also be conscious (Chris Koch).

Is Consciousness just Free Energy on Markov Landscapes?

Solms and Friston (2018) have proposed a model of consciousness, again based on abstract stochastic processes. A Markov blanket (Kirchov et al. 2018) defines the boundaries of a system (e.g. a cell or a multi-cellular organism) in a statistical sense in a way that can be used to define homeostatic and adaptive processes and can be recursive as in a multicellular organism. It is a statistical partitioning of a system into internal states and external states, where the blanket itself consists of the states that separate the two, constituting a statistical boundary that sets something apart from that which it is not. This shows that internal and external states are conditionally independent, as they can only influence one another via active and sensory states. The states that constitute the Markov blanket can be further partitioned into active and sensory states.

They use both ‘subjective’ and ‘objective’ to refer to observational perspectives, so subjective is not really subjective, but internal observation. The subjective perspective “upon” the organism realises the “being” of the organism which they call ‘interoceptive’. The objective perspective realises the “body” of the organism they call ‘exteroceptive’. They take an admittedly metaphysical position that neither of these observable realisations can be explained away by the other, which is fine. In other words, data about an organism that is derived from both interoceptive and exteroceptive perspectives must be reducible to one and the same set of explanations. This places each in their own parallel causal train except that an assumption is made of an underlying unity from which these both derive:

The starting point of my argument raises an interesting philosophical question. If body and mind are two appearances (aspects) of the same underlying thing, then what stuff is the underlying thing made of? In other words, using the analogy of thunder and lightning, what is the metapsychological equivalent of “electricity” (i.e., the thing that gives rise to thunder and lightning, both)?

We come to the devastating abstract crunch – “Therefore, biological explanations (as opposed to descriptions) are best formulated in neither interoceptive nor exteroceptive phenomenal terms, but rather as abstractions”. This is converting the central complementarity of subjective consciousness and objective brain into other complementarities of a different sort interoceptive v exteroceptive observation or perception and ascending neural pathways v cortical connections, neither of which are consistent with the original and fundamental subject-object complementarity at the heart of cosmology.

Fig 38: Solms-Friston model and Markov blankets. Predictive coding formulates free energy or surprise in terms of precision weighted prediction errors. A prediction error (e) here is the difference between a sensation (φ) produced by some action (M) and the sensation predicted by a generative model ψ(Q). Here, Q stands for internal expectations about – or representations of – hidden external states and ψ(Q) is the prediction of sensory inputs that would have been encountered given those external states, under the generative model. Under some simplifying assumptions, we can now associate free energy (F) with the amount of prediction error weighted by its precision (ω). Precision corresponds to the reliability, or inverse variance, of sensory fluctuations (in various modalities) and is an important aspect of inference; namely, the representation of uncertainty.
Their central claim is that their combined insights invoking this entirely abstract stochastic process yields a straightforward response to Chalmers’ question “why is there something it is like to be an organism, for the organism, and how does this something-it-is-like-ness come about?”. These two insights are: (1) that the primary function of consciousness is not to register states of the external world but rather to register the internal states of the experiencing subject and (2) concerns minimal conditions – a fundamental property of living things (i.e., biological self-organising systems) is their tendency to resist the second law of thermodynamics and that this functional property emerges naturally within any ergodic random dynamical system that possesses a Markov blanket.

The first is not based in philosophy but on anatomical and physiological evidence, which suggests that consciousness is “quintessentially” interoceptive. Their argument goes as follows: conscious qualia arise primarily not from exteroceptive perception (i.e., vision, hearing, somatic sensation, taste and smell), and still less from reflective awareness of such representations, but rather from the endogenous arousal processes that activate them. Exteroceptive representations are intrinsically unconscious – they do not inherently possess ‘something-it-is-like-ness’. They only acquire conscious quality when they are, in Chalmers’ words, “entertained” by the subject; i.e., when they are selectively activated by a more fundamental form of consciousness. In short, mental images can only be experienced by a conscious subject and they are in fact states of the conscious subject. The arousal processes that produce what is conventionally called ‘wakefulness’, in our view, therefore, constitute the experiencing subject – they are consciousness itself – explicitly the arousal functions of the centrencephalic structures that sustain wakefulness and behavioural responsivity which in turn supply the conscious character of some higher cortical functions. The latter perceptual and cognitive functions (which are otherwise typically unconscious) derive their consciousness absolutely from the centrencephalic region.

This is fine as a description of the relationship between ascending pathways such as the reticular activating system, and underscores the relationship between thalamic circuits as drivers of activity and cortical circuits as responsive constraints, however identifying consciousness itself with the ascending pathways is not accurate physiologically in terms of active CNS dynamics, as exemplified in the EEG, where we see cortical states active as a whole associated with conscious experiences, with the ascending pathways just providing as in their thermodynamic model a free-energy substrate.

In the Solms-Friston model, autonomous systems, including nervous systems are modelled in terms of predictive coding, which formulates free energy or surprise in terms of precision weighted prediction errors. Hey state specifically that the model although claiming to solve the hard problem is following the “Helmholtz school of medicine, whose members swore an oath in 1842 to the effect that “no forces other than the common physical chemical ones are at work in the organism”. In the model, precision corresponds to the reliability, or inverse variance, of sensory fluctuations and is an important aspect of inference in the representation of uncertainty. Precision is the confidence placed in the (predicted) consequences of an action or in a source of sensory evidence. In the ideal adaptive state of the organism – where negentropic demand is met by optimal predictions – Nirvana – there are no prediction errors and the expected free energy is absolutely minimised – homeostasis with no uncertainty or entropy and infinite precision. They claim this scheme, with recurrent exchanges of (ascending) prediction errors and (descending) predictions – closely resembles empirical message passing in cortical and subcortical hierarchies. In this context, action reduces to proprioceptive (motor) and interoceptive (autonomic) reflexes that are driven by descending predictions from the brain’s (hierarchical) generative model. Precision controls the influence of prediction errors on action and perception.

They then note that physiologically, precision is usually associated with the postsynaptic gain of cortical neuronal populations reporting prediction errors, associated – through free energy minimisation – with selective arousal or attentional selection. They then claim it is precisely this neuromodulatory synaptic mechanism that is targeted by psychotropic and psychedelic drugs on the basis of Nour and Carhart-Harris (2017).

The picture is actually much more complicated. Both psychedelics and other agents, from dissociatives to stimulants such as amphetamines, have differing and varied affects on attention. While psychedelics are associated with both a drop in the default mode network and sensory overload from upwelling activity, this isn’t easily analysed as simply prediction errors, nor an overall change in thermodynamic free energy minimisation. It is also manifestly inconsistent to associate surprise and uncertainty only with its suppression. Cultural expressions from music to scientific discoveries are all intimately associated with both uncertainty and surprise.
The approach of minimising surprise, while it does tally with avoidance of primary existential threats is not solved by homeostasis, but by self-organised criticality at the edge of chaos, and there is no empirical basis to define neural processes as stochastic Bayes network per se. Hence like IIT, this model is analogical and not causal.

Solms (2019) makes his homeostatic direction explicitly clear, citing personal experience dealing with subjects who have severe hydrocephalus and little cortical tissue, although some with seemingly empty cortices have small regions of cortical tissue having far more intense activity than normal:

I first expressed the view in 1997 that the problem of consciousness will only be solved if we reduce its psychological and physiological manifestations to a single underlying abstraction. It took me many years to realize that this abstraction revolves around the dynamics of free energy and uncertainty. Free energy minimization is the basic function of homeostasis, a function that is performed by the same brainstem nuclei that I was led to infer – like others, on independent (clinico-anatomical) grounds – were centrally implicated in the generation of consciousness. In other words, the functions of homeostasis and consciousness are realized physiologically in the very same part of the brain. This insight led to the collaborative work that enabled Friston and me to expand the variational free energy formulation of the mechanism of homeostasis to explain the mainspring of consciousness itself.

This viewpoint focuses on feeling, which is then identified with consciousness as a whole:

Consciousness persists in the absence of cerebral cortex, as does volitional behaviour. As Damasio and Carvalho (2013) put it:

Decorticated mammals exhibit a remarkable persistence of coherent, goal-oriented behavior that is consistent with feelings and consciousness. Consciousness is obliterated by focal lesions of the brainstem core – in a region conventionally described as the extended reticulothalamic activating system (ERTAS). ... If core brainstem consciousness is the primary type, then consciousness is fundamentally affective. The arousal processes that produce what is conventionally called “wakefulness” constitute the experiencing subject. In other words, the experiencing subject is constituted by affect. ... Although many cognitive scientists still must be weaned of the view that the cerebral cortex is the seat of consciousness the weight of evidence for the alternative view that the arousal processes generated in the upper brainstem and limbic system feel like something in and of themselves, is now overwhelming.

While these physiological details are important and correct, there are two critical flaws:

(1) Although the cortex may be electro-dynamically passive on its own and the mid-brain may have strategically excitable properties consistent with intentional awareness, to claim consciousness is only root brain stem afferent activation trivialises its nature and complexity, when all the elaborate details of the conscious experiences we have are clearly derived through the modulation of the cortex under the active excitation of the thalamo-cortical loop.

(2) David Chalmers’ philosophical description of subjectivity, as a fully conscious intact human would experience it “feel like something in themselves” is a misconstruction. Chalmers is carefully stating what is is like to actually experience consciousness subjectively, not what observation of afferent pathways is associated with, in terms of anatomical dissection of function.

This equating of feeling with consciousness runs into all sorts of problems by disabling some key aspects of conscious experience in favour of others, not just in waking life but also in alternative mental states. Someone driving a car may or may not be centred on their feelings some of the time, or be experiencing intense emotions likely to cause an accident, but for most people, driving is a conscious sensory-motor experience. One of the most outstanding features of psychedelic visions is kaleidoscopic imagery, which one both experiences as real veridical perceptions “out there” and a suppression of egotistical emotions leading to quiescent feelings amid overwhelming perceptual, sounds, scenes and geometrical patterns, which the person intimately experiences as consciousness expansion. The same thing with dreaming states which are often profoundly visual and in which emotions may reach crisis point in perceived existential crises, but in no way is feeling as such ‘felt’ to be the sine qua non of conscious experience. There is also a fundamental basis to the notion that all forms of perception both sensory and somatosensory are part of the envelope of conscious experience as is volition and the perception of intent. To thus identify the raw free energy of reticular activation as consciousness itself is a sever mischaracterisation.

Solms notes that this view is not shared by a long history involving the NCC or neural correlate of consciousness:
This assignment that the NCC does not lie in the brain stem, continues to this day. Crick’s closest collaborator, Christof Koch, says of the deep brainstem nuclei that “they are enablers [of consciousness] but not content-providers”.

Markov blankets are then conflated with two central properties accompanying conscious volition — selfhood and intentionality:

Readers may have noticed already that the dynamics of a Markov blanket generate two fundamental properties of minds — namely (elemental forms of) selfhood and intentionality. It is true that these dynamics also generate elemental properties of bodies — namely an insulating membrane (the ectoderm of complex organisms, from which the neural plate derives) and adaptive behavior. This is a remarkable fact. It underpins dual-aspect monism.

One can understand that selfhood and intentionality are fundamental properties of all autonomous life forms from the first prokaryotes to Homo sapiens, but this doesn’t mean they constitute experiential conscious volition as we know it, or that the neural plate substrates of early development define consciousness although I have shown that serotonin does provide such a role. However claiming that this stochastic description of (sensory) input and (motor) output solves the hard problem in terms of conscious volition is the most tissue thin analogy conceivable. The critical point remains that a pure abstract system is categorically inconsistent with actual subjectivity, just as objective physical processes are.

Can Teleological Thermodynamics Solve the Hard Problem?

Terrence Deacon in Incomplete Nature: How Mind Emerged from Matter sets out a descriptive teleological thermodynamics, which is an extension of Ilya Prigogine’s (1984) concept of far-from-equilibrium thermodynamics in a three-layered structure of homeo-, morpho- and teleo-dynamics. These three categories actually coincide with (1) inanimate matter, (2) far-from-equilibrium stability structures such as in chemical biogenesis, and (3) living organisms. We are already intimately familiar with each of these, except for some uncertainties about the precise route of biogenesis, so the description is simply a thermodynamic recasting, which is insightful, but not empirically demonstrated in any proof-of-principle examples.

We already know that biological systems consist of fractal layers of organisation arising from the symmetry-breaking of the quantum forces as a consequence of non-linear charge energetics to interactively produce: quarks, hadrons, atomic nuclei, atoms, molecules with increasingly fractal cooperative weak-bonding structures, supra-molecular complexes such as the ribosome, organelles such as the membrane and Golgi apparatus, cells, tissues, organs such as the brain organisms and the biosphere.

Teledynamic work is the production of contragrade teledynamic processes, that work in opposition to the usual orthograde direction, that in homeo-dynamic systems leads to increasing entropy at equilibrium. An orthograde teledynamic processes is an end-directed process that will tend to occur spontaneously. By contrast, contragrade change is described as the natural consequence of one orthograde process influencing a different orthograde process — for example, via some intervening medium. This implies that in one sense, all change ultimately originates from spontaneous thermodynamic processes controlled passively by constraints.

Yes biogenesis and biological evolution is teleologically directed towards diversity and yes evolution is a process by which adventitious mutation is sequestered in the genome and becomes available as significantly useful information by natural and sexual selection. In this sense “Incomplete Nature” is a self-confessed description of biogenesis, evolution and the constraints on organismic development, rather than mind or consciousness and here it does have
Descriptive insightfulness. However, it is subtly similar in its cognitive respect to Daniel Dennett’s multiple evolutionary drafts model now finessed by Terrence into a more concordant and appealing wrapping. In this respect, Bernard Baars’ description of the Cartesian Theatre of working memory, is surely the most anemic description in neuroscience, has a more appealing rationale because it is so richly populated with conceptual actors having the personae of living agents.

Deacon then applies this directly to conscious intentional actions. For illustration, reading exemplifies the logic of teleodynamic work. A passive source of cognitive constraints is potentially provided by the words on a page. A literate person structures their sensory and cognitive habits to reorganise the neural activities constituting thinking. This enables them to do teleodynamic work to shift mental tendencies away from those that are spontaneous (such as daydreaming) to those that are constrained by the text:

“Although teleodynamic processes are incredibly complex, and an explanation of the structure of teleodynamic work is by far the most elaborate—since it is constituted by special relationships between forms of morphodynamic work—it is also the most familiar. So it may be helpful to first consider the human side of teledynamic work before delving into the underlying dynamical structure of this process. Teledynamic work is what we must engage in when trying to make sense of an unclear explanation, or trying to produce an explanation that is unambiguous”.

“In cognitive terms, orthograde teleodynamic processes may be expressed as goal-directed innate adaptive behaviors, spontaneous emotional tendencies, learned unconscious patterns of behavior, stream-of-consciousness word associations, and so forth. In social terms, orthograde teleodynamic processes may be expressed as common cultural narratives for explaining events, habits of communication developed between different groups or classes of individuals, conventionalized patterns of exchange, and so on”.

Here is where there is a literally scorpion-like sting in the tail of Terrence’s very entertaining story round the camp fire, which is the very insight of the zeros that he astutely notes arise from the hard problem of consciousness and other manifestations of subjectivity, which are rather like Carlos Casteneda’s ‘holes between the sounds” in “The Teachings of Don Juan”, in that they don’t appear to arise from the reductionistic physical description.

This revolves around his notion of entention:

“I propose that we use the term ententional as a generic adjective to describe all phenomena that are intrinsically incomplete in the sense of being in relationship to, constituted by, or organized to achieve something non-intrinsic. By combining the prefix en- (for “in” or “within”) with the adjectival form meaning something like “inclined toward,” I hope to signal this deep and typically ignored commonality that exists in all the various phenomena that include within them a fundamental relationship to something absent.”

Terrence’s story starts out with great hope for conscious existence, invoking the possibility of causal openness:

“This opens the door to an emergent capacity to generate ever more complex, unprecedented forms of work, at progressively higher-order levels of dynamics, thereby introducing an essentially open-ended possibility of producing causal consequences that wouldn’t tend to arise spontaneously. That is, we can begin to discern a basis for a form of causal openness in the universe.”

However, by adding in his dynamic interaction between his teleological constraints and physical causality, he introduces a second level of objective causal closure defined by his thermodynamics. Notice that he admits this is a belief, not an empirical fact:

“By reframing the problem in these dynamical terms, I believe we will discover that rather than being the ultimate “hard problem” of philosophy and neuroscience, the subjective features of neural dynamics are the expected consequences of this emergent hierarchy. The so-called mystery of consciousness may thus turn out to be a false dilemma, created by our failure to understand the causal efficacy of emergent constraints.”

In his closing passages, again stating this is belief rather than an empirical fact, he attempts to nail the coffin of the zero or “absence” of the hard problem to it’s ultimate RIP:

“I believe that human subjectivity has turned out not to be the ultimate “hard problem” of science. Or rather, it turns out to have been hard for unexpected reasons. It was not hard because we lacked sufficiently complex research instruments, nor because the details of the process were so many and so intricately entangled with one another that our analytic tools could not cope, nor because our brains were inadequate to the task for evolutionary reasons, nor even because the problem is inaccessible using the scientific method. It was hard because it was counterintuitive, and because we have stubbornly insisted on looking for it where it could not be, in the stuff of the world. When viewed through the perspective of the special circular logic of constraint generation that we have called teleodynamics, this problem simply dissolves.”
He then plays to the darkly shaded tune of these absences, holes or zeros as you prefer:

“The subjectivity is not located in what is there, but emerges quite precisely from what is not there. Sentience is negatively “embodied” in the constraints emerging from teleodynamic processes, irrespective of their physical embodiment, and therefore does not directly correlate with any of the material substrates constituting those processes. Intrinsically emergent constraints are neither material nor dynamical—they are something missing—and yet as we have seen, they are not mere descriptive attributions of material processes, either. The intentional properties that we attribute to conscious experience are generated by the emergence of these constraints—constraints that emerge from constraints, absences that arise from, and create, new absences."

and in closing states full circle that we are back to a purely objective causality, lacking any need for subjective existence:

“But this negative existence, so to speak, of the conscious self doesn’t mean that consciousness is in any way ineffable or non-empirical. Indeed, if the account given here is in any way correct, it suggests that consciousness may even be precisely quantifiable and comparable, for example, between states of awareness, between species, and even possibly in non-organic processes, as in social processes or in some future sentient artifact. This is because teleodynamic processes, which provide the locus for sentience in any of its forms, are precisely analyzable processes, with definite measurable properties, in whatever substrates they arise.”

Here is where the Wikipedia editor’s comment was right:

“The book expands upon the classical conceptions of work and information in order to give an account of intentionality that is consistent with eliminative materialism and yet does not seek to explain away or pass off as epiphenomenal the non-physical properties of life.”

The difficulty here is that it is both consistent with eliminative materialism and the only sense in which mind is now “not epiphenomenal” is that it has been completely explained away as simply as case of objective thermodynamic teleo-dynamics. This use of entention as a purely mechanical generalisation of intent opens up the floodgates both to any form of AI that adopts the raw form of teleo-dynamics and directly to the dread of eliminative materialism, by supervening the entire scope of the subjective realm to annihilation in a thermodynamic teleology that in no way captures the true nature of diversity, surprise, creativity or insight, except in the evolutionary model of random accumulation of adventitious and hence “useful” teleological information. Furthermore no such purely thermodynamic reality can in any way manifest itself subjectively, so it is simply a model thought in the mind of the reader, not an actuality manifesting the subjectivity of every conscious living agent, although the teleological thermodynamics of life may be a valid description in statistical mechanics. Deacon’s description thus can be a partial comfort only to dedicated believers in pure materialism.

Hence it in no way solves the hard problem any more than any model of brain dynamics does by discovering processes which physically do approach the sorts of unstable sensitivity or other characteristics that do form an objective description confluent with subjectively conscious mental states. In this respect “Incomplete Nature” is simply addressing some of the easy problems around abstract functionality of brain states, in thermodynamic terms, not the hard problem itself.

Deacon has claimed that this teleology is so causally complete that it has automatically, in a purely descriptive account, rendered quantum reality irrelevant:

“It didn’t even require us to invoke any superficially strange and poorly understood quantum effects in our macroscopic explanations in order to account for what prior physical intuition seemed unable to explain about meaning, purpose, or consciousness. ... More important, the scale at which we do unambiguously recognize ententional properties is vastly larger than the scale of quantum events, and in between there are only thermodynamic and chemical processes.”

But this claim is self-fulfilling, as it stands precisely alongside the obvious fractal structure of brain tissue that likewise runs dynamically in a hand-shaking interaction between global wave states, cellular action potentials, and ion channels at the quantum level, modulated by edge-of-chaos transitions, and stochastic resonance at the unstable global tipping points when make-or-break situations are made, amid wave coherence sampling which is itself homologous with quantum measurement in the uncertainty principle. This is where we come full circle and have to recognise that, while Terrence did claim that teleological thermodynamics overlays quantum reality, he has in no way established that it has overruled it. Hence we come back to square one. In the evolutionary model, each adventitious mutation is an example of a single unrepeated quantum instance. His very own analogy between
evolution and neurodynamics implies that adventitious thought may arise likewise from a single quantum instability induced by an unstable neurodynamical tipping point and we know from recent research that the quantum world approaches the classical only under conditions of IID (independent and identically distributed measurements) as Gallego & Dakić (2021) have shown, which neither evolution nor neurodynamics conform to.

In his conclusion, Deacon sets out to claim this gives humanity hope of meaning in existence:

“Perhaps the most tragic feature of our age is that just when we have developed a truly universal perspective from which to appreciate the vastness of the cosmos, the causal complexity of material processes, and the chemical machinery of life, we have at the same time conceived the realm of value as radically alienated from this seemingly complete understanding of the fabric of existence. In the natural sciences there appears to be no place for right/wrong, meaningful/meaningless, beauty/ugliness, good/evil, love/hate, and so forth. The success of contemporary science appears to have dethroned the gods and left no foundation upon which unimpeachable values can rest. ... As I lamented in the opening chapter of this book, the cost of obtaining this dominance over material nature has had repercussions worldwide. Indeed, I don’t think that it is too crazy to imagine that the current crisis of faith and the rise in fundamentalism that seems to be gripping the modern world is in large part a reaction to the unignorable pragmatic success of a vision of reality that has no place for subjectivity or value. The specter of nihilism is, to many, more threatening than death. By rethinking the frame of the natural sciences in a way that has the metaphysical sophistication to integrate the realm of absent phenomena as we experience them, I believe that we can chart an alternative route out of the current existential crisis of the age—a route that neither requires believing in magic nor engaging in the subterfuge of ultimate self-doubt. ... If quantum physicists can learn to become comfortable with the material causal consequences of the superposition of alternate, as-yet-unrealized states of matter, it shouldn’t be too great a leap to begin to get comfortable with the superposition of the present and the absent in our functions, meanings, experiences, and values.”

Fig 40: Title image to “Incomplete Nature” – the complete ablation of the subjectively conscious volitional mind in favour of thermodynamic abstraction.

My physically casual brain made me do it becomes teleological thermodynamics made me do it.

But what Deacon has actually done is to screw down the death grip of true subjectivity even tighter. We end up with the opposite – eliminative materialism – rejecting the notion of mind and consciousness altogether as an archaic misconception, as Ryle has done, becoming nothing but a gap in the description of reality itself, substituted for by a regime of objective thermodynamics complementing physical materialism.

The Crack between Subjective Consciousness and Objective Brain Function

In this respect, it is pertinent to quote Popper and Eccles (1984 96) coining of the phrase “promissory materialism”:

“the new promissory materialism accepts that, at the present time, materialism is not tenable. But it offers us the promise of a better world, a world in which mental terms will have disappeared from our language, and in which materialism will be victorious. The victory is to come about as follows. With the progress of brain research, the language of the physiologists is likely to penetrate more and more into ordinary language and to change our picture of the universe, including that of common sense. So we shall be talking less and less about experiences, perceptions, thoughts, beliefs, purposes and aims; and more and more about brain processes, about dispositions to behave, and about overt behaviour. In this way, mentalist language will go out of fashion and be used only in historical reports, or metaphorically, or ironically. When this stage has been reached, mentalism will be stone dead, and the problem of mind and its relation to the body will have solved itself.”

We thus take the obvious foundational realities of existence – consciousness & volition – upon which we depend for our sanity and survival and turn our empirical experience into a vacuum, a blotted out the contrivance that a combination of biological constraints and mechanistic physical laws, which together can be the natural complement of existential consciousness, and instead unravel all the actuality of existence, as a descriptive illusion. We thus tell ourselves an arcane story that existence itself is a just thermodynamic constraint, neutralising our very agency to do anything meaningful, spontaneously imaginative, creatively transformative or merely good as in Bertrand Russell’s dire warning.

Conscious: Etym Latin conscient ‘knowing with others or in oneself’ (from conscire ‘be privy to’) + -ous

When we turn to the actual definition of consciousness e.g. in Merriam-Webster we find that essentially ALL the definitions of consciousness are dealing with subjective experience!

Definition of consciousness
1a : The quality or state of being aware especially of something within oneself.
1b : The state or fact of being conscious of an external object, state, or fact
1c: **Awareness** especially: concern for some social or political cause:

"The organization aims to raise the political consciousness of teenagers."

2: The state of being characterized by **sensation, emotion, volition, and thought** : mind.

3: The **totality of conscious states** of an individual.

4: The **normal state of conscious life**. “he regained consciousness”.

5: The **upper level of mental life** of which the person is aware as contrasted with unconscious processes.

Francis Crick and Christof Koch acknowledge in Crick’s words that “Consciousness is the major unsolved problem in biology”, in his foreword to Koch’s (2004) “The Quest for Consciousness”. Koch (2018) in “What Is Consciousness?”, makes clear in his first sentence that: “Consciousness is everything you experience” thus acknowledging that it is the sum total of subjective experience. Koch makes clear in his discussion that their strategy is rather to define the NCC or neural correlates of consciousness, equivalent to the various easy functional problems of consciousness, deferring the hard problem of exactly what subjective consciousness is until these problems are solved, in the hope they will address the elephant in the room. But correlation is NOT causation, so an NCC doesn’t imply the brain is causally closed.

Chris Koch (2020) unveils another defence tactic in discussing the status of near death experiences, admitting physical materialism is just an assumption, but claiming it has a-priori evidential weight requiring “extraordinary, compelling objective evidence to the contrary” to overrule it based purely on its past successes in science and technology:

“I accept the reality of these intensely felt experiences. They are as authentic as any other subjective feeling or perception. As a scientist, however, I operate under the hypothesis that all our thoughts, memories, percepts and experiences are an ineluctable consequence of the natural causal powers of our brain rather than of any supernatural ones. That premise has served science and its handmaiden, technology, extremely well over the past few centuries. Unless there is extraordinary, compelling, objective evidence to the contrary, I see no reason to abandon this assumption”.

For all Chris’s charming romantic approach to reductionism (Koch 2012) this hypothesis underscores the dishonesty of neuroscientific materialism, that he should feel the need to adopt this position, because it places an illegitimate test on reality. We HAVE to assume causal closure of brain function, because of the historical success of classical deterministic science in other simpler areas, or a completely unestablished admitted “assumption” is arbitrarily declared to be true under an impossible burden of proof, to establish the contrary – a specific causal violation, which we know to be concealed in the edge of chaos dynamics correlated with the subjectively conscious condition.

How then does neuroscience turn the tables on this central signature of subjective existence, to claim it is exclusively a functional aspect of brain processing, however plausible it might seem, knowing we are biological beings with brains?

Gamez (2014) in “The measurement of consciousness: a framework for the scientific study of consciousness” makes this process clear by defining a set of interlocking definitions which a-priori define it to be so:

**D1. A platinum standard system** is a physical system that is assumed to be associated with consciousness some or all of the time.

A1. The normally functioning adult human brain is a platinum standard system.

A2. The consciousness associated with a platinum standard system **nomologically supervenes on the platinum standard system**. In our current universe physically identical platinum standard systems are associated with identical consciousness. (X is said to supervene on Y if and only if some difference in Y is necessary for any difference in X to be possible.)

A3. During an experiment on the correlates of consciousness, the consciousness associated with a platinum standard system is **functionally connected to its c-reports** about consciousness. (subjective reports)

L1. There is a **functional connection** between consciousness and the [neural]correlates of consciousness.

This series of claims is simply defining consciousness to BE integrated brain function by philosophical supervenience, using the easy problems of consciousness based on simple functionality, as shown in the figure below, where the experimental subject has simply become their functional brain!!
Fig 41: The subjectively conscious individual is reduced to a set of functional interactions monitored by calibrated instruments (Gamez 2014), in which the case report “I am conscious of a red hat” is reduced to an objective sentence thereby side-stepping the entire subjective nature of consciousness, in this case a-priori, without even citing any kind of brain process to support it.

If the brain were simply controlling the process and consciousness was just a marionette being pulled by our brain strings we would experience this as being passive travellers in the passenger seat of intentionality. This is clearly NOT the case, so we need to distinguish brain influence e.g. as a boundary condition shaping, but not fully determining outcomes, from the brain determining conscious states entirely. We need to acknowledge subjective consciousness is the puppet master of edge-of-chaos instability and certainly not conclude that the brain drives the boat of subjective consciousness in a causally determined manner. This is consistent with the view of the brain as a functional filter on consciousness that is participatory with subjective awareness in shaping the nature of conscious experience.

Note that, by citing psychedelics, I am also invoking a paradoxical objective biochemical role for inducing UNCONSTRAINED subjectivity, so this is a deep cosmological paradox we all need to take careful account of.

A Cosmological Comparison with Chalmers’ Conscious Mind

In espousing his philosophical view of naturalistic dualism David Chalmers’ central points in “The Conscious Mind” (1996) are as follows:

1. In our world, there are conscious experiences [which are irreducible to physical descriptions because subjectivity is categorically irreducible to any combination of functional inferences about the objective physical universe and/or the brain].
2. There is a logically possible [zombie] world physically identical to ours, in which the positive facts about consciousness in our world do not hold.
3. Therefore, facts about consciousness are further facts about our world, over and above the physical facts.
4. So materialism is false.

Rather than a philosophical view based on astute argument, I will take a complementary view of reality, embracing empirical observation for the objective physical aspect and empirical experience for the subjectively conscious volitional aspect. This means that empiricism carries direct evidential weight over logical discourse while preserving the empirical and theoretical basis of scientific inquiry and the veridical nature of existential experience.

In regard to the above, support 1, 4 and 3 (for other reasons), but remain unconvinced about 2. This is because “logically possible” is a philosophical conclusion that lacks an empirical basis in nature. Given a broad acceptance of 1 on the basis that the subjective phenomena are categorically different from any possible explanation in objective terms it remains unclear that a universe without conscious experience can become manifest as all our knowledge of the physical universe is gained through conscious experience of it. Nor is it empirically evident that such a “zombie” universe could display identical properties with living ecosystems if it did, since such a condition is unachievable.

David then takes a very cautious view, retreating to the very brink of materialism by asserting that consciousness is naturally supervenient to the physical, although not logically so, noting that this does not invoke Cartesian dualism:

So it remains plausible that consciousness supervenes naturally on the physical. It is this view — natural supervenience without logical supervenience — that I will develop. … The arguments do not lead us to a dualism such as that of Descartes, with a separate realm of mental substance that exerts its own influence on physical processes.

David then effectively asserts, and later explicitly assumes causal closure of the physical universe as a justification, on grounds of personal opinion rather than empirical evidence:
The best evidence of contemporary science tells us that the physical world is more or less causally closed: for every physical event, there is a physical sufficient cause. If so, there is no room for a mental “ghost in the machine” to do any extra causal work. A small loophole may be opened by the existence of quantum indeterminacy, but I argue later that this probably cannot be exploited to yield a causal role for a nonphysical mind.

I reject this point of view, based on the fact that: (1) quantum reality consists of causal process punctuated by quantum uncertainty and entanglement. (2) This is exacerbated by open system quantum chaos, inducing further entanglements because the kind of edge of chaos phase-coherence processing used by the brain becomes subject to butterfly effect sensitivity at tipping points in conscious processing where critical insights and decisions over uncertain outcomes are resolved. This has also invoked a reappraisal of the exclusiveness of sufficient, rather than final causes, because resolving quantum field problems, e.g. in the Feynman formalism involves implicit information from the future absorbers. Therefore the classical view of efficient causality central to the notion of classical causal closure remains unproven. To wager such a position in advance of scientific verification is a belief not a description of nature.

Chalmers describes his position as a form of property dualism:

The dualism implied here is instead a kind of property dualism: conscious experience involves properties of an individual that are not entailed by the physical properties of that individual, although they may depend lawfully on those properties. Consciousness is a feature of the world over and above the physical features of the world.

The position I am advancing, involving a complementarity between the subjective mind at large and the physical universe could also be described as a form of property dualism, but working in the scientific-existential paradigm, I describe it as asymmetric complementarity, following wave-particle, boson-fermion, and other biological complementarities, such as sperm and ovum. These are not considered to be “property dualistic”, as the complementarity is integral to the natural condition, or cosmological “design” as a whole in the case of cosmological symmetry-breaking.

For a design example, the four core quantum forces of nature display a particular type of broken symmetry (fig 29 lower left), which introduces a fractal design into the universe resulting in biological tissues and brains as climax structural outcomes, without assuming any form of teleology – theistic or anthropic.

Chalmers then advances the “plausibility” of consciousness nevertheless having an [entirely] physical basis, generated by contingent laws of nature such as the biological functionality of brain processing:

It remains plausible, however, that consciousness arises from a physical basis, even though it is not entailed by that basis. The position we are left with is that consciousness arises from a physical substrate in virtue of certain contingent laws of nature, which are not themselves implied by physical laws. This position is implicitly held by many people who think of themselves as materialists. ... Some people will think that the view should count as a version of materialism rather than dualism, because it posits such a strong lawful dependence of the phenomenal facts on the physical facts, and because the physical domain remains autonomous.

I shall reject this view both on multiple grounds: (1) It remains unestablished that quantum cosmology is physically autonomous as a whole or that the universe can become manifest without conscious observers. (2) Volitional autonomy is evidential to the conscious subject but no causal physical process such as a machine displays autonomy as such. (3) It results in a contradictory treatment of the subjective realm where Chalmers asserts that consciousness is irreducible but later, as we shall see, claims the phenomenal can be subtracted from volitional causality over the physical, when volition is manifest consciously as well as in behaviour and Chalmers’ arguments fractures the two, rendering the conscious awareness of volition to be a delusion and the physical manifestation in consciously motivated behaviour to have no causal basis. This is the classical materialist trap!

On the one hand we have the zombie establishing consciousness phenomena are categorically independent of the physical and on the other we have a similar argument making them subtractable from the causal, thus invoking a philosophical Catch 22.

Chalmers then indicates he will explore new fundamental properties and laws of consciousness, detailed in a major section of his work. Symbiotic existential cosmology solves this problem differently by associating subjective phenomena as complementary manifestations of physically dynamic properties of brain processing rather than parallel laws in their own right. I reserve my position on this claim because it invokes a type of analysis successful in the exploration of the physical world, because fermionic matter is granular because of the Pauli exclusion principle, leading
to the fractal material complexity of matter and hence biology. It is unclear such a “subjectively reductionistic” approach can be successful in the subjective realm, as subjectivity is not clearly subdividable in the same way, as is expressed as a noted feature of Eastern philosophy:

To bring consciousness within the scope of a fundamental theory, we need to introduce new fundamental properties and laws.

Chalmers cites physicist Steven Weinberg looking towards an explanatory chain from fundamental laws:

In his book Dreams of a Final Theory (1992), physicist Steven Weinberg notes that what makes a fundamental theory in physics special is that it leads to an explanatory chain all the way up, ultimately explaining everything. But he is forced to concede that such a theory may not explain consciousness. At best, he says, we can explain the “objective correlates” of consciousness. “That may not be an explanation of consciousness, but it will be pretty close”

Chalmers then cites two possible outcomes, citing proto-phenomenal properties in passing as a possible option:

There are two ways this might go. Perhaps we might take experience itself as a fundamental feature of the world, alongside space-time, spin, charge, and the like. That is, certain phenomenal properties will have to be taken as basic properties. Alternatively, perhaps there is some other class of novel fundamental properties from which phenomenal properties are derived. Previous arguments have shown that these cannot be physical properties, but perhaps they are nonphysical properties of a new variety, on which phenomenal properties are logically supervenient. We could call these properties protophenomenal. Most of the time, however, I will speak as if the fundamental properties are themselves phenomenal.

This leads to seeking a parallel with the elegance of physical laws. I would question this approach, as the subjective is so fundamentally different from the objective that modelling subjective phenomena on the success of physical laws invokes a subjective reductionism even if not through proto-phenomenal or proto-panpsychic means:

The case of physics tells us that fundamental laws are typically simple and elegant; we should expect the same of the fundamental laws in a theory of consciousness. ... To capture the spirit of the view I advocate, I call it naturalistic dualism. It is naturalistic because it posits that everything is a consequence of a network of basic properties and laws, and because it is compatible with all the results of contemporary science.

He notes that this could rather be what one might rather call dual-aspect monism, citing matter and energy as alternatives, but not the complementary wave-particle aspects of quanta. This is problematic because matter and energy are not complementary but functionally equivalent, for example in terms of $E = mc^2$:

I should also note that although I call the view a variety of dualism, it is possible that it could turn out to be a kind of monism. Perhaps the physical and the phenomenal will turn out to be different aspects of a single encompassing kind, in something like the way that matter and energy turn out to be aspects of a single kind.

In dealing with possible objections to his approach, Chalmers cites emergence as a foil while still involving materialism, noting however that it has to exceed the usual limits, for example on biologically emergent properties. I agree with Chalmers on this:

Sometimes it is argued that consciousness might be an emergent property, in a sense that is still compatible with materialism. In recent work on complex systems and artificial life, it is often held that emergent properties are unpredictable from low-level properties, but that they are physical all the same. ... If consciousness is an emergent property, it is emergent in a much stronger sense. There is a stronger notion of emergence, used by the British emergentists (e.g., Broad [1925]), according to which emergent properties are not even predictable from the entire ensemble of low-level physical facts. It is reasonable to say (as the British emergentists did) that conscious experience is emergent in this sense.

I agree with Chalmers rather than his description of Searle’s position although I admire Searle’s work:

Like me, Searle (1992) holds that consciousness is merely naturally supervenient on the physical. He allows that a zombie replica is logically possible, holding that consciousness is merely caused by states of the brain. But he denies that this is a variety of dualism, even property dualism. This might seem to be a mere terminological issue, but Searle insists that the ontological status of consciousness is the same as that of physical features such as liquidity, so the issue is not merely terminological.

We now come to the crux of the problem — the relationship between subjective conscious experience, volitional will and causal efficacy over the physical world:

A problem with the view I have advocated is that if consciousness is merely naturally supervenient on the physical, then it seems to lack causal efficacy. The physical world is more or less causally closed, in that for any given physical event, it seems that there is a
physical explanation (modulo a small amount of quantum indeterminacy). This implies that there is no room for a nonphysical consciousness to do any independent causal work. It seems to be a mere epiphenomenon, hanging off the engine of physical causation, but making no difference in the physical world.

Chalmers notes two responses to Thomas Huxley’s (1874) coining of the term epiphenomenalism, after observing frogs with cranial ablations still managing to jump out of a pool of water: Huxley (1874) advocated such a view, but many people find it counterintuitive and repugnant.

Chalmers’ two grounds – counterintuitive and repugnant are pejorative of conscious experience and fail to invoke the full scope of the grounds for the invalidation of epiphenomenalism. The fact that something is counterintuitive or repugnant obviously doesn’t mean it is not true. Newton’s laws of motion were first seen to be counterintuitive, but are true nevertheless in their domain of application. Likewise disease and death are repugnant but universal realities of existence. But that’s because incorrect criteria are being used. Neither of them carry the force of veridical affirmation from empirical experience of our volitional actions and decisions which are the “critical point”. Epiphenomenalism is invalidated by empirical experience because it fails the mutual affirmation test of subjectively conscious volitional agents. An argument, however astute, doesn’t carry the water of conviction against empirical observation, or experience.

It may seem “counterintuitive” or even “pretentiously naive” to trade off mutual affirmation between conscious biological organisms against the assumed physical causality of the entire universe, but this is a valid cosmological position, given the fact that, as far as we know, the physical manifestation of the universe can only be verified by conscious perception of its existence. The alternative to conscious volition is experiential and cosmological catatonia.

Chalmers acknowledges the mysterious nature of causation in rejecting claims of a full formal epiphenomenalism citing the possibility of a breakdown in our classical notions of causality:

In responding to this, I will pursue a two-pronged strategy. First, it is not obvious that mere natural supervenience must imply epiphenomenalism in the strongest sense. It is clear that the picture it produces looks something like epiphenomenalism. Nevertheless, the very nature of causation itself is quite mysterious, and it is possible that when causation is better understood we will be in a position to understand a subtle way in which conscious experience may be causally relevant. ... On the second prong, I will consider the reasons why epiphenomenalism might be found unpalatable, and analyze their force as arguments.

In questioning causality Chalmers first cites Humean causation, upon which all it is for A to cause B is for there to be a uniform regularity between events of type A and events of type B, or a slightly more restrictive form in which any nomic (or lawful) connection suffices. Chalmers see these as inadequate and demurs that many conscious individuals will attribute such correlations to be causes when they may not be. He also fairly rejects overdetermination – the notion that both subjective and objective causes can come to bear in parallel on the same effect or behaviour.

Chalmers acknowledges that there are two classes of facts that do not supervene logically on particular physical facts: facts about consciousness and facts about causation and that these two may be linked:

A third strategy rests with the very nature of causation itself. We saw in Chapter 2 that there are two classes of facts that do not supervene logically on particular physical facts: facts about consciousness and facts about causation. It is natural to speculate that these two failures might be intimately related, and that consciousness and causation have some deep metaphysical tie.

A proposal like this has been developed by Rosenberg (1996), who argues that many of the problems of consciousness are precisely paralleled by problems about causation. He argues that because of these parallels, it may be that experience realizes causation, or some aspects of causation, in the actual world. On this view, causation needs to be realized by something in order to support its many properties, and experience is a natural candidate. If this is so, it may be that it is the very existence of experience that allows for causal relations to exist. Of course, this proposal is extremely speculative, and faces some problems. For a start, it seems to lead to a version of panpsychism the view that everything is conscious, which many find counterintuitive.

This is an extremely important point because the only evidence we have for classical causality is through our conscious experience of the universe in the affairs of the world around us. The laws of physics, both classical and quantum, contain no arrow of time upon which sufficient causes can be based and our only theoretical evidence for it comes from the stochastically driven second law of thermodynamics, with quantum entanglement having the spooky implications of retrodiction also imputing final causes. It is thus true (1) that the only way the physical universe actually becomes manifest is through our conscious experience of it and (2) that the laws of quantum mechanics lead to
superimposed quantum states and the potential for Schrödinger cat paradox multiverses, which our conscious experience may play a key part in resolving. But as Chalmers points out this leads to panpsychism:

There is of course the threat of panpsychism. I am not sure that this is such a bad prospect — if phenomenal properties are fundamental, it is natural to suppose that they might be widespread — but it is not a necessary consequence. ... An alternative is that the relevant properties are protophenomenal properties. Either way, this sort of intimate link suggests a kind of causal role for the phenomenal.

Nevertheless he concedes that his view of natural supervenience feels epiphenomenalistic. However, he then mounts an attempt to marginalise the consequences:

Some people ... may be tempted by an interactionist variety of dualism, in which experience fills causal gaps in physical processes. Giving in to this temptation raises more problems than it solves, however. For a start, it requires a hefty bet on the future of physics, one that does not currently seem at all promising; physical events seem inexorably to be explained in terms of other physical events. It also requires a large wager on the future of cognitive science, as it suggests that the usual kinds of physical/functional models will be insufficient to explain behavior. But the deepest problem is that this view may be no better at getting around the problems with epiphenomenalism than the view with causal closure, for reasons I will discuss shortly [the assumed ability to subtract the phenomenal from the causal].

He then mounts a critique of the ability of the quantum universe to alter the classical causality of brain states, on two key fronts (1) quantum uncertainty and (2) collapse of the wave function:

(1) The only form of interactionist dualism that has seemed even remotely tenable in the contemporary picture is one that exploits certain properties of quantum mechanics. There are two ways this might go. First, some have appealed to the existence of quantum indeterminacy a nonphysical consciousness might be responsible for filling the resultant causal gaps, determining which values some physical magnitudes might take within an apparently "probabilistic" distribution (e.g., Eccles 1986). Although these decisions would have only a tiny proximate effect, perhaps nonlinear dynamics could amplify these tiny fluctuations into significant macroscopic effects on behavior. ... This is an audacious and interesting suggestion, but it has a number of problems. First, the theory contradicts the quantum-mechanical postulate that these microscopic "decisions" are entirely random, and in principle it implies that there should be some detectable pattern to them—a testable hypothesis. Second, in order that this theory allows that consciousness does any interesting causal work, it needs to be the case that the behavior produced by these microscopic decisions is somehow different in kind than that produced by most other sets of decisions that might have been made by a purely random process.

(2) A second way in which quantum mechanics bears on the issue of causal closure lies with the fact that in some interpretations of the quantum formalism, consciousness itself plays a vital causal role, being required to bring about the so-called "collapse of the wave function." This collapse is supposed to occur upon any act of measurement; and in one interpretation, the only way to distinguish a measurement from a non-measurement is via the presence of consciousness. This theory is certainly not universally accepted (for a start, it presupposes that consciousness is not itself physical, surely contrary to the views of most physicists), and I do not accept it myself, but in any case it seems that the kind of causal work consciousness performs here is quite different from the kind required for consciousness to play a role in directing behavior. It is unclear how a collapse in external perceived objects allows consciousness to affect physical processing within the brain; such theories are usually silent on what happens to the brain during collapse. And even if consciousness somehow manages to collapse the brain state, then all the above remarks about apparently random processes and their connection with behavior still apply.

Both these questions are extensively addressed in this chapter of the monograph. There is no empirical evidence that brain processes are causally closed. Shepherd (2017) points out, that the neuroscientific threat to free will has not been causally established, particularly in the light of Schurger et al. (2012, 2015), also discussed herein. It is illegitimate to assume that any connectedness between subjective and objective in quantum uncertainty would result in gross or even detectable variations from pseudo-randomness, particularly if the relationship is one complementary to the physical universe as a whole. We already know that, in the absence of wave function collapse third party quanta do invoke compounded entanglements. Many such complex interactions, particularly integral transforms, involving a convolution integral of multiple components are likely to induce pseudo-random statistics rather than distortions of the gross statistics. Indeed two entangled particles are able to display correlations violating Bell’s inequality while the statistics of each appears random to an observer only measuring one.
in this space with a conformal quantum field theory like standard particle field theories on the boundary. (c) Entanglement plays a pivotal role because when the entanglement between two regions on the boundary is reduced to zero, the bulk space pinches off and separates into two regions. (d) In an application to cosmology, entanglement on the horizon of black holes may occur if and only if a wormhole in space-time connects their interiors. Einstein and Rosen addressed both worm-holes and the pair-splitting EPR experiment. Juan Maldacena sent colleague Leonard Susskind the cryptic message ER=EPR outlining the root idea that entanglement and worm-holes were different views of the same phenomenon (Maldacena and Susskind 2013). (e) Time may itself be an emergent property of quantum entanglement (Moreva et al. 2013). An external observer (1) sees a fixed correlated state, while an internal observer using one particle of a correlated pair as a clock (2) sees the quantum state evolving through two time measurements using polarization-rotating quartz plates and two beam splitters PBS1 and PBS2.

Another example of a many-to-many correspondence is the holographic principle in M-theory or AdS/CFT Correspondence (Maldacena 1998) which gives rise to a duality between a quantum field theory on the “boundary” surface enclosing a region of spacetime, and spacetime geometry in the interior “bulk” anti-deSitter space. This is precisely the duality we see in optical holograms, between the interference fringes on the 2-D hologram and the reconstitutable 3-D image it was derived from, by additive coherent light ray tracing. Attention has been drawn to this duality as an oracle to discuss the assumed “binding problem” of how brain processes generate the coherence of subjective experience (Elliot 2019). This has led to it being applied as an oracle for proposals e.g. about non-physicalist concepts such as panpsychism, involved in Chalmers’ *meta problem* of consciousness. However, because this is a bijective duality, these tend to be used to reinforce physicalist arguments. In the author’s view the underlying complementarity supporting conscious subjectivity in the physical universe is not such a bijective duality, as it provides complementary roles for subjective consciousness to seamlessly resolve uncertainties in the unstable dynamics of edge-of-chaos processes in brain dynamics. These complementary inputs to the ongoing physical state through volition interleaving with brains states in the neural correlate of consciousness are not possible in a bijective duality. Also the AdS/CFT Correspondence is a purely objective physical theory that does not directly address the hard problem.

Moreover, in regard to the collapse of the wave function, the idiosyncrasy of single quantum instances displays unmitigated liberty, except in the context of repeated measurements of the same kind, in which the probability distribution is normalised by its asymptotic approach to the wave function real power $\Psi^* \Psi$, in which the empirical wave function is an integral representation of entanglement at large. In the biological context no such repeated measurements occur so there is a close correspondence between quantum idiosyncrasy, the unpredictability of brain states at unstable tipping points and the uncertain and unpredictable nature of open environment survival crises. As non-IID (independent and identically distributed measurement) quantum processes do not necessarily converge to the classical, the need to prove the case for subjective interaction is no stronger than the need for materialism to prove its case for causal closure, which remains non-evident empirically.

Chalmers then begins to explore the futility of invoking spooky quantum pseudo-particle states or subjective “psychons”, as these don’t in themselves demonstrate experiential properties:

*Imagine (with Eccles) that “psychons” in the nonphysical mind push around physical processes in the brain, and that psychons are the seat of experience. We can tell a story about the causal relations between psychons and physical processes, and a story about the causal dynamics among psychons, without ever invoking the fact that psychons have phenomenal properties.*
This brings us to the nub of Chalmers’ critique, with which I disagree on empirical grounds:

_Any view that takes consciousness seriously will at least have to face up to a limited form of epiphenomenalism. The very fact that experience can be coherently subtracted from any causal account implies that experience is superfluous in the explanation of behavior, whether or not it has some subtle causal relevance._

I see this conclusion as the core of a dilemma all forms of philosophical causal reasoning apply to conscious volition in particular. It is evident that core physical theories defining the laws of nature, from Newton’s laws of motion to cosmological TOEs, or theories of everything, are not explicitly about causality, but the description of nature through symmetries, symmetry-breaking and equational relationships that successfully define characteristics of nature we can empirically observe and confirm, such as the doubling of the bending of light around the Sun due to the Sun’s gravitational field, confirming Einstein’s theory of general relativity.

To make a claim on logical grounds that the subjective “phenomenal” aspect can be subtracted from the causal is not a valid comment about the status of subjective experience but the particular way the philosophical discourse is treating causality. Science is a product of theoretical predictions and confirming empirical observations. Neither is the theory a cause of the observations but a natural description of the circumstances predisposing to them. It is thus empirical observation that is the standard of validating natural science and it is the same standard of empirical experience that defines the natural investigation of the subjective domain. In this regard, the standard is and has to be veridical affirmation by empirical experience, not a logically astute argument to the contrary in defiance of subjective evidence.

Chalmers then repeats his mischaracterisation as the common objection:

_The most common objection to epiphenomenalism is simply that it is counterintuitive or even “repugnant.” Finding a conclusion counterintuitive or repugnant is not sufficient reason to reject the conclusion, however, especially if it is the conclusion of a strong argument._

In my view this is an incorrect portrayal of the central existentially experienced objection, which is that our conscious existential experience is centrally and unambiguously that of being an intentional agent acting in he physical world to further our physical survival and social success. We do this by a coherent integrated experience of responding to circumstances over which we have partial control, focusing our attention and volitional will of making decisions and carrying out ensuing physical actions with purposive intent, consciously aware of our intentions and the strength of our wilful determination, in exactly the same way we process and pay attention to our sensory experience.

We are thus aware and aware that we are aware, and aware that we intend and aware that we are aware that we intend and aware that we act wilfully, intentionally and often decisively and tenaciously resist attempts by other agents and the vagaries of the world at large to impede our autonomy as conscious volitional living beings functioning as physically causal agents. To characterise the inconsistency between this view of organismic conscious existential survival in the natural world as merely because the unverified claim of epiphenomenalism is counterintuitive on the one hand is to attribute it to a failure of astuteness and on the grounds of repugnance on the other hand to a failure of our wishful emotions to recognise the stark limitations of our sense of autonomous survival against the odds. This amounts to a philosophical misrepresentation of the realities.

Human perception is described as veridical because it evokes an experience of the world around us that is \ more true to reality than the incoming sensory information. Our perception of our volition is likewise veridical, to give us a truthful expression of the way our conscious attentive will is securing our survival in real time. To concede sensory perception is veridical and to deny it entirely for our perception of our volition is a contradiction – in Gilbert Ryle’s stark terminology – a category error. If epiphenomenalism were actually, in any qualitative, or even quantitative respect true, our veridical perception would inform us that we are mere passengers accompanying our action without any veridical sense of our volition.

Chalmers then goes into the counter-objections in detail:

_More detailed objections to epiphenomenalism fall into three classes: those concerning the relationship of experience to ordinary behavior, those concerning the relationship of experience to judgments about experience, and those concerning the overall picture of the world that it gives rise to._
The first is an attempt at finesse. Chalmers demurs on veridical volition because he attributes it to mistaken regularity or an indirect nomic (lawful) connection, ultimately attempting to dispense with it as merely an intuition which cannot have the force of an astute philosophical argument:

We are much more directly aware of experience and of behavior than we are of an underlying brain state; upon exposure to systematic regularities between experience and behavior, it is natural that a strong causal connection should be inferred. Even if the connection were only an indirect nomic connection due to relations to the underlying brain state, we would still expect the inference to be made. So this intuition can be explained away. In any case, this sort of objection cannot be fatal to the view, as it is an intuition that does not extend directly into an argument. It is an instance of the merely counterintuitive.

The second however he concedes is both worrying and potentially fatal. My position is that it is manifestly fatal, because, Chalmers concedes it is incompatible with our knowledge of experience, as I have already discussed:

The second class of objections is more worrying. It seems very strange that our experiences should be irrelevant to the explanation of why we talk about experiences, for instance, or perhaps even to our internal judgments about experiences; this seems much stranger than the mere irrelevance of my pain to the explanation of my hand's withdrawal. ... Some claim that this sort of problem is not merely counterintuitive but fatal. For example, it might be claimed that this is incompatible with our knowledge of experience, or with our ability to refer to experiences. I believe that when these arguments are spelled out they do not ultimately gain their conclusion, but these questions are certainly challenging.

As noted the basis of my objection is that Chalmers' resort to the use of astute causal argument, while dismissing veridical awareness of volition in action as intuitive by comparison with robust philosophical argument is fatal because argument is a symbolic expression of a very narrow subset of subjective experience and can't pretend to account for it as a whole. But the core objection is that this violates the principles of verification by empirical experience that are the foundation of the "scientific" exploration of the subjective.

Chalmers is ever astute and acknowledges that some people, including myself will find his position to be a fatal flaw:

I do not describe my view as epiphenomenalism. The question of the causal relevance of experience remains open, and a more detailed theory of both causation and of experience will be required before the issue can be settled. But the view implies at least a weak form of epiphenomenalism. Some will find that nevertheless the epiphenomenalist nature of this position is a fatal flaw. I have some sympathy with this position, which can be seen as an expression of the paradox of consciousness: when it comes to consciousness, it can seem that all the alternatives are bad. However, I think the problems with all other views are fatal in a much stronger way than the counterintuitiveness of this one.

Summarising his position he states his four key assumptions:

The argument for my view is an inference from roughly four premises:
1. Conscious experience exists.
2. Conscious experience is not logically supervenient on the physical.
3. If there are phenomena that are not logically supervenient on the physical facts, then materialism is false.
4. The physical domain is causally closed.

Chalmers finally states his naturalistic dualism succinctly:

Then there is my view, which accepts premises (1), (2), (3), and (4): vii. Naturalistic dualism. Consciousness supervenes naturally on the physical, without supervening logically or "metaphysically."

My position is to deny (4) on the basis of the veridical nature of empirical experience, which is both inconsistent with causal closure of the physical and is the foundational principle of the pursuit of knowledge in the subjective, just as replication by empirical observation is pivotal to objective science. This is so because verification between subjectively conscious agents depends on mutual veridical affirmation of their common status as volitional conscious agents, which is what all sane human beings, not subverted by implicit belief in materialism assert, consistent, as previously noted, with conscious observation of the universe being necessary and integral to the ability to establish and hence manifest its existence.

To subsume veridical experience of volition to refutation by philosophical argument, on the basis that phenomena can be subtracted from causality and hence that volition can be discounted as merely "intuition" rather than empirical experience, is as fallacious as attempting to mount a philosophical argument that the the doubling of the bending of light around the Sun due to the Sun's gravitational field does not mean that we should accept relativity because the general field equation \( G_{\mu\nu} = \Lambda g_{\mu\nu} + \kappa T_{\mu\nu} \) is simply a numerical expression describing a functional relationship and
not a causal statement, especially having conceded that: “there are two classes of facts that do not supervene logically on particular physical facts: facts about consciousness and facts about causation”.

And Chalmers has one very astute final observation:

There is also an eighth common view, which is generally underspecified: viii. Don’t-have-a-clue materialism. “I don’t have a clue about consciousness. It seems utterly mysterious to me. But it must be physical, as materialism must be true.” Such a view is held widely, but rarely in print (although see Fodor 1992).

Ultimately we come back to his persistent, and as detailed in my view, incorrect contention that the phenomenal component can be subtracted from the causal, when the issue is that volition is both experientially phenomenal and physically efficacious as we know experientially, and thus can’t validly be subtracted from the phenomenal aspect:

The deepest reason to reject options (iv) and (vi) is that they ultimately suffer from the same problem as a more standard physics: the phenomenal component can be coherently subtracted from the causal component.

It should be noted that Chalmers does seriously acknowledge the potential relevance of panpsychism as a possible solution, as I have:

Personally, I am much more confident of naturalistic dualism than I am of panpsychism. The latter issue seems to be very much open. But I hope to have said enough to show that we ought to take the possibility of some sort of panpsychism seriously; there seem to be no knockdown arguments against the view, and there are various positive reasons why one might embrace it.

In “The Meta Problem of Consciousness” Chalmers (2018) discusses the meta-problem of explaining why we think consciousness poses a hard problem, or in other terms, the problem of explaining why we think consciousness is hard to explain. In this he addresses phenomenal reports: the things we say about consciousness (that is, about phenomenal consciousness). Problem reports are a fact of human behaviour. Because of this, the meta-problem of explaining them is strictly speaking one of the easy problems of consciousness. Chalmers contrasts illusionism: the view that consciousness is or involves a sort of introspective illusion, while realist think conscious experiences are real direct phenomena. Chalmers notes that because illusionism is held by a minority, it makes sense to understand the problem as the meta-problem and focus on solving it.

This invokes a research program involving (i) experimental philosophy and psychology, linguistics, and anthropology studying subjects’ judgments about consciousness, (ii) work in psychology and neuroscience on the mechanisms that underlie our self-models and bring about problem reports and other phenomenal reports, (iii) work in artificial intelligence and computational cognitive science on computational models of phenomenal reports, yielding computational systems that produce reports like ours, and (iv) philosophical assessment of potential mechanisms, including how well they match up with and explain philosophical judgments about consciousness.

Chalmers is principally targeting a complementary problem to the hard problem which can help elucidate these dichotomies, but it applies more generally to the sense that it concedes the role of subjective reports and poses questions of how these can be rationalized in philosophy and particularly in neuroscience, where subjective experience and subjective reports tend to take second tier to hard physical data on brain states in so far as they can unambiguously be elucidated in conscious subjects.

Chalmers uses this approach to discuss theories of consciousness such as IIT Tonioni & Koch (2015) that integrated information is the basis of consciousness, noting that there is no obvious link between integration of information and these judgments. Since, according to IIT, for every system with high integrated information there will be a computationally isomorphic simulated system with zero integrated information. He applies the same challenge to global workspace theories (Baars, 1997), where the basis of consciousness is a global workspace that makes information available to other systems in the brain. How does the global workspace help to explain our judgments about consciousness? Again, it is not obvious how the workspace explains problem reports involving a sense that consciousness is puzzling.
Higher-order thought theories (Rosenthal, 2002) say that conscious states are those that are the objects of higher-order thoughts. But again it is not clear how mere higher-order thoughts explain why we report mental states as being conscious nor how higher-order thoughts explain why we report conscious states as puzzling.

He notes that it can apply to quantum theories (Hameroff and Penrose, 1996; Stapp, 1993) that say there is a strong tie between wave-function collapse and consciousness. Does wave-function collapse play a central role in explaining reports of consciousness? One might worry that the answer is no, since wave-function collapse only selects one of multiple branches of the wave function. If a subject says ‘I am conscious’ in the selected branch, it is arguable that the subject also says ‘I am conscious’ in many unselected branches. If so it looks as if there may be an explanation of the reports which is prior to wave-function collapse.

The challenge also applies to panpsychist theories which hold that human consciousness is some sort of combination of micro-consciousnesses in fundamental entities. The combination problem for panpsychism is to explain how micro-consciousnesses can combine to yield our consciousness, now extended to explain how these combination states play a central role in bringing about reports of consciousness.

In considering introspective models which attribute primitive relations to qualities and contents, Chalmers, notes that introspection is especially central to Graziano’s (2013) AST model in which ‘awareness is a model of attention’ and doubts attention is the right choice for the complex relation that is being modelled, suggesting instead that it is more generally a model of representation.

Chalmers’ own view with which I have complete agreement is best quoted for its sheer lucidity:

> My own tentative view is that the most promising solution to the meta-problem lies in primitive relation attribution and the sense of acquaintance: our experiences seem to primitively acquaint us with qualities in the environment, and these experiences are themselves objects of acquaintance. I favour a realist theory of consciousness where consciousness does in fact involve acquaintance in this way. This line tends to suggest a combination of a first-order representational view of consciousness (consciousness involves immediate awareness of worldly properties) with a self-representational view of consciousness (consciousness involves immediate awareness of itself). I do not think this sort of awareness is reducible to brain mechanisms, but one might expect some sort of corresponding structure at the level of brain mechanisms.

Uziel Awret (private communication) notes the need to distinguish the ground of subjectivity from the properties:

> The intransitive properties of consciousness those common to all conscious states, systems and creatures like some rudimentary ‘there is something it is like’ to be such systems, or to be in such states, and are usually referred to as ‘phenomenal character’ (some would add privacy and intentionality). The transitive properties of consciousness are those that distinguish between different conscious states like blue and red or a square and a triangle and referred to as ‘representational content’. Conscious mental states have both structural and non-structural properties including aspects of the representational content that are more structural lending themselves to scientific investigation and non-structural aspects of phenomenal character that seem less accessible to scientific investigation.

The question - What is it about consciousness that is made necessary by the way the brain is? Should be broken in two:

1) What is it about the structural properties of consciousness that are necessitated by the way the brain is?
2) What is it about phenomenal character that is necessitated by the way the brain is?

In symbiotic existential cosmology I am focusing on phenomenal properties as intractable to the hard problem, the Darwinian panpsychism likewise refers only to primitive subjectivity in general with an evolutionary model, where consciousness as we know it, is an emergent property induced by the eucaryote endosymbiosis when the membrane became freed for informational excitability and social signalling via neurotransmitters. The transitive structural properties have to be seen in the context of how the brain operates neurodynamically.

Consistent with his view in “The Conscious Mind”, Chalmers and McQueen (2021) have philosophically explored a variety of scenarios in which consciousness could collapse the wave function in realistic circumstances, dealing specifically with the paradoxes arising from superposition of the observer as a quantum system. They explore various options including super-selection rules forcing the elimination of some components of the superimposed state and super-resistance models in which a threshold causes collapse. Chalmers and McQueen adopt IIT as a basis for their analysis, but this introduces abstractions, in which consciousness is associated with a discrete Markov formulation.
consistent with observed features of conscious existence but not possessing subjectivity as such. This leads to a
description where we are really analysing features of consciousness in objective brain dynamics rather than subjective
experience to establish causality.

Summarising the difference between Chalmers & McQueen’s approach and Symbiotic Existential Cosmology, we
compare four philosophical objections they cited and addressed:

(a) What is a superposed state of consciousness? Chalmers & McQueen are stating a functional IIT model of
"consciousness", so they state such a situation is possible, in conflict with our veridical experiences. The symbiotic
cosmology concurs with the veridical conclusions of subjective conscious, and with Wigner’s position that this is
"absurd", although it doesn’t rule out bodies and brains being quantum objects.

(b) How do quantum effects make a difference to macroscopic brain processes? Chalmers & McQueen do not assume
quantum sensitivity in the "warm" brain, stating that "we have treated brain states as superpositions of numerous
decoherent eigenstates, which themselves may involve relatively classical processing in neurons". Symbiotic
cosmology accepts the need for brain states to have at least some quantum sensitivity and presents evidence for this.
Critically it does not require the kind of isolation that current quantum computing methods do, by either isolating
themselves from any significant decoherence, or by adiabatic quantum computing at very low temperatures
following a series of zero energy configurations. All it requires in symbiotic cosmology are critically poised cellular
states that become sensitive to individual quantum fluctuations in critically poised ion channels, initially in individual
eucaryote single celled organisms. Later this process can become coupled in animal brains, through critically-poised
whole brain states as coherent “excitons” distinguishable from one another through phase coherence discrimination
being sensitive to threshold transitions in single neurons and their ion channels.

(c) What about macroscopic superpositions? Chalmers & McQueen hedge their bets, firstly suggesting machines
might also be conscious: "For a start, if a correct theory of consciousness associates these devices with some amount
of consciousness (as may be the case for IIT), then the devices will collapse wave functions much as humans do." Then
following it with a catch-all: "Even if these devices are not conscious, it is likely that typical measuring devices will be
entangled with humans and other conscious systems, so that they will typically be in a collapsed state too."

(d) What about the first appearance of consciousness in the universe? This is a problem for their particular models.
They seek to solve this with an approximate super-resistance model: "For eons, the universe can persist in a wholly
unconscious superposed state without any collapses. At some point, a physical correlate of consciousness may emerge
in some branch of the wave function, yielding a superposition of consciousness and unconsciousness (or their physical
correlates) with low amplitude for consciousness".

The symbiotic cosmological model is panpsychic so the subjective element is included from the cosmic origin. Indeed it
would then be possible for the universe to be involved in collapse of its own wave functions and develop a course of
history, without human observers, which is a key strength of the theory, but in the case of the experimental quantum
measurements of the types we are dealing with in the cat paradox, there is a specific interaction between human
organismic consciousness and the experiment, so collapse could be evoked by the human observer’s consciousness.
This may apply more to (a) situations in how the brain performs its own phase front coherence processing between
wave voltages and discrete action potentials and (b) in unstable tipping points in prisoners’ dilemma paradoxes in open
environment situations, in which there are real or potential threats to survival, as in fig 34.

Penrose (2014) suggested a similar process involving gravitationally induced collapse, in which a quantum state
remains in superposition until the difference of space-time curvature attains a significant level. However all quantum
entanglement experiments on Earth take place successfully in an environment where gravitation is present.

Chalmers also notes that their general view might prove causal closure of consciousness: “The same might apply to the
connection between consciousness and non-conscious processes in the brain: when superposed non-conscious
processes threaten to affect consciousness, there will be some sort of selection. In this way, there is a causal role for
consciousness in the physical world” (Chalmers 2003, pp.262-3). This is very close to Stapp’s proposal above and the
approach adopted in this cosmology, and to neuroscience notions of peripheral rather than coherent conscious
processing in the brain, but it is being applied to collapse of the brain as a quantum superimposed state, not the
subjective mind.
While this is provocative of an attempt to confirm a causal basis for volitional will, the difficulty here is that quantum observation depends on the subjective experience of the observer, not just integrated brain states we might accept as being the objective correlates of subjectivity, so the explanation of the theory is led into dealing with potential paradoxes of physical collapse that are tied to objective brain states rather than subjective experience, which is the veridical reality generating the unique history of the universe, rather than superimposed multiverses. In the author's view Albert's critique is pivotal – human society remains impeded from exploring the actual nature of unconstrained conscious states and only with the full exploration of these and collecting veridical accounts of visionary states can we begin to assess the nature and cosmological status of subjectivity.

To coin an analogy from the mathematical world, integral transforms such as the Fourier transform convert localisable time-amplitude information into frequency information, creating a mapping from all states into a complementary configuration space. If the subjective basis of experience is a transform of the entire physical universe under the encapsulated constraints of the organismic brain, it may have a form of predictive power without possessing any localisable or separable features of the objective universe. Effectively it would be sampling the entire scope of quantum entanglement throughout the universe and throughout space-time, and through the consciousness of other sentient organisms, echoing Huxley's notion of organismic consciousness being a filter upon the “mind at large”. Brain processing already appears to use transforms as integral to its wave processing, so the analogy is highly pertinent.

**Minimalist Physicalism and Scale Free Consciousness**

Fields, Glazebrook & Levin (2021) take a very different approach from naturalistic dualism, they call Minimalist Physicalism MP, which bypasses classical physicalism and seeks to incorporate consciousness as a type of observer-world relationship based only on principles of quantum information that is claimed on empirical grounds to be scale-free and then regards basal systems which they describe as running all the way down the evolutionary tree not just to single-celled eucaryotes and Symbiotic Existential Cosmology does of consciousness proper, but to the first prokaryote and in principal to abstract quantum systems, thus equating with the primitive subjectivity of SEC.

> Here, we provide a straightforward construction of fundamental, scale-free features of consciousness and cognition within a generic description of system-environment information exchange as bipartite physical interaction. We term this description “minimal physicalism” (MP) as it makes no assumptions about classical computational architecture, in particular, no assumptions about network architecture, and no physical assumptions beyond those of quantum information theory.

A well-established literature extends the concepts of consciousness — the capability of having phenomenal experiences, however basic or minimally structured—and cognition to phylogenetically basal systems, including free-living or facultatively communal unicells, whether pro- or eukaryotic, plants, and aneural or lower (than mammals, birds, or cephalopods) complexity neural metazoa, particularly flat-worms.

> Like the extension of these concepts from humans to nonhuman mammals and then to big-brained non-mammals, this extension to more basal organisms was initially motivated by observations of communication, learning, and behavioral flexibility, and by functional similarities between the mechanisms supporting information processing and learning in basal systems and in more complex systems such as mammals. Both molecular and bioelectric mechanisms of cellular information processing, memory, communication, and error correction are, in particular, evolutionarily ancient and conserved across phylogeny.

Like the Solms-Friston model of the conscious brain, this utilises Markov blankets which from a statistical thermodynamic interface across the cell membrane:

> As the locus of molecular, thermodynamic, and bioelectric exchange with the environment, the cell membrane implements a Markov Blanket (MB) that renders its interior conditionally independent of its exterior; this allows the cell to be described as a Bayesian active inference system. The utility of this Bayesian approach has been demonstrated in simulation models of cell–cell communication driving morphogenesis.

The information that transits the cell membrane, and is thereby encoded on the MB implemented by the membrane, is actionable or meaningful to the cell: it “makes a difference” to what the cell does. When the cell's interaction with its environment is represented as measurement, what renders the information meaningful becomes clear: meaning requires measurement with respect to some reference frame. Viewed abstractly, a reference frame is a value, or more generally a vector, from which deviation is detectable.

This notion of consciousness is an interactive “consciousness of” rather than subjective consciousness as a cosmological complement to the physical universe and in that sense claims to be able to pose the hard problem for example in single cellular prokaryotic systems where the feedback processes can all be identified. I have some
reservations about whether this is actually testing the hard problem in its original sense or not. Prokaryote membranes are dominated by respiratory or photosynthetic free energy production, unlike eucaryote membranes which are available for perception and social signalling.

**These cross-scale similarities motivate a hypothesis that consciousness and cognition are scale-free phenomena that characterize all living systems. If consciousness and cognition are scale-free phenomena, we can expect them to be supported by common, scalable mechanisms that can be investigated in whatever systems permit the most straightforward theoretical and experimental approaches.** Phylogenetically basal organisms, in vitro preparations, and synthetic constructs provide obvious advantages of manipulability and environmental control. Studies of basal systems are, moreover, especially effective in overcoming the intuitions that give rise to the hard problem, as they allow the mechanisms via which single cells and relatively simple multicellular organisms navigate their environments—mechanisms that they share with most of our cells, and with us as organisms—to be investigated in detail.

I nevertheless think the approach is potentially powerful and deeply informative:

*Our interest here has not been ontological, but rather empirical: to derive as much as possible from the simple assumption that consciousness involves information exchange subject to the constraints of quantum information theory. We have shown that the MP framework that follows from this assumption allows many of the key features of consciousness to be understood as simple, scale-independent consequences of thermodynamics.*

It has led to a description of neurons as hierarchies of quantum reference frames (Fields, Glazebrook & Levin 2022). And has also led to intriguing conclusions on the limits of metabolic limits on classical information processing by biological cells, implying quantum processing in the cell interior (Fields & Levin 2021):

*Biological information processing is generally assumed to be classical. Measured cellular energy budgets of both prokaryotes and eukaryotes, however, fall orders of magnitude short of the power required to maintain classical states of protein conformation and localization at the A, fs scales predicted by single-molecule decoherence calculations and assumed by classical molecular dynamics models. We suggest that decoherence is limited to the immediate surroundings of the cell membrane and of inter-compartmental boundaries within the cell, and that bulk cellular biochemistry implements quantum information processing.**

**Defence of the real world from the Case Against Reality**

I have said that while consciousness is primary, the universe is necessary. Thus we know the universe only through our conscious experiences of it, but its stability and structure is necessary for the existence of conscious life.

Don Hoffman in “The Case Against Reality” (2020) makes the evolutionary case that perception is not veridical in the sense of optimally truthful, but evolved by natural selection. Yes cat’s eyes are designed to hunt, with low colour specificity and reflecting retinas to hunt at night with those almond shaped pupils, and insect vision may be even more prosaic but although human perception has evolved by natural selection, human selection has been evolving towards the most generalised adaptable attributes because the human niche is strategically omnivorous of reality. Human perception has thus been consciously naturally selected to be veridical. Visual reality out there is a chaotic jumble of photons that have no colour only wavelength and particulate energy. Human perception has evolved to give us the most socially and environmentally discerning visual theatre of 3-D, size-conserved, seamlessly integrated experience. Yes, consciousness is also a type of internal model of reality constructed by the brain through evolution, but it is a veridical masterpiece and it is not just a model, but an outstanding manifestation of the ground of conscious being in subjective cosmology. There is no better way of looking at so called “physical reality” that we can possibly imagine!!

But there is another lesson lurking here! The case is not against veridical perception itself, but the notion of a “real world” that is independent of our perceptions of it, rather than an elusive quantum reality, in which the universe is manifest through our evolved consciousness of it (Mark et al. 2010, Hofmann et al. 2015, Fields et al. 2017, Prakash et al. 2020). The interface theory of perception (ITP) is a filter theory like Huxley’s “Doors of Perception”, of how the brain constructs our internal model of reality. While I agree with the central point that our perception is a conscious construction and we need to understand it as such, if the real world doesn’t exist then genes aren’t real. Natural selection is not either. The evolutionary whole ball game over billions of years depends on the stability of the real world quantum universe over these same time scales or we wouldn’t even have a fitness function to select naturally towards. When we are dreaming, things do change like that, so we can have some sort of understanding of the implications and how completely impossible everything would be without the real world being real.
Consciousness and the Quantum: Putting it all Back Together

In summary here is my tentative position about how free will interacts with the universe and causality in detail. This is a working hypothesis, not a proven conclusion but I think it has a counter-intuitive twist that may explain everything.

Firstly in quantum mechanics, we have two apparent processes:
(a) the evolution of the wave function
(b) the causality-violating collapse of the wave function on quantum measurement

There are various versions of QM, from the Everett interpretation where no collapse takes place (but this creates probability multiverses that we don’t experience) to Wigner type interpretations where the conscious observer collapses the wave function. In any event, conscious observers experience Schrödinger’s cat either alive or dead in the real word or so it seems. Napoleon didn’t win Waterloo and we experience a line of history taking place partly as a result of our own actions, which I call historicity.

Symbiotic existential cosmology is agnostic about these QM differences, because it imputes primitive subjectivity to quanta, which could then also in principle act as ‘observers’, but leave this aside and back to the established physics.

When we do a simple two-slit interference experiment one photon at a time, as Feynman marvelled at, the individual photons can end up literally anywhere the wave function amplitude is non-zero throughout space-time. If we make a phase space in which the amplitude is normalised they can literally end up anywhere in this space with equal probability, just like a random variable.

However, when we repeat the experiment multiple times we discover a pattern, that the photographic plate begins to have bands where the photons ended up, varying sinusoidally with the superimposed wave functions. This is an example of IID (independent and identically distributed measurements).

This is how the quantum process converges to the classical in the Born interpretation of large quantum numbers, but it is explicitly violated in both evolution, where each mutation that becomes fixed by selection induces a new context for a subsequent mutation, and in brain dynamics where any quantum event fixed by altering subsequent neuronal activity also changes the context. Again let’s leave whether this is possible in the brain aside although I will claim that the butterfly effect, stochastic resonance and global tipping points at critical decisions are ideal ground for this.

Let’s look at a single quantum ‘instance’ again. We have already seen that, in the phase space, the quantum can end up anywhere at all. This is the purest form of free-will we can possibly imagine, except that it is shaped by the wave function, so it has context just like our personal conscious decisions.

What’s the flip side of this? It’s that the whole process was being guided by the wave function. Now we get to entanglement. In the ideal interference experiment, we have prepared a pristine experiment in which we have defined the wave function simply and precisely by the macroscopic apparatus, but in the real world there are a multitude of third-party interactions, and in the absence of collapse, each of these introduce entanglements that modulate the wave function.

Indeed in the Everett interpretation all wave functions are part of the universal wave function forming an entangled history from alpha to Omega. So the flip side of quantum free will is the ‘consciousness’ the wave function possesses globally as a representation of potentially the entire history of reality encoded in the subtleties of the wave function. Thus we have a primitive model of quantum conscious free will.

Now to entanglement in detail. The results of Einstein, Rosen, Podolsky, Bell and Alain Aspect demonstrate that when two particles become entangled in a single wave function and we make independent measurements of both, we find that Bell’s theorem is violated, ruling out local Einsteinian causality between the separated particles but consistent with quantum mechanics.

We can do this e.g. with an excited Calcium atom because it has two outer electrons so can transition to the ground state emitting a green and a yellow photon in opposite directions having net zero spin, thus having complementary
polarisations. And Aspect did this with time varying analysers which showed that the correlations persisted over space-like intervals invoking local travel faster than the speed of light.

The conclusion is that (a) The polarisation statistics of either photon appears individually random, (b) when we match them up whenever we measure one, the other instantaneously adopts complementary polarisation, but (c) this entangled relationship can’t be used to send information between the separated particles.

There is another point here. Both the separate particles look like they are behaving randomly but there is a hidden process going on which is completely masked unless we sample the two together.

Now back to the supposedly causal universe. QM has two interposed processes in causal reality as we experience it: (a) The Hamiltonian progression of the wave function under the Schrödinger equation. (b) The apparently random projection of superpositions onto one of the eigenvectors.

This is what I call 'punctuated' causality after 'punctuated equilibrium' in evolution. So we now have to ask what is the cosmological source of this randomness? We already know that lots of deterministic processes can end up with quasi-random distributions. Computers use these all the time to do random simulations and classical deterministic chaotic processes have the property of ergodicity, converging to a space-filling ‘thermodynamic’ trajectory characteristic of stochastic systems. So there are a huge swathe of complex processes that could underlie quantum uncertainty that could distribute in the limit to be quasi-random, masking any apparent 'hidden variable theory'.

Now let’s go back to supposed causal closure in the brain. In the quantum universe, notwithstanding the ebb and flow over Libet’s claim, it is not possible to make any practical empirical experimental test to confirm causal closure of the brain, so the onus on science to demonstrate it fails.

Causal closure might appear to make superficial sense because, unless it IS causally closed, we would have both mind and brain dynamics affecting future brain states resulting in causal conflict. But if it is confined only to circumstances where the brain dynamics is critically poised, because it is representing an existential crisis where the causally-induced alternatives are finely balanced and the global brain state (in mutual phase coherence feedback with action potentials modulated by stochastic resonance) is at a sensitively dependent unstable tipping point, this corresponds quite closely to a quantum measurement of its own instability.

So we ask this question: 'What if the only thing subjective consciousness has the capacity to do is to perform quantum measurements on its on brain’s unstable brain states? Does this invoke any form of useful mind-matter interactionism or is it just futile randomness?'

Here I think that it has a huge capacity to be exactly what we are all looking for, because the universe as we know it is paradoxically ‘punctuated causality’ – literally only half causal and half uncertain in structural terms, so although we don’t expect quantum measurement to force any outcomes to cause the cat to be alive rather than dead, it does have a profound effect on the evolution of the universe, turning it from a multiverse into one where Napoleon didn’t win the battle of Waterloo, and where Nelson turned his blind eye on the Danish fleet in the Battle of Copenhagen.

Of course some of these events come down to hidden physically causal factors like the positioning of troops or the silly height of the Spanish ships in the Armada’s defeat, but the key role of conscious experience, as Michael Graziano’s attention schema theory points out, is split-second intuitive life or death decisions when the shark strikes. We know the brain is also a predictive perceptual computer as shown in the “flash-lag” illusion where it sometimes makes predictive errors, but all this comes down in the end to an intensely conscious real time decision which is going to alter the course of history in exactly the way a quantum measurement does.

Note also that this process emerged in pretty complete form with the founding universal eucaryote ancestor, complete with membrane action potentials, edge of chaos excitability on a global basis, the genes to enable synapse formation and the neurotransmitters as social signalling molecules, and as I noted to Uziel, the brain is an intimately coupled society of such cells operating in essentially the same way.

Taken to a rather poetic conclusion, we are walking inflated quanta exercising our free will in just the way each individual photon does, except we are doing it in a supremely entangled way that brings the conscious moment into
focus in every detail of our neurodynamic internal model of reality representing the mysterious quantum world around
us and the extreme vagaries and computational intractability of the open environment problem, which is worse than
the travelling salesman problem because there isn’t necessarily only one outcome, but multiple threads, all or any of
which may result in annihilation or ultimate survival.

You could even speculate that our entire incarnation, from birth to death, is a single quantum measurement,
particularly when looked at sideways on in space-time, as the Feynman representation tends to do!

**How the Mind and Brain Influence One Another**

To summarise and complete, here is a short discussion with the psychophysicist Stanley Klein:

**Stan:** There has been a lot of evidence that mind is being done in the brain. There are indeed a number of folks that
think that mind is separate from the brain. Of course the brain is getting input from neurons outside of the brain like
from our eyes and ears, etc. I look forward to hearing evidence that points to mind coming from outside of our brain.

**Chris:** That challenge is a counterfactual finesse. To suggest that mind is outside the brain, if you are a physicalist,
means you are asking for the subjective mind to physically exist somewhere outside the brain – i.e. in the toes or
round the corner somewhere. You know that’s not how it works. Mind is inside and the brain is outside. Both are
happening depending on how we choose the discourse.

And Stan, just what is the extensive evidence that mind is being done in the brain? There is no way of escaping that in
any brain research on a conscious individual mind, is happening when an experimental recording is made of brain
dynamics e.g. Freeman dynamics. But this isn’t mind being done by the brain – just accompanying brain states.

**Stan Klein:** However, I don’t fully understand what you said about the mind-brain connection. Could you provide more
details of what you have in mind.

**Chris:** The trick is in how the brain uses dynamical instability computationally. It’s attempting to form a causal model,
but the open environment is computationally intractable and indeterminate. The single celled eucaryote learned to
use edge of chaos membrane excitation for predictive sentience, by being sensitively dependent on external quantum
modes to generate a physical awareness of its environment. As the amoeboid flagellates evolved they became
genetically adapted to take advantage of this predictively, gaining perpetual survival opportunities. I suspect this of
being non-IID at the cellular level so its a genuine quantum process at the edge of chaos that aids survival because the
membrane excitation feedback process under genetic control becomes predictive in ways that involve weak quantum
measurements and expand instantaneous time into a quantum of the present. We experience this as “the present”.
In a complex brain, each of the neurons are carrying out an exceedingly complex social version of this, that grew out of
neurotransmitters as social signalling molecules, so the social signalling has become a wired form of synaptic signalling
driven at high speed through axonic and dendritic connections. The result is a Freeman dynamics brain at the edge of
chaos that seamlessly uses a combination of self-organised criticality to resolve uncertainties and making quantum
measurements through wave phase coherence of neuronally networked populations. Because it evolved from adaptive
unstable cellular consciousness it seamlessly integrates computational and quantum predictive dynamics.

This is just a description on the fly of neurodynamics that passes far more sophistication onto the neurons themselves
as highly evolved human cells with extreme delicate social connections simultaneously using all the social signalling
molecules from glutamate through GABA serotonin and so on. But the key to understanding it is not brain dynamics
but brain development and the roles the neurons of each neurotransmitter type have in mutually organising the social
network of synapses.

**Stan:** Many thanks for your detailed discussion of many details of how the brain does its thing. You seem to be
agreeing with me that the brain is where the action is for producing the mind. As I’ve said many times, present science
doesn’t yet fully understand how the brain does it. Do you agree with the above or do you think the brain isn’t
producing mind?
Chris: No I don’t Stan! The brain and mind are producing one another. The brain is not causally closed and the mind is transcausally volitional. By transcausal I mean the result is a product of a transactional process between past and future underlying quantum reality and wave function collapse.

The brain, as a developmentally and dynamically structured set of conscious neurons, is providing a partially open dynamical computational context in which the mind fills in the unstable parts of the quantum dynamic. This is being driven by tightly-coupled cellular sentence on the part of neurons and their complementary neuroglia. This means that, from the mind’s point of view, the brain is a boundary condition acting as a filter on the way the mind can volitionally act. That’s why we look out at the conscious experiential world we perceive as individuals. By act I do not mean causally interact in the sense of interactional dualism. Nor is it simply dual aspect monism because the complementary processes are very different.

The nature of the mind is related to and complementary to the underlying volitional process that determines wave function collapse. This means again that mind is complementary to the universe as a whole. We appear to have our own mind, not because there are many minds, but because the many brains impose varying boundary constraints, as encapsulations.

Stan: Chris, You said: “By transcausal I mean the result is a product of a transactional process between past and future underlying quantum reality and wave function collapse.” Why did you include “future”? Present science doesn’t allow information to go backwards in time or faster than light. But strangely enough some influences can go faster than light. Wonderfully crazy.

Chris: The Feynman description and transactional interpretation both involve hand-shaking between past and future through the special relativistic wave propagator and offer and confirmation waves. Weak quantum measurement is an averaged out process which involves retrodiction post-hoc. It’s still partly I/D because of the repeated measurements to establish the ‘Bohmian’ trajectories. But cellular sentence is a feedback loop at the quantum level that isn’t trying to make a classical prediction, just to exert anticipatory volition, escaping the snake strike, so it’s basically an inflated version of context dependent wave function collapse, including advanced influences from absorbers. I’m not being too precise about this because SEC is agnostic as to quantum interpretations.

You are happy with entanglement involving instantaneous definition of the state of the remote particle, when the nearby one has its polarisation measured because this doesn’t involve a classical signal exchanged faster than light. It simply reveals a hidden correlation that now has become determinate. But this actually occurs because the advanced waves from both detectors arrive at the source of the entangled photons and the changed result is referred back in the retarded wave to instantaneously define the remote particle’s orientation. So that is the way it all works.

Real positive energy determines the arrow of time and the direction of classical causality, but collapse of the wave function punctuates this. So if you are talking about real positive energy particles, forward causality is true, but if you are talking about collapse of the wave function it isn’t. For example virtual particles don’t conserve mass-energy and don’t respect the arrow of time because they are not real positive energy so they interconnect past and future symmetrically in precisely determining the electromagnetic force in QED.

Because mind is complementary to quantum uncertainty, it is complementary to the transactional milieu. This doesn’t mean it can send classical signals from the future to the past, but it means that its volition can and does reflect these ‘virtual’ influences. That’s why we intuitively feel and perceive we have active agency over the universe and veridically perceive this to be the case and perceive that we are acting predictively by the conscious presence of mind, while also plotting out the next move, where possible cognitively. It may seem counter-intuitive that standing in for the apparent randomness of uncertainty all there is to volition but that’s enough to completely determine and to utterly change the course of history, as we know.

Stan: Chris you said: “As you know I also have a relationship with Psi. It’s just a crazy knack that I seem to possess” If you can demonstrate your ability to do Psi, you can get a Nobel prize! Can you give an example of your Psi ability?

If we can’t own our own consciousness I don’t think it right to say we possess Phi but we are responsive to it and share its innate capacity. I simply said it was a knack I possessed. That knack is open mindedness to uncanny correspondences in the flow of ongoing experience.
I am happy with Radin, Bancel & Delorme (2021) producing research supporting an influence of mind on entanglement and other Psi results that may have statistical significance. But these are attempts to produce verifiable results, indicating an effect under repeated instances, which make them statistically significant. This tends to be like an IID (independent identically distributed) quantum experiment that converges to the Born probability interpretation, but it depends on the exact nature of the experimental process undergone.

I really like the simple concise treatment of Gallego & Dakić (2021) showing that, in non-IID processes, the quantum description prevails in macroscopic situations. So let me try to explain where I see what people call Psi is coming from. I am particularly interested in causality-violating conscious experiences that involve time and implicit anticipation, particularly under shifting contexts in real life where each event changes the context, so there is no IID. This is going to strike these all out of scientific proof because we can’t apply statistical analysis to non IID events as they are adventitious as we know with evolutionary mutation, but there is a reason why this is likely to be critical.

We accept that the brain has evolved to be a predictor of environmental crises of survival and opportunities for food and reproduction. We know the perceptual brain has evolved to be a predictor of emerging situations, evidenced by anomalies such as flash-lag illusions and mainstream ideas such as Graziano’s attention schema theory AST. This makes excellent evolutionary sense and explains why the brain has evolved to ensure the survival of the organism, through massively parallel computing that doesn’t stall in an exponential runaway, like serial computers facing the travelling salesman problem, so like Anil Seth we can describe the brain as a kind of prediction machine, using consciousness efficiently do do its work in real time, even if this is a kind of hallucination for efficiencies sake.

Now we come to the hard part. Evolution has not only selected massively parallel real time predictive machines, but subjectively conscious ones. So the same argument has to apply to subjective consciousness.

So we have to address the question of why evolution has retained subjective consciousness all the way to mammals, primates and humanity, apparently universally across metazoa if subjective consciousness in itself has no predictive power over and above objective brain function.

The hard problem exists because (1) all our experience, including all knowledge of the objective physical universe is derived subjectively, (2) subjectivity is categorically inconsistent with pure objectivity and cannot be finessed into it by any Zeno’s paradox easy problem approach, and (3) edge of chaos brain dynamics, combined with phase coherence processing mean the physical brain is a self-critically unstable system, uncertainly poised in the very conscious states we are considering, making proof of causal closure impossible.

So subjective consciousness must have a critical predictive advantage for it to be universally retained as central to brain function sitting right in the centre of the cyclone of edge of chaos.

When we walk down the street we can consider that we are highly determined by our circumstances, going to the supermarket for example 50 m down our side street from here. We may be thinking some very obvious thoughts like worrying about Ukraine, but when we turn the corner just about anything can occur, just as Mike challenging me on the first line I wrote on this topic starting a massive diversion.

So about half our active lives are spent dealing with defined causal aspects (the supermarket list) and the other half are accidental things that come in from left field (the car that nearly runs me over on the main street). This is living in the conscious universe. The causal circumstances are the Schrödinger equation part and the accident waiting to happen is cat paradox collapse of the wave function. Because our lives complexly fail to be IID in any way, the real world remains quantum active and both processes are playing out. Brain computational predictivity is there to deal with the Schrödinger part and subjective consciousness to deal with causality-violating collapse part of daily quantum existence.

To be able to be predictive, subjective consciousness needs to be reflected in the sort of interactions described in the transactional interpretation and special relativistic Feynman formulation where tellingly even the exactly determined values of the electron magnetic moment are found with stunning accuracy by integrating over both past and future components of the wave functions. The transactional approach which deals with real particle exchanges gives an intuitive picture of this implicit predictivity, but it all comes down to how a many-to-many transaction collapses into a
single real particle exchange and whatever way we look at this it is a collapse form potential past and future states one a single subset pair of these so it’s not moving either direction in space-time. As I noted above, I don’t have the final answer on this and suspect that no causal description is possible although I call it transcausality, because to do so would be to commit a causality violating space-time process to be causally explained, so it may forever be hidden in the entanglement which extends to the wave function of the universe as a whole. However in this picture, we as subjectively conscious beings are INSIDE this entangled phenomenon and are thus intuitively conscious of it in our changing circumstances.

This means that our circumstances, which the Eastern Wisdom Tradition call karma (although with a more moral tone) are a product of cosmological entanglement the mysterious hidden variable problem. That’s all well and good, but we know about Bayes theorem, so many people discount subjective reports of coincidence or synchronicity as being false predictions resulting from selecting only the verifying cases and ignoring the contradicting ones. The trouble with this argument is essentially that it only works with IID processes which we know converge to the Born probability. When we are dealing with sheer idiosyncracy, we are dealing with non-IID quantum "science fiction" as Bernie tried to put it today, incorrectly, since subjective conscious volition is anything BUT science fiction. If anything neuroscience is fiction denying volition. But the key point here is that we can’t use Bayes theorem estimates in singular on-IID events.

So what is the answer to your Nobel prize-winning question? Well it’s this. If we allow ourselves to entertain the primacy of consciousness, we enable our minds (and brains) to enter into a heightened form of intuitive awareness, where some of our attentive, perceptual and cognitive effort go into actually looking at, and entering into, the flux of experience. Put in a very clunky way by meditators, who are far too disciplined in their one-pointed focus to appreciate the full dimensions, unless they completely abandon themselves to the abyss, this is called mindfulness. That is allowing our mind to simply resonate with nature in its vast space-time ramifications around us, as animals do, to make sure they can actually hear the hiss of the snake strike over the swishing of the long grasses and the chirping cicadas.

So what about my Psi? Sometimes I have really striking qualitative experiences which have the character not just of everyday coincidence, but something else at the bottom of the billabong as the Australians say. Precognitive dreams that are registered and come veridically true are examples. I hated writing a song that later proved to have tragic precognitive echoes of specific details of 9-11 that can also be explained to some degree given the subject matter, but the qualitative details remain uncanny to this day.

But why would we spend time speculating on this? Deepak challenged me with the question does Godel’s theorem mean there is a creative principle. Yes it shows that no ordered system is complete in a context of axiomatic arithmetic. In the same way, subjective consciousness is transformative over the physical universe, through efficacy of volition. We don’t have time to save the world from a perilous fate dwelling on magic tricks. We need to do the good thing for life as a whole, while we are here and time is short. But Brahman accompanies me as I labour and the great virtue of entheogens is that the whack they give under the right circumstances can last a lifetime, or at least a seven year fast, because, when you fall outside the bubble of perception, you are never completely in the closed causality box any longer.

But there is more to this. The circumstances of the world may look like they are hugely deterministic laws of mass action, leaving us helpless. Empires rise and fall and their huge armies with them, in clashes of the titans as if everything is brute force, of tectonic fire and tsunamic flood, but consciousness and the human conscious world view are both transformative and critically unstable. When Nelson turned his blind eye to the telescope in the Battle of Copenhagen, an alternative history was created. Perceived realities are in flux. The Weltanshaung of Immortality is an infectious concept with an R0 very delicately poised at 1, just reproducing itself without extinction. One tiny shift and the entire flux of history can be transformed back to immortal Paradise. So the entire stakes are caught in a single cat paradox experiment that encompasses all of us.

**Stan Klein:** I’m pleased that we are in general agreement with standard science. One topic where there might be differences is on the topic of psychic phenomena. Do you think that telepathy might be possible, in violation of the presently known 18 wavicles?

My response is sheer speculation, off the cuff. If Bob tries to run a telepathy experiment and thinks a specific planned thought and ‘sends’ it to Alice and something enters Alice’s head out of the blue, this is very hard to distinguish from a
quantum uncertain ‘cat paradox’ event, and Alice’s brain would have had to be in a highly uncertain dynamical state, because otherwise the causal circumstances of her brain function are forcing her brain to see Bob’s thought. If that were the case it would take a strong wavicle interaction we could probably measure or falsify. But I don’t think that’s the case, even if Psi experimenters can get a sigma out of their experiments.

But that’s not how I think this works. I think the possibility is that conscious brains use quantum entanglement and can sometimes share entangled states. This again is off the cuff, but I would see brain states as dynamical quasi-particles corresponding to phase coupled global excitations. Now the actual more common context is not an experiment, but two people who know one another, say it’s me an my mum, because this happened a lot. Because we know one another (except she’s gone) there are certain dynamical brain states that can become ‘engrammed’ in memory, like my sense of my mother’s presence and her sense of me, her son, that form a kind of familial collective consciousness.

So then I suddenly get the idea to call my mum because I haven’t done so for a while and that’s this quasi-exciton emerging in a non-IID way out of the ‘engram’ milieu, and I call her, and her phone rings and that sets off the other entangled part of her quasi-exciton that got entangled with mine last time we spoke, and of course a call from me is on the cards too, and times before that. So I say “Hi and she says “I was just thinking of you!” This is also the Aboriginal dream time speaking. They (and twins) suddenly notice something is amiss in their psyche and realise their uncle, or sibling, has passed away somewhere far off.

Modern culture is very bad at this kind of thing because we either think flat stick in a mechanistic way or we meditate in a controlled mindful way and never really let the winds of fate pass through our consciousness any more. So both spiritual practices and practical realities can block our sensibilities. The key point here is how are we going to disprove this using the standard model? It’s just as bad as the hard problem. If quantum uncertainty is possible and conscious volition is real, all these other things are on the scientific table top of reality as Carlos Castaneda put it, at the distant edge of brute certainty!

The Diverse States of Subjective Consciousness

A key issue in this discussion, particularly in regard to the materialist emphasis of neuroscience, is the fact that there are diverse states of conscious experience that extend far beyond and deeper into our awareness than the states of everyday experience of the world around us. Those who spend virtually all their living existence only relating to the everyday waking state can easily slip into identifying subjective consciousness with merely being an internal model of physical reality around them and then succumb to mind-brain identity, or exclusively materialistic conceptions of subjective consciousness as a brain mechanism.

This belies the complexity and depth of the problem of consciousness because there are a variety of states of non-ordinary consciousness, which are neither imaginary, nor simply hallucinatory, nor are they just random uncoordinated phenomena, but are perceived as veridical experiences having the same, or qualitatively similar reality value, to our experiences of the world around us.

Fig 44: The sheer diversity of conscious mental states need exploration in their own right without a priori assumptions.
These include:

(a) **Dreams** particularly the richer end of the REM spectrum of states, including lucid and prescient dreams.

(b) **Psychedelic experiences**, which ‘reveal’ internal realities, from kaleidoscopic geometric visions to whole scenes and encounters, generally of a radically different nature to those of dreams, meditation on its own and ordinary consciousness. These constitute the traditional sacramental routes to entheogenic realisation, or moksha.

(c) **Dissociative experiences** such as induced in different ways by salvinorin-A and the anaesthetic ketamine, which differ from psychedelics in both their mechanism and their experiential character.

(d) **Meditative and contemplative** states of sensory withdrawal and ego loss. These are the traditional non-sacramental routes to mystical union, moksha and satori, which complement the sacramental routes in (b).

(e) **Psychic and parapsychological** experiences, including (1) precognition, (2) prescience & deja vu, (3) uncanny unexplained coincidences, (4) telepathy, and (5) psychokinesis.

(f) **Near death experiences** NDEs and **out of body experiences** OBEs.

**Moksha** \(^{29}\) means release from the cycle of birth and death in this life in the sense of experiencing and realising the conscious cosmic unity that transcends the physically mortal condition.

While dream states are ephemeral in that they can only be recalled intensely during waking, they are also veridical sentient experiences. Lucid dreaming states, although difficult to initiate and unstable either to immediate awakening by activating the reticular activating system or subject to a false awakening and reversion to the normal REM state, they do enable the conscious observer to experience an often very exotic mental state in real time.

Psychedelic and dissociative experiences are non-ordinary waking states that can be experienced and interrogated consciously. Psychedelic states have particularly striking attributes, especially when combined with meditative withdrawal, characterised by “ultimate reality” and types of abstract perceptual experience having intense reality value radically different form any other kinds of experience. These are not hallucinations and their nature needs a great deal of further subjective exploration to begin to fully fathom. Meditative experiences, although more controlled and tending more to mindfulness and compassion likewise stand in the Eastern tradition as a central route to union with cosmic reality exemplified in the union of Brahman and the atman.

Parapsychological experiences, which are the orphans of materialistic science, are perceived as common place by many individuals and surveys indicate a degree of statistical support (Cardena 2018, Wardell 2019, Girolini 1991). Some of these, such as (1) and (2) may be associated with deep properties of the quantum universe, hinted at in the Feynman formalism, weak quantum measurement and the transactional interpretation.

These diverse forms of subjective experience present a deep and complex domain of subjective discovery, which has barely been tapped and emphasises the inadequacy of assuming a physically materialistic view, which diminishes the authenticity of everyday experience to be merely an epiphenomenal internal brain model and assigns all forms of non-ordinary conscious experience to delusory, imaginary, confabulated, stochastic, or hallucinatory status.

This emphasises the position already expressed in the introduction that, while brain states may be a necessary condition for human conscious experiences, they are not a sufficient condition and the primacy of the conscious condition introduces a cosmological paradox. All our experience of the world is exclusively through our conscious perception of it and yet we are bound to accept the reality of the external universe for our own conscious survival as biological organisms and to negotiate the affairs of the world, but we simply don’t know the existential status of the universe is actually able to manifest in the absence of our conscious experience of it and the fact that we don’t is critical to good cosmological design. So experiential reality including the source of our scientific description of it starts with consciousness and ends up with the universe, while biogenesis starts with cosmic symmetry-breaking and ends up with conscious organisms. That’s the existential paradox.

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\(^{29}\) **moksha** – derived from the Sanskrit word muc (“to free”), the term moksha literally means freedom from samsara (existential illusion). This concept of liberation or release is shared by a wide spectrum of religious traditions, including Hinduism, Buddhism, and Jainism.
John Archibald Wheeler (1983) quotes as follows:

"An old legend describes a dialog between Abraham and Jehovah. Jehovah chides Abraham "You would even exist if it were not for me!", who replies "Yes Lord that I know, but also You would not be known if it were not for me. In our time the participants in the dialog have changed. They are the universe and man."

"How does quantum mechanics differ from what Bishop George Berkeley told us two centuries ago?" "Esse est percipi" to be is to be perceived.

**Consciousness as a Quantum Climax**

This work focuses on edge of chaos dynamics and self-organised criticality as a transition to quantum sensitivity through “excitons” distinguished from one another by wave phase coherence, complemented by neuronal thresholds and ion channel activations as a mechanism. None of these need to operate in an atmosphere of complete isolation from quantum decoherence in the “warm wet brain”. They derive their basis from the corresponding excitations in single celled eucaryotes so the key step is the sensitivity of edge of chaos excitation in the single cell to quantum level changes in the ion channel.

Biology is rich with phenomena at the quantum level, which are essential to biological function. Enzymes invoke quantum tunnelling to enable transitions through their substrate’s activation energy. Protein folding is a manifestation of quantum computation. When a photosynthetic active centre absorbs a photon, it has been proposed that the wave function of the excitation is able to perform a quantum computation, which enables the excitation to travel down the most efficient route to reach the chemical reaction site (Hildner et al. 2013). Photon absorption in photosynthetic bacteria involves pairs of excited proteins which enter into a superimposed vibrational state, in which one or the other becomes activated in the manner of the Schrödinger cat paradox experiment (Thyrhaug et al 2018). Research confirms the conscious brain can detect single photons and is able to amplify sensitivity given previous threshold input (Tinsley et al. 2016, Takeshita et al. 2017). Quantum entanglement has also been claimed to be behind the way some birds navigate in the magnetic field (Giachello et al. 2016, Paul et al. 2017, Hiscock et al. 2016, Gunther et al. 2018). Estimates of coherence time in calcium phosphate Posner’s clusters, are as long as 105 seconds (Fisher 2015). Daan Zohar (1990) in “The Quantum Self” has also drawn attention to ways in which quantum phenomena could arise in the brain, including the coherence states proposed by Herbert Frölich (1968, 1977, 1983, 1988) which have received some experimental support (Katona et al. 2015), particularly in systems driven far from equilibrium (Zhang et al. 2019).

The emergence of organismic consciousness is an evolutionary process. The brain inherited the dynamics to make our form of subjective consciousness possible long before multi-celled organisms evolved. LECA the founding single-celled eucaryote already possessed the G-protein linked receptors found in the brain, and going even deeper -- LUCA the last common ancestor of all life, possessed a chemiosmosmic excitable membrane, enabling chaotic sensitivity in the butterfly effect during bursting and beating. In the context of animal brains, these in turn, lead to phase-front processing, which forms a representation of the same dynamics involved in quantum measurement, bringing quantum entanglement into the dynamics, driven by self-organised criticality at tipping points, running from individual ion channels to whole brain dynamics, in a coherent system reaching a complexity unique in the universe.

The universe is thus a sentient cosmos, evolving in such a way as to make possible a fully intimate connection between subjective and objective aspects of reality, in which existential "isness" and objective behaviour reach a consummation in the sentient brain in conscious perception and volitional will. Consciousness can then intentionally affect the physical universe, just as we experience it to do, by collapsing the wave function of the "multiverse" of quantum probabilities into the line, or course, of cosmic history we experience, through Schrödinger’s cat paradox. This is what we experience as conscious decision-making, affecting the world around us, for better, or worse. This in turn means that, as a consummating manifestation of cosmic sentence, we have a personal and collective responsibility to fulfil this emergent quest and to preserve and unfold the diversity of life in the universe and this is what the meaning and purpose of life is all about. It is we ourselves, the universe’s sentient beings, who form the consummating manifestation of the interactive catastrophe set off by symmetry-breaking in the cosmic origin and it is we who must needs protect and unfold the diversity of life and consciousness, so that the process can reach ultimate fulfilment. The buck stops with us and the fate of life within the universe becomes our personal responsibility to protect.
This cosmology, by its structural design presents a unique form of anthropic cosmology. The anthropic cosmological principle states that our location in the universe is necessarily privileged to the extent of being compatible with our existence as observers, given that we could only exist in a type of universe capable of developing and sustaining sentient life. The strong form says the universe (and hence the fundamental parameters on which it depends) must be such as to admit the creation of observers within it at some stage. Proponents of the anthropic principle argue that it explains why this universe has the age and the fundamental physical constants necessary to accommodate conscious life, since if either had been different, we would not have been around to make observations. Anthropic reasoning is often used to deal with the notion that the universe seems to be fine tuned in terms of the relative strengths and interactions of the four forces, in such a way as to make conscious observers possible.

The phrase "anthropic principle" first appeared in Brandon Carter’s (1973) contribution to a symposium honouring Copernicus’s 500th birthday. He articulated the Anthropic Principle in reaction to the Copernican Principle, which states that humans do not occupy a privileged position in the Universe. “Although our situation is not necessarily central, it is inevitably privileged to some extent.” He defined two forms of the anthropic principle, a “weak” one which referred only to anthropic selection of privileged spacetime locations in the universe, and a more controversial “strong” form that addressed the values of the fundamental constants of physics. In effect the symbiotic cosmology “inverts” the Copernican principle by stating climax consciousness provides the ultimate privilege, by enabling the universe as a whole to become conscious.

Fig 46: Paradise on the cosmic equator. According to the anthropic principle, existence of conscious observers is a boundary condition. Life can exist only once cosmic evolution has generated the elements of life and evolution has then a chance to reach an organismic climax.

The weak anthropic principle (WAP) states that the universe’s ostensible fine tuning is the result of selection bias (specifically survivorship bias). Most often such arguments draw upon some notion of the multiverse for there to be a statistical population of universes to select from. However, a single vast universe is sufficient for most forms of the WAP that do not specifically deal with fine tuning. The strong anthropic principle (SAP), as proposed by Barrow & Tipler (1988), states that the universe is in some sense compelled to eventually have conscious and sapient life emerge within it. The Wheeler participatory anthropic principle (PAP) states that only universes with a capacity for consciousness can exist. Wheeler states: “We are participators in bringing into being not only the near and here but the far away and long ago.”

Psychedelics and the Fermi Paradox

The relationship between psychedelics and the Fermi paradox is the most controversial part of Symbiotic Existential Cosmology, so an explanation is in order. The Fermi paradox is the question: “Why is there no evidence of life out there in the universe, given that from what we already know, it is a very probable occurrence? Is it because it’s hiding, or because dominant cultural civilisations become unstable in evolutionary time scales and self-destruct?

The word psychedelic means “psyche revealing”, where psyche means the human mind, soul, or spirit and dēlos means ‘clear, manifest’. The classic SHT2a psychedelics are paradoxical serotonin receptor super-agonists that appear to induce a distinct second signalling pathway that sets off different processes from simply a surfeit of serotonin, putatively involving serotonin-glutamate receptor dimers that metabotropically modify glutamate excitation across the cortex. By contrast, both SSRI anti-depressants and entactogens affect the serotonin transporter to increase serotonin levels at the receptor, but the entactogen MDMA is not a psychedelic. It gives a strong serotonergic high amid touchy feelly ‘love drug’ sensations, possibly because of secondary oxytocin effects, but not a psychedelic ‘trip’.
Psychedelic species and substances set off a flood of incoming sensory stimulation, combined with a tendency for the default mode network to go silent, resulting in the experience of ego loss, and in combination with meditative repose, can become full blown quantum change experiences, in which religious people may experience God or “divinity” alternatively described as “ultimate reality” by the non-religious. Hence the name *enthogen* is applied to their ritual use in spiritual and shamanic contexts. Of course, in negative contexts, this can become Heaven and Hell as Aldous Huxley pointed out, so good conducive contexts are critical. But the fact that psychedelics are being used to treat terminal illness and severe depression successfully shows that, even in dire contexts, they can be very beneficial.

Psychedelics effectively induce a situation where subjective consciousness begins to derive an internal model of the reality of its own internal dynamics, invoking kaleidoscopic geometric figures and synesthesia – resonant mixed sense-mode experiences, in which accentuated daydreaming evolves into veridical visions – actual perception of observational realities ‘out there’, and finally the existential experience of union with the ‘other’ – the signature of Brahman-atman and peak accounts of near death experiences.

So while meditation alone can result in states of peaceful mindfulness and compassion and in some people mystical experience, brain studies of meditation reveal a more controlled state of oscillatory synchrony amid a sparser spiritual or mystical experience. This explains why moksha is so rare and why the Eastern tradition resorts to reincarnation to seek enlightenment in a future life cycle, although some people with conducive genetic biochemistry enter these states more often naturally and can become mystic visionaries, leading both to new religions and cultic misadventures.

Fig 47: An artist’s portrait of a psychedelic experience.

Psychedelics can reveal, in far greater first-person depth and illumination, the dimensions of the visionary experience shared by religious mysticism and meditative repose, and do it in a way which is characteristic of those aspects of near death experience that take us to the very edge of existence. The psychedelic experience gained from ingesting a psychoactive species is not a false vision, or inferior to a pure spiritual experience and is modulated as part of the attentive experience of the subjectively conscious observer, who remains able to distinguish reality from fiction. Bringing all these together, we have a research recipe for the subjective equivalent of the LHC in cosmological physics. We can tie this phenomenon to edge-of-chaos modulations disrupting the perceptual filters in our neurodynamics that our evolution as a species has selected for, to confine the observed plethora of internal and external information to a vastly reduced core subset, tuned down for organismic survival.

The key markers of human selection have been Machiavellian social intelligence on the one hand and the “mating mind” (Miller 2000) on the other, where astute female reproductive choice has led to an XY-chromosomal peacock’s tail runaway of super-intelligence (Fielder & King 2017) amid the softer, kinder aspects of perpetual human sexual receptivity amid human sensual love and longing, but nevertheless, with the loss of innocence of our original virtues of verifiable trust in good character over time during our gatherer-hunter phase in small bands of people, human evolution since has clearly been towards an increasingly urban patriarchal culture of human dominance over other humans, the female sex and the diversity of nature, enshrined in the growth of the egotistical mind as an overblown survival tool turned into the pursuit of dominance and power.

Human cultures have reacted to this dilemma by altruistic punishment, asserting prescriptive highly incorrect moral cosmologies, while extolling the ideals of virtuousness and compassion. In recent form, this has led to utopian notions of humanity, combined with artificial intelligence, and technology, becoming dominant forces in the mechanistic universe, violating our symbiotic relationship with nature and woman alike, leading to the mass extinction of biodiversity and our own attrition or extinction.
In the pursuit of longevity, amid human cloning and genetic modification, those seeking human immortality are trying to turn themselves back into parthenogenetic organisms whose life span is indeterminate, but this is ultimate selfishness. No parthenogenetic species can survive long term without sexual recombination and the biosphere to support it so this is a cul de sac and evolutionary suicide, as is any form of species dominance that violates the fundamental principle of biospheric symbiosis of all species within it.

So the question remains: Why are there psychedelics and do they have a meaningful role in the evolutionary process? If we go back to biogenesis itself, we have a partially solved problem of far-from equilibrium fractal molecular chemistry breaking through to the RNA era. Nevertheless, given the organic gas clouds of Orion, the lost city vents littering the primordial olivine ocean floor and other catalytic processes, all except the hard end of intelligent designers accept that this is a natural process. Likewise for the eucaryote emergence, which after all is a symbiosis of the two complementary foundational life forms, archaea and bacteria. We also have the tendency of adventitious mutation within the biosphere’s diversity to produce a plethora of organic molecules, so it’s hardly surprising if some of these are psychedelic, in our case on Earth most prominently a mere three – psilocin, DMT, and mescal.

But there is another side to this story. The human brain is actually an intimately coupled society of some $10^{10}$ neurons communicating and modulating their activity through the same core types of neurotransmitter amoeba-flagellates evolved as single-celled organisms for social signalling. We think of the brain as predominantly electrodynamic, but it is a profusely sappy biochemical organ in which electrodynamic excitation is punctuated and mediated by biochemical synaptic transmission. The metabotropic receptors modulate key dynamical modes from direct excitation and inhibition (glutamate, GABA and acetyl-choline) through waking activity vigilance, mood and drive (nor-epinephrine, serotonin and dopamine) to the stages of light and dreaming sleep involving several of these.

An evolutionary key here is that these neurotransmitters are also formative developmental morphogens. Serotonin for example retains a similar role in human brain development to that as the fruiting tip organiser in Dictyostellium, extending from maternal serotonin inducing the neural crest all the way through to the ascending 5HT1a pathways fanning out across the cortex (later modulating wake and sleep modes) acting in development as primers for the cells which organise the layered structure of the cortex. This means that modulating neurotransmission can alter primal evolutionary survival modes evolved through the deep developmental roles conserved since our single celled ancestors by the same neurotransmitters.

So the hypothesis connecting psychedelics and the Fermi paradox is that evolution climaxing to the emergence of a dominant cultural species like Homo involves a narrowing of the experiential filters to promote species dominance which then becomes a critical flaw, in species dominance and exploitation precipitating a mass extinction of the diversity of life through habitat destruction and the depletion of resources, in a non-renewable energy consumption and population burst, causing severe climatic change and disrupting planetary habitats on a global scale. This is the Fermi apocalypse catastrophe we are witnessing.

The natural antidote to the destructive Fermi apocalypse is that the kind of climax driven by a dominant cultural species also occurs at peak biodiversity, after a long period of fecund prosperity, in our case since the Tertiary-Cretaceous extinction, and this results in a ‘salting’ of the biosphere with biomolecules which modulate the neuronal activity of a dominant species in such a way as to carry its conscious neurodynamics closer to the climax edge of experiential chaos than its own evolutionary species selection became adapted for. This is then a way the fullness of evolutionary climax comes to reestablish the symbiotic biosphere, because changing the consciousness of the dominant species liberates it from its evolutionary constraints. Because any dominant cultural species seeks to understand what the hell it is doing in the universe, this becomes a catalyst for its own self-discovery.

This is not a magic process of divine psychedelic intervention, but might come to explain the other good half of the Fermi paradox. A dominant species which discovers its psychedelic species and learns to use their paradoxically disturbing properties, then begins to protect and even cherish its biosphere as sacred and integral to the cosmic “design”, for the lack of a better word, and thus, instead of proudly announcing its dominant existence to all comers, or failing one of the many triple witching hours of its own cultural, political, economic and environmental instabilities, instead settles into discovering the abyss of its own conscious experience as a convergent symbiosis with the conscious universe as a whole.
This is what I term cosmological symbiosis, thereby settling into a much more cerebral perennially immortal existence, complemented by the use of renewable technology and adroit strategies to protect the biosphere from astronomical crises, such as massive impacts and nearby supernovae, by careful use of its solar system habitats to avoid putting all its eggs in one basket and to remain concealed in the universe at large, to avoid predatory exploitation from without. This is the Fermi paradise on the cosmic equator in space-time.

In this sense, the notion of union with the cosmic mind is also not a magical process, although it is magical to experience and spiritual to the core. It is simply allowing our own subjective consciousness to reach edge of chaos climax while running egoless in neutral, thus enabling a rapprochement between the organismic brain and the foundational dynamics that invoke the mind at large, as an archetypal dynamical system, expressing in the fullest and most resonant way, the consciousness of the universe, expressed through its climax biota. The differences from traditional spiritual realisation can also be seen in its reverence of nature as sacred consistent with the Weltanshauung of Immortality, rather than the mind-sky view of cosmic transcendence over nature, all too anthropomorphically seeking only human transfiguration in enlightenment l the Eastern traditions, where nature is just degenerate sentient beings and the biological and genetic basis as natures embodied sacredness is set aside.

So the healing is this. Evolution of the biosphere has a safety valve for the human egoistical destruction of Gaia. It’s just a product of the sheer adventitious fecundity of evolution, not a magical phenomenon. But it has the capacity to bridge the gap between humanity as unnatural evil and humanity as “we are nature”. This is proven by the fact that the very substances suppressed by Western culture in the 1960s, in an echo of the Inquisition and witch hunts, have now become a cutting edge treatment for severe depression and the existential nightmare of terminal illness.

Now here is the deep paradox. The Western religious tradition, sourcing from Yeshua is a sacramental tradition. The synoptic gospels claim Jesus instituted the carnivorous sacrificial sacrament of his own flesh and blood in the last supper. “And he took the cup, and when he had given thanks, he gave it to them: and they all drank of it. And he said unto them, This is my blood of the new testament, which is shed for many.” But where did this historical disjunct, so un-Hebrew arise? We have to look further to his all too Dionysian miraculous behaviour supported by the women of Galilee “out of their very substance”. The entire mission is an apocalyptic presentation of Dionysian tragic theatre, inherited from the sweeping victory of Alexander the Great, leaving in his wake a Greek culture that extended across Syria and Jordan to the Nabatean cultural climax in Yeshua’s time, where Dhushara became his manifestation. Dionysus is the god of wine and altered states supported by the maenads whose pupils were dilated with belladonna.

I didn’t invent psilocybe mushrooms, the biosphere did. I concealed my use of them for 50 years and went to Jerusalem in the millennium to pronounce the epoch of the Tree of Life because of them telling me so a decade and a half before. But we all have to accept the fact that the founding religion of Western culture is sacramental and it is no coincidence that I now stand here as the spokesperson for the Tree of Life holding the sacraments of the biosphere. That is coming out of left field but that is the healing because it is the scientific way for egoistical human nature to become healed in time to save life. This doesn’t mean everyone should be taking psychedelics. It just means that they are part of the solution and when they are accepted as such, a new horizon beckons. Enough of a good part, given their newly recognised status to make a real transformation of human culture for the better.

My experience of Brahman in the moksha epiphany that triggered this cosmology was not a false vision. I stand by the Upanishads! I stand likewise by the Gospel of Thomas. I stand also by Maria Sabina and Gordon Wasson. My June experience was made all the more genuine because I am an extremely sane scientist fully aware that I have intentionally taken my conscious neurodynamics to the edge of chaos to liberate it from the filters of my own evolutionary confinement. I can then return to the fold and set to work to discover what kind of universe can actually make this all possible in scientific terms. Instead of a raft of religious edicts and doctrine and some mystical poetry, humanity gets a viable cosmology of quantum reality and conscious existence that is verifiable and detailed across an increasingly vast spectrum of disciplines.
5 Psychedelics in the Brain and Mind

While the brain is an electro-chemical organ, whose excitations are pulses and waves of electrical excitation, communication between neurons is predominantly chemical, via synaptic bulbs which release neurotransmitter molecules that bind to receptor proteins in the membrane of the target neuron that are either ionotropic and open ion channels, causing an electrical voltage, or metabotropic, activating proteins which alter the way the target neuron behaves. The primary excitatory neurotransmitter is the amino acid glutamate and the primary inhibitory one is gamma-amino-butyric acid or GABA, modulated by alcohol and sedatives. Their mutual interaction generates waves of excitation and inhibition identified with brain activity in the electroencephalogram.

Other neurotransmitter molecules including serotonin (5-hydroxy-tryptamine derived from the amino acid tryptophan), nor-epinephrine and dopamine (derived from tyrosine) have a modal modulating effect on brain activity mostly through slower-acting metabotropic receptors. Serotonin and nor-epinephrine pathways regulate modes of organismic behaviour, including sleep and mood in serotonin, vigilance in nor-epinephrine, and reward seeking in dopamine. The level of neurotransmitters in the synaptic junction is also regulated by transporter proteins which mop up unused neurotransmitters after the event, to avoid the brain being flooded with effects that are now over.

The classic psychedelics, including psilocin, mescaline, dimethyl-tryptamine and LSD all have a common action on serotonin receptors in the brain. By interrupting psychedelic action with an inhibitor, Franz Vollenweider et al. (1998) established that the principal action of psychedelics was at the serotonin 2HT2a receptor, widely distributed in the cortex, fig 49(a), and densely expressed in layer 5 pyramidal neurons. Their detailed interaction with the spectrum of brain receptors can be seen in fig 49(h) and the close relationship between psilocin (4-hydroxy-dimethyl-tryptamine) and serotonin (5-hydroxy tryptamine) in fig 49(l).

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Serotonin has multiple modal behavioural roles in the brain as a regulator of sleep and mood. The class of antidepressants called SSRIs, or selective serotonin reuptake inhibitors, increase the levels of serotonin by inhibiting its reuptake by transporter proteins. Entactogens such as MDMA, or ecstasy, go further and reverse the transporter, so as to dump an acute dose of serotonin, leading to the entactogenic high, accompanied by pleasurable and affectionate interpersonal contact. Both these agents can subsequently lead to serotonin depletion, the “Tuesday blues” or longer term withdrawal effects in antidepressants, but neither induce the psychedelic state. By contrast psychedelics have little physical dependence potential, because the acute effects rapidly wane if they are repeatedly dosed, until after a refractory period of days.

Outlines of an understanding of how psychedelics act have required protracted investigation and are still under exploration. Psychedelics are agonists that turn on serotonin receptors, rather than blocking their action, just as is serotonin itself, but the way psychedelics do this seems to involve a distinct protein cascade. As shown in fig 49(b), while all serotonin agonists active the protein c-fos, psychedelics also active the developmental protein early growth response 2 or egr-2. Fig 49(c) shows this is confirmed in vivo in mice. There has also been found from multiple researchers to be interactions between 5HT2a (Kim et al. 2020) and metabotropic glutamate MgluR2 receptors, fig 49(d) involving psychedelics, which may explain how psychedelics, in addition to causing a standard serotonergic effect, also have the bizarre sensory and existential effects they are renowned for, by modulating excitatory glutamatergic activity.
Fig 49: (a) Excitatory 5HT2a receptors are widely distributed across the cortex with concentrations in frontal and visual areas (Stein et al, Nichols 2011), top-right mentally “at-risk” lower right healthy (Hurlemann et al). (b) In vitro and (c) in vivo investigation of protein activations caused by 5HT2a has shown a consistent differential activation of egr-2 (early growth response 2) transcription factor in psychedelics, as opposed to universal activation of c-fos (Nichols & Sanders-Bush 2002, González-Maeso & Sealfon 2003, González-Maeso et al 2007). (d) Serotonin agonism also appears to be linked to a pairing of 5HT2a with an adjacent glutamate mGluR2 metabotropic (G-protein-linked) receptor where egr-2 is blocked by an mGluR2 agonist (Bockaert et al, Fribourg et al, Kondo & Sawa, Uslaner et al, Gewirtz & Marek, Delille et al). (e) Persistence homological scaffolds for placebo (left) and psilocybin (right) showing greater inter-connective persistence (Petri et al). (f) PET study of 15-20 mg psilocybin taken orally over a 48 minute period 90 minutes after consumption, which shows frontal activation by comparison with a resting state (Vollenweider et al 1997). (g) Reduction in amygdala activity in patients with treatment-resistant depression. Stabilisation of the DMN also occurred. Half of patients ceased to be depressed and experienced changes in their brain activity that lasted about five weeks (Carhart-Harris R et al. 2017). (h) Heat map of normalised receptor interactions (Ray 2010). Activity dark blue=0 to red=4 (orange for 2a and 2c, black no data). (i) LSD increases global functional connectivity of higher-level integrative cortical and sub-cortical regions (Tagliazucchi et al. 2016). (j) A recording during the 12 minutes after intravenous administration of psilocybin 2mg (~15 mg orally), which shows reduced activity in medial frontal cortex (mPFC), posterior cingulate cortex (PCC) and other areas (Carhart-Harris et al 2012a, Lee & Roth). (k) PET study of 5HT2a sites where psilocybin acts, with red and yellow having highest density (Hasler & Quednow). (l) Comparative electric fields of serotonin and psilocin. (m) Increases in activity associated with autobiographical memories on psilocybin. (n) Greater late phase activations during autobiographical recollection under psilocybin than placebo (Carhart-Harris et al. 2012b). (o) Changes in fMRI whole cerebral blood flow (CBF) on LSD, resting state functional connectivity (RSFC) increased between V1 and a large number of cortical and subcortical brain regions, but decreased between the parahippocampal (PH) and the retrosplenial cortex (RSC) and PCC, although increased between the PH and dorsal mPFC and right dorsolateral prefrontal cortex (Carhart-Harris et al 2016a). (p) Reductions in alpha (8-15 Hz) and delta (1-4 Hz) MEG power with ego-dissolution on LSD attributed to cortical desynchronisation (Ibid). (q) Corresponding decreases in MEG for psilocybin (Muthukumaraswamy et al 2013). (r) Source localisation of one of several networks with reduced power, again associated with desynchronisation (Ibid). (s) fMRI BOLD Variance time courses into the four regions of peak statistical significance for psilocybin and placebo. (t) Statistical significance for decreased low frequency power (LFP) and power spectrum scaling exponent α after psilocybin infusion. Statistical significance of increased power point rate (PPR) and decreased point process interval (PPI) after psilocybin infusion (Tagliazucchi et al. 2014). (u) Distinct receptor phosphorylation barcodes in psychedelics. (Vandermoere & Marin 2014). (v) Increased functional connectivity after psilocybin between the DMN and (i) r-fronto-parietal, (ii) DAN dorsal attention network, (iii) SAL salience network, (iv) TPN task positive network, (v) thalamus to TPN (Carhart-Harris et al. 2013), consistent with the “unconstrained mind” (Lifshitz et al. 2018).
When we come to studying the effects on the brain in electrical and metabolic brain studies, the results are complex. There are two principal ways of studying brain activity, one is to place electrodes, or superconducting magnets on the scalp and record the electrical activity in electro- and magneto-encephalograms (EEG and MEG) and the other is to use metabolic measures using functional magnetic resonance imaging (fMRI), or positron emission tomography (PET) requiring a radio-active tracer. fMRI BOLD uses blood oxygen level dependent imaging and PET can sample for glucose.

While one might expect that something causing visions, or even hallucinations, might result in enhanced brain excitation, some aspects of the psychedelic state, such as ego loss might also arise from a reduction in activity. Early scans of subjects on psilocybin, fig 49(f) indeed showed increases, as has a later study on LSD when the visual areas are examined, fig 49(o), but the scientific community was surprised when a team led by Robin Carhart-Harris and David Nutt, fig 49(j), found that there was a significant and unexpected reduction in activity. At the time, Franz Vollenweider commented: “We have completed a number of similar studies and we always saw an activation of these same areas. We gave the drug orally and waited an hour, but they administered it intravenously just before the scans, so one explanation is that the effects were not that strong.” Carhart-Harris et al. injected psilocybin and waited only a short period before the scans began. Psilocybin is a pro-drug, which is converted to psilocin, the active ingredient. The former is converted to the latter by stomach acids and in the liver by alkaline phosphatase (Dinis-Oliveira 2017).

However Robin Carhart-Harris subsequently associated these results with a reduction in the activity of the default mode network (DFM). This was discovered a few years earlier from a pattern of apparent reductions in activity in certain areas during specific tasks that showed up as increased activity when resting (Raichle & Snyder 2007). The DFM is thought to have a critical survival role in formulating responses to actual or incipient crises, making active use of the brain during down times from activity to be better prepared. In fact there are many resting state networks and the fundamental idea is that the brain has two complementary modes of activity which can occur together, a passive role responding to incoming environmental or sensory priorities and an active role generating activity beneficial to the organism’s survival, with both of these processes superimposing during activities, so one or the other appears more prominent. Areas noted in these studies as having reductions were the medial frontal cortex (mPFC), posterior cingulate cortex (PCC), parahippocampal (PH) and the retrosplenial cortex (RSC). The PCC in particular is characterised in measuring how much you are “caught up” in your feelings and responses, as opposed to just having them. Carhart-Harris et al. (2013) also investigated (v) the connection between the DMN and other networks such as the saliency (SAL) and dorsal attention (DAN) networks and found psilocybin increased functional connectivity between several areas which normally have orthogonal non-interactive relationships confirming the increased functional connectivity of diverse regions under psychedelics.
Carhart-Harris cites the results as evidence of a reduction in default mode network activity consistent with silencing the internal dialogue and ego loss (Pollen 2018). A second researcher Justin Brewer has also found a similar reduction in people meditating (Brewer et al. 2011). This has led to the idea that stopping the internal dialogue of the default mode can result in ego dissolution, because the distinctions between self and other become blurred and the role of the ego as the strategic basis of the default mode network means that silencing it could induce a state of union, in which self and universe become one. Functional imaging has linked the precuneus, an integral component of the default mode network to the processes involved in self-consciousness, such as reflective self-awareness, that involve rating one’s own personality traits compared to those judged of other people (Cavanna & Trimble 2006). This thesis supports the notion that both psychedelics and meditation can induce states of ego loss, but the effects of psychedelics are very profound and striking and experientially different from a meditative state of controlled repose, so quietening the resting state networks is a necessary gateway to both, but is not sufficient to explain the vast experiential territory of the psychedelic conscious state.

Millière R et al. (2018) express it this way: “even forms of putative “total” self-loss involving the radical disruption of both narrative and multisensory aspects of self-consciousness are best thought of as a family of states which can differ from a phenomenological perspective with respect to variables that are not directly related to self-consciousness. Indeed, strong forms of drug-induced ego dissolution may involve a very vivid and rich sensory phenomenology, perhaps as a result of decreased sensory gating, while available evidence on some “selfless” states induced by meditation suggests that their phenomenal content is very sparse (e.g., in states of so-called “pure consciousness” achieved in Samadhi practice).”

Carhart-Harris also compared the degree of reduction with subjects’ personal reports of the experience during the session and found that the reduction was greater in subjects who reported evidence of ego or subject-world dissolution such as “I existed only as an idea, or concept”, or “I didn’t know where I ended and my surroundings began”, suggesting the effect is genuine. The result is also consistent with heightened activity in other brain areas, particularly those involved in the subjective effects of visions and synesthesia 30, which would tend to affect sensory areas rather than associative or frontal areas.

Subsequent studies, both on psilocybin and LSD using MEG fig 49(p, q), give further insights into this situation. The psilocybin study was again by injection but the listed subjective responses showed marked effect differences between subject and placebo, indicative of the psychedelic state. In both studies there was found to be a reduction in oscillatory power, which in the LSD study was strongly associated with ego loss.

Fig 51: Subjective responses within 15 mins of exiting the scanner (Muthukumaraswamy et al.2013).

This reduction in overall power is consistent with increased desynchronisation in the signals, as in wave superposition of decoherent signals, which rise and fall at different instants are more likely to cancel one another, resulting in lower net oscillatory power. This is consistent with diverse interacting signals arising from the stimulatory effects of the psychedelic on usually less associated areas, resulting in more information arising to the conscious level which would normally be filtered out, disrupting the usual flow of attention identifying and streamlining the ordered thought process. The psilocybin study also attempted to identify the source localisation of the resting state networks using independent component analysis (ICA) which determined up to seven, rather than just one, as illustrated in fig 49(r).

30 Synesthesia: a perceptual phenomenon in which stimulation in one sensory or cognitive mode leads to experiences in a second mode.
Evidence corroborating this interpretation came from a further ingenious experiment from another team led by Carhart-Harris, to analyse “homological scaffolds” of brain activity under psychedelics. Fig 49(e) shows the result, in which there is a far richer network of homological scaffolds in play under psilocybin (right) with the “doors of perception” thrown open than in the normal mental state (left). This technique takes filtered correlations between the time series of the fMRI voxels, forms linkage graphs between each correlated series and then applies algebraic topology using the cliques of three or more to determine and weight the connections. Their evolution over time is also used to show that, while most of the population of psychedelic scaffolds have shorter duration than the fewer number in the placebo state, some psychedelic ones last significantly longer. This is also supported fig 49(s, t), by increased fMRI variance in the hippocampus and anterior cingulate and changes in power spectrum and other measures (Tagliazucchi et al. 2014). A further study (Lord et al. 2019) has explored recurrent BOLD phase-locking patterns (PL states). A similar result 5(i) shows LSD increases global functional connectivity of higher-level integrative cortical and sub-cortical regions (Tagliazucchi et al. 2016).

A theoretical idea advanced to explain salient features of the brain dynamics in psychedelic experiences is the notion of increased entropy. Carhart-Harris et al. (2014) note that “There is an emerging view in cognitive neuroscience that the brain self-organizes under normal conditions into transiently stable spatiotemporal configurations that this instability is maximal at a point where the global system is critically poised in a transition zone between order and chaos”. The paper then goes on to identify “metastability” of a brain network in terms of the variance in the network’s intrinsic synchrony over time and to claim the psychedelic state has higher entropy than the normal waking mental state. While the dynamical details of this have been criticised (Papo 2016), they do serve to have conceptual explanatory power. Edge-of-chaos dynamics and transitions from chaos to order in critically poised sensitive states are essential to a dynamical model of the brain to avoid the dynamics becoming locked into sub-optimal ordered states, by using the butterfly effect and its “ergodic” ability to fully permeate the space of possibilities.

A distinction is then made between two modes of cognition, primary consciousness “a mode of thinking the mind regresses to under certain conditions, e.g., in response to severe stress, psychedelic drugs and in REM sleep”, including magical thinking, “a style of cognition in which supernatural interpretations of phenomena are made” and secondary consciousness “the consciousness of mature adult humans”. The article then takes the view that “the mind has evolved (via secondary consciousness upheld by the ego) to process the environment as precisely as possible by finessing its representations of the world, so that surprise and uncertainty (i.e., entropy) are minimized.” It then argues “that secondary consciousness actually depends on the human brain having developed/evolved a degree of sub-criticality in its functionality, i.e., an extended ability to suppress entropy and thus organize and constrain cognition. It is argued that this entropy-suppressing function of the human brain serves to promote realism, foresight, careful reflection and an ability to recognize and overcome wishful and paranoid fantasies. Equally however, it could be seen as exerting a limiting or narrowing influence on consciousness”. This leads to the conclusion that “that the underlying neurodynamics of primary states are more “entropic” than secondary states i.e., primary states exhibit more pronounced characteristics of criticality and perhaps supercriticality than normal waking consciousness — implying that the latter is slightly sub-critical, if not perfectly critical.”

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This leads to a discussion of the role the default mode network is claimed to have maintaining the ego through the internal dialogue, leading to forms of mental illness involving the oppression of over-weaning order, such as depression, where repetitious rounds of internal dialogue occur, reinforcing a pessimistic existential outlook. It is also an ongoing feature of the fear of inevitable death that plagues human society.

As noted, there are some major issues with simply using entropy as a measure of criticality (Papo 2016). Highly entropic systems can be products either of chaotic criticality, or noisy randomness and entropy is itself not a measure of either complexity or criticality. That said, the general theme of balancing novelty with uncertainty is characteristic of brain dynamics, much of which has characteristics of pink, or 1/f noise displayed by edge-of-chaos dynamics, and human creations such as musical compositions, which ideally balance history and novelty.

A second notion is the cortico–striato–thalamo–cortical (CSTC) model which involves circuits between the cortex and the thalamus that mediate control of sensory information flow to the cortex and awareness and attention (Vollenweider and Geyer, 2001). This model highlights 5-HT2a receptor activation on circuits between the thalamus and cortex to explain the subjective effects of psychedelics (Geyer and Vollenweider, 2008). In this view, psychedelics impede sensory gating functions of the thalamus, allowing increased sensory and interoceptive information flow from thalamus to cortical regions. This reduction in sensory gating is proposed to lead to sensory overload of the cortex that results in both the observed perceptual effects and cognitive changes.

A third related notion, extending the entropy idea is that psychedelics may act to “flatten the potential energy landscape” between attracting brain states (Carhart-Harris & Friston 2019), which has received some tentative support in an LSD study (Singleton et al. 2021). The 2019 paper notes “We call this formulation ‘relaxed beliefs under psychedelics’ (REBUS) and the anarchic brain, founded on the principle that — via their entropic effect on spontaneous cortical activity— psychedelics work to relax the precision of high-level priors or beliefs, thereby liberating bottom-up information flow, particularly via intrinsic sources such as the limbic system.”

A key characteristic of some neural nets using an energy landscape to reach and optimum is to run the simulation at a higher temperature of random fluctuations at first to avoid the system getting stuck in an “alpine lake”, gradually lowering the temperature to reach a quasi-optimal minimum, in a process called annealing. This is a similar process to using a transition from chaos to order to enter a quasi-optimal strange attractor. The idea is that the higher energy landscape is a way the brain filters the doors of perception, by impeding upwelling stimuli using top-down control and that when the landscape is flattened using psychedelics, new information can flood into conscious awareness.

A core basis of this argument is valid – that the brain has evolved to streamline conscious existence for survival, by filtering out uncertainty to enable rapid and decisive decision-making, ensuring organismic survival, consonant with Aldous Huxley’s (1954) notion in “The Doors of Perception” that everyday reality imposes a filter and that psychedelics, by reducing the filter can enable individual consciousness to perceive the “mind at large”.

There are also scientific hints that psychedelics, such as DMT, which it is also believed occurs naturally in the brain has neurogenerative effects. Ly et al. (2018) report that, like ketamine, serotonergic psychedelics are capable of robustly increasing neuritogenesis and/or spinogenesis both in vitro and in vivo.

Fig 53: (1) Changes in neuronal structure, spinogenesis and the involvement of the 5-HT2a receptor in neural plasticity. (2) The involvement of DMT in neurogenesis. Neurospheres were cultured for 7 days in the presence of DMT.

These changes are accompanied by increased synapse number and function. DMT treatment has also been found to activate the subgranular neurogenic niche regulating the proliferation of neural stem cells, the migration of neuroblasts, and promoting the generation of new neurons in the hippocampus,
therefore enhancing adult neurogenesis and improving spatial learning and memory tasks (Morales-Garcia et al. 2020). Increased hippocampal neurogenesis also occurred in mice treated with 0.1 mg/Kg, who also extinguished cued fear conditioning significantly more rapidly (Catlow et al. 2013).

6 Therapy and Quantum Change: The Results from Scientific Studies

The theme of ego-dissolution and the DMN is also discussed with Robin Carhart-Harris at length in Michael Pollen’s (2018) work. It provides a general perspective in which to understand the basis of some of the outstanding claims about the mental states psychedelics induce. As noted, psychedelics have been found to share characteristics both with meditative states and religious contemplation, in which experimenters have found a reduction in the activity of the DFM. Silencing of the internal dialogue in ego dissolution also involves extensive sensory-existential changes in which the boundary between self and other/world becomes blurred. It is important to understand that dissolving of the DMN in the acute psilocybin phase is naturally followed by a reintegration to an active and more functional DMN than in depressive illness. Carhart-Harris extends this blurring to explaining the magical thinking that frequently leads people experiencing deep insights under psychedelics to describe them as veridically true – revealed truths rather than just a personal opinion. He suggests that one explanation of this is that relative judgment that something is just a personal opinion requires separation of subjectivity to carry weight, but in the state of union no such distinction exists.

This raises a fundamental question. Are the insights real or illusory? This is the same question that plagues the status volitional will. Reductionistic materialists attempt to finesse this position by claiming we are simply the product of our circumstances and the causality of brain processes and that the notion of “free-will” is just an illusion resulting from evolution requiring us to invest in the notion as a rationale to proceed on the basis of an organismic personal autonomy that doesn’t actually exist. Subjective consciousness then becomes an epiphenomenon, having no causal effect on the material world.

However, most people and the law act on the conviction that we are intentional beings who have consequences on the world around us and that we are accountable for our actions. Premeditation is in criminal law the defining foundation of conscious intent that determines the severity of a crime. We thus need to assess deep psychedelic experiences by the same token. Reports from very astute and trustworthy individuals consistently declare that a genuine veridical experience has taken place, having the nature of truth of the same status as both swearing legal evidence and a replicable observation of the physical world.

Aldous Huxley 31 wrote in The Doors of Perception: “Each person is at each moment capable of remembering all that has ever happened to him and of perceiving everything that is happening everywhere in the universe. The function of the brain and nervous system is to protect us from being overwhelmed and confused by this mass of largely useless and irrelevant knowledge, by shutting out most of what we should otherwise perceive or remember at any moment, and leaving only that very small and special selection which is likely to be practically useful. According to such a theory, each one of us is potentially Mind at Large” ... “In the final stage of egolness there is an ‘obscure knowledge’ that All is in all — that All is actually each. This is as near, I take it, as a finite mind can ever come to ‘perceiving everything that is happening everywhere in the universe’.”

Huxley is highly critical of the limiting nature of the doors of perception’s usual filter: “To make biological survival possible, Mind at Large has to be funnelled through the reducing valve of the brain and nervous system. What comes out at the other end is a measly trickle of the kind of consciousness which will help us to stay alive on the surface of this particular planet. To formulate and express the contents of this reduced awareness, man has invented and endlessly elaborated those symbol-systems and implicit philosophies which we call languages. Every individual is at once the beneficiary and the victim of the linguistic tradition into which he or she has been born — the beneficiary inasmuch as language gives access to he accumulated records of other people’s experience; the victim in so far as it confirms him in the belief that reduced awareness is the only awareness and as it be-devils his sense of reality, so that he is all too apt to take his concepts for data, his words for actual things.”

This criticism has become even more urgent and critical in a time of planetary climate and ecocrisis, when this reduced tribal awareness driven by ego-consciousness is causing dire risk of a mass extinction of the diversity of life and potentially the extinction of the human species. To a reader not familiar with these states, it is hard to give credibility to the notion that a person under the influence of an agent originally labelled as an “hallucinogen” that is known to have both transcendent and potentially diabolically dysphoric dimensions as Huxley emphasised in “Heaven and Hell” (1956) can also have experiences with the long-lasting therapeutic relief or mystical insight, let alone be literally and veridically true.

31 This follows in line with the filter theories of Henri Bergson Matière et Mémoire (1896) and William James Human Immortality. (1898)
However this is precisely what a number of studies, where precisely these insights under psychedelics have been repeatedly shown to have long lasting insights and benefits, both in severe depression and in people suffering a terminal condition and in normal people experiencing mystical states (Carhart-Harris et al. 2016b, Griffiths et al. 2006, 2008, 2011, 2016, 2021).

The titles of these research papers “Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance”, “Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later”, and “Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer” indelibly attest to the genuine long-term effects that these experiences induced. Ketamine has similarly shown promise in treatment-resistant depression, though effects do not last as long as those observed with psilocybin. A possible mechanism has been found in the disassembly of perineuronal nets restraining new synapse formation in established learned memories (Venturino et al. 2021).

A later study (Griffiths et al. 2018) combined the use of psilocybin with meditation and other spiritual practices, echoing the way in which movements such as the Native American Church and the Union Vegetale provide a spiritually conducive context to engender positive outcomes, designed to tap into quantum change experiences – sudden, distinctive, benevolent, and often profoundly meaningful experiences that are said to result in personal transformations that affect a broad range of personal emotions, cognitions and behaviours (Miller, 2004; Miller and C’de Baca, 2001). The discussion notes that: “The study showed robust interactive positive effects of psilocybin dose
and added support for spiritual practices on a wide range of longitudinal measures at 6 months including interpersonal closeness, gratitude, life meaning/purpose, forgiveness, death transcendence, daily spiritual experiences, religious faith and coping, and rating of participants by community observers. Analyses suggest that the determinants of these effects were the intensity of the psilocybin occasioned mystical experience and the rates of engagement with meditation and other spiritual practices. Most broadly, as a model system for studying so-called quantum change experiences, which have been described for centuries but which have eluded rigorous prospective experimental analysis, further investigation of psilocybin-occasioned experiences may have broad implications for the development of drug and non-drug interventions in both therapeutic and nontherapeutic applications in order to engender enduring positive trait-level changes in attitudes and behavior and in healthy psychological functioning”.

Miller (2004) notes: “The person typically experiences mystical quantum change passively, not a product of personal will or control, and has a difficult time expressing the experience in words. They usually are intensely positive, joyful experiences, and often the person senses the presence of an awe-inspiring transcendent Other. Often there is a noetic element of revelation, a sudden knowing of a new truth. An experience of unity is common; for example, an ineffable oneness with all of humankind, with nature, or the universe. In these respects, the mystical type of quantum change is similar to common reports of near-death experiences (Lorimer 1990). At the most mystical level, quantum changers seemed to become more alike, as if they had in some way glimpsed the same truth. They often voiced the experience of being interconnected with and part of all of humanity and creation. Those who had experienced themselves in the presence of a transcendent Other gave strikingly similar descriptions. They felt awe but rarely fear, for in its presence they had experienced unspeakable love and acceptance. The insightful type of quantum change lacks most of the mystical components save one: the noetic element of sudden realization or knowing with great and sudden force, and in the moment of seeing, the person recognizes them for authentic truth (or Truth). Their effect tends to be a reorganization of one’s perceptions of self and reality and a cathartic, ecstatic, sense of relief and release. They knew instantly they had passed through a one-way door through which there was no return. They were changed, freed right then, and knew it immediately. Often, characteristics that had been valued least became most important [spirituality and generosity], and those that had ranked as highest priorities [such as status and possessions] fell to the bottom”.

A further study (Griffiths et al. 2019) compared “God-encounter experiences” under classic psychedelics and naturally. While “the Non-Drug Group was most likely to choose “God” as the best descriptor of that which was encountered while the psychedelic groups were most likely to choose “Ultimate Reality.” Most participants reported vivid memories of the encounter experience, which frequently involved communication with something having the attributes of being conscious, benevolent, intelligent, sacred, eternal, and all-knowing. … These experiences were rated as among the most personally meaningful and spiritually significant lifetime experiences, with moderate to strong persisting positive changes in life satisfaction, purpose, and meaning attributed to these experiences”. A long-term increase in mindfulness is also noted (Madsen et al. 2020).

Bill Richards notes that mystical experience isn’t something vague, but a specific form of human consciousness. ‘When it’s expressed through questionnaires you can find evidence of six categories, which are: unity; transcendence of time and space; intuitive knowledge (what William James called the noetic quality); a sense of sacredness or awesomeness; deeply felt positive mood, such as joy, peace, love, purity; and claims of ineffability and what we call paradoxaity — that it’s very hard to put these experiences into words and when people try to express it they keep contradicting themselves, that’s the paradoxaity: ‘I died but I’ve never been so alive, the ultimate reality was one but it was many, it was beyond time but it included time’ — ultimately the Buddhist claim of the nothingness that contains all reality. And it seems contradictory, but mystics would say the problem isn’t in the experience; it’s in our ability to express the experience within language, at this point in the development of language. And that the answer, the truth is always “both and” rather than “either or”’.

As a warning to unsupported experiences in a bad setting, a survey by Griffiths’ group of extreme, challenging experiences (Barrett et al. 2016, Carbonaro et al. 2016), 1993 individuals (mean age 30 yrs; 78% male) completed an online survey about their single most psychologically difficult, or challenging experience (worst “bad trip”) after consuming psilocybin mushrooms. 39% rated it among the top five most challenging experiences of his/her lifetime. 11% put self or others at risk of physical harm; factors increasing the likelihood of risk included estimated dose, duration and difficulty of the experience, and absence of physical comfort and social support. 2.6% behaved in a

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32 Bob Jesse and Bill Richards are co-authors of Roland Griffith’s 2006, 2008 mystical experiences studies.
physically aggressive or violent manner and 2.7% received medical help. Of those whose experience occurred >1 year before, 7.6% sought treatment for enduring psychological symptoms. Three cases appeared associated with onset of enduring psychotic symptoms and three cases with attempted suicide. Intriguingly, the degree of difficulty was positively associated with enduring increases in well-being. Despite difficulties, 84% endorsed benefitting from the experience and the researchers noted that the incidence of risky behaviour or enduring psychological distress is extremely low when psilocybin is given in laboratory studies to screened, prepared, and supported participants.

It is extremely significant that facing the fear of immanent death, possibly in pain and debilitation, which is the most real and terrifying crisis any conscious mortal being can face, can be redeemed on an ongoing, not just a transient basis, by a psychedelic experience. This attests to these experiences not being illusory but evidential to the conscious mind as the antidote to the mortal dilemma. This is precisely what “moksha”, the primary goal of all Eastern spirituality, seeks to attain through a lifetime of renunciation and devoted meditation. It also stands as highly evidential that in their signature work “The Psychedelic Experience”, Leary, Alpert and Metzner (1964) presented a guide for readers to navigate the psychedelic state, framed as a modern representation of the Bardo Thodol or Tibetan Book of the Dead – “The Great Liberation upon Hearing in the Intermediate State” – (Lama Kazi Dawa-Samdup Eng trans 1927), the Tibetan Buddhist manual for successfully negotiating death and rebirth.

Michael Pollen notes a conversation with Roland Griffiths, in which, despite being a world renowned academic researcher leading the field, he has to pick his words very carefully: “The first time I raised [Bob] Jesse’s idea of the betterment of well people with Roland Griffiths, he seemed to squirm a bit in his chair and then chose his words with care ‘culturally right now that is a dangerous idea to promote’ ”. However Roland later commented “We’re all dealing with death – this is far too valuable to limit to sick people”, afterwards carefully amending it to “This will be far too valuable to limit to sick people”.

On the question of authenticity, opinions vary. David Nichols (2011), the Perdue pharmacologist who founded the Hefter Institute to support psychedelic research and synthesised the psilocybin for Griffith’s experiments said “If it gives them peace, if it helps people to die peacefully with their friends and their family at their side, I don’t care if it’s real or illusion”. But Roland Griffiths acknowledges “authenticity is a scientific question not yet answered – all we have to go by is the phenomenology” – i.e. the quality of personal reports. In response to Michael’s “staunchly materialist” world view Roland replied “Okay then, but what about the miracle that we are conscious? Just think about that for a second, that we are aware and that we are aware that we are aware! How unlikely is that?” Thus affirming that the problem is universal to consciousness not to the moksha state, as we have noted with volitional will.

Primary consciousness associated with reduction of the internal dialogue and ego-dissolution is not just a question of flawed magical thinking that the mind regresses to, but is shared by psychedelics, meditation and deep religious contemplation, all of which in varying ways seek to calm the internal dialogue, attributed to inhibition of the DMN. Michael Pollen cites a number of themes relating to this, including the undifferentiated inclusive mentality of the child mind advanced by Alison Gopnik who co-hosted a talk with Robin Carhart-Harris (2016), echoing sayings of Yeshua and Don Jose Matsuwa. Gopnik refers to a wider nuanced “lantern awareness” which becomes a starker “spotlight awareness” of the Cartesian theatre in adulthood, which as we age, becomes more and more locked into habitual routines that have been found successful in the past. It also applies to releasing the inability of the ordered mind to think outside the box and to be creative, as opposed to conservative and analytic consciousness, which is strongly history-based, rather than novelty-based.

But there are also outstanding differences between psychedelic experiences and meditative and contemplative ones, which are essential to understand and are pivotal to the central enigma of existential cosmology. Mediation seeks to achieve enlightenment by careful top down control, mediated by equanimity, rejection of grasping desires, one-pointed concentration and compassionate emotion. Religious contemplation seeks repose in prayer and devotion. Thus the person involved finds a degree subjective fulfilment, amid acceptance of a spiritual or religious doctrine they are already committed to. Although these experiences of ego dissolution may induce positive outcomes for the individual, they also tend to confirm established beliefs, rather than open the floodgates to new ideas challenging one’s preconceived assumptions. By contrast, psychedelics are liable to induce insights of a novel and existentially challenging nature, such as the somewhat baffling notion of “the mind at large” as a spontaneous discovery.

Psychedelics provide a complex cyclonic perturbation of existential and sentient consciousness, not a simple “enlightenment pill”. Bill Richards notes: ‘The relation of the drug to the experience is not like taking an aspirin to get
rid of your headache. What the psychedelic substance ... they all seem to be skeleton keys that open up the mind, that give you an opportunity to explore, but where you go and what happens depends on who you are, kind of who you are, your maturity, your life history, your capacity to be able to choose to trust unconditionally, your feeling of safety, your courage. So much more is involved than just taking the drug!

What we are dealing with in psychedelics is a whole constellation of mental states, depending on the circumstances and mind set of the person involved. They can take on visionary aspects of traditional notions such as soul theft and sorcery and invoke complex detailed visions from which the word ‘trip’ arises, including specific socio-cultural motifs such as snakes and animistic visionary deities. Some of these can be hilarious, others frightening. Some can be profound, others frivolous or meaningless. Some can lead to messianic delusions and others to creative art, musical composition and scientific discoveries. Albert Hoffman has stated that Karri Mullis, who invented the polymerase chain reaction that is now identified to be the core of molecular biology techniques and essential for Covid-19 testing, told him he credited its discovery to his use of LSD in his student days where he synthesised LSD. It was reported that he was actually coming down from a trip when the idea struck him. We are dealing with an agent invoking as many diverse features as existence can provide. The critical issue underlying this retinal carnival of experiences is how it can reveal underlying experiential knowledge difficult or impossible to gain through any other route.

Their political liberalism and nature-relatedness dimensions have been confirmed (Nour et al. 2017, Lyons & Carhart-Harris 2018). Nearly nine hundred participants provided information about their naturalistic psychedelic, cocaine, and alcohol use, and answered questions relating to personality traits of openness and conscientiousness, nature relatedness, – “I am not separate from nature but part of nature” – and political attitudes. Participants also rated the degree of ego dissolution experienced during their “most intense” recalled psychedelic experience. Analysis revealed that lifetime psychedelic use (but not lifetime cocaine use or weekly alcohol consumption) positively predicted liberal political views, openness and nature relatedness, and negatively predicted authoritarian political views, after accounting for potential confounding variables. Ego dissolution correlated significantly with these effects.

Psychedelics clearly have political and revolutionary implications that can lay siege to traditional cultural values. It is admitted that the initial wave of repression of psychedelics was political in nature in response to a social movement rejecting the core tenets of a consumer society polarised between materialistic exploitation and religious and sexual conservatism. Fifty three years later, we find ourselves only moderately emerging from a period of repression lasting half a century, still tightly regulated, so as to be applicable only to scientific studies, largely on pathological conditions of depression and terminal illness, or direct scientific inquiry but not for the betterment of sane and healthy people. There is a deep parallel between the Catholic repression of gnostic elements in the Inquisition that arose ultimately from cross fertilisation of ideas during the Crusades, and of the witch hunts against older spiritual beliefs centred around the ancient European Goddess whose practices Christianity replaced and the reaction to the social values emerging from psychedelics in the 1960s.

The same repressive end result as the middle ages Christian repressions of dissent occurred when LSD become popularised and suddenly, because it had not yet become illegal, huge quantities of very pure acid flooded into rock culture, by devoted underground chemists not seeking financial rewards but for the “common good”, celebrated by the Beatles’ “Tomorrow Never Knows” citing Leary’s Bardo Thodol, and “Lucy in the Sky with Diamonds”, while on the East Coast of the US, Timothy Leary was pronouncing “turn on, tune in and drop out” and on the West Coast, the Grateful Dead, playing “Dark Star” on acid, the Electric Kool-aid Acid tests and the Merry Pranksters, were blowing young peoples minds, while the infectious ethic of free love was shedding conventional sexual morality. This blew the cover on just how seriously the political and revolutionary implications of psychedelics were laying siege to traditional cultural and particularly commercialistic political and religious values.

Despite the fact that many of these events passed safely without incident, that LSD didn’t split peoples chromosomes, that groups of people hadn’t stared at the sun until they went blind, by the mid-1960s the backlash against the use of LSD and its perceived corrosive effects on the values of the Western middle class resulted in governmental action to restrict the availability of psychedelics by making any use of them illegal. Both LSD and psilocybin were declared “Schedule One” substances. The governors of Nevada and California signed bills into law on May 30, 1966 and the rest of the world followed shortly after, fulfilling the dark ending of Huxley’s (1962) allegory in “Island”, in which the people of Pala consume yellow mushrooms which they call “moksha” to induce visionary states, but are in the end subjected to a military takeover by a neighbouring conservative religious culture. The picture hardened with the case of Charles
Manson. The prosecution contended that, while Manson never directly ordered the murders, his ideology constituted an overt act of conspiracy.

However that didn’t stop consumption of psychedelics, which have remained an underground transformative staple at music festivals, forming the entheogenic 33 counterpoint to MDMA’s entactogenic love-in experience in the rave party scene. Entheogen (see Ott 1993) is a term that, by its own meaning infers that deity emerges from the sacrament rather than vice versa, confirming the overwhelming impression from this class of agents that they have transcendental dimensions. Stanislav Grof coined the term “holotropic” 34, to cover wholeness seeking in all its forms from experiencing the totality as in the mind at large to peri-natal experiences of a physical rebirth struggle.

But repressive legislation of the war on drugs has still had a mind-numbingly counter-productive effect. People are incarcerated for long periods for simple possession of psychedelics. For four decades they were effectively eliminated from scientific knowledge, or assessment. Society as a whole has had almost no opportunity to figure out what role these profoundly transformative agents have in world culture, despite the fact that the natural entheogens have been used for millennia for spiritual and therapeutic purposes in every culture that has consumed them. This means that the role of entheogens has until subtly in the 21st century, been suppressed entirely by the very world societies that have claimed to be the pillar of scientific enlightenment. At the same time, while psychedelics continue to be used devotedly by an underground network of devoted psychonauts, they tend to be trivialised as mere entertainment. Their potential impact on society’s, and the planet’s future, remains occluded as an illegal recreational playground of no confirmed value, or significance.

Currently natural psychedelics are used scientifically in research, and particularly into therapy for pathological conditions of depression and terminal illness. They also continue to be used in some settings for religious and spiritual purposes such as Santo Daime, the Union Vegetale and the Native American Church, much as they have for centuries. Finally they are used recreationally as an illegal but sometimes tolerated fringe activity, partly because they are easy to cultivate and almost impossible to eradicate. All of these uses create a gloss on the phenomenon which clouds its full potential. Recreational use tends to trivialise it and reduce it to the pursuit of pleasure. Spiritual and religious use tends to reinforce existing attitudes, from Christian doctrine to tribal sorcery and witchcraft.

Demonstrating just how complex the discourse on sacred mushrooms are, Andy Letcher in “Mad Thoughts on Mushrooms” (2007) cites three dominant discourses in a Foucauldian sense: (1) Psychotic where hallucinogens are perceived to induce psychosis, (2) Therapeutic, where they are seen to have therapeutic value when confined to the clinic, and (3) Prohibitionary when they escape the clinic and should be suppressed by the full force of the law. In this view the pendulum swung firstly from (1) => (2) => (3) and is now swinging back towards (2) while still remaining a discourse of containment and marginalisation on the part of academics, out of realistic fear of a regulatory backlash.

Running counter to these three dominant discourses are four resistive discourses: (4) Recreational, in which breaking the bounds is advocated both for the pleasure these experiences brain and for the pleasure of transgression against the imposed restrictive order; (5) Psychedelic, for their ability to reveal or make manifest the hidden dimensions of the self; (6) Entheogenic, stemming ultimately from Gordon Wasson’s religious experiences on mushrooms in a group conference in which Carl Ruck coined the term, meaning “generating God within,” or “becoming God within”, and finally; (7) Panpsychic / Animistic, that is, they evoke, not theophany but animaphany. Here, mushrooms are not regarded as altering, consciousness but as adjusting what it is possible to perceive, and therefore the spirits and beings occasioned by mushrooms are neither hallucinations nor some aspect of the self, but beneficent discarnate entities with whom the practitioner attempts to forge relationships. They thus tend to evoke states of consciousness in which the consciousness of animals and plants, to other, e.g. spirit entities, or the mind at large, are experienced.

David Luke (2020) also lists a diverse collection of anomalous experiences spanning the transpersonal and psychedelic including (a) synesthesia, (b) extra-dimensional percepts, (c) out-of-body experiences, (d) near death experiences, (e) entity encounters including (mythological beings, chimeras, extraterrestrials, angels and celestial beings, semi-divine beings such as Jesus or Buddha, demons, monsters and beings of death), (f) interspecies communication, (g)...

33 entheogen – "god (theos) within", is a psychoactive substance that induces alterations in perception, mood, consciousness, cognition, or behaviour for the purposes of engendering spiritual development or otherwise in sacred contexts. (Wikipedia)

34 holotropic “wholeness seeking” – states which aim towards wholeness and the totality of existence – e.g. Brahma–atman.
possibility, and (h) telepathy, precognition, clairvoyance and psychokinesis. DMT is particularly prone to spirit images, as illustrated in “Ayahuasca Visions” (Luna & Amaringo 1991). Not all of the examples cited by Luke are psychedelic induced and several of the psychedelic examples echo in greater intensity and embellishment those in dreaming and hypnagogic imagery, in which the subject finds themselves immersed in perceived situations and encounters with entities that evaporate with arousal. These can be considered as visions at the periphery of the nierika portal.

At an extreme, we have Terrence McKenna’s far-fetched statement identifying mushroom spores, rather than the cosmological consciousness and visions they evoke, as galactic entities of enlightenment spread across the universe: “I am old, older than thought in your species, which is itself fifty times older than your history. Though I have been on earth for ages, I am from the stars. My home is no one planet, for many worlds scattered through the shining disc of the galaxy have conditions which allow my spores an opportunity for life.” (McKenna 1993 210).

There is a fine line between this kind of statement, which most people will find unbelievable fantasy, and a much more widely held, meaningful and validating discourse that the mushroom experience can evoke a universal consciousness that may inform in meaningful, or even urgent ways, the ensuing direction a person’s life needs to take. (Yaden et al. 2021) call for epistemic humility regarding psychedelics and the hard problem: “We conclude by calling for epistemic humility regarding the potential for psychedelic research to aid in explaining the hard problem of consciousness while pointing to ways in which psychedelics may advance the study of many specific aspects of consciousness.” Epistemic humility is applying a rule that we can’t assess reality in itself – the very core of the psychedelic experience of “ultimate reality” unless we do so with the filters of the doors of perception slammed shut! How they can say this, while holding the purse strings of the dominant therapeutic discourse, is extremely troubling. Their reasoning is not really about psychedelics but about the confounding nature of the hard problem: “The hard problem of consciousness is currently not scientifically answered, and it is not clear that a scientific answer is even possible, which is why it is called “a hard problem.” They then note that the hard problem is often described in terms of the “explanatory gap” (Levine, 1983), noting: “This phrase may be an understatement – there is far more than a gap, but rather a yawning chasm between our current scientific understanding and the prospect of explaining the hard problem of consciousness.” This is the chasm of the psychedelic experience in which materialistic science fails the test because it can’t explain conscious volitional will either. To use the term scientific in this way is a contradiction to the meaning of science as a word which embraces knowledge more generally than physical investigation.

Although psychedelics may not of themselves automatically solve the hard problem, the psychedelic experience cited in this article has led to the cosmological description in this article, which does provide a concise solution to the hard problem. The problem is not with psychedelics, but the assumptions of materialism and physicalism of the current dominant fashion in scientific exploration of brain states. This is confirmed by their statement that: “it is not clear that a scientific answer is even possible”. This highlights what the author sees as a dangerous development in psychedelic research, where the agent most startlingly evoking subjective changes to experience is being filtered through a materialistic filter by the very academics acting as the mediators of therapeutic use and research into these agents. This looks to be an example of the dominant discourse in therapeutic use being applied by the mediators of the research to undermine both the psychedelic and entheogenic resistive discourses and the validity of psychedelics outside the laboratory as agents of cosmological investigation.

Note that the symbiotic cosmology does not conform to the philosophical classification in Yaden et al. (2021) into 3 broad categories: materialist, dualistic, and monistic. The symbiotic cosmology is panpsychic so it is not materialist, but neither is it dualistic or monistic. It is a description based on complementarity extending the wave-particle complementarity of quantum physics to a cosmological subject-object complementarity in which the two complements cannot be separated in a dualism, just as wave and particle aspects are alternate manifestations of a
single quantum identity which cannot be separated, yet it is not monistic because it is a complementarity, not simply a monistic theory of a cosmic mind alone.

Yaden et al. (2021) attempt to justify their conclusion by citing four authors, (Blackmore, 2013; Letheby, 2015; Bayne and Carter, 2018; Johnson, 2020). A viewing of Susan Blackmore’s 2020 Tucson talk however makes clear that she considers the debate whether psychedelics reveal new discoveries or merely cause distortions of the psyche will only be revealed by the new wave of psychedelic research which I support. Bayne and Carter do not treat the hard problem as such, but critique the idea of layers of consciousness and the simplistic notion that psychedelics per se invoke a “higher” form of consciousness, or even that what psychedelics do reveal can be classified in terms of one-dimensional layers, with which this article again agrees. In fact the notion of the nierika advanced in this article is more like a cyclonic vortex having a multitude of divergent experiential features, some illusory and some informative, with the centre of the cyclone providing a portal to deeper forms of experience which may have abstract or cosmological value. This is not a linear indexed description and the subjective process of entering such states requires going “deeper into the abyss” of unconstrained consciousness rather than any simplistic view of “higher” conscious states.

Letheby invokes three descriptions of psychedelic experience: (1) Yes – by inducing mystical states of consciousness, psychedelics afford direct knowledge of supernatural, transcendent dimensions of reality (the entheogenic resistive discourse). (2) No – since materialism or physicalism is true, there are no transcendental realities, and psychedelics just cause compelling hallucinations or delusions (the dominant hallucinogenic and psychotomimetic discourse). (3) Neither – a third view that psychedelics can afford genuine epistemic benefits, even if materialism is true and there is no transcendent reality. Rather than helping us learn new factual information, psychedelics then allow us to understand or appreciate already-known (or otherwise knowable) facts in deep, vivid, affectively and motivationally significant ways. This is again taking a position with implicit dependence on a materialistic viewpoint, while conceding psychedelics may reveal epistemic benefits, so it is confining its own conclusion by its founding assumption of materialism. The symbiotic cosmology is again neither simply an old view, nor is it materialistic. It has resemblances to Upanishadic thought dating back to 700 BC, but it is not a monist theory and is based extensively on detailed investigation of quantum reality, chaotic systems, evolutionary origins of membrane excitability and neuroscience in a novel cosmological description induced by a mushroom experience.

Matt Johnson (2020), who is both a cited reference and also a co-author of Yaden et al., takes issue with the very concept of consciousness itself as “sloppy”, noting that “one might question whether the different concepts associated with consciousness should even be identified under a singular construct.” This has some validity, for example the subjectivity of consciousness is distinct from its features of coherent attentiveness and from the distinct nature of specific qualia and with notions of self-consciousness and the cognitive mind of thoughts and verbal processes. But consciousness is all these things in a coherent concept, integral to our existential condition, so sloppy is derogatory and unscientific. Consciousness is our most enduring and all-encompassing arena of experience. It is not sloppy! It is fundamental and essential!

In dealing with the hard problem, Matt says “Explaining the existence of experience itself, which is the “hard problem” of consciousness, is at present something that appears outside of the realm of empirical science. Some philosophers and scientists have disputed the existence of this hard problem, but I do not think the problem should be dismissed”.

But empiric 37 means “experience”, as does experiment, and there is abundant evidence coming also out of the Johns Hopkins team attesting to experiments confirming experiential observations of quantum change involving “ultimate reality” (Griffiths et al. 2018, 2019). These represent statistical evidence, just as the moksha epiphany does. The claims about consciousness and the experiments on mystical states are thus presenting mutually-contradictory academic reasoning. A critique is made of psychedelic states as having no evidential value based on a preamble assessment that the hard problem is empirically unscientific. This contradicts the definition of empirical, whose root lies in subjective accounts, by invalidating veridical reporting. The legal system depends centrally on veridical evidence. It is integral to interrogating the subjective condition sine qua non. So the materialist assumption is empirically counterproductive.

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37 empiric based on, concerned with, or verifiable by observation or experience rather than theory or pure logic.

Etym. empiric via Latin from Greek empeirikos, from empeiria ‘experience’, from empeiros ‘skilled’ (based on peira ‘trial, experiment’).

experimental late 15th century ‘having personal experience’, also ‘experienced, observed’: from Latin experimentum practical experience
In summing up Johnson states: “I suggest that psychedelic science has, to date, not provided substantial advancement in our understanding of any of these concepts [easy or hard] purported to relate to consciousness”. This is a very pessimistic and confounding view for research in psychedelic science that is showing real promise of cultural benefit. Given a priori assumption of the hard problem’s quasi-unscientific status, it is hard to see how substantial advancement could ever occur on either the role of psychedelics as an informant of the nature of reality, or the status of the hard problem itself. This again underlines the fallacy of academic reasoning that is subservient to the materialistic hypothesis to the extent that no other type of cosmology can be entertained and no empirical result can be gained except by objective means. But biogenic/panpsychic cosmology is biologically precise and seamlessly consistent with multiple steps of the evolutionary pathway so it is a meticulous natural description, consistent with quantum and dynamical physics and with neuroscience. Therefore such reasoning is integral to the scientific discourse.

This error of empiricism applies critically to analysis of the symbiotic cosmology because the principal evidence for it has to come veridically from first person reports. We can’t directly see the consciousness of others, so it is impossible to see the consciousness in simpler life forms or physical processes directly. One can rightly conclude that panpsychic cosmology is the only class of cosmology in which conscious volitional intent is real, so by the veridical test of validity Occam’s razor cuts for panpsychism as a necessity. This is because volitional will implies the conscious mind affect the physical brain and hence the physics of the universe. Therefore mind is a complementary aspect of the physical universe. To a materialist this appears to be adding something that is unnecessary but from the veridical perspective it is essential, because materialist cosmology does not admit conscious volitional will. The inescapable solution is quantum panpsychism.

The problem for mechanists is that intervening states of consciousness are largely inaccessible. But organismic consciousness is evident in humans and mammals generally and is accessible also in other forms in deeply unbounded mental states of meditation or psychedelic transcendence, in which organismic consciousness is asymptotically convergent to an unbounded abstract state identifiable to the subject with the mind at large. Thus the two accessible avenues for scientific discovery are the organismic state and the mind at large. This is why the role of psychedelics becomes sine qua non optimal. If you take them out of the equation, you really have only sparse states of meditative vigil and the dreaming state. Thus to discount the importance of psychedelics is futile and counterproductive.

Yaden et al. nevertheless do concede the potentiality of psychedelics to address the hard problem: “The scientific study of psychedelics and consciousness, in all of its meanings, is still nascent. While we cannot, at present, see any clear scientific traction resulting from the intersection of psychedelics and the hard problem of consciousness, we are open to the possibility of being proven wrong.” This article now of full book length monograph articulates a strategic response.

The thesis in this monograph takes a form of a scientific investigation that sets up a verifiable framework to present a cosmology, consisting of interlocking biogenic, panpsychic and symbiotic aspects, scientifically accounting for the flowering of conscious life in the universe, that has components of discourse (2) that they are therapeutic, (5) that they reveal the self, (6) that they induce moksha and (7) in that this is not a theistic description of reality, but one in which consciousness as we know it is widespread in all eucaryote organisms, and in the mind at large through them, so that the animistic actually has a valid cosmological basis.
The Evolutionary Landscape of Symbiotic Existential Cosmology

Fig 56: The Tree of Life merger that made us in the eucaryote endo-symbiosis (Baum & Baum 2020).

Symbiotic Existential Cosmology is a fundamentally evolutionary, in which the integrative nature of both genotype and phenotype, modified only by small mutational changes, ensures the biosphere as a whole retains stability over evolutionary and cosmological time scales. However it is also an innovative evolutionary quantum cosmology in which:

1. **Mutations** are viewed as **quantum uncertain transformations** following a **non IID sequence** which fails to converge to the probability interpretation, rather than simple randomness.

2. **Major evolutionary transitions** including **biogenesis**, the **eucaryote endo-symbiosis** and our **cultural emergence**.

3. **Natural and sexual selection** of metazoa is mediated by an animal’s **subjective conscious volition over the natural world** and additional roles such as:

4. **Modular regulatory evolution.** See figs 66, 68 & 88, show that transposable elements and endogenous retroviruses which occupy nearly half the human genome, are both capable of mutational insertion of new elements as well as having been utilised in essential symbiotic roles.

5. **The organismic development process** is also coupled to genetic evolution. Fig 62 shows this in homeotic gene evolution underlying segmental development across the metazoa and fig 64 also shows the approach in the evolution of the human brain as a social neuronal organism.

6. **Biospheric symbiosis**: Natural and sexual selection results in the fittest biospheric symbionts, not the most competitive dominant species, exemplified by the eucaryote endo-symbiosis and multiple predator-prey and parasite-host relationships rising to climax diversity.

7. **The mutual coupling of genetic evolution to cultural evolution**, with the emergence of culture and language, has resulted in a multilevel selection paradigm in which cultural elements reinforced across generations, also influence genotype and organismic phenotype, and vice versa.

8. **Cosmological symbiosis** in which **gene-culture-biosphere co-evolution** ensures biospheric and human survival.

**Gregory Bateson (1972)** viewed all three systems of the individual, society and ecosystem as together a part of one supreme cybernetic system that controls everything instead of just interacting systems. This supreme cybernetic system is beyond the self of the individual and could be equated to what many people refer to as God, though Bateson referred to it as Mind.

Evolutionary Origins of Neuronal Excitability, Neurotransmitters, Brains and Conscious Experience

The discussion of psychedelics in the previous chapters brings us back to a fundamental question. Why does the brain use neurotransmitters such as serotonin in such characteristic ways to do with emotion, wakefulness and sleep, vigilance and reward? This takes us back all the way to the emergence of life and potentially to the cosmological relationships defining the biomolecules, from ATP to RNA, and the various biological amino acids and their elementary amines such as tryptamine and dopamine. The elementary neurotransmitter types, many of which are fundamental amino acids (glutamate, glycine, GABA), or amines derived from amino acids (serotonin, dopamine, histamine, epinephrine) have primordial relationships with the membrane, as soluble molecules with complementary (+) charge relationships with the hydrophilic (−) ends of the phospholipids. Glutamate and GABA are prominent components of both the Tagish Lake and Murchison carbonaceous chondrites and stardust aerogels from the tail of comet Wild 2, clear evidence for a prebiotic cosmological status. As the two key excitatory and inhibitory neurotransmitters in the human brain, which are also key in myxamoeba fruiting body aggregation, demonstrating their strong conservation, this also gives human consciousness a cosmological foundation.
Tryptophan, the amino acid from which serotonin is generated, plays a key role in the transfer of electric charge in the earliest forms of photosynthesis. In *Rhodobacter sphaeroides*, there are 39 tryptophan residues surrounding the porphyrin centre. Initiation of the electron transfer reaction by excitation results in a transient change in the absorbance at UVB, near the peak of the tryptophan absorbance band. To make serotonin from tryptophan, oxygen is needed, and in the earliest geological times the Earth’s atmosphere had little oxygen. Thus, serotonin is made specifically in unicellular systems capable of photosynthesis and the cellular production of oxygen. Consequently serotonin is up to 100 times more plentiful in plants and animals that have ceased to synthesise tryptophan, depending on plants for their supply. This relationship with light continues to this day in human use of melatonin to define the circadian cycle and serotonin in wakefulness and sleep, with light deprivation causing depression through serotonin.

The fundamental components of the G-protein coupled receptor system, including the canonical GPCR itself appear to go right back to LECA the last eucaryote common ancestor, as they are shared across all major eucaryote branches (Mendoza et al.). From the gene diversity for serotonin receptors, the 5-HT1a receptor is estimated to have evolved 750 million to 1 billion years ago, before the muscarinic, dopaminergic and adrenergic receptor systems (Peroutka & Howell, Peroutka, Walker et al) and long before the Cambrian radiation defining multicellular animals. As noted by Natoh (1973), "the ionic mechanisms for electrogensis are basically identical to those in nerves, muscles, and receptors of metazoan organisms". Wan & Jékely (2021) describe the ancestral repertoire of eukaryotic excitability and discuss five major cellular innovations that enabled its evolutionary origin, including a vastly expanded repertoire of ion channels, the emergence of cilia and pseudopodia, endomembranes as intracellular capacitors, a flexible plasma membrane and the relocation of chemiosmotic ATP synthesis to mitochondria, which liberated the plasma membrane for more complex electrical signalling involved in sensing and reacting.

This places the emergence of receptor proteins and their neurotransmitters as occurring before the multicellular nervous systems, as cell-to-cell signalling molecules essential for survival, and positive and negative responses to nutrition and danger. The need for multimodal molecular messengers thus arises from the need for cells to have a variety of signalling molecules modulating key motivational and aversive aspects of survival strategy.

It also explains that neurotransmitters originated from direct signalling pathways between the cell membrane and gene expression in the nucleus of single cells, highlighting why changes in gene expression such as that of *egr-2* in...
psychedelics may be central to psychedelic neurotransmitter action, rather than just flow-on excitation. It has also been suggested that key enzymes in neurotransmitter pathways may have become ubiquitous through horizontal gene transfer from bacteria (Iyer et al).

This ancient origin is confirmed by the fact that receptor proteins, second signalling pathways and key neurotransmitters are known to occur widely in single-celled protists. Both *Crithidia* and *Tetrahymena* contain norepinephrine, epinephrine, and serotonin (Blum 1969). The ciliated protozoan *Tetrahymena pyriformis* (Brizzi & Blum, Essman) and flagellated *Crithidia fasciculata* (Janakidevi et al) utilise serotonin, and the former also metabolises dopamine and epinephrine (Takeda & Sugiyama, Nomura et al). *Tetrahymena pyriformis* also has circadian light-related melatonin expression (Kohidai et al). In Tetrahymena, intracellular concentrations of serotonin and dopamine vary inversely during logarithmic and stationary phases of growth. These substances are released into the extracellular milieu, probably in response to elevated intracellular Ca²⁺, where they can increase intracellular levels of cAMP. Evidence that GABA could play a similar role comes from the finding that treatment with diazepam, a GABA receptor ligand, elevates the growth rate of Tetrahymena (Lauder 1993). *Tetrahymena* utilises histamine, serotonin, epinephrine, melatonin, and triiodothyronine can be found in it, as well as peptide hormones, such as insulin, adrenocorticotropic hormone, epidermal growth factor, endocannabinoids, endorphins and c-AMP and GMP. Thus signalling molecules in single celled eucaryotes appear to further long-term adaption through cross-generational epigenetic changes (Csaba 2014).

*Trypanosoma cruzi* could be induced to differentiate by increased cAMP levels that resulted from addition of epinephrine (González-Perdomo et al). Species of Entamoeba secrete serotonin and the neuropeptides neurotensin and substance P (McGowan et al) and release and respond to catecholamine compounds during differentiation from the trophozoite stage into the dormant or transmissible cyst stage (Eichinger et al) and *Plasmodium falciparum* malaria replication can be blocked by SHT1a agonists (Locher et. al). Acetyl-choline and its G-protein coupled receptor have been found in acanthamoeba (Baig & Ahmad 2017, Baig AM, et al. 2018). Elements of the protein signalling pathways, such as protein kinase C, essential to neuronal synaptic contact originated close to the eucaryote origin (Emes et al. 2008, Ryan & Grant 2009). Likewise the DlG family of postsynaptic scaffold proteins, which bind neurotransmitter receptors and enzymes into signalling complexes originated before the divergence of the vertebrates and arthropods (Nithianantharajah et al. 2012).

Consequently the major neuroreceptor classes have a very ancient origin, with the SHT1 and SHT2 families diverging before the molluscs, arthropods and vertebrates diverged, close to the level of the founding metazoas. Sponges, with only two cell types, express serotonin (Wayrer et al) and have been shown to have the critical gene networks to generate synapses, in a pre-coordinated form (Conaco et al). Coelenterates already have all the key components of serotonin pathways, involved in signalling by sensory cells and neurons, despite having only a primitive nerve network (McCauley, Umbriaco et al).

Aggregation of social myxamoeba such as the slime mould *Dictyostelium discoidium* (video), under exhaustion of food supply, is mediated by a cyclic-AMP, also utilising glutamate and GABAb receptors (Taniura et al. 2006, Anjard & Loomis), forming first a motile slug and then forming a fruiting body via reciprocal serotonin and monoamine oxidase A (maoA) activity (Halloy et al, Goldbeter, Taniura et al, Baskar, Mani & Hyde). MaoA, which degrades serotonin, confers the fate of an organiser to the *Dictyostelium* tip. Once a tip has formed, serotonin contributes to tip dominance. It inhibits further tip formation, and thus ensures the mound retains the size determined during the earlier developmental stage. This relationship between serotonin and MAOa is precisely retained in humans, as exemplified in MAO inhibitor anti-depressants. The slug motions, including phototaxis, follow a distinct dynamical process from individual amoeba responses (Schlenkrich et al. 1995), indicating a separate collective organismic excitation protocol.

And this collective organism can be sexually diverse. *D. discoideum* has three different mating types which can mate with any two different sexes. Heterothallic mating occurs when two or more amoebae of different mating types fuse during aggregation to form a multinuclear syngamy, which then breaks apart forming binucleate cells leading to one or more giant zygotes, which then release cAMP to attract other cells, engulfing them cannibalistically which serve to encase the whole aggregate in a thick, cellulose wall to protect it. Inside the macrocyst, the giant cell divides first through meiosis, then through mitosis to produce many haploid amoebae that will be released to feed as normal amoebae would. This means that the collective organism is sexually diverse, just as we are. It also means that a sexually diverse but significantly related population engages in sacrificial behaviour for the benefit of the species because the individuals forming the stalk die and do not get to produce spores. In related *D. purpureum* the slug stage...
in genetically mixed colonies separates into slugs containing a majority of closely related individuals to avoid cheating (Mehdiabadi et al. 2009). The fact that syncytium formation leads to cells having up to three mitochondrial genotypes, when three sexual strains fuse, suggests sexual fusion could have evolved by the endosymbionts to ensure their survival, controlled later by sperm-ovum fertilisation to avoid cytoplasmic genetic warfare. Serotonin thus plays a key role in enabling developmental organisation of reproduction conducive to the survival of the collective sexual organism, rather than individual amoebae.

Both serotonin and external cAMP as well as glutamate and GABA are thus involved in social signalling, mediated by external G-protein linked receptors, despite the fact that in mammals cAMP is an intracellular second-signalling molecule. GABA promotes the release of the peptide SDF-2 which induces spore formation. Glutamate acts via the metabotropic glutamate receptor DdmGluPR as a competitive inhibitor of GABA functions mediated by a GABAβ-like receptor and is also able to inhibit induction of sporulation by SDF-2. Lack of glutamate expression delayed aggregate formation and impaired chemotaxis toward cAMP. Phylogenetic analysis suggests that DdmGluPR diverged after the mGluR family-GABAβ receptors split but before mGluR family divergence (Anjard & Loomis 2006, Milne & Devreotes 1993, Tanura et al. 2006).

About a third of wild-collected D. discoideum also engage in the symbiotic “husbandry” of bacteria, allowing the “seeding” of the food source at the location of the spore dispersal, which is particularly valuable if the new location is low in food resources. Colonies produced from the “farming” spores also show the same behaviour when sporulating. Some bacteria are sequestered in double membrane bound phagosomes where they are protectively isolated but not consumed. The amoebae preserve their individuality and each amoeba has its own bacterium. Symbiotic farming has a cost benefit trade-off: Those colonies that do not consume all of the prey bacteria produce smaller spores that cannot disperse as widely. In addition, much less benefit exists for bacteria-containing spores that land in a food-rich region, explaining why an ongoing minority of colonies do this (Brock et al. 2011).

Fig 59: Above: Changes in extracellular electric potential of D. discoideum pseudoplasmodial slug (fig 93) moving on the substratum (Kitami 1988). Below: VAMP homology between Dictyostelium and humans (Bennett et al. 2008).

Just as humans and slime moulds share the same basic neurotransmitter pathways, human phagocytes and Dictyostelium share the same pathways for bacterial assimilation and defensive protection (Dunn et al. 2017). This is reflected in the homology of human and myxamoebic SNARE protein VAMP7, or SYBL1 (Bennett et al. 2008), involved in both endosomal vesicle transport and target cell killing by natural killer cells. Syntaxin 7, syntaxin 8, Vti1 and VAMP7 form an active SNARE complex for early macropinocytic compartment fusion in Dictyostelium (Bogdanov et al. 2008). Syntaxins drive fusion of synaptic vesicles containing v-SNAREs, and interact with voltage dependent calcium and potassium channels. The myxamoebic versions likewise have sequence homologies with human versions.

Fig 60: Ichthyosporeans Filasterians and Choanoflagellates have genes for proto-synaptic proteins having extensive evolutionary homology with metazoan and vertebrate (human) synaptic proteins Dlg/PSD-95, Homer and Shank. In single-celled species they are associated with aggregation processes, just as human synaptic protein Dlg/PSD-95 is also active in septate junctions in skin cells (Burkhardt & Sprecher 2017).
Studies of protists that are close relatives of metazoans, like the ichthyosporean Creolimax fragrantissima, the filasterean Capsaspora owczarzaki and the two choanoflagellate species Monosiga brevicollis and Salpingoeca rosetta possess proto-synaptic proteins – synaptic protein homologs although they never developed synapses and neurons that may interact with other proto-synaptic proteins in organisms with no synapses and neurons, in a very similar manner as observed in neurons. Their genomes encode for Dlg/PSD-95, Homer and Shank. Vesicle membrane proteins (e.g. Synaptophysin and Synaptogyrin), proteins involved in exocytosis (e.g. Complexin), and signaling (e.g. CaMKII) are also present in the genomes C. owczarzaki and choanoflagellates. Moreover, voltage-gated sodium and calcium channels were identified in the genomes of choanoflagellates (Liebeskind et al. 2011, Burkhardt & Sprecher 2017).

In metazoans with synapses and neurons, synaptic proteins are functionally diverse and fulfill different roles in other cell types. This seems to be the case for nearly every synaptic protein found in vertebrates. For instance, Dlg/PSD-95 functions as a scaffolding protein and clusters iGluRs to the plasma membrane of postsynapses, but the same protein is an important component of septate junctions in epithelial cells. The protein Homer, which is expressed in the nucleus and binds both to Flotillins in choano-flagellates and to astrocytes in vertebrates highlighting that many proto-synaptic genes may be pleiotropic.

Brunet & Arendt (2016) have explored the incidence of action potentials and Na/Ca ion channels and associated the incidence of action potentials in single celled eucaryotes as stemming from the activation of the eucaryote flagellum. The eucaryote kingdom is divided at or close to the base by the unikont/bikont division of one or two flagella, with animals and plants on opposing branches. Both of these broad groups bear flagella and have action potentials. Close to the root excavata such as Naegleria are known to possess flagella (fig 58). From this point of view excitability including that leading to action potentials is an ancestral feature of flagellated energetic protists. The amoeboid-flagellate switch is also conserved also across the choanoflagellates (Brunet et al 2021).

Wan and Jékely (2020) note that fast reaction escape responses of ciliated eucaryote cells to potential threats from illumination changes or mechanical disturbance are usually induced by action potentials – unidirectional electrical pulses involving fast, regenerative changes in membrane potential. They state that while all cells display some electrical activity, phylogenetic evidence suggests that the capacity to propagate action potentials may have been an ancestral eukaryotic trait supported by LECA.

Brunet & Arendt (2016) advance an evolutionary hypothesis for the origin of the depolarization–contraction–secretion (DCS) coupling, the functional core of animal neuromuscular circuits. They argue that such fast reactions may have emerged in response to accidental membrane damage and sudden calcium influx. Based on calcium-triggered membrane depolarization, they infer that the first action potentials evolved alongside the membrane of sensory-motile cilia, with the first voltage-sensitive sodium/calcium channels enabling a fast and coordinated response of the entire cilium to mechanosensory stimuli. From the cilium, action potentials then spread across the entire cell, enabling global cellular responses such as concerted contraction in several independent eukaryote lineages. In animals, this process led to the invention of mechano-sensory contractile cells. These gave rise to mechano-sensory receptor cells, neurons and muscle cells by division of labour and can be regarded as the founder cell type of the nervous system.

A precursor of synaptic transmission occurs in choanoflagellates, where the cells of some species aggregate to form colonies. In these colonies, the cells move water past the colony by beating their flagella. Each of these cells can release transmitters that act on receptors in nearby cells to produce movements of the whole colony (Kristan 2016). At the transition to multicellularity, the fresh water sponge Spongilla lacustris has 18 distinct cell types. Synaptic genes were active in a few of these types, which were clustered around the sponges’ digestive chambers called secretory neuroid cells. X-ray scans revealed that neuroids send out long arms to modulate the activity of choanocytes holding the flagella that drive the sponges high-flow filter feeding currents. They do not have actual synapses but illustrate the evolution of cells specialising in modulating the activity of others (Musser et al. 2021).
Also originating with LECA are key transcription factors responsible for initiating transcription and hence gene expression. Fig 62(1) shows the full spread of these factors across eucaryote diversity, with a large panenucaryotic core complemented by further evolution of TF’s in unikonts, holozoa (animals and amoebas), metazoa (higher animals), fungi, algae and higher plants.

Likewise, the homeodomains originate at or close to the LECA root, occurring for example in trichomonads and more diversely in amoebozoa and establishing separate new branches in metazoa, fungi and plants. These provide a genetic skeleton for developmental adaption of higher organisms through regulatory changes of morphogenesis leading to evolution of organismic phenotype of major phylla in constrained forms of regulatory evolution leading to among other branches to the brains of vertebrates, mammals, primates, apes and humans in the processes outlined in fig 64.

We thus now turn to higher organism and particularly human brain development. Late in the fourth week, the neural tube develops three distinct bulges that correspond to the areas that will become the three major divisions of the brain: forebrain, midbrain, and hindbrain. Not until the end of week 5 and into week 6 (usually around forty to forty-three days) does the first (chaotically) excitable electrical brain activity begin to occur. During weeks 8 to 10, the cerebrum begins its development in earnest. Neurons proliferate and begin their migration throughout the brain. The frontal and temporal poles of the brain are apparent during weeks 12 to 16, and the frontal pole (which becomes the neocortex) grows disproportionately fast when compared with the rest of the cortex.

The very early leading role in brain development of serotonin expression is laid bare by its sequential expression and elaboration from very early stages and is consistent across vertebrate species. In early mouse embryos, 5-HT derived from the maternal-embryonic circulation activates different 5-HT receptors to control the proliferation, migration, gene expression, and morphogenesis of neural-crest and neural crest-derived cells (Buznikov et al. 2001). 5-HT signaling molecules such as enzymes responsible for 5-HT synthesis and breakdown,
5-HT receptors and the 5-HT transporter (5-HTT) are already expressed in the brain before 5-HT neurons are born (Witteveen et al. 2013).

“The development of serotonin-containing neurons has been extensively studied in a number of animal species, including rat, chick, nonhuman primate, and human. In all species studied the highest functional status of the serotonin system is reached early in development, and adult levels of the system are actually much lower than in the younger animal. Serotonergic neurons are first evident by 5 weeks of gestation and increase rapidly through the 10th week of gestation. By 15 weeks of gestation, the typical organization of serotonin cell bodies into the raphe nuclei can be seen. Serotonin levels increase more slowly throughout the first 2 years of life and then decline to adult levels by 5 years of age. The early arrival of serotonin into target regions, ahead of other monoamines, may regulate the ingrowth and terminal development of other monoamines, in particular dopamine. Because serotonin regulates the maturation of target areas, the amount of serotonin that grows into an area becomes key for further development” (Whitaker-Azmitia 2001).

GABAergic neurons likewise appear early in the development of embryonic brain and spinal cord. GABAergic fibers, apparently ascending from the spinal cord, project through regions of brainstem, midbrain and forebrain where serotonergic, dopaminergic and peptidergic neurons are being generated. An example of trophic signalling between neurons and glia also occurs in the serotonergic regulation of the calcium-binding protein S100β, which functions as a serotonergic and GABAergic growth factor in the embryonic brain stem (Lauder 1993).

“Cells of the serotonergic raphe nuclei are generated early in the embryonic rat brain, prior to most of their target cells. As soon as they are formed, these neurons begin to send axons rostrally, where they soon encounter their earliest targets (e.g., dopamine neurons of the substantia nigra). The ability of 5-HT to regulate development of its target cells may be mediated by specific 5-HT receptor subtypes. It has been demonstrated that prenatal exposure to pCPA, or the general agonist 5-methoxytryptamine (5-MT), alters the postnatal expression of 5-HT receptors in rat brain. A recent in situ hybridization study has revealed that embryonic monoamine neurons and other neuronal populations affected by in utero exposure to pCPA express mRNA transcripts encoding 5-HT1c and 5-HT2 receptors. Moreover, the [psychedelic] 5-HT1c/2 agonist DOI promotes growth of cultured embryonic brainstem 5-HT neurons and mesencephalic dopamine neurons”.

Fig 64: (1, 2) Neurogenesis and cellular migration up the glial scaffold to form the cortical layers (Agritman et al. 2017, Paridaen & Hutton 2014). (3) Serotonin interactions in the mature brain between the Dorsal Raphe and mPFC (Celada, Puig & Arigas 2013). These are also activated I embryogenesis and mediate the organisation of the layered cortex through the Cajal-Retzius cells. Inset: Dopamine and Noradrenalin inputs to dlPFC (Thiele & Bellgrove 2018). (5) Pyramidal cells are complex oscillating cells which have receptors for multiple neurotransmitters in diverse locations from dendrites to the cell body and axon. (6) Connectome of axonal pathways in the brain emphasise its integrated embryonic development as an adaptive cellular process.

5-HT1a neurons located in the rostral raphe cluster extend profuse axon tracts into the fore- and midbrain. A distant target of the ascending 5-HT projection system within the forebrain is the medial prefrontal cortex (mPFC). The mPFC is the seat of our highest cognitive abilities and known to be involved in attentional processes, working memory and behavioural flexibility. In rodents, the developing 5-HT-positive fibers reach the mPFC, where they initially innervate the marginal zone and the subplate, before massively innervating the cortical plate proper. The 5-HT fibers, found within the marginal zone of the mPFC, are thought to contact Cajal-Retzius (CR) cells, cortical layer I cells secreting the glycoprotein reelin crucial for the correct layering of the cortex (Witteveen et al. 2013). Serotonin’s key function as a organising of brain development
in humans, may thus explain why fetal alcohol syndrome may be precipitated by embryonic serotonin depletion (Whitaker-Azmitia et al. 1996). The 5-HT2A receptor develops more slowly than the 5HT1A. The peak of the 5-HT2A receptor is earlier than the 5-HT2C receptor and the receptor is functional by postnatal day 7 in the rat hippocampus. This time period is too late to influence differentiation, however the receptor may play a role in branching, terminal sprouting, synaptogenesis, and mitogenesis. The role of both the 5-HT1A and 5-HT2A receptors during development suggest that the 5-HT2A receptor acts to release glucose from glial cells and to increase Ca²⁺ levels in neurons.

These actions destabilise the internal cytoskeleton, promoting fluidity and result in cell proliferation and apoptosis, resulting in structural instability. By contrast, the 5-HT1A receptor increases the release of S100β from astrocytes and reduces the levels of cAMP in neurons, promoting an acceleration of differentiation produced by enhancement and stabilisation of cytoskeletal formation, neuronal rest and stability. The 5-HT2 receptor can be referred to as a programmable receptor. Events during development may affect the number, affinity, or function of these receptors in the adult brain. Both prenatal and postnatal stress to the mother significantly increases the number of 5-HT2 receptors in the offspring, even after they have become adults (Azmitia 2001).

Serotonin neuronal autoregulation spans major metazoan phyla from molluscs, through arthropods to vertebrates as well as the human brain: “Serotonin appears to autoregulate development of cultured 5-HT neurons, and can initiate and autoamplify its own synthesis in hypothalamic cultures. Evidence for an autoregulatory role of 5-HT in vivo comes from the observations that Drosophila mutants incapable of 5-HT synthesis, and adult snails depleted of 5-HT, exhibit aberrant growth of serotonergic axons. Similar effects are seen in rats treated prenatally with the 5-HT receptor agonist 5-MT. Taken together, these studies indicate that altered levels of 5-HT may affect development of the serotonergic system in developing brain. Serotonin also inhibits its own growth through the presence of serotonergic receptors on serotonin terminals possibly 5-HT1b. Thus, serotonin regulates not only the development of target fields, but also its own development” (Whitaker-Azmitia et al. 1996).

This picture confirms that the role of serotonin in nervous system development is strongly conserved from amoebozoa to humans and signals the existence of an ancient conserved regulatory system that evolved in single celled eucaryotes to secure survival of the collective organism, still similarly expressed in us to regulate development. This provides an evolutionary basis for neurodynamic networks to have retained these developmental characteristics, enabling entheogenic serotonin receptor agonists to alter the emotional dynamics of the networks of the ego attuned for organismic and kin survival to promote collective survival, experienced as union the with mind at large. It is also consistent with consciousness emerging at the level of the eucaryote cell.

The developmental paradigm outlined in fig 64 also underlines the fact that the entire network architecture of the brain is the result of a developmental social interaction between specific cell types of neural epithelial cells differentiating into glial and neuronal cell types, which then, in a coordinated sequence, undergo a dynamic state of cell migration where differentiating cells use the glial scaffold to locate their cell bodies in the appropriate places in the cortical layers before sending out dendrites and axons to make contact with the cell types with which they will eventually form the functional brain’s global network.

Cell migration to achieve this has to occur on multiple fronts. In radial migration, Neural stem cells proliferate in the ventricular zone lower in fig 64 (1, 2). The first postmitotic cells to migrate from the preplate become Cajal-Retzius cells and subplate neurons, migrating by somal translocation. The cells are bipolar and attach the leading edge of the process and the soma is then transported by nucleokinesis, via a microtubule “cage” around the nucleus elongating and contracting in association with the centrosome to guide the nucleus to its final destination. Radial fibres (radial glia) can translocate to the cortical plate and differentiate either into astrocytes or neurons. Somal translocation can occur at any time during development. Subsequent waves of neurons split the preplate by migrating along radial glial fibres to form the cortical plate. Each wave of migrating cells travel past their predecessors forming layers in an inside-out manner, meaning that the youngest neurons are the closest to the surface. It is estimated that glial guided migration represents 80-90% of migrating neurons. Most interneurons and Cajal-Retzius cells migrate tangentially through multiple modes of migration to reach their appropriate lateral location in the cortex. Many neurons migrating along the anterior-posterior axis of the body use existing axon tracts to migrate along in a process called axophilic migration. An example is GnRH- expressing neurons, which make a long journey from their birthplace in the nose, through the forebrain, and into the hypothalamus. Neurophilic migration involves the migration of neurons along an axon belonging to a different cell type. Gliophilic migration is the migration of glia along glial fibres.
The resulting picture is that the entire global network structure of the mature nervous system has arisen through the intelligent strategic activity of individual glial and neuronal cells responding to morphogenetic, cell identifying and neurotransmitter clues. There is obviously a genetically based adaptive program in play to achieve this, but the resulting complexity is vastly higher than the complexity of the human genome, so it has to take place through individual cells responding intelligently to the cellular signals in their immediate environment.

As the nervous system matures and active excitable network communication arises, edge of chaos excitability forms a dynamic inducer of network connectivity and synaptic adaption, working through the sensory systems from the outside in, with the retina, modulating the input nuclei such as the lateral and medial geniculate in the thalamus and finally the cortex. This means that the notion of the mature brain as simply a synaptic network where the cells are simple functional modules summing up synaptic inputs and encoding these inputs in an action potential firing rate are gross trivialisations of the neurons and glial cells, whose interactive intelligence has been responsible, not just for ongoing adaptive brain states, but the entire structure and function of the nervous system. There is no evolutionary sense in their regressing to a McCulloch-Pitts zombie state having intelligently generated the entire brain.

The idea of the brain as simply a biological neural network of summative synaptic units with thresholds and long term weighting adjustments is thus a highly incorrect simplification, while the idea of the brain as a social network of participating highly intelligent cells both causing the entire fabric and it collective activity in conscious mental states is the correct one and the one that remains informative about all forms of adaption, learning and memory in which the human brain is involved. Likewise the idea that the neurons are just cellular automata while the networked brain somehow has emergent conscious from its network complexity is a Zeno’s paradox fallacy.

The final aspect of this is that the process is not just cellular but is a dynamic fractal from the quantum level to the global brain state. It is operating using wave phase coherence in feedback between continuous and discrete signalling and it is operating at the edge of chaos, so its dynamical properties are in a state of self-organised criticality at the quantum level. It is thus in a state of sustained causal uncertainty.

There can be no comparison between the conscious mammalian brain and any externally designed artificial neural net, because the biological one is intelligently designed from the cell up, through the development process, rather than having an externally imposed serial structure, as in a convolutional neural networks, or even random neural nets approximating cerebral circuits, which lack the fractal functionality, thus making machines with subjectively conscious volition, improbable to untenable. Artificial neural nets do not currently possess any of the the edge of chaos phase coherence sampling dynamics of the neurodynamic brain.

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**Fig 65:** Upper a convolutional neural net is an externally designed serial causal chain where convolutions of the image are first formed and then a multilayer neural net is entrained on the data to produce a pattern discriminator. The neural nets are simple Hebbian nets connected in series. Lower: An experiment to measure net memory capacity in simple neural nets by iterative synaptic modification designed to have rough quasi-random connections modelled on brain neural networks, tested on active field overlap $\alpha$ (Suárez et al. 2021).
The Extended Evolutionary Synthesis

This places the evolutionary view of Symbiotic Existential Cosmology as lying within the extended evolutionary synthesis (Pennisi 2008), which includes multi-level selection, trans-generational epigenetic inheritance (Felsenfeld 2014), niche construction, evolvability, and concepts of evolutionary developmental biology (evo-devo) comparing the regulatory and developmental processes of different organisms to infer how developmental processes evolved (Gerhart & Kirschner 2007). The inclusion of gene-culture coevolution augments this view, to encompass cultural reproductive processes involving memes – a concept, social process or institution that spreads from person to person within a culture and often carries symbolic meaning that can self-replicate, mutate, and respond to selective pressures.

All species have evolved mechanisms of phenotypic plasticity that enable them to respond adaptively to their environments. Some mechanisms of phenotypic plasticity count as evolutionary processes in their own right. The human capacity for symbolic thought provides an inheritance system having the same kind of combinatorial diversity as does genetic recombination and antibody formation. (Wilson et al. 2014).

Culture is phenotypic plasticity that acquired its own intrinsic capacity to change and is now out of genetic control. We don’t expect a flu virus to operate to our advantage, so why should we expect a ‘mind virus’ always to be in our interests? For meme advocates, not only is cultural evolution largely unconstrained by genetic pre-dispositions, but genetic evolution may itself be driven by cultural imperatives (Laland and Brown 2002 319).

‘Meme’ is the name given to such units of culture and, as some memes are more likely to spread than others, there is a new kind of evolution generated at the cultural level. Somewhat disturbingly, the selection of one meme over another may be of no advantage to the individual human being; rather the meme makes use of us in order to replicate itself. Memeticists suggest that human beings may behave the way they do because it is in their interests but because their minds have been infected by a cultural virus. Could consciousness be little more than a collection of memes? Are the dominant world religions neither true nor even beneficial, but merely those complexes of religious ideas that happen to be best at spreading? (Laland and Brown 2002 24)

They note Dawkins’ (1976) original discovery of the term:

He coined the terms ‘replicator’ and ‘vehicle’ to distinguish between the ‘immortal’ genes, which are replicated each generation, and the transient, vehicular organisms that house them. The gene is the archetypal replicator, but Dawkins proposed that a new, frequently insidious kind of replicator has recently emerged on this planet, a mind virus that infects us with catchy concepts and fashionable ideas. “We need a name for the new replicator, a noun that conveys the idea of a unit of cultural transmission, or a unit of imitation. ‘Mimeme’ comes from a suitable Greek root, but I want a monosyllable that sounds a bit like ‘gene’. I hope my classicist friends will forgive me if I abbreviate mimeme to meme.”

The word evolution itself is plagued by a spectrum of meanings. Oxford languages defines it’s scientific meaning as “the process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth” but more generally it is the gradual development of something, quoting in example: “the forms of written languages undergo constant evolution. When we come to discuss gene culture coevolution, these two meanings will come into direct conflict. “It’s etymology underlies this ambiguity arising early 17th century: from Latin evolution ‘unrolling’, from the verb evolvere (evolve). Early senses related to movement, first recorded in describing a ‘wheeling’ manoeuvre in the realignment of troops or ships. Current senses stem from a notion of ‘opening out’, giving rise to the sense of ‘development’.

Charles Darwin used the word in print once only, in the closing paragraph of “The Origin of Species” (1859), and preferred descent with modification, in part because evolution already had been used in the discarded homunculus theory of embryological development and in part because it carried a sense of “progress” not present in Darwin’s idea. But Victorian belief in progress prevailed (and the advantages of brevity), and Herbert Spencer and other biologists after Darwin popularised evolution.

Dawkins (1976, 1982) argued that discrete, accurately copied, long-lived “replicators” are necessary for cumulative, adaptive evolution and must have the following characteristics:

Fidelity. The copying must be sufficiently accurate that even after a long chain of copies the replicator remains almost unchanged.

Fecundity. At least some varieties of the replicator must be capable of generating more than one copy of themselves.

Longevity. Replicators must survive long enough to affect their own rate of replication.

Although these statements implicitly assume this process is cumulatively integrative over time, so that snakes do not turn into tigers, thus ensuring the stability of the biosphere over evolutionary and cosmological time scales, this is not specifically expressed and can cause problems when we are dealing with gene culture co-evolution. We know there is
a deep truth to this argument because our genomes are full of transposable elements which at all opportunities seek
to replicate themselves potentially at the expense of organismic mutation and/or survival. However organisms apply
natural and sexual selection as whole genomes and there is more complexity to this picture. Even a simple prokaryote
genome that reproduces parthenogenetically will eventually accumulate a lethal load of deleterious mutations by
Muller's Ratchet. Hence recombination between genomes is a virtually universal necessary condition, via conjugation
plasmids and viruses in prokaryotes and indexed sexual recombination in eucaryotes.

Dawkins argued that individual genes must be seen as the units of selection in evolutionary processes within sexual
populations. This is primarily because the other possible candidates, notably whole organisms and groups, do not
"replicate." Stephen J. Gould in "Caring Groups and Selfish Genes" (1977), argued that by contrast genes cannot be
units of selection because natural selection is not able to "see" (operate on) single genes, only on whole organisms.
Lewontin (1970) had argued that natural selection at any level requires variation, heredity and differential fitness. Hull
argued that people had been packing into one concept, "unit of selection," criteria associated with two distinct and
equally important roles:

Repliactor: an entity that passes on its structure largely intact in successive replications.
Interactor: an entity that interacts as a cohesive whole with its environment in such a way that this interaction causes
replication to be differential.

Wilson DH et al. (2014) in noting that humans possess great capacity for behavioural and cultural change, but our
ability to manage change is still limited have set out to sketch a basic science of intentional change centred on
evolution, introducing a further set of concepts related to cultural evolution:

The human capacity for symbolic thought provides an inheritance system having the same kind of combinatorial diversity as does
genetic recombination and antibody formation. Taking these propositions seriously allows an integration of major traditions within
the basic behavioral sciences, such as behaviorism, social constructivism, social psychology, cognitive psychology, and evolutionary
psychology, which are often isolated and even conceptualized as opposed to one another.

In this sense, a network of symbolic relations that regulates behavior is like a genotype that produces a phenotype. We will call it a
"symbotype" to stress the comparison. Like genotypes, symbotypes evolve based on what they cause the organism to do, regardless of
the direct correspondence between the mental and environmental relations. As an example, religious and superstitious beliefs
might not correspond directly to anything that exists in the real world, but they might still be favored by selection, based on the
behaviors they motivate in the real world. … The term symbotype refers not to a single cultural trait but rather to a given set of
symbolic relations, which results in an entire suite of phenotypic traits (the phenotype). The term does not presuppose any particular
proximate mechanism for the symbotype and does not assume that the phenotype can be atomized into independent traits.
Obviously, a great deal of future research will be required to clarify the concept of the symbotype, but it differs importantly from the
concept of a meme.

Wilson et al. then cite informational recombination as a key generator of variety, that we have seen in the context of
integral genetic evolution. While this is true, it goes little or no way towards establishing the integral stability over long
time scales of such processes:

Genotypes, symbotypes, and antibodies share something else – almost infinite variety, based on the recombination of their
elements. Much as x genes with two alleles at each locus result in 2^x combinations, each potentially producing a different phenotype
for selection to act on, a human symbolic system consisting of a few handfuls of "object—sign" relations will be able to derive
thousands of combinations, each potentially resulting in a different phenotype for selection to act on (Deacon 1998).

This provides Wilson et al. with their primary thesis that humans have evolved a “quantum leap” in our elaborate
capacity for open-ended behavioural and cultural change:

However our symbolic inheritance system and its combinatorial properties arose, the result was a quantum jump in our capacity for
open-ended behavioral and cultural change. The best way to see this is by standing back from the “trees” of single scientific studies to see the “forest” of human evolution. A single biological species spread out of Africa to inhabit the globe, adapting to all climatic
zones and occupying hundreds of ecological niches, in just tens of thousands of years. Each culture has mental and physical toolkits
for survival and reproduction that no individual could possibly learn in a lifetime. Then the advent of agriculture enabled the scale of
human society to increase by many orders of magnitude, resulting in mega societies unlike anything our species had previously
experienced. The human cultural adaptive radiation is comparable in scope to the genetic adaptive radiations of major taxonomic
groups such as mammals and dinosaurs (Pagel & Mace 2004). What else is required to conclude that humans have an elaborate
capacity for open-ended behavioral and cultural change?

In this they implicitly acknowledge that not only does the cultural milieu not necessarily optimise natural evolutionary
fitness in the biosphere, but that natural fitness cannot now even be defined as an entity in its own right:
It is important to stress that the cultural inheritance system does not entirely supersede the other inheritance systems. Moreover, the four inheritance systems – genetic, epigenetics, learning, and symbolic thought – have been interacting with one another throughout our history as a species. Genetic evolution and cultural evolution have been shaping each other for a very long time. It is therefore incorrect to say that cultural evolution serves to maximize genetic fitness, as if the latter can be defined without reference to the former.

So we come back to the central question – how does the advent of cultural evolution enhance or diminish that capacity of Homo sapiens to survive on evolutionary time scales in the closing circle of the evolving biosphere?

Because the concept of symbiotype bears a superficial resemblance to the concept of meme (Dawkins 1976), a brief comparison is in order. The term meme is sometimes used broadly to refer to any cultural trait. More narrow usages suggest that cultural traits resemble physical genes in various respects, such as functioning as “replicators,” having a physical form inside the brain, or having the capacity to spread at the expense of their human hosts (Aunger 2002; Blackmore 1999). The most recent treatments of cultural evolution recognize the need for a term that describes cultural traits at the phenotypic level; but these treatments depart from other specific concepts that have been associated with the term meme. In particular, it is possible for the replication of cultural traits to be a systemic process without the need for gene-like replicators (Henrich et al. 2008; Laland & Brown 2002). The concept of “evolution without replicators” applies even to genetic evolution (Godfrey-Smith 2000).

They hint at a deep analogy between genetic and cultural evolution:

The human capacity for symbolic thought provides an inheritance system having the same kind of combinatorial diversity as does genetic recombination and antibody formation. Taking these propositions seriously allows an integration of major traditions within the basic behavioral sciences, such as behaviorism, social constructivism, social psychology, cognitive psychology, and evolutionary psychology, which are often isolated and even conceptualized as opposed to one another.

This merely highlights a deep analogy between cultural ‘inheritance’ and the recombinational complexity of genetic, antibody systems and symbolic thought, but this is not a model for evolution but simply sexual recombination, leaving aside gradual evolutionary change on cosmological time scales due to mutation and selective advantage. Only when we have informational systems which can (1) replicate, (2) be subject to incremental change that is subject to phenotypic differences and selection and (3) the capacity for recombination can we establish a sustainable evolutionary paradigm.

Their answer thus leads to a series of troubling questions regarding not only the lack of a comprehensive integral evolutionary paradigm of gene-culture co-evolution but to the emergence of forms of “evolution” with neither replicators, nor integral stability, and not only in cultural evolution alone, but in genetic evolution as well.

Henrich et al. (2008) state:

While we agree that the existence of replicators is sufficient for cumulative adaptive evolution, they are not necessary. Any process of cultural transmission that leads to accurate replication of the average characteristics of the population will work. Accurate replication at the level of the gene (or meme) will have this effect, but accurate at the population level can arise for other reasons as well. Highly accurate, unbiased, genetic replication allows minute selective forces to generate and preserve adaptations over millions of years. Error prone cultural replication, [of one of two mental representations], even when “corrected” by a conformist bias [a group choosing the most common option found in the group], imposes modest, but still significant forces on the cultural composition of the population. Similarly, blending inheritance [e.g. in which an average result not actually present in the set of instances] rapidly depletes the variation in a population necessary for selective processes like prestige-biased transmission to have an effect. But, because the inferential processes that underlie cultural transmission are noisy, it is likely that they can maintain lots of variation. However, this also means that they are likely to create evolutionary forces that act to change the mean, and thus compete with selective forces.

Laland & Brown (2002) take issue with the concepts of replicator versus vehicle, in the context of cultural evolution:

The approach, advocated by Hull (2000) 38, is to describe as replication all cases in which information is passed along largely unchanged regardless of whether the substrate is a brain or artefactual. Replicators are distinguished from interactors (loosely synonymous with Dawkins’ ‘vehicles’), which are the entities that exhibit adaptations, but are characterized by a loss of information.

They also deal with the continuous interactive aspects of cultural evolution:

38 Organisms are commonly regarded as: (1) phenotypes that interact with their environments, that survive, reproduce, and pass on genes and (2) the entities that are ‘produced’ by genes. Hull (personal communication) argues that his notion of ‘interactor’ is significantly different from Dawkins’ ‘vehicle’. As in (1), Hull’s regards his concept as a populational notion (the population of entities that directly interact with the external environment), while Dawkins’s ‘vehicle’, as in (2), is regarded as more embryological (vehicles are the entity that replicators produce).
A major question mark against memes, to which both Dawkins and Dennett allude, is whether they have sufficiently high copying fidelity, or accuracy of reproduction. When discussing meme fidelity Dawkins confesses ‘here I must admit that I am on shaky ground’ (1976, p. 209), and he acknowledges, as an example, that his ideas published in The Selfish Gene resulted from a blending of Trivers’s and his own memes. Similarly, Dennett (1995 355) asks: ‘Isn’t one of the hallmarks of cultural evolution and transmission the extraordinarily high rate of mutation and recombination?’. If memes are constantly passed on in altered forms, can they be described as replicators? This looks quite unlike the particulate, virtually error-free copying of gene translation. At first sight, meme evolution appears so fluid, subject as it is to continuous mutation, blending of memes, and cross-fertilization between lineages, that it is difficult to see how it could generate complex adaptations analogous to the vertebrate eye or hand.

There are at least two counterarguments that have been put forward. The first was expressed most clearly by Dawkins: It is possible that this appearance of non-particularateness is illusory, and that the analogy with genes does not break down. After all, if we look at the inheritance of many genetic characters such as human height or skin colouring, it does not look like the work of indivisible and unblendable genes. (1976, p. 209). The second counterargument is that, while every version of a meme varies from one person to the next according to each individual’s personal experiences, all memes have a core element that is shared knowledge.

Godfrey-Smith (2000) critiques the classical concept of the replicator in the light of a series of criticisms including those of developmental systems theory:

Criticism of the Dawkins/Hull replicator is found in the work of Paul Griffiths and Russell Gray (1994 298), who are among the proponents of “developmental systems theory” (DST) as a general approach to development and evolution. According to Griffiths and Gray, the replicator/interactor distinction is the product of a “dichotomous” view of evolution and development, where the “dichotomy” involves an illegitimate division between two fundamental types of developmental causes, the “genetic” and the “environmental.” Griffiths and Gray claim that the standard replicator/interactor distinction is a “projection into evolution” of dichotomous views of development. … The developmental systems theorists argue that the only thing which actively replicates or reproduces itself is the entire life cycle. They also argue that the life cycle is the relevant unit for evolutionary theory: “the prime unit of evolution (unit of self-replication) is the developmental process, or life cycle.” We should conceive evolution as the “differential replication of developmental processes/life cycles”.

He then applies Lewontin’s formulation for Darwinian evolution which does not specifically cite a replicator:

Let us approach this point via Lewontin’s formulation of the recipe for Darwinian evolution (1970). Evolution requires a population in which there is variation in phenotype, differential reproduction on the basis of phenotype, and heredity of the traits associated with differential reproduction. Heredity is conceived as a correlation between parents and offspring. As Lewontin says, it does not matter how the correlation is achieved, so long as it exists.

In Lewontin’s 1970 discussion, the term “unit of selection” has a simple and thin sense -- the units are just the entities in the population which satisfy his three conditions. These "units" need not be replicators, because in a sexual population there can be a great deal of difference between parent and offspring. Yet if parent and offspring are correlated -- if parent and offspring are more similar than randomly selected pairs of individuals in that population -- then evolution by natural selection can occur. The requirement of heredity in traits affecting fitness is weaker than a requirement that there exist replicators, and heredity is all that is needed for evolution.

The principle of integral evolutionary change is thus reduced to the simple root of heredity 39, much as in Gregor Mendel’s (1866) work. But this studies hybridisation and is thus about indexed recombination across a single generation and thus gives no theoretical model for integral evolutionary change that ensures stability over the cosmological time scales required for avoiding a Fermi paradox extinction.

This is inadequate and symbolises the entire dilemma of memetic cultural evolution being called evolution at all, because the foundation of evolutionary viability on cosmological time scales is the gradual cumulative change of what Darwin called “descent with modification”, now known to be caused by intermittent mutational changes at a low level each generation, enabling the genomes of a species to survive on a population scale combined with natural and sexual selection that is the process occurring on cosmological time scales, that has allowed the biosphere to evolve without Fermi paradox, caused by short-term instability. Recombination, as associated with cross-fertilisation of ideas is a single step process to offset Muller’s ratchet and provides non of the graduated change to maintain cumulative evolutionary synchrony between evolving species.

39 heredity (n.) “the passing on of physical or mental characteristics genetically from one generation to another” Etym. 1530s, “inheritance, succession,” from French héredité, from Old French eredité “inheritance, legacy” (12c.), from Latin hereditatem (nominaive hereditas) “heirship, inheritance, an inheritance, condition of being an heir.” Legal sense of “inheritable quality or character” first recorded 1784; the modern biological sense “transmission of qualities from parents to offspring” seems to be found first in 1863, introduced by Herbert Spencer.
The only way this can be resolved to ensure biospheric and human survival is gene-culture-biosphere co-evolution, in which cultural memes acknowledge the cosmological necessity of human genetic and cultural evolution maintaining overall genetic fitness of the biosphere over such cosmological time scales.

**The Evolving Human Genotype: Developmental Evolution and Viral Symbiosis**

To gain an empirical view of how these various evolutionary factors play out in practice, we now turn to examining in detail the evolutionary processes of replication and selection as they apply to our own species.

The double stranded human genome consists of some $3 \times 10^9$ base pairs, including only $\sim 21,000$ protein-coding genes making up around 1% of the genome. More than 80% of the human genome has some active biochemical activity. Although it is currently unknown whether all of this DNA contributes to cellular function, the majority can be transcribed into RNA. Nearly 20 percent of the genome is associated with DNase hypersensitivity or transcription factor binding, identifiable with regulatory regions, of which more than 4 million have been identified (Zhao 2012).

Many of these protein coding genes, including the nuclear core metabolic genes arising from the endosymbiotic $\alpha$-proteobacteria that became our mitochondria, first evolved in the great archaean expansion 3.2 billion years ago (David & Alm 2010), so that the phenotypic evolution of higher organisms has become a regulatory symphony orchestrating the expression of these genes and later homeotic morphogenetic genes that arose with the first metaphyta in ever more evolved regulatory relationships, through natural and sexual selection based on animal survival and reproduction.

As Gerhart & Kirschner (2007) note:

*Regulatory change acts on the repertoire of unchanging core processes to select subsets, which are then externally selected upon. The burden of creativity in evolution, down to minute details, does not rest on selection alone. Through its ancient repertoire of core processes, the current phenotype of the animal determines the kind, amount, and viability of phenotypic variation the animal can produce in response to regulatory change. Thanks to the nature of the processes, the range of possible anatomical and physiological variations is enormous, and many are likely nonlethal, in part simply because the processes have been providing “useful” function since pre-Cambrian times. Phenotypic plasticities, both those evokable by environmental change and those developmental adaptabilities not evocable, are rich sources and favored paths of variation requiring little regulatory change.*

This brings us to the selfish gene part, which invokes an extraordinary symbiotic evolutionary story over very long time scales. Around 46% of the human genome consists of transposable genetic elements (TEs) and endogenous retroviruses, which can take on a selfish life of their own. The evolutionary distribution of these elements in the human genome is illustrated in fig 22. TEs can be separated into two major classes: DNA transposons and retrotransposons. DNA transposons, making up $\sim 3\%$ of the human genome, can excise themselves from the genome, move as DNA and paste themselves into new genomic sites. Although they are currently not mobilising in the human genome, they were active during early primate evolution, until $\sim 37$ million years ago. Retrotransposons duplicate via
transcribed RNA intermediates that are reverse-transcribed and inserted at new genomic locations. They consist of two groups, with and without long terminal repeats (LTRs). Human LTR elements are endogenous retroviruses which account for ~8% of the genome, most inserted in the human genome >25 My ago, and their activity is presently very limited in humans, if occurring at all. Nevertheless, HERV-derived transcripts and proteins have been detected in healthy and diseased human tissues, and HERV-K, the youngest, most conserved family, is able to form virus-like particles (Bannert & Kurth 2004). By contrast, the vast majority of human TEs result from the present and past activity of non-LTR retrotransposons, typified by LINE-1 (or L1), Alu and SVA elements, that collectively account for about one third of the human genome. These are the only TEs unequivocally shown to be currently active in humans, as demonstrated by de novo insertions causing genetic disorders (Cordaux & Batzer 2009).

There are >500,000 L1 copies in the human genome, resulting from their continued mobilisation for the past 150 My. L1 elements constitute ~17% of the human genome. There are >1 million Alu copies in the human genome, resulting from their continued activity throughout the past ~65 My. Alu elements have no coding capacity and are, therefore, non-autonomous TEs – “a parasite’s parasite”. Instead, they borrow the processes encoded by L1 elements. There are ~3,000 SVA copies in the human genome, resulting from continued activity throughout the ~25 My of hominid evolution. SVA elements are non-autonomous TEs mobilised by the L1 machinery. Before the autonomous L1 element and its Alu parasite expansions, the genome experienced the autonomous L2 element and its MIR parasite. The current rate of Alu and L1 retrotransposition has been estimated as one insertion every 20-200 births in humans.

We now investigate the ecology, parasitism and symbiotic implications of transposable elements. TEs are not randomly distributed. The genome may be viewed as an ecosystem inhabited by diverse communities of TEs, which seek to propagate and multiply through parasitism, cooperation, and competition. Many elements have evolved mechanisms to target specific loci where their insertions are less detrimental to the host but favourable for their propagation. The success and diversity of TEs in a genome are shaped both by properties intrinsic to the elements as well as evolutionary forces acting at the level of the host species (Bourque et al. 2018 and ensuing paragraphs).

To survive in evolution, TE expression needs to strike a balance – sufficient to promote amplification, but not so vigorous as to lead to a fitness disadvantage for the host offsetting the benefit to the TE. TE-encoded enzymes are naturally suboptimal for transposition and why some TEs have evolved self-regulatory mechanisms controlling their own copy numbers. A variety of host factors are also employed to control TE expression, which includes a variety of small RNA, chromatin, and DNA modification pathways, and sequence-specific repressors such as KRAB zinc-finger proteins. However, many of these silencing mechanisms must be at least partially released to permit developmental

Fig 67: (Left) LINE-1 RNA mediates binding of Nucleolin and Kap1 to rDNA, promoting rRNA synthesis and ESC self-renewal. (Right) Pseudogene-mediated production of endogenous small interfering RNAs (endo-siRNAs). Pseudogenes can arise through the copying of a parent gene (by duplication or by retrotransposition). (a) An antisense transcript of the pseudogene and an mRNA transcript of its parent gene can then form a double-stranded RNA. (b) Pseudogenic endo-siRNAs can also arise through copying of the parent gene as in a and then nearby duplication and inversion of this copy. The subsequent transcription of both copies results in a long RNA, which folds into a hairpin, as one half of it is complementary to its other half. In both a and b, the double-stranded RNA is cut by Dicer into 21-nucleotide endo-siRNAs, which are guided by the RISC complex to interact with, and degrade, the parent gene’s remaining mRNA transcripts. The mRNA from genes is in red and that from pseudogenes is in blue. Green arrows indicate DNA rearrangements (Sasidharan R, Gerstein M 2008 Protein fossils live on as RNA Nature 453/5 729-32).
regulation of host gene expression programs, particularly during early embryonic development. For example, genomewide loss of DNA methylation is necessary to reset imprinted genes in primordial germ cells. This affords TE an opportunity, as reduced DNA methylation often promotes TE expression. There is also a large body of evidence supporting the idea that horizontal transposon transfer is a common phenomenon that affects virtually every major type of TE and all branches of the tree of life, in addition to endogenous vertical transfer in organismic reproduction.

TEs are an extensive source of mutations and genetic polymorphisms. More than 99.9% of the ~500,000 L1 copies are no longer mobile due to various forms of mutations and truncations. It is estimated that each person carries a set of ~100 active L1 elements, mostly young insertions still segregating within the human population. TEs are associated with genome rearrangements and unique chromosome features. Transposition represents a potent mechanism of genome expansion that over time is counteracted by the removal of DNA via deletion. The rate at which TEs transpose, which is in part under host control, is an important driver of genome evolution.

To replicate down the germ line L1 elements are preferentially expressed in both germ-line tissues and steriodogenic in mice (Branciforte and Martin 1994, Trelogan and Martin 1995). L1 RNA transcripts are generated in several stages of spermatogenesis including leptotene, and in the primary oocytes of females poised at prophase 1 and predominantly become expressed after fertilisation in embryogenesis (Lyon et al. 2010). Most insertions are in somatic cells leading to somatic mosaicism and only a small subset in germ line cells. This could enable somatic stress to have a potential effect on translocation in the germ-line which might enable forms of genetic adaption in long-lived species such as humans (King 1985). Conversely the SRY-group male determining gene SOX has been found to regulate LINE retrotransposition (Tchénio et. al. 2000).

L1 is highly expressed during early development and plays essential roles in mouse embryonic stem cells (ESCs) and pre-implantation embryos. L1 RNA acts as a nuclear scaffold that recruits Nucleolin and Kap1/Trim28 to repress Dux, the master activator of a transcriptional program specific to the 2-cell embryo. It is required for Dux silencing, synthesis of rRNA, and exit from the 2-cell stage (Percharde M et al. 2018).

L1 elements have also been found to replicate in neural progenitor cells in both the mouse and human and copy numbers have been found to increase in the hippocampus, and in several regions of adult human brains, when compared to the copy number of endogenous L1s in heart or liver genomic DNAs from the same donor. The authors comment that these data suggest that de novo L1 retrotransposition events may occur in the human brain and, in principle, have the potential to contribute to individual somatic mosaicism (Coufal et. al. 2009).

Similarly inactive L1 elements have been found to be 'boosters' of one X chromosome in collapse of one of the two X chromosomes in somatic lines that happens in female embryogenesis (Lyon 2000). A subset of young LINE-1 elements, however, is expressed during X inactivation, rather than being silenced. Such LINE expression requires the specific heterochromatic state induced by Xist. These L1s often lie within escape-prone regions of the X chromosome, but close to genes that are subject to X inactivation, and are associated with putative endo-siRNAs small interfering RNAs that silence transposable elements. L1s may thus facilitate XCI at different levels (Chow et al. 2010).

A number of key coding and non-coding RNAs are derived from TEs. Although usually detrimental, there is growing evidence that TE insertions can provide raw material for the emergence of protein-coding genes and non-coding RNAs, which can take on important and, in some cases essential, cellular function. A spectacular example of deeply conserved TE-derived genes are Rag1 and Rag2, that catalyse V(D)J somatic recombination in the vertebrate immune system. Both genes, and probably the DNA signals they recognise, were derived from an ancestral DNA transposon around 500 million years ago.

One of the most intriguing examples of TE domestication is the repeated, independent capture of ERV env genes, termed syncytns, which are involved in placentaion by facilitating cell–cell fusion and syncytiotrophoblast formation. These multinucleated cells originate from fetal trophoblasts and constitute the boundary layer between maternal and fetal tissue. The major functions of this layer include maternal–fetal exchange and the maintenance of immunologic tolerance toward the developing fetus (Bannert & Kurth 2004). Notably, one or more such syncytin genes have been found in virtually every placental mammalian lineage where they have been sought, strongly suggesting that ERVs have played essential roles in the evolution and extreme phenotypic variability of the mammalian placenta (Lavialle et al. 2013, Cornelis G et al. (2017).
Another example of a viral-sourced activity re-purposed for host cell function is provided by the neuronal Arc gene, which arose from the gag gene from a LTR retrotransposon domesticated in the common ancestor of tetrapod vertebrates. Genetic and biochemical studies of murine Arc show that it is involved in memory and synaptic plasticity and has preserved most of the ancestral activities of Gag, including the packaging and intercellular trafficking of its own RNA (Pastuzyn et al. 2018, Nikolaienko et al. 2018).

TEs can donate their own genes to the host, and they can also add exons and rearrange and duplicate existing host genes. In humans, intronic Alu elements are particularly prone to be captured as alternative exons through cryptic splice sites residing within their sequences. L1 and SVA (SINE/VNTR/Alu) elements also contribute to exon shuffling through transduction events of adjacent host sequences during their mobilisation. The reverse transcriptase activity of retroelements is also responsible for the trans-duplication of cellular mRNAs to create ‘processed’ retrogenes in a wide range of organisms. The L1 enzymatic machinery is thought to be involved in the generation of tens of thousands of retrogene copies in mammalian genomes, many of which remain transcribed and some of which have acquired new cellular functions. This is a process still actively shaping our genomes; it has been estimated that 1 in every 6000 humans carries a novel retrogene insertion.

TEs also make substantial contributions to non-protein coding functions of the cell. They are major components of thousands of long non-coding RNAs in human and mouse genomes, often transcriptionally driven by retroviral LTRs. Some of these TE-driven IncRNAs appear to play important roles in the maintenance of stem cell pluripotency and other developmental processes. Many studies have demonstrated that TE sequences embedded within IncRNAs and mRNAs can directly modulate RNA stability, processing, or localisation with important regulatory consequences. Furthermore, TE-derived microRNAs and other small RNAs processed from TEs can also adopt regulatory roles serving host cell functions. The myriad of mechanisms by which TEs contribute to coding and non-coding RNAs illustrate the multi-faceted interactions between these elements and their host.

TEs contribute cis-regulatory DNA elements and modify transcriptional networks. Cis-regulatory networks coordinate the transcription of multiple genes that function in concert to orchestrate entire pathways and complex biological processes. There is now mounting evidence that TEs have been a rich source of material for the modulation of eukaryotic gene expression. TEs can disperse vast amounts of promoters and enhancers transcription factor binding sites, insulator sequences, and repressive elements As TE families typically populate a genome as a multitude of related copies, it has long been postulated that they have the potential to donate the same cis-regulatory module to ‘wire’ batteries of genes dispersed throughout the genome. An increasing number of studies support this model and suggest that TEs have provided the building blocks for the assembly and remodelling of cis-regulatory networks during evolution, including pathways underlying processes as diverse as pregnancy, stem cell pluripotency, neocortex development and innate immunity.

We now turn to the overall mutational load of all these processes. Xue Y et al. (2009) set an even lower limit examining the Y chromosome of $3.0 \times 10^{-8}$ mutations/nucleotide/generation, giving 90 per haploid genome. Harris & Pritchard
(2017) note that due to the combined action error correcting genes, mutation rates are extremely low in humans—about one point mutation per 100 MB or about 60 genome-wide per generation. Give only 1% coding this would imply only around 0.6 coding mutations per generation consistent with the raw assumption of around 0.5.

Feusier J et al. (2019) have provided the following retrotransposition rate estimates for Alu elements, one in 40 births, is roughly half the rate estimated using phylogenetic analyses of one in 20, a difference in magnitude similar to that observed for single-nucleotide variants. The L1 retrotransposition rate is one in 63 births and is within range of previous estimates (1:20–1:200 births). The SVA retrotransposition rate, one in 63 births. While these are more disruptive or retrogene TE insertions, the rates of both are broadly consistent with a viable mutational load under integrative mutational change accompanied by sexual recombination.

This picture has shown us a comprehensive view of how the organismic human genome succeeds in maintaining a balance with its “selfish” TEs, in which feedback between TE transposition, host repression and a wide array of symbiotic evolutionary manifestations have resulted in a co-evolutionary scenario in which the TEs have become (or have always been) essential complements of the host nuclear genome, providing us with the capacity for passing the two cell embryo stage, enabling placental development, contributing to neural plasticity and learning and the very basis of our antibody immunity.

The Evolving Human Phenotype: Sexual Evolution, the Heritage of Sexual Love and Patriarchal Dominion

In “The Woman that never Evolved”, Sarah Hrdy (1981) conveyed a previously unrecognised view of the primate female in the span of her transition to humanity: we are introduced to our nearest female relatives: competitive, independent, sexually assertive primates who have every bit as much at stake in the evolutionary game as their male counterparts do. These females compete among themselves for rank and resources, but will bond together for mutual defense. They risk their lives to protect their young, yet consort with the very male who murdered their offspring when successful reproduction depends upon it. They tolerate other breeding females if food is plentiful, but chase them away when monogamy is the optimal strategy. When “promiscuity” is an advantage, female primates—like their human cousins—exhibit a sexual appetite that ensures a range of breeding partners. From case after case we are led to the conclusion that the sexually passive, noncompetitive, all-nurturing woman of prevailing myth never could have evolved within the primate order.

Human evolution and cultural emergence has thus been marked by a strong influence of female reproductive choice, amid mutual mate choice, accompanying a long slowly developing childhood. This is consistent with our closest sister species, chimps and bonobos having a mix of female exogamy and male clan dominance in chimps, and powerful alpha females in bonobos, where sexual evolution of the clitoris has led to frequent female-female socio-sexual bonding
(Fielder & King 2004 A). The eschewing of overt estrus in favour of menstruation in humans, combined with a degree of lunar and menstrual synchrony also leads to female reproductive choice operating strategically to offset male reproductive domination and threats of male infanticide.

Indeed human sexual evolution, perpetual socio-sexual receptivity accompanied by ecstatic female arousal, the foregoing of overt oestrus in favour of menstruation, the need for human males to demonstrate genuine indicators of genetic fitness, both in a large penis lacking the penile bone of the great apes, and in hunting and social prowess, consistent with XY sex chromosome inheritance, complemented by lunar phasing and menstrual synchrony, attest to an evolutionary emergence of *Homo sapiens* strongly influenced by female reproductive choice (Fielder & King 2004).

Evidence for such archaic patterns is evident in the practices of founding human cultures, from 19th century accounts of ‘Hottentot’ women refusing sex unless meat is provided, through the Hadza to the Sandawe “twerking” rites by the light of the full moon (King & Fielder 2004 B), sometimes referred to as the “sex strike” (Knight 1991, Power & Watts 1996, King & Fielder 2004). Intense female clitoral orgasm, perpetual sexual receptiveness outside menstruation, the growth of fatty breasts and neotonous features indicating fecundity and youthfulness and the loss of penis spines and bones, with growth of a large erectile penis in males, also attests to mutual sexual selection in humans enhancing both female sexual attractiveness and males having to give a genuine indicator of genetic fitness during sex.

The emergence of super-intelligence in humans has also been associated with the “mating mind” (Miller 2000), in which men display their genetic prowess in hunting and their social skills in music, story-telling and social humour, while the women make astute social choices of who to get pregnant with, given a mix of good genes and resourcing required to bring up a human infant. Machiavellian social intelligence for strategic bluffing, is also evident in intelligent species, from capuchins to humans. Female sexual selection is consistent with XY sex chromosome inheritance, where the large X chromosome is unique in males but chimeric in females due to double X being toxic, except in the germ line (Turner 1996). This provides a context for males to demonstrate intellectual and social prowess due to their unique X whose genes may also serve reproductive choice in females. The X chromosome contains multiple genes linked to brain function and development, some of which are rapidly evolving, giving support to this idea.

My joint work with Christine (Fielder & King 2004) “Sexual Paradox: Complementarity, Reproductive Conflict and Human Emergence” set out the thesis that the emergence of human culture and super-intelligence arose from a reproductive prisoners’ dilemma of sexual selection game theory where neither sex had the upper hand in terms of their own highly asymmetric reproductive strategies, causing a peacock’s tail Red Queen race of mutual sexual selection for culture and intelligence, centrally mediated by astute female reproductive choice, in a context of mutual mate choice to enhance family stability. Because of the very high costs to mammal females due to having to invest in live birth, the female reproductive strategy is highly skewed towards careful parental investment. By contrast mammalian male strategies are strongly skewed to fertilising as many females as possible. Hence only 3% of mammalian species are socially monogamous, although not genetically so, due to covert ‘cheating’ by both sexes. Humans are at an extreme for mammals, because of the high risks of delivering a large-headed baby, often as a single offspring, long periods of lactation and child care in a slowly-growing infant, requiring increasing cultural education put these asymmetries at an extreme, leading to sexually-antagonistic co-evolution, manifest in existential conflicts of personal interest. This then becomes the process of sexual selection that is fixing the intellectual benefits of the emergence of language and culture we will see in the next section. It is a view confluent with evolutionary psychology, which we support, as giving expression to evolutionary sexual selection conducive both to human emergence and intelligence, and also to strongly pro-social influences of love consistent with long-term emergent stability.

This is partly underpinned by some beautiful aspects of mammalian sexual chromosome evolution. Mammals have an ingenious sexual genetic scheme to align sexual selection with the effects of the honest egg and the cheating sperm. The female XX and male XY means that the male is haploid X and the female diploid XX. The haploid state provides for maximal selective advantage, because there is just one ‘pure’ copy of each gene on this entire chromosome, not two interacting copies. When the female embryo begins to divide about the 10 to 20 cell stage, in each somatic cell i.e. apart from the germ-line sex cells, one or other X randomly collapses. So a female brain is single X, like the male, but with a difference - it is a mosaic of cells of two genetic X-identities, those of her father and mother, as in the picture of

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40 It has been claimed that concealed estrus is not an evolved trait but an underlying primate condition and that overt estrus is an evolved trait due to sexual and social selection e.g. in chimps and bonobos (Laland & Brown 2002 13), as the majority of primate species, including most apes, do not reveal their time of ovulation.
the tortoise-shelled cat. The male by contrast is endowed with one pure maternal X-dose. When he is good he is very very good - but when he is bad he is singularly retarded. There are at least 8 forms of X-linked male mental retardation because the X chromosome, the hemizygous 'haploid' X is carrying several key genes for brain development at the spearhead of human evolution (Turner 1996).

There are 221 known human genetic defects that can cause mental impairment, some 10% of which reside on the X chromosome, even though it carries less than 4% of known human genes and the complete sequence of the X chromosome (Ross et al. 2005), confirms that an unusually large number of its genes code for proteins important to brain function. Researchers have also found that in some traits linked to intelligence, such as verbal skills and good social behaviour, male twins were more alike than female twins indicating X-linked genes in which the females are chimeric (Loat et al. 2004).

In our species, where intelligence and social skills are central to success, genes on the X chromosome seem to have evolved rapidly to provide us with the necessary brain power (Check 2005). An explanation goes as follows. As the X and Y diverged from a common autosome pair they each began to accumulate autosomal genes. Ultimately the X and Y diverged to the point where most X genes cannot recombine with Y and become recombined only in female oogenesis. This makes the X one of the most stable in the mammalian genome, for two reasons. Firstly because the genes are expressed in almost exclusively haploid form in males, who have lost the corresponding Y genes, they need to be more strongly conserved according to Muller's ratchet theory. Secondly, mutation rates are much lower in females who produce a relatively small number of primordial eggs early in embryogenesis, as opposed to males, who produce vast numbers of sperm throughout life.

The stability and inheritance of the X may have paradoxically exposed X genes to more intense pressure to evolve. As genes became transferred between chromosomes, those involving intelligence that became transferred to the X become exposed to acute sexual selection by females because in males, the X chromosome genes get a chance to shine, or to fail miserably, each time they pass through the male line. Because a male carries only one copy, any new mutations are revealed in all their glory.

Many of the genes on the X chromosome associated with human brain function seem to have distant relatives with different functions in other vertebrates, such as chickens and fish (Kohn et al. 2004). So in boosting our cognitive abilities, the X chromosome seems to have co-opted a diverse range of existing genes, rather than evolving a new set of genetic sequences for the purpose, posing a paradox of conservatism amid rapid change. In some instances, geneticists have pinpointed genes on the X chromosome that still seem to be in the process of adopting new roles in the brain. For instance, a gene called JARID1C seems to be evolving from a similar gene called JARID1D, which is found on the Y chromosome. If men inherit a damaged version of the JARID1C gene on their single X chromosome, they develop mental disabilities. The fact that the healthy Y chromosome version cannot compensate for its defective cousin hints that JARID1C is becoming more crucial to the brain as it evolves (Jensen et al. 2005).

Fig 70: (Left) X-linked tortoise-shell gene variation demonstrates X-mosaicism in a female cat on a scale where the brain would also be chimaeric. The confinement of this phenomenon to female felines combined with an elusive contracted genetic element in female somatic cells, the Baar body, was the trigger for Mary Lyon (2000), the discoverer of mosaic X-inactivation to make the discovery (Jegalian and Lahn 2001). (Top right) Darwin Family tree (Turner 1996). His grandfather was the founder of Wedgwood Pottery and his cousin, Galton, was a prolific writer and the founder of the Eugenic movement. The pedigree shown in the figure was said, at the beginning of the century, to indicate that genius is a Y-linked dominant, but it could equally well be explained by X linkage. Charles Darwin received Joshua Wedgwood's X chromosome and therefore his intelligence through his mother (11-3), and Erasmus Darwin's brilliance having reappeared in Francis Galton via his mother (11-7), rather than his father. Mary Howard (1-3), was also related to the Galtons. (Lower right) Human X and Y chromosomes.
When the occasional man gets the pure benefit of a fortuitous X complementing his other good brain genes on the diploid chromosomes he may thus become a genius. The irony is that the male never can transmit this heritage to his sons. It is always the maternal X that goes to the son, because to be a son he must have got the paternal Y. Females are thus the progenitors of male prodigies, but the prodigies are doomed ducks. This is the sacrificial saga of the sex gene. The only hope for a male genius is to have daughters! By contrast, females can fortuitously give direct birth to male geniuses. This doesn’t mean only males display creative genius. Neither does it deny the capacity of culture and education to mediate natural differences.

A revolutionary idea is that female genes encouraging female sexual selection for intelligence are strongly linked to genes for high intelligence selected for in the male. Early in human evolution, researchers suggest (Zechnet et al. 2001), females developed a preference for intelligent males. According to the theory, the genes for super-intelligence and for the preference of intelligent males were closely linked, and so were inherited together. And because superior intelligence also aided survival, the process wasn’t kept in check by natural selection — unlike other sexually selected characteristics such as the peacock’s tail, which makes its bearers more vulnerable to predators. These X-linked genes then ran away together without any limitation by natural selection, because of the adaptive advantage of intelligence.

Laland’s treatment of sexual selection is a glaring omission in terms of its pivotal role, all the more anomalous, given Darwin’s own founding (1871) title on human emergence — “The Descent of Man, and Selection in Relation to Sex”. When Laland does briefly touch on sexual selection in passing, it is only a brief reference with no implications articulated either for our emergence as a super-intelligent species, or for the effects of our epoch of ‘civilized’ culture for better or worse:

Even if human mating preferences are learned, socially transmitted, and culture specific, sexual selection will still result. Indeed, culturally generated sexual selection was found to be faster and more potent than its gene-based counterpart. ... experimental data shows that humans copy the mate choice decisions of others, which can lead to the social transmission of preferences for particular characteristics in the opposite sex. ... Given the pervasiveness of cultural influences on human mating preferences, social transmission may exert a powerful influence on the selection of secondary sexual characteristics and other physical and personality traits.

By contrast with the mating mind, his notion of mere social copying of sexual fashion in any of its kinky voyeurisms, provides absolutely no reassurance of any evolutionary benefits for cultural evolution on human sensibility.

![Fig 71: A human reproductive bottleneck in Y-chromosome diversity began about 10,000 years ago and continued for several millennia (Karmin et al. 2015). Inset shows 11 independent areas of primal agriculture discovered.](image)
being an agricultural Genghis Khan effect of potentates, an explanation for this extreme genetic skewing has been proposed in terms of extreme competition between patrilineal kin groups in the neolithic, preceding and leading into the emergence of major urban cultures, wiping out whole Y-chromosome clades through male genocide and abduction of the females (Zeng, Aw & Feldman 2018).

This period was then succeeded by the rise of patriarchal societies (Lerner 1986, Sanday 1981) supported by patriarchal religious imperatives that sought to inhibit forms of cultural matriliney in which women brought up children with their maternal family, in favour of patriarchal kinship and reproductive attitudes repressing female reproductive choice in favour of paternity certainty, leading to 4000 years in which the natural paradox between human female and male reproductive strategies, essential for fertile genetic evolution were suppressed in favour of male rights to control women's choices of sexual partner, pregnancy and autonomy, often by oppressive and violent means, from stoning for adultery applied selectively to women who didn’t cry out, through female genital mutilation, including infibulation, enforced veiling, loss of independent ownership rights over land and assets, loss of educational and financial independence, enforced chaperoning of women by their male relatives, and judged half the value of a man in law.

Gene-Culture Co-Evolution

(a) The Emergence of Language

The emergence of spoken language has been associated both with female gatherers talking about their relationships down the grape vine while on gathering forays, when the men were out on a hunt, the only sounds of which were disguised animal signals, and with mothers speaking to their babies (Hrdy 2003). Animal studies have also suggested social empathy as a catalyst (Erard & Matcic 2018).

Selective scenarios for the emergence of natural language are bounteous. Language evolved to facilitate cooperative hunting. Language evolved as a costly ornament that allows females to assess male quality. Language evolved as a substitute for the grooming exhibited by other primates when groups got too large. Language evolved to promote pair bonding, to aid mother-child communication, to gossip about others, to expedite toolmaking, as a tool for thought, or to fulfill countless other functions or purposes (Laland 2017 176).

While the basis of language has veered from hardwired concepts such as universal generative grammars, and a battery of cerebral toolkits specifically to articulate and interpret spoken word, based on Broca’s and Wernicke’s language areas, there is no good rationale why a purely genetic and natural selection process in the absence of the evolutionary effect of language itself can provide an explanation. This leads to gene-culture co-evolutionary theories (Kirby & Christiansen 2003, Laland & Brown 2002, Pinker 2010, Deacon 1998), in which language itself becomes a kind of
meme-like parasite provocateur transforming human intelligence, exploding our ecological niches and giving rise to the phenomenon of culture.

Laland (2017) highlights the vast difference in vocal fluency that casts humans and monkey species distinctly apart from the relative paucity of such communication in higher apes:

*When the natural communication systems of primates are examined, for instance, no straightforward increase in complexity from monkeys to apes to humans is observed. Many researchers characterize great ape communication systems as more limited in range than those of monkeys. For example, monkeys, but not other apes, have functionally referential alarm calls, although whether monkey calls are truly referential like human language remains contested. This particular ape-monkey difference makes biological sense. Great apes are larger and stronger than monkeys, and hence are less vulnerable to predation. Apes almost certainly didn’t evolve referential alarm calls because they had comparatively little to be alarmed about. Indeed, there is little that is learned at all in the vocal communication of nonhuman apes.18 Apes do possess gestures to initiate play, for instance, or when infants signal they wish to be carried—many of these gestures have learned elements. However, apes seemingly do not use their gestures referentially, nor do their gestures exhibit any symbolic or conventionalized features.*

Laland ties this to the very earliest phase of human increase in brain size associated with tool-making:

*The latest thinking on the evolution of early Homo suggests that increases in brain size were coupled with increased toolmaking and stone transport, dietary expansion, and greater developmental plasticity (the flexible adjustment of development to environmental conditions). This means that there would be plenty to teach, because our hominin ancestors subsisted on a broad omnivorous diet and were reliant on a large number of extractive foraging and tool-using skills. This period in human history was the dawn of cumulative culture, when our ancestors first began manufacturing stone tools, using the flakes to butcher carcasses for food and in a variety of other ways. In other words, the beginning of the phase in which (according to our analysis of the evolution of teaching) cumulative culture would help make teaching widely adaptive. Here, then, is a setting in which teaching among close relatives could be beneficial across a broad range of contexts.*

In his chapter on the evolution of intelligence, Laland cites the following six factors as key to evolution of human intelligence grouped in three categories, constituting “cultural drive” in turn shaping human genetics: (a) social (social learning, tactical deception) (b) technical (tool use, innovation) and (c) ecological (extractive foraging, diet depth). These are combined into the notion of “primate g” which effectively becomes general intelligence.

*Here he has essentially broadened the competitive notion of Machiavellian intelligence, which he still accepts is central, with other obvious mechanisms of feedback including social copying, tool use and foraging, placing an emphasis on social learning, particularly high-fidelity copying, in relation to group size and long generation times, noting that primate longevity correlates with social learning rather than general intelligence. While acknowledging the role of Machiavellian intelligence, Laland’s lack of awareness of the pivotal role of sexual selection in promoting both intelligence and a loving pro-social society, noted in the previous section raises the question over the assumed benefits of cultural evolution over the sexual selection aspects gatherer-hunter evolutionary psychology, which has sustained us over longer time frames and left a clear imprint in our sexual physiology and pursuit of sexual love.*

The crucible for the early language evolution Laland invokes, rather than the small-brained Australopithicenes, with a cranial volume of some 450 cc similar to other apes, would appear to be the major push made by Homo erectus and his alter-ego Homo ergaster, went from a 750cc brain to 1250cc close to our own average size of around 1400cc. Analysis of erectus skulls and the discovery of a hyoid bone involved in speech vocalisation is also consistent with an increasing use of language in erectus (Broadfield et. al. 2001), complementing a 1.6 million year old Homo ergaster skeleton, which does have some evidence of Broca’s area (Taylor 1996 41).

Henrich (2017) demurs on the role of teaching in the emergence of language in his review of Laland’s book:

*I worry that it may overestimate the centrality of teaching and language for social learning, especially early in human evolution. My concern arises from the fact that, although teaching—broadly defined—does exist in some form across diverse societies, most of the research on pedagogy, parenting, and socialization derives from populations that are Western, educated, industrialized, rich, and democratic (WEIRD). In contrast to small-scale societies, WEIRD people rely heavily on intense verbal tuition, positive feedback, and active instructional interventions (3). This bias may skew our understanding of the role played by direct tuition and verbal scaffolding in cultural transmission. Further, numerous social norms, rituals, and technical skills are culturally transmitted without teaching or language (4), especially in small-scale societies.*

Henrich (2016) argues that the secret of our success comes from culture, with cultural evolution and genetic evolution driving one another. The result of an immense period of this gene-culture co-evolution is not a “really smart, though
somewhat less hairy, chimp", but "a new kind of animal" which has arrived because it is "better to be social than smart". The big difference between baby humans and chimpanzees is not in mastering abstract ideas, like quantity or causality, but that we are "prolific, spontaneous and automatic imitators, even willing to copy seemingly unnecessary or purely stylistic steps".

Humans are adaptive cultural learners who acquire ideas, beliefs, values, social norms, motivations, and worldview from others in their communities. To focus our cultural learning, we use cues of prestige, success, sex, dialect, and ethnicity, among others, and especially attend to particular domains, such as those involving food, sex, danger, and norm violations. … Humans are status seekers and aware strongly influence by prestige. But what’s highly flexible is which behaviors or actions lead to high prestige. … The social norms we acquire often come with internalized motivations and ways of viewing the world (guiding our attention and memory), as well as with standards for judging and punishing others. People’s preferences and motivations are not fixed.

Darwin, the founder of the evolutionary approach, speculated that language was potentially an invention (1904–60): "Man not only uses inarticulate cries, gestures and expressions, but has invented articulate language, if indeed the word invented can be applied to a process completed by innumerable steps half consciously made". Morten Christiansen questions the need to invoke a Chomskian generative grammar. Instead, he argues, language has adapted to utilise more general cognitive processing capacities that were already part of our ancestors’ brains before language came along. Among these, he focuses on ‘sequential learning’ - the ability to encode and represent the order of the discrete elements in a sequence. This ability is not unique to humans: mountain gorillas, for example, use it in the complicated preparation of certain spiky plant foods, where a sequence of tasks is required to remove the edible part. Language, he says, is a ‘non-obligate mutualistic endosymbiont’ - a kind of evolutionary structure like a ‘symbolic virus’.

Kirby suggests our brains are not so specifically designed for language and that we appear to be biologically adapted to language because language which evolves much faster than biology has culturally adapted to us, gaining semantic power and representational efficiency as it evolves. It also provides a common explanation for both spoken and written language which has evolved too recently to have arisen from long-term genetic evolution.

Introducing their approach, Kirby and Christiansen (2003) note:

There are an enormous number of communication systems in the natural world (Hauser, 1996). When a male Tu`ngara frog produces "whines" and "chucks" to attract a female, when a mantis shrimp strikes the ground to warn off a competitor for territory, even when a bee is attracted to a particular flower, communication is taking place. Humans as prodigious communicators are not unusual in this respect. What makes human language stand out as unique (or at least very rare indeed) is the degree to which it is learned. From a design point of view, it is easy to see the advantages of providing instructions for building mechanisms for language acquisition rather than the language itself. Human language cannot be completely innate because it would not fit in the genome. Warden (1995) has derived a speed-limit on evolution that allows us to estimate the maximum amount of information in the human genome that codes for the cognitive differences between us and chimpanzees. He gives a paltry figure of approximately 5 kilobytes. This is equivalent to the text of just the introduction to this chapter. Finally, we look at the implications of our work for linguistic and evolutionary theory. Ultimately, we argue that linguistic structure arises from the interactions between learning, culture and evolution. If we are to understand the origins of human language, we must understand what happens when these three complex adaptive systems are brought together.

A meme impels its bearer to broadcast it, and it mutates in some recipients: a sound of a word, or a phrase is randomly altered. Perhaps, as in Monty Python’s The Life of Brian, the audience of the Sermon on the Mount misconstrues the “Blessed are the peacemakers” as “Blessed are the cheesemakers.” The new version is more memorable and comes to predominate in the majority of minds. It too in mangled by typos and speako’s and hearo’s, and the most spreadable ones accumulate, gradually transforming the sequence of sounds. Eventually, they spell out, “That’s one small step for man, one giant leap for mankind”. I think you’ll agree that this is not how cultural change works. A complex meme does not arise by the retention of copying errors. If selection does not explain complex design in cultural evolution by itself, then it is of no importance. This is mistaken. There is no doubt that as people acquire and modify beliefs, ideas and values the variation that is generated can be highly non-random, and these non-selective processes shape cultural variation. But so what? Selection occurs anytime there is heritable variation that effects survival or reproduction (transmission).

Various lines of evidence support such optimisation of representational and cognitive efficiency in existing languages. For example dependency length minimisation, in which words which depend on one another come closer in a sentence than random (Futrell et al. 2015), makes it easier to recognise meanings in both spoken and written sentences, although the efficiency of existing languages varies widely. Widely used languages such as English have evolved to simplify changes of tense, person, gender and number to avoid complex conjugation and declension of verbs and nouns. There is also evidence that the root of languages might be partly iconic rather than the arbitrary relationships between sound and meaning of traditional linguistic theories, so that words indicating slowness, descent or negative emotions have a falling pattern of intonation while those with the opposite have a rising one, like down as
opposed to up. "Splash" provides a good example of a word whose spoken sound mimics its natural sound.

Fig 73: Evolutionary tree of the Indo-European languages (Gray & Atkinson 2003).

Languages as different as Danish and Hindi have evolved in less than 5000 years from a common Proto-Indo-European ancestor (Gray & Atkinson 2003). Yet it took up to 200,000 years for modern humans to evolve from archaic Homo sapiens. The latest estimates of the oldest skulls discovered, from the Omo river by Richard Leakey are 196,000 years (McDougall et al. 2005). Pinker (2003) notes steps of this type in the experiments of Martin Nowak's group in establishing both sequential symbols such as vowels and consonants to form a word and positional syntax in which words describing single events give way to active characterisation of a type of event. Both are adaptive responses to informational crisis as a large number of symbols each associated with a single context or event involves too many similar symbols to adequately discriminate one from another. The emergence of such structures could in turn have enabled the semantic enfolding of the rational mind. Reading written language is clearly such an adaption of visual pattern recognition and other skills.

Corballis (2002) suggests language arose from a selective convergence of these diverse attributes to give rise to semantic language, possibly also accompanied by a convergence of other faculties such as mental perspectives of others, consistent with an early common origin of click sounds (p 106). Gestures like the shrug are also ancient responses, while smiles, and snarls with all their dimensions from appeasement to tooth threatening exposure go all the way back through our primate relatives. Laughter is an example of a central chaotic and explosive emotional response to contradiction, or surprise, which is suggestive of an ancient origin, earlier than language as we know it, in sharing emotional reactions, which also appears to have a basis in sexual courtship and family bonding:

"Women laugh most in the presence of men they find attractive. 
Men are the leading laugh getters, women are the leading laughers"
Robert Provine

The advent of semantic exchange would place a huge new evolutionary burden on all areas of the cortex by exploding time, space and society into an historical process in which more and more contexts, individuals and situations came to be named and hence distinguishable from one another. Such a language involution would then place a burden of selection on larger brains which could handle the new and diverse complexities of a world imbued with historical and semantic meaning requiring slowed foetal development and a new awareness of social and sexual relationships and their implications. We can see the germ of this complexity in ape societies, such as grazing gelada baboons, where there are a host of cries indicating all manner of interactions, from courtship, through male competition, to emotional ‘social contracts’ of mutuality, reciprocation, aggression and reconciliation, as well as group warnings about predators. Among these, sexual courtship and competition are both very strong and also very subtle fleeting yet highly focused influences, as a glance at a female macaque inciting an extra-alpha ‘safari’ coupling behind the alpha males’ backs indicates.

This is also broadly consistent with the fact that brain processing about lexical semantic information still appears to be a striking advantage for experience-based representational structures (i.e., encoding information about sensory- motor, affective, and other features of phenomenal experience), with little evidence for independent taxonomic or distributional organisation (Fernandino et al. 2022).
This approach to the emergence of language also supports a general role for Machiavellian social interactions, with a core emphasis on reproduction and sexual selection driving the burgeoning complexity of semantic language, consistent with both Geoffrey Miller’s sexual selection ideas and honesty and deceit in wider social contracts. Consistent with this view is the fact that the sneakiest monkeys have the largest brains (Byrne & Corp 2004). Dunbar (1996) suggests that, as neocortical size increases, more subtle social and political strategies, such as tactical deception come into play. As a result, lower-ranking individuals are able to find loopholes in the social dominance hierarchy. Their special cognitive capacity makes them able to improve their reproductive success, in spite of lower rank - in line with the Machiavellian Intelligence hypothesis (Whiten and Byrne 1988, 1997). Boehm (1999 182) comments that the political invention of egalitarian society during this process enabled such individuals to forgo or invoke strategies of social deception, suggesting that lower ranking coalitions bluffed or forced their way, as male coalitions of chimps can do, to form large, stable and purposeful coalitions which are at the root of our social egalitarianism, politics and morality.

Laland (2017) brings this whole thesis back to its foundation in gene-culture co-evolution:

I described how the manufacture and use of stone tools may have played a vital role in human evolution by generating coevolutionary feedback between cultural practices and genetic inheritance, and thereby contributed to the emergence of language. Our tool knapping study supported the hypothesis that a gene-culture coevolutionary dynamic between tool use and social transmission was ongoing in human evolution, starting at least 2.5 million years ago and continuing to the present. Indeed, this entire book is one long advocacy for the significance of evolutionary feedback that encompasses a cultural drive mechanism initiated by natural selection that favored accurate and efficient copying. That selective feedback propelled the evolution of cognition in some primate lineages, and ultimately was responsible for the awesome computational power of the human brain. That propensity was fashioned by millions of years of gene-culture co-evolution.

(b) Niche Construction, Habitat Destruction Gene-culture Co-evolution and the Anthropocene

Niche construction is a concept from the extended evolutionary synthesis, where species not only exist within an ecological niche existing in the natural environment, but by their own activities alter the niche to promote their own survival. Niche construction can provide both physical and cultural extensions of a species niche. Because in symbiotic existential cosmology subjective conscious volition has physical efficacy, this becomes a conscious intentional process.

Fig 74: Examples of niche construction: Devil's gardens in the Amazon. The ant, Myrmelachista schumanni, which nests in Duroia hirsuta stems, creates devil's gardens by poisoning all plants except its hosts. A worker ant attacks a plant by lethal injection (inset). It bites a small hole in the leaf tissue, inserts the tip of its abdomen, and releases formic acid, which kills the plant. Superb Lyre bird of Sth. Australia has made a cultural niche through female sexual selection for diverse male courtship songs. A beaver dam. Beavers hold a very specific biological niche in the ecosystem: constructing dams across river systems. Human destruction of the rain forest to make monoclonal palm oil plantations Sabah.
Niche construction is a process by which gene-culture co-evolution can transform the evolutionary process. Examples of niche construction include the building of nests and burrows by animals, and the creation of shade, influencing of wind speed, and alternation of nutrient cycling by plants. Although these alterations are often beneficial to the constructor, they are not always. In the case of Homo sapiens, the process has had an unconstrained runaway effect driven by human evolution as a dominant species exploiting the natural environment. The trouble is that human niche construction has become wholesale habitat destruction. Despite climate, habitat and biodiversity crisis leading towards a mass extinction on cosmological time scales, there is no sign that gene-culture evolution is producing the stability required for the biosphere to survive in evolutionary time.

Fig 75: Human niche construction has exceeded all ecological bounds and transformed or destroyed the natural ecosystems to produce agricultural, urban, mining and toxically polluted landscapes reaching an irreversible degradation of the entire concept of an ecosystemic niche, due to the impact of a single species.

Fig 76: The Anthropocene: Eventually, these processes lead to their own cultural imposition on the planet, resulting in entirely synthetic “cognitive” rather than “experiential” landscapes (Guardian).
For niche construction to affect evolution it must satisfy: (1) the organism significantly modifying environmental conditions, (2) these modifications influencing one or more selection pressures on a recipient organism, and (3) there must be an evolutionary response in at least one recipient population caused by the environmental modification. Niche construction can be viewed as an evolutionary process that works in conjunction with natural selection. Evolution entails networks of feedbacks in which previously selected organisms drive environmental changes, and organism-modified environments subsequently select for changes in organisms. The complementary match between an organism and its environment results from the two processes of natural selection and niche construction. The effect of niche construction is especially pronounced in situations where environmental alterations persist for several generations, introducing the evolutionary role of ecological inheritance. The development of many organisms, and the recurrence of traits across generations, has been found to depend critically on the construction of developmental environments such as nests by ancestral organisms. Ecological inheritance implies that organisms inherit two legacies from their ancestors: genes and a modified environment.

Niche construction is recognised to have played important roles in human evolution, including the evolution of cognitive capabilities. It is immediately apparent that humans possess an unusually potent capability to regulate, construct and destroy their environments, and that this is generating pressing current problems (e.g. climate change, deforestation, urbanisation). However, human scientists have been attracted to the niche construction perspective because it recognises human activities as a directing process, rather than merely the consequence of natural selection.

Mathematical models have established that cultural niche construction can modify natural selection on human genes and drive evolutionary events in the process of gene-culture coevolution. There is now little doubt that human cultural niche construction has co-directed human evolution. Humans have modified selection, for instance, by dispersing into new environments with different climatic regimes, devising agricultural practices or domesticating livestock. For example, dairy farming created a selection pressure that led to the spread of alleles for adult lactase persistence. Many hundreds of genes have been found to be subject to recent selection, and human cultural activities are thought to be a major source of this selection.

Laland (2017 243) gives a fitting account of the benefits and emerging costs of agriculture as niche construction:

Agricultural practices are examples of cultural niche construction that, as described in the previous chapter, can trigger evolutionary episodes in both the domesticates and, via selective feedback, in the human populations too. Cultural niche constructing processes that contribute to plant domestication include selective collecting, transporting, storing, and planting of seeds; setting fire to grasslands and forest, either intentionally or accidentally; cutting down trees; tilling; weeding and the selective culling of competing species; irrigation; and creating organically rich dump heaps. The skills and information that underlay these processes were passed from one generation to the next through a combination of teaching, imitation, stories, myths, and ritual, with the knowledge base regularly accumulating and being updated. Over time, these agricultural practices had an impact on the plants, which underwent a series of dramatic changes, such as major increases in size of the plant or its seeds, faster seed germination, simultaneous ripening of the seed crop, and so forth. The changes benefited both species by increasing the fitness of the plant community and elevating its yield. Sowing seeds in prepared substrates, for example, both induces changes in germination and dispersal mechanisms through inadvertent artificial selection, and helps the tended plants by increasing their likelihood of being included in next year’s seed stock. The increased yield, in turn, encouraged humans to perpetuate the practices that maintained or increased plant productivity, thereby triggering natural selection that modified human digestive enzymes. However, the methods of sowing selected seeds and harvesting plants inadvertently imposed selection on the crops that eventually left many inviable when in open competition with wild counterparts, and hence utterly dependent on humans.

The same reasoning applies to animals, where domestication again selected for increased yields of animal products, such as milk, but also a variety of other traits, including lowered reactivity to environmental stimuli and a dependence on humans for survival and reproduction. The protection provided by corrals and pens, and selection of animals that were easy to manage, again modified the impact of natural selection on animal breeds. When removed from anthropogenic settings, that selection left the animals concerned much more vulnerable to predation.

But he is vastly underestimating the jeopardy here. Not only have the selectively bred strains become dependent on humans but they have become mono-cultured, often losing natural disease resistance and the evolutionary diversity that wild plants have to survive on evolutionary time scales. Worse still, the cultivated plant and animal varieties and habitat destruction generally have led to the genetic diversity of the wild relatives being severely compromised, so that the future viability of the entire niche construction of agriculture looks increasingly uncertain unless resolute corrective action is taken. Finally, although agriculture supported a larger population, their nutritional diet was inferior to gatherer-hunter societies and they tended to become smaller and suffered more parasites and epidemic diseases.
Laland & Brown (2002 245-249) note the transition to gene-culture coevolution as a coherent discipline:

Gene–culture coevolution is like a hybrid cross between memetics and evolutionary psychology, with a little mathematical rigour thrown into the pot. Like memeticists, gene–culture coevolution enthusiasts treat culture as an evolving pool of ideas, beliefs, values, and knowledge that is learned and socially transmitted between individuals. Like evolutionary psychologists, these researchers believe that the cultural knowledge an individual adopts may sometimes, although certainly not always, depend on his or her genetic constitution. … Moreover, selection acting on the genetic system is commonly generated or modified by the spread of cultural information.

They place it as a central theoretical construct in the divergent views of differing social science disciplines:

For most social scientists ‘culture’ is a given. The notion that much of the variation in the behaviour of humans is brought about by their being exposed to divergent cultures is so widespread and intuitive that it appears beyond dispute. Culture is regarded as a cohesive set of mental representations, a collection of ideas, beliefs, and values that are transmitted among individuals and acquired through social learning.

In contrast, most sociobiologists and evolutionary psychologists are united by the belief that the transmitted elements of culture exert either a comparatively trivial influence on human behaviour, or that whatever influence they have is so strictly circumscribed by genes that there is no need to take account of the dynamic properties of culture. For human behavioural ecologists, culture is viewed as a flexible system that produces the most adaptive outcome in a given environment and that can be altered over a relatively short period of time in response to environmental change. Others, such as many behaviour geneticists, treat ‘culture’ as the dross that is left over when the ‘more important’ genetic influences on behaviour have been isolated. ‘Culture’ is usually lumped together with individual learning and other environmental effects on behaviour into a ragbag labelled ‘nurture’, to be contrasted with genetic sources of variation.

For proponents of gene–culture coevolution, many of these other biological perspectives are misguided. Too much culture changes too quickly to be feasibly explained by genes, while the fact that different behavioural traditions can be found in similar environments would appear to render environmental explanations of behaviour impotent a lot of the time.

They thus state a convincing case for the approach and both meaningful in biological evolutionary terms and in terms of key cultural forms of evolutionary change:

Our capacity for culture is a unique adaptation. It allows us humans to learn about our world rapidly and efficiently. Human beings don’t have to scour their environment for sources of food and water, devise their own means of communication, or reinvent technological advances from first principles. Our capacity to acquire valuable skills and information from more knowledgeable others, such as parents, teachers, or friends, as well as indirectly via artefacts such as books and computers, furnishes us with a short cut to adaptive (and sometimes maladaptive) behaviour. Advocates of gene–culture coevolution share with memeticists and the vast majority of social scientists the view that what makes culture different from other aspects of the environment is the knowledge passed between individuals. Culture is transmitted and inherited in an endless chain, frequently adapted and modified to produce cumulative evolutionary change. This infectious, information-based property of transmission is what allows culture to change rapidly, to propagate a novel behaviour through a population, to modify the selection pressures acting on genes, and to exert such a powerful influence on our behavioural development.

Science, Religion and Gene-Culture Coevolution

Both science and religion are complex conceptual, symbolic and behavioural systems that cross human generations and have structured cultural influences affecting human survival and reproduction thus forming principal candidates for gene-cultural co-evolution. The scientific description of reality is a complex symbolic and conceptual system and the scientific method involves highly focussed forms of social behaviour associated with discovering the nature of reality around us. Likewise religion is a complex scriptural description that lays claim to an ultimate description of conscious (spiritual) reality accompanied by moral doctrines, devotional ritual and utopian aims of world redemption.

However their methods and approaches are very different and involve very distinct approaches, scepticism requiring proof or confirmation in science and affirmative belief frequently being essential for religious conviction, along with moral imperatives. This means that their mode of cultural evolution are contrasting and have distinct influence of humanity sometimes complementary but frequently discordant and in contradiction to one another. Nevertheless it is possible to give each an evolutionary treatment in terms of complex conceptual systems, either as memeplexes, as Dawkins (1976) put it or symtotypes as DH Wilson et al. (2014) describe.
Science doesn’t evolve by incremental mutation and natural selection, so much as theoretical innovation and empirical discovery, changing the natural context factually, often described as a scientific revolution, or paradigm shift. The standard of fitness tends toward theoretical or empirical truth about the natural and physical universe and the memes are the description of the universe themselves.

Nevertheless the interaction of scientists has been likened to an evolutionary process (Laland & Brown 2002 235):

Hull (1982) believes that scientific communities (e.g. Darwinsians) are a collection of interacting scientists that have in common one or more memes (e.g. natural selection, Mendelian genetics, etc.) that are expressed in an evolving conceptual system (e.g. Darwinism). Researchers of today that are part of the Darwinian community have different views from their 19th-century counterparts. What unites them is the notion that they derived their beliefs from pre-ceeding Darwinians. But how can we tell whether a scientist is part of a scientific community? According to Hull (1982), in exactly the same way we can tell whether an individual organism is a member of a particular species:

Hull suggests that, to belong within the same lineage, scientists must have gained their information from each other, rather than merely holding similar views. Once such communities of scientists are defined, an evolutionary analysis of the development of ideas can begin. In fact, Hull argues that science is analogous to artificial selection rather than natural selection:

Just as the breeder consciously selects the organisms that he breeds in order to produce desired changes in his stock, the scientist chooses conceptual variants in order to improve his scientific theories. Both processes involve conscious, intentional choices even though many of the results in both cases may be unanticipated. (1982, p. 317)

A related, but more interesting, point is that memetic evolution is sometimes directed and intentional. Hull notes that the characteristic that commentator have in mind when they claim that sociocultural evolution, especially conceptual development in science, is ‘Lamarckian’ is that at least sometimes people actually notice problems and try to solve them. For instance, Pinker states: Memes such as the theory of relativity are not the cumulative product of millions of random (undirected) mutations of some original idea, but each brain in the chain of production added huge dollops of value to the product in a nonrandom way.

Science also, despite it’s declared commitment to the sceptical principle demonstrates it’s capacity to follow fashionable trend in assumptions that become undeclared beliefs, partly propelled by a publish or perish defensiveness to key mechanistic assumptions such as the physically causal nature of brain processes, when these remain unproven and likely unprovable.

However, it is religious belief and doctrine, and the underlying correspondences with spirituality as a complement, or even a deeper underlying truth than science, where the memetic sting comes to bite, as Laland & Brown (2002) note:

One sinister aspect of the meme’s-eye view is that human beings seem to have been stripped of their ability to chose their own beliefs, values, and ways of life. Apparently, nefarious mind viruses are running our lives. The memes are choosing and manipulating us, not the other way round. Surely this surreal alternative perspective can’t be the whole story? After all, our minds have evolved over millions of years. Wouldn’t evolution at least have fashioned us with an ability to evaluate the alternative options and filter the available information that is adopted? If our bodies have an immune system to quell biological viruses, then shouldn’t we expect our minds to have analogous defences to suppress rogue memes? The stance advocated by some memeticists may be missing some of the underlying complexity to human behaviour. Aunger (2000) identifies a key issue for memeticists to investigate: namely, whether the design in cultural ‘adaptations’ is best described as artificially selected by people to reflect their needs or as the unintended outcome of independent replicators. For instance, has the human brain been shaped to have certain properties that ‘god’ happens to fit, as suggested by Hinde (1999), or is the god concept merely a clever replicator, as Dawkins (1976) says?

In “Why Gods Persist” Hinde (1999) made a cultural field study of the reasons why deities persist in diverse religious and cultural traditions, from Monotheism, through Taoism and Buddhism, to ethnic religions, examining all the reasons from the life hereafter to meaning and morality. One of his major arguments concerned the components of religions (for instance, beliefs, ritual, values, and sociality) and whether the nature of these components could be understood using traditional biological principles.

1. **Attribution** We all seek to understand what is going on around us, and ‘understanding’ in this context implies attributing events to causes: it is reasonable to suppose that such attempts at explanation aided survival in the environments in which humans evolved.

2. **Control, self-efficacy** Of course, with the growth of scientific understanding we no longer need to find causal explanations for most natural phenomena, and for many people the need to postulate supernatural forces has been pushed back to events preceding the Big Bang. But while understanding the causes of events is an important contributor to the individual’s peace of mind, it only takes one part of the way: the need to understand is closely related to a second issue, namely the need to feel in control of the events that influence one’s life.
3. **Adversity** Closely related to the need to feel a sense of control, individuals need a means to cope with persecution, suffering and illness. Religion can help in such situations in several ways. It can assist the sufferer to accept the situation as inevitable, as God’s will, and thus release him from the pain of kicking against the pricks. Alternatively, it can remove the devastating feeling that there is nothing that one can do, for at least one can pray and transfer the responsibility elsewhere.

4. **Mortality** Yet another major source for the attractiveness of deities lies in the desire for life after death. All organisms are adapted to strive for survival as necessary for reproduction. Even for a believer there may be uncertainty either about the fact of survival or about the nature of future existence, and uncertainty is likely to breed fear. Belief in a benevolent deity and a happy after-life can allay such preoccupations.

5. **Relationship factors** Humans seek social contact, and loneliness can be an important cause of distress. Indeed the sharing of experience is an important facet of all close relationships. The dissolution of a close relationship or bereavement involves a loss of part of the self-system. We continue to need attachment figures throughout life.

6. **Social factors** Religious belief is not just an individual matter. Beliefs are more or less shared with others, and there are powerful social forces that ensure that it should be so. There is often a gain to the individual from the sense of community, and a gain to the community from the effect of the shared beliefs on the loyalty of individuals: positive feedback is obtained from the consensual validation by others of the otherwise unverifiable beliefs.

7. **The meaning of life** Perhaps for many the apparent potency of religion can be encapsulated by saying that it gives a coherent meaning to life, though whether the need for meaning is primary, or depends on some of the issues previously mentioned, is an issue that need not detain us. Some argue that 'the search for significance is the overarching, guiding force in life'. It is often suggested that the tangible world is inadequate to provide material for the construction of credible compensation for non-available resources of the types mentioned above, that belief in a meaningful universe requires a designing agency, and that religions would lose their appeal if they lost contact with the supernatural.

8. **The diversity of the bases of belief** In the preceding paragraphs it has been argued that a number of basic propensities, which are probably ubiquitous in humans though differing somewhat between individuals and cultures, are basic to religious beliefs. To the extent that such is the case, religious beliefs can be seen as basically Darwinian.

9. **Belief and emotion** As mentioned already, in discussing beliefs it is difficult not to give the impression that belief is a solely intellectual matter. Nothing could be farther from the truth. We now know that the cognitive and emotional aspects of human psychological functioning are much more closely intertwined than was formerly thought to be the case, and this is especially important for religiosity. The very fact that religious beliefs involve counter-intuitive phenomena, and that people continue to adhere to beliefs which are contradicted by empirical evidence, suggests that intellectual conviction is not the sole issue.

Hinde's own views were summarized when he said, "It does not matter too much what you believe, for many different cultural beliefs bring meaning to believers’ lives (though differences in religious beliefs can lead to horrendous conflict). But what does matter is how people behave." He also hypothesized about the evolution of pro-social groups, saying that groups in which members behave pro-socially and cooperate are most successful despite the conflict between the self and the group that's introduced by pro-sociality. He argued that this conflict was managed by what is commonly called morality.

However, it is Richard Dawkins who really set the meme lynx among the hawks and doves of religion, as Laland and Brown (2002 216) note:

One of the most controversial applications of memetic reasoning has been to account for religion. An organized and socially sanctioned belief in a god is to many people a given and a truth. This belief is not always regarded as something that is a legitimate focus for scientific enquiry. Even among non-believers, the idea that religions could be self-serving and self-perpetuating ideational complexes that hoodwink us into spreading their message is somewhat disturbing. Yet that is precisely what they have been argued to by advocates of the meme’s-eye view.

This infamous account was first proposed by Dawkins in *The Selfish Gene* (1976), and elaborated in later writings. Dawkins argued that cultural selection would favour memes that gang up effectively into super-attractive coadapted meme-complexes, or memeplexes (Speel, 1995; referenced in Blackmore, 1999). Dawkins suggested that we could regard a church, with its architecture, rituals, laws, music, art, and written tradition, as just such a memeplex. He argued that the idea of a god and the religion memes that aggregate around it replicate themselves by providing convincing answers to life’s great questions.

Religions, however, are perhaps much more sinister than that. Dawkins suggested that they appear to employ various tricks, and co-opt other memes that facilitate their replication by the most dastardly of connivances. For instance, according to Dawkins:

an aspect of doctrine which has been very effective in enforcing religious observance is the threat of hell fire. Many children and even some adults believe that they will suffer ghastly torments after death if they do not obey the priestly rules. This is a particularly nasty technique of persuasion, causing great psychological anguish ... The idea of hell fire is ... self-perpetuating, because of its own deep psychological impact. It has become linked with the god meme because the two reinforce each other, and assist each other's survival in the meme pool. (Italics in original; 1976, p. 212)

Then there is faith: [Faith] means blind trust, in the absence of evidence, even in the teeth of evidence ... The meme for blind faith secures its own perpetuation by the simple unconscious expedient of discouraging rational enquiry. (Dawkins, 1976, pp. 212–13)
In fact, consider every possible trick that memes could employ to increase their frequency and memeticists suggest that such tricks are observed among organized religions (Aaron Lynch, 1996; Blackmore, 1999). They point out that memes would thrive that encouraged credit and praise to be heaped on individuals who read or learn verbatim texts describing the meme-complex; for example, the learning of Bible stories. Children adopt their parents' memes, hence specific religious memes may encourage having children, discourage abortion or contraception, encourage respect for elders, and discourage marriages between faiths. Memes could increase their frequency through conversions, so the most effective religions would be expected to place a premium on evangelism, proselytism, missionary work, and punishment of non-believers. Additionally, any challenge to the meme-complex might be treated extremely severely as, for example, in the case of Ayatollah Khomeini's fatwa on the author Salman Rushdie.

Blackmore (1999) asks her readers to reflect on why some minor religions went on to become great faiths, while the majority died out with the death of their leader. Her answer is that, of the many religious ideas, only some had packages of memes that were effective gimmicks for propagation, with particularly compelling (and difficult to disprove) explanations for life, and these became the major religions. Citing the work of theologian Hugh Pyper, Blackmore describes the Bible as the fittest of all books. She writes:

Western culture is the Bible's way of making more Bibles. And why is it [the bible] so successful? Because it alters its environment in a way that increases the chances of it being copied. It does this, for example, by including within itself many instructions to pass it on, and by describing itself as indispensable to the people who read it. It is extremely adaptable, and since much of its content is self-contradictory it can be used to justify more or less any action or moral stance. (1999, p. 192)

Attributing motives to memes is simply an intellectual stance adopted to help envisage which memes might be expected to have evolved. As Blackmore explains, religious memes did not, indeed could not, set out to succeed. She suggests that they were simply ideas and behaviour that had some utility in explaining the world and succeeded where others failed because they had the right combination of mutually supportive ideas that allowed them to be repeatedly passed on. It is worthy of note that there are other evolutionary approaches to understanding religion, many of which stress the advantages that religion bring to the individual (e.g. Hinde, 1999).


Dr. Wilson, a renowned evolutionary biologist, proposes that religion -- with all its institutional, emotional and prescriptive trappings -- ranks as a kind of mega-adaptation: a trait that evolved because it conferred advantages on those who bore it. But whereas evolutionary biologists traditionally view an adaptation as the outcome of a struggle between unevenly matched individuals -- say, between one polar bear with a cleanly cloaking white coat, and another with a slightly less effective form of camouflage -- Dr. Wilson sees religion as the product of group selection at work.

In his new book, Dr. Wilson argues that the religious impulse evolved early in hominid history because it helped make groups of humans comparatively more cohesive, more cooperative and more fraternal, and thus able to present a formidable front against bands of less organized or unified adversaries. By taking an evolutionary perspective on the subject, Dr. Wilson said, religion's twinned record of transcendent glories and shocking barbarities becomes comprehensible and even predictable, though not, perhaps, inevitable for the future.

In his own words he says: “I consider myself a communitarian, and there are many things I admire about religion, but no, I don’t believe in God. I tell people I’m an atheist, but a nice atheist.”

Wilson states that he has set out to demonstrate that a church can be thought of as an organism in an evolutionary sense:

True love means growth for the whole organism, whose members are all interdependent and serve each other.
That is the outward form of the inner working of the Spirit, the organism of the Body governed by Christ.
We see the same thing among the bees, who all work with equal zeal gathering honey. — Ehrenpreis [1650] 1978, 11

Religious believers often compare their communities to a single organism or even to a social insect colony. The passage quoted above is from the writings of the Hutterites, a Christian denomination that originated in Europe five centuries ago and that currently thrives in communal settlements scattered throughout northwestern North America. Across the world in China and Japan, Zen Buddhist monasteries were often constructed to resemble a single human body (Colcutt 1981). The purpose of this book is to treat the organismic concept of religious groups as a serious scientific hypothesis. Organisms are a product of natural selection. Through countless generations of variation and selection, they acquire properties that enable them to survive and reproduce in their environments. My purpose is to see if human groups in general, and religious groups in particular, qualify as organismic in this sense.

In summarising his evolutionary case as unifying systems, he notes this could extend to culture as a whole in all its aspects quoting culture itself as a defensive structure against chaos:

Cultures are defensive constructions against chaos, designed to reduce the impact of randomness on experience. They are adaptive responses, just as feathers are for birds and fur is for mammals. Cultures prescribe norms, evolve goals, build beliefs that help us tackle the challenges of existence. In
This passage claims for culture in general what I have tried to show for religion in particular. The word religion is derived from the Latin "religio," which means "to unite or bind together". Related words used outside the context of religion are "religate" (to bind together or unite) and "ligature" (the act of tying or binding up). These meanings reflect the essence of the thesis of this book, like a hidden clue that was not discovered until the very end. However, religions are not the only systems that unite people into adaptive groups. I could have written a book on political organizations, business organizations, military organizations, sports teams, family groups, secular intellectual traditions, or even diffuse cultures as adaptive units. We therefore need to develop a general theory of unifying systems of which religion is a special case.

The idea that religions enable larger scale cooperative behaviour is universally supported. Many writers have expressed the view that moral systems in both animal and human societies function to reduce intra-social conflict leading in turn to inter-social dominance (Alexander 1987, Hinde 1999, Wilson 2002, Rossano (2010), Dunbar (2022)).

But DH Wilson's point makes clear that other forms of social system also enable large scale cooperation, particularly social systems based on compassionate justice that people can recognise as good, so it doesn't explain why religion is advantageously desirable for the common good, integral to human culture or biology, or why a prescriptive religion that binds people in punitive ways to a more exacting extension of natural morality is superior to secular societies which can achieve the same ends. It is simply a fact of history that dominant empires have been associated with religions of one sort or another as social binding, arising from antiquity, even to the extent of ancient Rome switching to Christianity as a state religion under Constantine.

Nevertheless Wilson in his work (p 105) makes clear why the God-people relationship may not be factual:

**The God-people relationship** Ask a person to do something and the most likely response will be "Why?" An adaptive belief system cannot simply provide a list of behaviors but must also justify them. It might seem that the justification could be factual and straightforward: "Do this because it is good for you." However, this approach is unlikely to succeed for a number of reasons.

**First,** it *works best when the consequences of the behavior are well known:* "Eat your spinach because it is high in iron and will make you healthy." Often the consequences of behaviors are not well known, and the most obvious short-term consequences (the bitter taste of spinach) can lead to a different conclusion than the more subtle long-term consequences (the health effects). An adaptive belief system must cope with ignorance in its justification of behaviors.

**Second,** a belief system that is adaptive at the group level must cope with the problem of cheating, which benefits some individuals at the expense of others within the group. Cheating is genuinely beneficial for the cheater (when he or she gets away with it), and therefore cannot be argued against on the basis of personal benefit. The same point can be made in terms of the "veil of ignorance" that Rawls (1971) used to explain the concept of justice. Ask self-interested people to design a society, subject to the constraint that they will be placed at random within the society, and they will design a just society. However, once placed within the society, they are subject to a different set of constraints and may well want to destroy what they previously created. This problem, which lies at the heart of multilevel selection theory, makes it difficult to justify the behaviors that constitute an adaptive group in terms of personal benefit.

**Third,** an adaptive belief system must be economical. The beliefs that justify the behaviors must be easily learned and employed in the real world. A fictional belief system that is user-friendly and that motivates an adaptive suite of behaviors will surpass a realistic belief system that requires a Ph.D. to understand and that leads to a paralysis of indecision.

**Fourth,** a fictional belief system can be more motivating than a realistic belief system. Imagine two individuals competing for a common resource. Even though the facts of this situation are easy to comprehend, regarding one's enemy as inhuman can be more motivating than regarding one's enemy as just like oneself.

**Fifth,** a fictional belief system can perform the same functions as externally imposed rewards and punishments, often at a much lower cost. For example, the usual means of raising money to serve the common good is in the form of taxes. Unfortunately, individuals who avoid paying taxes without punishment are always better off in material terms than solid citizens within the same group. Cheating can be prevented by punishment, but implementing a system for detecting and punishing cheaters can itself be costly. Another solution is to manipulate the cost of cheating in the mind of the average citizen. Groups governed by belief systems that internalize social control can be much more successful than groups that must rely on external forms of social control.

For all of these (and probably other) reasons, we can expect many belief systems to be massively fictional in their portrayal of the world (Wilson 1990, 1995). As I discussed, their adaptedness must be judged by the behaviors they motivate, not by their factual correspondence to reality.

This raises a series of problems:

**Firstly** do religions evolve and what did they evolve from?
Secondly, religions, although they are moral social systems, which enable larger societies to cohere, also claim to be cosmological descriptions of existential reality expressing ultimate truth. If they are “massively fictional”, they run the risk of dominating society and then leading it into an invidious outcome.

Thirdly, the very reasons being advanced why they are advantageous have nothing to do with their inner truth or otherwise, but precisely those self-reinforcing social feedback loops that memeticists cite as principal caveats about the role of religions. Wilson’s five points are essentially social replicator rules and and Hinde’s nine reasons are the very avenues these rules seek to utilise.

Fourthly, the question of morality. Sociobiology teaches us that morality is a function of animal societies in which strategic bluffing occurs designed to inhibit internal competition to result in external dominance and survival. It is not a cosmological imperative. Religion, by contrast asserts morality as a divine principle, ring fenced by virtuous inducements and dire consequences.

Fifthly, while Wilson uses examples such as Calvinism to highlight constructive pro-sociality not requiring oppressive punishments, the history of religion is littered with homicidal punishments, and oppressive edicts presenting no avenue of escape for members, so the notion that religions are more efficient by positive inducement fails the historical test, whenever prescriptive religions show their teeth and claws in their true colours.

Sixthly, the notion that humanity has evolved to be genetically predisposed to spiritual or religious concepts, or that the brain is or is “hard-wired” to do so has not been scientifically established.

Seventhly, although Wilson’s citing of the reformation is an example of a type of evolutionary change within Christianity, paradigm shifts in religions are exceedingly rare over time scales of millennia, because religions are set up to zealously resist evolutionary change or re-interpretation as heresy, apostasy or blasphemy, unlike science where new ideas are assessed on their empirical or theoretic evidence, so that religion attempts to frustrate its own evolution, with the religious assault on evolutionary science, on the basis of the mythical and incorrect Sabbatical Creation, being a suitable case for treatment.

The Evolution of Religions and the Consequences

Firstly, the Evidence for Evolution of Religions from Animism, Shamanism and Ancestor Worship: Religions do display evolutionary relationships over time, due to the cross-infection of ideas, as illustrated in fig 77 and to natural variation, speciation and some forms of syncretic recombination. Buddhism, Jainism and Hinduism, in its many forms, all involve commonalities of world view and emergent movements such as Tantrism have overlapped these traditions. Likewise the Zoroastrian notion of cosmic renovation infected the Hebrew tradition to become Jewish apocalypticism and then the Christian version in the Gospels and Revelation. However evolutionary writers consistently see the origins of religion in mystical and trance states associated with shamanism and animism.

Robin Dunbar (2022) in “How Religion Evolved” expresses this view (Riesz 2022):

At the emotional heart of religion, as Dunbar sees it, is something he calls “the mystical stance”, which includes “a susceptibility to enter trance-like states”, “belief in a transcendent(al or spirit) world” and “a belief that we can call on hidden power(s) to help us”. Though sophisticated systems of theology have obviously been built on these foundations, “beneath the surface veneer of doctrinal rectitude lurks an ancient foundation of pagan mystical religion”. One of the key questions is how the original immersive or shamanic forms of religion develop into elaborate doctrinal religions.

Nick Spencer’s (2022) review elaborates:

Dunbar is clear that religious practices improve the individual’s “fitness”. “Active involvement in religion both makes you feel happier and provides you with a level of support that helps you cope.” The second key urge takes us beyond this “functional” role. Humans are predisposed towards the transcendent. The “mystical stance” is widespread, ancient in origin, and “part of what it is to be human”. Whether through trance states in early “shamanic” religions or less dramatic but still affecting encounters with music, art or nature, the sense of being part of something deeper and more profound than ourselves is near-universal. None of this means that such feelings are necessarily true. Dunbar is clear that doctrinal truth claims, such as about the nature of God or of creation, have played a relatively minor and recent role in the evolution of religion. Rather, it is simply that belief in a spiritual realm or in human purpose or destiny is very deeply ingrained in our nature. Dunbar is clear that the same religious urges that engender pro-social behaviour within the group can also provoke antisocial behaviour outside it — the more I bond with my co-religionists, the less I have in common with those of other faiths. And when religious identity is co-opted by the state, the result can be disastrous.
Matt Rossano (2010), in “Supernatural Selection” places this back to the first worldwide spread of modern humans:

At the same time of the worldwide spread of modern humans we see the first compelling evidence for the religious practices of shamanism, animism, and ancestor worship. Echoing the famous anthropologist Roy Rappaport, my view is that this is more than mere accident. Religion played a nontrivial role in the achievement of distinctively human society. … Thus, where we observe greater ubiquity we infer greater antiquity: An increasingly widespread trait is likely to be a more ancient one that possibly traces back to the origin of the species. Using this same logic, we can attempt to identify religion’s “primitive” traits.

He discovers the foundations to be ancestor worship, shamanism, and animism, the belief in natural and animal spirits:

Using this approach, three traits emerge: ancestor worship, shamanism, and the animistic belief in natural and animal spirits. Each of these traits represents a "supernaturalizing" of social life—a way in which our ancestors expanded the social world to include a supernatural layer filled with ever-vigilant spiritual monitors.

He summarises his basis for these being the evolutionary source:

**Ancestor worship:** is widespread across traditional religions in Africa, Asia, the Pacific Islands, and the South American tropics. In his survey of traditional African religions, missionary and religious scholar Geoffrey Parrinder states flatly, “All Africans believe in the
ancestors, as ever-living and watchful.” Half a world away, on the Solomon Islands, the same attitude persists among the Kwaio people, for whom daily interaction with ancestors is as routine as eating, drinking, and sleeping. Interacting with the ancestors, however, does not always happen within the context of recognizable rituals. Efe Pygmies regularly interact with ancestors in the forest and in dreams, but they engage in hardly anything that would look to us like worship.

**Shamanism:** The term “shaman” comes from the Tungus root sasan, meaning “one who is excited or raised” or simply “to know.” This reflects the fact that the shaman’s function is to enter an altered state of consciousness wherein he or she connects with spiritual forces in order to gain knowledge or cure illness. The shaman, then, is a spiritual practitioner—a specialist whose job is to interact with the spiritual world.

**Animism:** The belief in a spiritual force pervading all of nature is common among hunter-gatherers. Powerful animal spirits play a prominent role in the art, myths, and religious beliefs of traditional people as culturally and geographically diverse as the Aborigines of Australia, the Inuits of the Arctic, the Ainu of northern Japan, the Bushmen of South Africa, the Javanese of Malaysia, and numerous native North and South American tribes. Animal spirits were also prominent among the great chiefdoms of pre-Columbian America (e.g., Aztecs, Toltecs, Incas) and the early great civilizations of the Old World (Egypt, Mesopotamia). There are some exceptions and variations. For example, while Aka Pygmies believe in animal spirits, neither Mbuti nor Baka Pygmies do. Instead, Baka Pygmies believe in anthropomorphized “game spirits,” while the Mbuti see the entire forest as a living spirit.

However he neglects the obvious centrality of the Great Mother, fully evident as far back as 35,000 years ago in the Aurignacian in the case of the Venus of Hohle Fels. Rianne Eissler (1987) in “The Chalice and the Blade” summarises the early evidence for the Great Mother:

“It would seem only logical that the visible dimorphism, or difference in form, between the two halves of humanity had a profound effect on Paleolithic systems of belief. And it would seem equally logical that the fact that both human and animal life is generated from the female body and that, like the seasons and the moon, woman’s body also goes through cycles led our ancestors to see the life-giving and sustaining powers of the world in female, rather than male, form. In sum, instead of being random and unconnected materials, the Paleolithic remains of female figurines, red ochre in burials, and vagina-shaped cowrie shells appear to be early manifestations of what was later to develop into a complex religion centering on the worship of a Mother Goddess as the source and regeneratrix of all forms of life. This Goddess worship, as James and other scholars note, survived well into historic times “in the composite figure of the Magna Mater of the Near East and the Greco-Roman world.”

Rossano pinpoints the transition between these early imagistic processes and traditional doctrinal religions:

Anthropologist Harvey Whitehouse argues that religion exists in two modes: imagistic and doctrinal. The imagistic mode is characterized by infrequent, emotionally charged rituals that create the conditions for strong social bonding among participants. This mode encourages private reflection on emotionally arousing events. Its effects typically remain localized and personalized, not conducive to widespread transmission. By contrast, the doctrinal mode facilitates the efficient spread of religious beliefs across a broad population. It does this by stressing frequent, stylized rituals that encourage the rate storage of a common set of actions, stories, and teachings (e.g., the Catholic mass, where the story of Jesus’ last meal is reenacted and his message of sacrifice is revisited). While the doctrinal mode is an efficient tool for transmission, it can also lose its force through tedium. Thus, both modes are believed necessary for a religion to remain vital: the imagistic providing the individual motivation to participate in religious activities, the doctrinal to establish a common set of ideals and behaviors. Whitehouse contends that the imagistic mode is historically more ancient, probably dating as far back as the “religious” cave art of the Upper Paleolithic. I agree, but I suggest that the ritual and emotional roots of the imagistic mode run far deeper than the Upper Paleolithic — to well before the African Interregnum (100000-60000). Conversely, the foundations for the doctrinal mode emerge much later.

This distinction between imagistic spirituality as expressed in diverse forms in the animism section and the doctrinal religion people tends to associate with religion and its social impacts also is the distinction between the source mysticism that underlies all religious inspiration that lies at the seeds of new religions and the prescriptive memes traditional religions apply to their populations to maintain theistic control over human beliefs and actions.

**Secondly, the Cosmological Claims of Religion:** In terms of cosmology, Christianity lays claim to ultimate authority. The Sabbathical Creation of Genesis is a quaint allegory, that passes the meme “efficiency” test with flying colours because it is so concise and endearing but is categorically wrong, both in the timing relationship of Earthly life to the solar system and to the order of the living species themselves. Once the notion of creation is implanted, the temptation to conceive of the universe in terms of creative design becomes almost impossible to overturn. Revelation likewise passes the “more motivating than reality” meme test by being so outrageously hyperbolic destroying the late planet Earth in apocalyptic conflagration leading to the newly created heavenly Jerusalem. This destructive eschatology is not only incorrect, it is diabolically genocidal. It cements nature as completely expendable and leads to a complete disregard for natural or human survival in planetary crisis, to which religious dominion over nature has contributed.
While edge-of-chaos dynamics is pivotal to the way biogenesis, biological evolution and conscious experience, arising from, cosmological symmetry-breaking, world religions share a motif of the ultimate rule of order over chaos, which becomes a cosmic war against disorder, in the form of evil because, although each cosmology starts out pure, disorder creeps in, culminating in a destructive final renovation of the universe in the end of days. The Vedic cosmology ends in annihilation, in the Kali yuga. Buddhist cosmology similarly descends into the Samvartakalpa or “Eon of dissolution. In the western traditions we wind up with the Day of Judgment.

Fig 78: Marduk and Tiamat. The war of order against chaos, light vs dark, good vs evil and male vs female. This is a cosmological fault, as the diversity and complexity of life and consciousness arises at the edge of chaos.

Such cosmologies thus invoke divine purity but introduce a cosmological war of order against chaos in a creeping dissolution perceived as primary evil. Just as Marduk the God of civic order is depicted as conquering Tiamat – the ancient Goddess of the Sea that is the symbol of the chaos of primordial creation, so later Near Eastern traditions from Zoroastrian, through Jewish, Christian and Islamic adopted the final solution of the end of days.

The Western notion of eschatological apocalypse originates from the Zoroastrian Frashokereti – a final renovation of the universe, when evil will be destroyed, and everything else will be then in perfect unity with God (Ahura Mazda).

Premises: (1) good will eventually prevail over evil; (2) creation was initially perfectly good, but was subsequently corrupted by evil; (3) the world will ultimately be restored to the perfection it had at the time of creation; (4) the “salvation for the individual depended on the sum of [that person’s] thoughts, words and deeds, and there could be no intervention, whether compassionate or capricious, by any divine being to alter this.” Thus, each human bears the responsibility for the fate of his own soul, and simultaneously shares in the responsibility for the fate of the world.

The accompanying story in the Bundahishn, runs as follows: At the end of the “third time” (the first being the age of creation, the second of mixture, and the third of separation), there will be a great battle between the forces of good (the yazatas) and those of evil (the daevas) in which the good will triumph. On earth, the Saoshyant – “one who brings benefit” – an eschatological saviour figure will bring about a resurrection of the dead in the bodies they had before they died. This is followed by a last judgment through ordeal. The yazatas Aryanman and Atar will melt the metal in the hills and mountains, and the molten metal will then flow across the earth like a river. All mankind—both the living and the resurrected dead—will be required to wade through that river, but for the righteous (ashavan) it will seem to be a river of warm milk, while the wicked will be burned. The river will then flow down to hell, where it will annihilate Angra Mainyu and the last vestiges of wickedness in the universe. In later Zoroastrian texts, it is written that the molten metal will purify the wicked. The righteous will partake of parahaoma, which will confer immortality. Thereafter, humankind will live without food, without hunger or thirst, and without weapons (or possibility of bodily injury). The material substance of the bodies will be so light as to cast no shadow. All humanity will speak a single language and belong to a single nation without borders. All will share a single purpose and goal, joining with the divine for a perpetual exaltation of God’s glory. While in the beginning there was one plant, one animal and one human, the variety that had since issued would remain forever. Similarly, the host of divinities brought into existence by Mazda continue to have distinct existences, “and there is no prophecy of their re-absorption into the Godhead.

The eschatological renovation entered Jewish and later Christian thought through the Edict of Restoration, of Cyrus II of Persia (c. 600–530 BC) a proclamation attested by a cylinder seal in which Cyrus authorised and encouraged the return of the Israelites to the Land of Israel following his conquest of the Neo-Babylonian Empire.

“Thus saith the LORD to His anointed, to Cyrus, whose right hand I have holden, to subdue nations before him, and to loose the loins of kings; to open the doors before him, and that the gates may not be shut (Isaiah 45:1).

Christianity introduced a further element into eschatological apocalypse, in the form of the dying saviour. The dying-and-rising resurrection deity is a religious motif often cited from the religions of the ancient Near East, and traditions influenced by them include Biblical and Greco-Roman mythology and by extension Christianity. The concept was first
proposed in comparative mythology by James Frazer's seminal *The Golden Bough* (1890). Frazer associated the motif with fertility rites surrounding the yearly cycle of vegetation. Frazer cited the examples of Osiris, Tammuz, Adonis and Attis, Dionysus and Jesus:

*With Attis, Adonis or Tammuz, we begin to close about the Christian altar. Behind them, as behind the slave who was King of the Wood, there looms, scarcely named, the shadow of that other God, who as Son of Man ... died on the tree. And inescapably we are brought to conclude that Jesus the Christ acquired divinity by assuming the attributes of another deity (Bishop 1936).*

In Pfleiderer's *Philosophy of Religion* (1878), he freely adopts a position of 'nature mythology':

*The earliest action in the way of worship in the primitive history of mankind, was nothing but a dramatic repetition of the divine life seen in the processes of nature, with a view to taking part in it in a mutual intercourse of gods and men. The usages connected with the spring and autumn festivals in nature-religions everywhere show very plainly an effort to represent the coming and the departure of the deity of life and light, in such a manner that the changing fortunes of the deity may be repeated and experienced afresh in the imitative acts and emotions of their worshippers. Thus in Egypt was celebrated the complaint of Isis for Osiris, in Syria the marriage and the death of the sun-god Melcarth or Adonis, in Eleusis the search and lament for her daughter Core ... in Athens the death and resurrection of Dionysus.*

This association was reinforced by Pfleiderer (1903):

*The 'animistic' notion of the sacraments did not first make its way into Christianity in the post-apostolic time, but pervades the whole Pauline theology. What Paul accomplished was to 'ethicize' the 'original enthusiasm' of the early Christians 'which in its original form was closely related to the origin of Mysteries'. In so doing, Paul 'created for the growing Christian Church the elements of its ceremonial, without which no Church religion could arise or maintain itself' ... 'essentially the same myth lies at the origin of the mysteries' of Osiris, Adonis, Demeter and Persephone, and Dionysus, while 'nearly allied to these legends of the violent death of a god are those which tell of the voluntary descent of a god or hero into the underworld and his fortunate return', such as Tammuz.*

Some of the premises have been debated by Smith (1990), who commented in his critique of Pfleiderer:

*In his last work devoted to the topic and published in 1905, Pfleiderer more strongly insists on the parallels between Paul and the mysteries of the dying and rising gods, as well as Paul's creative genius in transforming them into an 'ethical' system, and makes an additional set of arguments. The use of these 'borrowings' was necessary to distinguish Christianity from Judaism. Its 'orgiastic' enthusiasm, now domesticated by Paul, is what freed early Christianity from the rigidities of 'national-legal' Judaism. When this domestication later failed, the 'dangerous one-sidedness' of Gnosticism resulted.*

*From Pfleiderer's initial publications, although never without challenge, the interpretation, especially, of Pauline myth and ritual as being intrinsically related to the pattern of dying and rising gods, has persisted in some circles of New Testament scholarship. Thus R. Bultmann could continue to declare, in 1965, that Paul's understanding of baptism was grounded in the theology of the Hellenistic-Christian community: which understood this traditional initiation-sacrament on analogy with the initiation-sacraments of the mystery religions. The meaning of the latter is to impart to the initiates a share in the fate of the cult-deity who has suffered death and reawakened to life - such as Attis, Adonis, or Osiris.*

*But Smith then claimed the the dying God was irrelevant because it was seasonal, while Yeshua's mission was “once and for all”:*

*The death of Jesus is further distinguished from the fate of all the mystery-deities by the fact that it happened once and for all, and is incapable of being repeated cultically; here we have an historical event, there is a mythical drama.*

*For in that he died, he died unto sin once: but in that he liveth, he liveth unto God (Romans 6:10).*

*But this is a false criticism because it was clear that Yeshua’s entire mission, as described in the gospels, is a once and for all mission of apocalypse, but the entire episode is played out as a single performance of a Dionysian tragedy, in the Greek fertility tradition, as Hugh Schonfield carefully documented in “The Passover Plot (1965) and is accounted in detail in the *Natty Dread* chapter. And in the Pauline Eucharist, Christ is reborn anew in every celebration of the Mass.*

Regardless, in Christianity, whether expressed in Yeshua's own concepts and actions, or the additions of Paul and later gospel writers, we have the central notion of Jesus as the only begotten Son of God, whose sacrificial death in the crucifixion became a necessary atonement for the forgiveness of sins:

*He said unto them, But whom say ye that I am? Peter answering said, The Christ of God. And he straitly charged them, and commanded them to tell no man that thing; Saying, The Son of man must suffer many things, and be rejected of the elders and chief priests and scribes, and be slain, and be raised the third day (Luke 9:20).*
The synoptic mission account proceeds through a panoply of elements of fertility cult religions. John the Baptist had already had his head served up on a platter as trophy for Salome dancing Inanna’s descent at Macherus in front of Herod’s generals. Yeshua is then ministered unto out of their substance by the women of Galilee, performing Dionysian miracles, anointed to his doom by a woman alleged to be Magdalen, set at nought in a Roman Saturnalia and cries “Eloi, Eloi, lama sabachthani?” echoing both Psalm 22 and the Canaanite cry of Mot to El, on the cross, looked on from far off by the women of Galilee, while cursing the daughters of Jerusalem, is risen on the third day after harrowing hell and ascends to Abba the Father, becoming the only begotten Son of God, later enshrined in the hybrid Godhead of the Trinity.

The sacrificial element appears to be a memetic device to create a Hellenistic religion out of Yeshua’s apocalyptic mission, culminating in his death, devised 17 years later in the Pauline epistles, and elaborated 20 years later again in Mark, Luke and Matthew, so that we have little idea of how much of this is Yeshua’s own tragic Dionysian Theatre and how much is Paul’s Hellenistic revision using Yeshua as a cipher.

There is a glaring contrast between the apocalypse and sacrifice of the canonical gospels and the Gospel of Thomas, which has barely a hint of either, raising further questions over the authenticity of the canonical accounts. When the synoptics say Peter declares Yeshua is the Christ, in Thomas (13) Yeshua denies it: “I am not your master. Because you have drunk, you have become intoxicated from the bubbling spring which I have measured out.” The entire apocalyptic expectation is brought into the gnostic present: (51) “His disciples said to him, “When will the repose of the dead come about, and when will the new world come?” He said to them, “What you look forward to has already come, but you do not recognise it.” There are only hints of apocalypse, but there is no mention of Christ’s returning in power: (79) “For there will be days when you will say, ‘Blessed are the womb which has not conceived and the breasts which have not given milk.’” There is only one oblique reference to the sacrificial sacred marriage, whose conclusion is unclear: (61) “Two will rest on a bed: the one will die, and the other will live.”

In effect, as in Matthew 25:31 and Revelation, Christ has taken over the role of Saoshyant and become the key administrator of justice, but to achieve this role has had to die a sacrificial death to the Father God, so that sins can be forgiven. In the Avestan source tradition there is no need for this homicide, which comes out of contrasting tradition of mortal sacrifice of the dying God. We thus have a hybrid apocalyptic cosmology founded on two inconsistent notions, the cosmic renovation where each being is free and responsible for their actions, and the resurrected savour whose acknowledgement as Lord becomes the only remedy for the remission of sins, thus providing a fertility tradition short circuit to the purity of Frashokereti. There is no way that this can be validly presented as an actual cosmology of the universe in which we consciously exist and this means the notion of God it presents is at best a syncretic mythopoetic notion, and at worst a disingenuous contrivance to present Christ as the cosmic intercessor with God, in whom we must believe, while God has become sequestered in the background.

Fig 78b: (Left) God blessing the Seventh day (Blake) (Right) Creation of Adam (Michelangelo). Although God is conceived of as incorporeal, omnipotent and transcendent, all conceptions of God are routed through human agency.

To make this more explicit, we need to examine the nature of God as conceived by religions. The notion of deity has arisen from animism, the world view where all natural phenomena are treated as living agency. The earliest such characters are trickster heroes such as the San peoples Kaggen, or mantis – a human-insect-bird therianthrope – or shape-shifter between animal and human form. It is only later that such deities became enshrined in religions as the
many deities we know from Kali, Vishnu and Shiva, through Quetzalcoatl, the plumed serpent who rose from his own ashes and also had human form, to El, Asherah, Inanna, Enki, Tammuz, Zeus, Hera and Dionysus. YHVH is depicted as an abstract deity, but nevertheless has all-too-human emotional attributes. Ultimately such deities evolved into the male creator deity of patriarchal monotheism and then to hybrid chimeric forms, such as the Trinity composed of Father, Son and Holy Ghost. Abba as the “Father” returns irreversibly to the anthropocentric mold, with Mary and the dying Jesus ubiquitous as graven images adorning Catholic altars.

Genesis confesses the ‘Elohim are in human likeness in a mutual anthropocentric projection, thus typecasting God as a the Creator and Legislator as an anthropocentric projection of human manufacture and governance:

Let us make man in our image, after our likeness: So ‘Elohim created man in ‘their’ own image, in the image of ‘Elohim created he him; male and female created he them (Genesis 1).

The outright ‘humanness’ of God’s personality is likewise manifested in God’s palette of mammalian limbic emotions, from love and compassion, through patience, to jealously and wrath. Because Christianity focuses almost exclusively on the personae of Yeshua and Christ, we gain most of our idea of the God of monotheism through the Old Testament.

In the Hebrew tradition, God’s love is covenantal, even to the point of tempting the faithful to infanticide:

And it came to pass after these things, that God did tempt Abraham, and said unto him, Abraham: and he said, Behold, here I am. And he said, Take now thy son, thine only son Isaac, whom thou lovest, and get thee into the land of Moriah; and offer him there for a burnt offering upon one of the mountains which I will tell thee of. ... And Abraham stretched forth his hand, and took the knife to slay his son. And the angel of the LORD called unto him out of heaven, and said, Abraham, Abraham: and he said, Here am I. And he said, Lay not thine hand upon the lad, neither do thou any thing unto him: for now I know that thou fearest God, seeing thou hast not withheld thy son, thine only son from me.

The Psalms reverberate with Yahweh’s protective love of His people:

How excellent is thy lovingkindness, O God! therefore the children of men put their trust under the shadow of thy wings (Ps 36:7).

Because thy lovingkindness is better than life, my lips shall praise thee (Ps 63:3).

But thou, O Lord, art a God full of compassion, and gracious, long suffering, and plenteous in mercy and truth (Ps 63:3).

But let all those that put their trust in thee rejoice: let them ever shout for joy, because thou defendest them: let them also that love thy name be joyful in thee. For thou, Lord, wilt bless the righteous; with favour wilt thou compass him as with a shield (Ps 5:11)

But this love is tempered by the covenant of faith:

And Solomon said, O Lord God of Israel, there is no God like thee in the heaven, nor in the earth; which keepest covenant, and shewest mercy unto thy servants, that walk before thee with all their hearts (2 Chron 6:14).

For the mountains shall depart, and the hills be removed; but my kindness shall not depart from thee, neither shall the covenant of my peace be removed, saith the Lord that hath mercy on thee (Isa 54:10).

Know therefore that the Lord thy God, he is God, the faithful God, which keepeth covenant and mercy with them that love him and keep his commandments to a thousand generations (Deut 7:9)

Who is a God like unto thee, that pardoneth iniquity, and passeth by the transgression of the remnant of his heritage? he retaineth not his anger for ever, because he delighteth in mercy (Micah 7:18).

The Lord thy God in the midst of thee is mighty: he will save, he will rejoice over thee with joy; he will rest in his love, he will joy over thee with singing (Zeph 3:17).

However, the jealousy of God is the most outstandingly prominent aspect of his personality in the scriptures:

But ye shall destroy their altars, break their images, and cut down their groves:

And I will judge thee, as women that break wedlock and shed blood are judged; and I will give thee blood in fury and jealousy. (Ezekiel 16:38)
Ye shall not go after other gods, of the gods of the people which are round about you; (For the Lord thy God is a jealous God among you) lest the anger of the LORD thy God be kindled against thee, and destroy thee from off the face of the earth. (Deut 6:14)

However God’s love leads to the supplicant bride Israel:

And I passed by you and I looked on you and behold, your time was the time of love. And I spread my skirt over you and I covered your nakedness. And I swore to you and I entered into a covenant with you and you became Mine. She is now washed, anointed, dressed, wrapped, covered, and adorned with silks, fine linen, embroidery, gold, and silver. And you were very beautiful and you advanced to regal estate. And your name went out among the nations, because of your beauty; for it was perfect, by My Splendor which I had set on you (Ezek. 16).

Schwartz (1996) has cutting comment on this passage:

Ezekiel 16, the extended allegory of Israel as a whore, brings the relation between whores, exile, and monotheism (adultery, defiled land, and idolatry) into sharp focus. It is the story of a child being born and growing up wild and unloved in the field, and when she matures into puberty, of her being owned, sexually and materially, by Yahweh.

What is pivotal to understand here is that this zealous and jealous nature is exactly what was instituted by the forefathers, to ensure that their religion of Yahweh could keep itself distinct from the multitude of religions of the nations on all sides. It’s purpose and the allegory of Israel as sacred bride and the allegory of Christ as the Bridegroom in its shadow is NOT the divine presence of God speaking, but the institution of a powerful patriarchal replicative meme designed to have maximally efficient social effect.

Religious believers might try to argue that this is just the flawed human description of God’s inscrutable nature, but this is not a defence, because we are dealing with a God acting in history, so His actions and commands clearly declare His intended effects, for example at Jericho:

And the city shall be accursed, even it, and all that are therein, to the LORD: only Rahab the harlot shall live, she and all that are with her in the house, because she hid the messengers that we sent. ... And they burnt the city with fire, and all that was therein: only the silver, and the gold, and the vessels of brass and of iron, they put into the treasury of the house of the LORD (2 Chron 34 4-5).

If we reject the notion that this is God’s justice in favour of Joshua’s human fallibility, the whole thesis fails including the ten commandments of Moses. But actually it is God’s jealous curse of the religions of the nations operating here as it did through to the time of Josiah in fear of the Babylonian invasion:

Josiah] began to purge Judah and Jerusalem from the high places, and the groves, and the carved images, and the molten images. And they brake down the altars of Baalim in his presence; and the images, that were on high above them, he cut down; and the groves, and the carved images, and the molten images, he brake in pieces, and made dust of them, and strawed it upon the graves of them that had sacrificed unto them. And he burnt the bones of the priests upon their altars. And he brought out the grove (asherah) from the house of the Lord, without Jerusalem, unto the brook Kidron, and burned it and stamped it small to powder, and cast the powder thereof upon the graves of the children of the people. And he brake down the pavilions of the effeminate, which were in the house of the Lord, where the women wove hangings for the grove (2 Kings 23 3).

By contrast, the Christian expression of God’s love is sacrificial, rather than covenantal. God’s love is imputed indirectly because He sacrificed His only begotten Son to become the intermediary with whom we communicate:

But God commendeth his love toward us, in that, while we were yet sinners, Christ died for us (Rom. 5).

What shall we then say to these things? If God be for us, who can be against us? He that spared not his own Son, but delivered him up for us all, how shall he not with him also freely give us all things? (Rom. 8.)

But God, who is rich in mercy, for his great love wherewith he loved us, Even when we were dead in sins, hath quickened us together with Christ, (by grace ye are saved) (Eph. 2).

For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life (John 3).

In this was manifested the love of God toward us, because that God sent his only begotten Son into the world, that we might live through him. Herein is love, not that we loved God, but that he loved us, and sent his Son to be the propitiation (sacrifice) for our sins (John 4).

For the Father himself loveth you, because ye have loved me, and have believed that I came out from God (John 16).
Centrally the covenantal aspect has been transferred from Yahweh to Yeshua as tangible intermediary:

He that hath my commandments, and keepeth them, he it is that loveth me:
and he that loveth me shall be loved of my Father, and I will love him, and will manifest myself to him (John 14).

Finally we have the intervention of the Holy Ghost as a second intermediary, again leaving the Father remote, although Christians do pray to the Father, in the Holy Ghost, seeking the love and mercy of Christ:

And hope maketh not ashamed; because the love of God is shed abroad in our hearts by the Holy Ghost which is given unto us (Rom 5).

But ye, beloved, building up yourselves on your most holy faith, praying in the Holy Ghost,
Keep yourselves in the love of God, looking for the mercy of our Lord Jesus Christ unto eternal life (Jude 20).

Both the Gospel of Thomas and the Synoptics do quote Yeshua as citing the three as one triad, although only the Holy Ghost deserves accusation of blasphemy for transgression:

Jesus said: He who blasphemes against the Father will be forgiven, and he who blasphemes against the Son will be forgiven; but he who blasphemes against the Holy Spirit will not be forgiven, either on earth or in heaven." (Thom 44)

However, we know the Christian God of the Trinity is not a cosmological manifestation but a contrivance. In the fourth century, Arius taught that the Father existed prior to the Son who was not, by nature, God but rather a changeable creature who was granted the dignity of becoming "Son of God". In 325, the First Council of Nicaea adopted the Nicene Creed which described Christ as "God of God, Light of Light, very God of very God, begotten, not made, being of one substance with the Father", and the "Holy Ghost" as the one by which "was incarnate... of the Virgin Mary".

Therefore we come to terms with the fact that Christianity is saddled with an impossible cosmologically discordant idea of God, inconsistent with the original nature of the Zoroastrian renovation, forming a short-circuit to forgiveness by belief in Jesus as Lord and Saviour. A critically efficient meme to outmanoeuvre the Hebrew tradition in favour of the Hellenistic view, that then swept through the pagan nations, who were already sympathetic to these ideas, through the agency of Paul establishing the rituals of a Hellenistic religion, founded on Yeshua's apocalyptic mission.

The Christianity of the New Testament is a creative combination of Jewish and Hellenistic traditions transformed into a tertium quid ('a third something'); that is, a reality related to two known things but transcending them both (Aune 1987).

Central to the entire Hellenistic emphasis is the nature of the Eucharist as the founding rite of the Christian religion. According to the Pauline epistles (1 Corinthians 11:23–25) and the later gospels, the rite was instituted by Yeshua. During the Last Supper (Matt 26:26–28; Mark 14:22–24; Luke 22:17–20;) he commanded them to "do this in memory of me" while referring to the bread as "my body" and the cup of wine as "the blood of my covenant, which is poured out for many". Ignatius of Antioch (born c. 35 or 50, died between 98 and 117), one of the Apostolic Fathers, mentions the Eucharist as "the flesh of our Saviour Jesus Christ". Two forms are also cited in the first century Didache. In Catholicism, this is elaborated in the doctrine of transubstantiation the turning of the bread and wine into the soma and sangre of Christ. It is expressed in the teaching that Christ is risen from the dead and is alive, so that when the bread is changed into his body, not only his body is present, but Christ as a whole is present ("the body and blood, together with the soul and divinity"). The same holds when the wine is transubstantiated into the blood of Christ. In the Reformation Protestant churches rejected this doctrine or amended it to an undefined spiritual presence.

Although God is conceived of as being omnipotent, omniscient, omnipresent and omnibenevolent as well as having an eternal and necessary existence and is most often held to be incorporeal, related to conceptions of transcendence or immanence the supreme being, as world creator, and principal object of faith, He is invoked by the faithful as a person in a loving and yet supplicant relationship in the same form as a beneficent yet exacting human leader. Believers are thus conceiving of God in their own experience of relationships with others, regardless of His reality or actual nature and existence, or otherwise. In other words, the idea of God corporeal or otherwise is a human view of emotional and intellectual agency inspired through scriptural belief.

This is not to tell the whole story of divinity, because, as Rudolph Otto (1917) has made clear, these are but the rational dimensions of the Holy:
It is essential to every theistic conception of God, and most of all to the Christian, that it designates and precisely characterizes Deity by the attributes Spirit, Reason, Purpose, Good Will, Supreme Power, Unity, Selfhood. The nature of God is thus thought of by analogy with our human nature of reason and personality; only, whereas in ourselves we are aware of this as qualified by restriction and limitation, as applied to God the attributes we use are 'completed', i.e. thought as absolute and unqualified. Now all these attributes constitute clear and definite concepts: they can be grasped by the intellect; they can be analysed by thought; they even admit of definition. An object that can thus be thought conceptually may be termed rational.

In coming to understand the Holy of Holies that underlies the religious quest and is deeply chthonic to it's superficial memetic nature as a process of social control, Otto ranges through terms such as sacred to find the invent a special term to stand for 'the holy' minus its moral factor or 'moment', and, as we can now add, minus its 'rational' aspect altogether, which he comes to term the numinous which we shall explore later in the context of the brain.

It will be our endeavour to suggest this unnamed Something to the reader as far as we may, so that he may himself feel it. There is no religion in which it does not live as the real innermost core, and without it no religion would be worthy of the name. ... For this purpose I adopt a word coined from the Latin numen. Omen has given us ominous, and there is no reason why from numen we should not similarly form a word 'numinous'. I shall speak then of a unique 'numinous' category of value and of a definitely 'numinous' state of mind.

Thirdly, Religion is an Avowedly Memetic Process: Religions are profoundly memetic and are custom designed by their forefathers to have precisely the powerful influence of religious culture over individual interests, personal liberty and even human survival that the memetic detractors express. Notwithstanding their mystical and numinous basis, these are also vehemently opposed by organised religion as disturbing the dominant order. Religion inextricably has two complementary and contradictory natures. It lays claim incorrectly to cosmological ascendancy but at the same time is constructed as an intensely captivating meme system in which the believer comes to serve the interests of the religious complex and its social following, rather than human survival or individual benefit, or true spiritual illumination. This is why religio is to 'bind' as in the Roms fasces. This means Dawkins’ warning is not to be set aside. To achieve any long-term viable human culture, and ensure the future of the human species, it is essential that the memetic control of religion over human culture and the human mind is liberated from bondage.

Patriarchal Monotheism
1. Security: God is the generator of cosmological order, out of and triumphal over, chaos, providing ultimate security.
2. Power: God is omniscient, omnipotent Lord, creator and legislator. This is cosmological autocracy, in human image.
3. Belief: Love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind, and with all thy strength.
4. Compulsion: To turn aside from, or reject the religious path is atheism, blasphemy, heresy or apostasy.
5. Hierarchy: Woman and nature are supplicant to man, as man is to God.
6. Eternal morality: Moral judgment is rewarded and punished in the end of days by eternal torment or salvation.
7. Conflict: This casts order and chaos, good and evil, light and dark as in a state of eternal war, destroying fecundity.

This is a dominant memetic system, enticing by its ultimate security and the notion that loving God is reciprocated by God’s love, along with the ultimate incentive of eternal life resolving all existential uncertainties, but it’s dark underbelly is the ultimate fear of God’s wrath, the condemnation of all human beings as original sinners, the social and physical punishments of one’s flaws being discovered, either by one’s religious neighbours or by God himself leading to dire earthly punishment or eternal torment.

The culturally memetic influence of religion on human evolution, through patriarchal dominance of reproductive choice is profoundly expressed in the amplified reproduction rates of Islam, and following it Christianity, to fulfil their utopian aims of world dominance is expressed in their heightened birth rates over the population as whole (Pew Res).

Fourthly, Natural versus Memetic Morality: We have the problem of morality as an evolved cooperative good versus an oppressive imperative. The sociobiological view of morality is that it is a win-win adaption through group selection which also favours individual survival. Curry et al. (2019) express this in extremely eloquent terms:
Life begins when molecules start making copies of themselves. These ‘replicators’ are ‘selfish’ in the technical sense that they promote their own replication (Dawkins, 1976/2006). They can promote their replication at the expense of other replicators. These competitive interactions have a winner and a loser; one’s gain is another’s loss; they are zerosum games (Maynard Smith, 1982; Von Neumann & Morgenstern, 1944). Replicators can also replicate in concert with other replicators (Dawkins, 1998). These cooperative interactions can have two winners; they are win-win situations; they are non-zerosum games. Natural selection can favour genes for cooperation – that is, genes for evolutionarily-stable phenotypic strategies designed to achieve superior equilibria in non-zerosum interactions – and has done throughout the history of life. Natural selection for genes that employ cooperative strategies has driven several ‘major transitions’ in the evolution of life on Earth, including the formation of cells, chromosomes and multicellular organisms (Maynard Smith & Szathmáry, 1995). Natural selection has also favoured genes for cooperation between individuals, in a wide variety of species (Dugatkin, 1997), including humans. Humans descend from a long line of social primates; they have spent 50 million years living in social groups (Shultz, Opie, & Atkinson, 2011), and two million years making a living as intensely collaborative hunter-gatherers (Tooby & DeVore, 1987). This has equipped humans with a range of biological – including psychological – adaptations for cooperation. These adaptations can be seen as natural selection’s ‘attempts’ to solve the problems of cooperation. More recently, improvisational intelligence and cultural transmission (Boyd, Richerson, & Henrich, 2011; Pinker, 2010) have made it possible for humans to attempt to improve upon natural selection’s solutions by inventing evolutionarily-novel solutions – ‘tools and rules’ – for further bolstering cooperation (Binmore, 1994a, 1994b; Hammerstein, 2003; Nagel, 1991; Popper, 1945). Together, these biological and cultural mechanisms provide the motivation for social, cooperative and altruistic behaviour; and they provide the criteria by which individuals evaluate the behaviour of others. According to MAC, it is precisely these solutions to problems of cooperation – this collection of instincts, intuitions, inventions and institutions – that constitute human morality (Curry, 2005, 2016).

Laland (2017) notes that socially organised societies becomes dominant over competitors, including by force of arms, following Richerson and Henrich (2012):

(1) societies with an organized army are more likely to win conflicts than those without, (2) city-states with division of labor and occupational specializations would tend to out-compete those without these innovations, (3) agricultural communities that have devised irrigation systems would flourish more readily than others, and (4) societies with religious doctrines that stabilize within-group cooperative activities will thrive at the expense of those with no gods to help ensure compliance.

Yet he still presents the religious spectre as basically a benign cooperative process, in which the docile members of a religiously conforming society will out-survive their more rebellious independently-minded colleagues without any reference to the kinds of draconian punishments conservative and religious societies go to the lengths to exercise:

Theoretical analyses suggest that humans should be particularly adept at recognizing, representing, and adopting the local norms of their society, as well as notice, condemn, and punish violations of those norms. For instance, moral norms could plausibly have generated natural selection acting on human genes to favor cooperative tendencies. Individuals who are more inclined to conform to norms would find it “easier to enter larger norm-bound societies and to abide by the rules, than individuals lacking this tendency. These more “docile” individuals would be at an advantage, to the extent that they would be better placed to benefit from the society’s technologies and less vulnerable to exclusion or punishment. In turn, a population of more docile individuals could then permit the cultural evolution of more sophisticated and effective norms, and allow groups to maintain more reliable cooperation. A similar mechanism could have favored a tendency of individuals to feel shame or guilt when they violate a social norm.

Haidt & Graham (2007) present theoretical and empirical reasons for believing that there are five psychological moral systems (MF) that provide the foundations for the world’s many moralities:


They base this on the notion that conservative societies have moral intuitions not recognised by social liberals:

On this definition of morality, conservative opposition to social justice programs appears to be immoral, and has been explained as a product of various non-moral processes such as system justification or social dominance orientation. In this article we argue that, from an anthropological perspective, the moral domain is usually much broader, encompassing many more aspects of social life and valuing institutions as much or more than individuals.

As noted above, Curry et al. (2019) define Morality-as-Cooperation (MAC) as the theory that morality is a collection of biological and cultural solutions to the problems of cooperation recurrent in human social life and have expressed it in the following seven principles:

(1) Allocation of resources to kin (Family Values), (2) Coordination to mutual advantage (Group Loyalty), (3) Social exchange (Reciprocity), (4,5) Contests between Hawks (Heroism) & Doves (Defence) in which agents fairly indicate how far they are prepared to pursue a conflict, (6) Division (Fairness) divide the resource proportionately by bargaining power and (7) Possession (Property Rights) deferring to prior possession.
Curry et al. tested MAC’s predictions by developing the Morality-as-Cooperation Questionnaire (MAC-Q), and comparing its psychometric properties to those of the Moral Foundations Questionnaire (MFQ). They found that over four studies, the results supported the MAC-Q’s seven-factor model of morality, but not the MFQ’s five-factor model. Thus MAC emerges as the best available compass with which to explore the moral landscape.

The upshot of this research is that morality has a valid basis as a win-win that enhances both group and individual survival, on a sociobiological basis where natural selection is paramount, but does not include prescriptive culturally originating religious imperatives of an oppressive nature that invoke dire penalties when they are not observed.

Effectively the five factor MF is presenting conservative morality, which goes further than natural morality of MAC to enforce cooperation by ‘altruistic’ punishment as practiced widely by prescriptive religions.

Rossano (2010) describes this process as “getting people in line”:

I argued that there are two ways for groups to establish and maintain intra-group cooperativeness that extends beyond the boundaries of kin selection, reciprocity, and indirect reciprocity: (1) by motivating people to follow group-based social norms, and (2) and by motivating them to punish those who don’t follow social norms. One of the chief sources of this motivation is social scrutiny — the idea that we are being watched and judged by others. Given the close-knit nature of the hunter-gatherer groups from which we evolved, the notion of being constantly watched and evaluated was a familiar one. Experimental work shows that we are hypersensitive to the cues that suggest public observation of our behavior. Furthermore, this same work shows that we are naturally hypervigilant against freeloaders and cheaters who threaten group cohesion and that we have effective means of bringing them into line.

Religious doctrines exploit hypervigilance as actively enforced memes, both by constructive inducement as virtues and destructive moral punishment as sins, in ways that are far more encompassing and punitive than mere social disapproval.

Fifthly, Religious Enforcement of Homicidal Violence: this brings us to the fallacy that religion is just a way of enticing people to cooperate by pro-social incentives. When the crunch comes, religious edicts, laws and punishments are among the most severe and unforgiving. Dismemberment for theft, stoning for adultery, and death for apostasy. While Islam today still displays these homicidal features in full iconic form, none of the patriarchal religions can consider themselves free of these diabolical practices in their long term history. I will address just a few violently homicidal examples that have particularly punished women, to make the situation clear.

Genocide at Medina and Femicide at Mecca

At first Muhammad had lived in peace with the people of Mecca, whose environs such as Taif had shrines to the Goddesses al-Uzza, Manat and al-Lat and for whom the Kaaba was a sacred site for all religious pilgrims and included astral and Christian figures. But when he decided that his verses accepting the three goddesses as intermediaries were a heresy spawned by satanic influence, and began to preach a more firebrand monotheism, this offended the sensibilities of the Quraysh of Mecca and he ended up having to escape to Medina with a small band of followers. There was a large Jewish community at Medina occupying an entire sector of the walled oasis settlement. Many Jews had settled in Arabia from the time of the Roman diaspora. However Muhammad found his new Arab religion, cast in the model of the Jewish heritage, was not respected by the Jews of Medina. Ostensibly, in response to this perceived insult, Muhammad turned the direction of prayer from Jerusalem to Mecca.

The situation soured and finally turned to genocide when the Quraysh of Mecca, angered by his disruptive influence, laid siege to Medina. The plight in the oasis became desperate. Not knowing which side would eventually win, the Qurayzah Jews sent a party to parley with the Quraysh to try to preserve themselves from being overrun by one side or the other and some of them were overheard swearing allegiance. But then in a superstitious misjudgment, the Quraysh deserted the siege when a severe desert storm struck the region. In the aftermath a Muslim friend of the Jews drew his finger over his throat to warn them of their impending fate:
According to Karen Armstrong’s “Muhammad” (1992 206), fearing the Jews might have opened their gates to the enemy, Muhammad appointed a mortally wounded fighter Sa’d ibn Mu’adh who was carried to the Qurayzah village on a litter, as judge over their fates:

Sa’d judged that all the 700 men should be killed, their wives and children sold into slavery and their property divided among the Muslims. Muhammad cried aloud: “You have judged according to the ruling of Allah above the seven skies!” He next day Muhammad ordered a trench to be dug in the souk of Medina. Some individuals were spared at the request of the Muslims, but the rest were tied together in groups and beheaded; their bodies were thrown into the trench.

It is probably impossible for us to dissociate this story from Nazi atrocities and it will inevitably alienate many people irrevocably from Muhammad. But Western scholars like Maxime Rodinson and W. Montgomery Watt argue that it is not correct to judge the incident by twentieth-century standards.

But the problem’s are profound: (1) Appointing a mortally wounded man as judge is prejudicial. (2) This was an unmitigated genocide because the Jews never actually betrayed the Muslims and never did open their gates, or the story would have been entirely different. (3) In the 21st century these genocidal standards are still legitimised and applied by Muslims today and Muhammad extolled as a divine prophet in an age where genocide on this scale is a crime against humanity. There was no excuse and no valid rationalisation for this slaughter, and later Muslim history up to the taking of Mecca demonstrates that this killing proved to be unnecessary gratuitous violence for which history needs to judge this tradition.

Ending the period of religious tolerance that had made Mecca a divine pilgrimage destination, Muhammad smashed all the icons in the Ka’aba, leaving only the portraits of Jesus and Mary and ironically, the vagina-like meteoric Black Stone, the most sacrosanct symbol of the old religion. Likewise the images of al-Uzza and Manat and a year later also those of al-Lat at Taif, were destroyed, although the people there initially resisted and raised an army leading to an indecisive siege. Although Muhammad issued an amnesty to those who accepted his rule, a list of prominent opponents were summarily executed. Within two and a half years, Muhammad would pass away.

Nawal el Sadaawi in “The Hidden Face of Eve” notes the effect on women who opposed Muhammad’s rule:

Sarah was a famous slave singer who aimed her barbed words against the Moslems. She was among those whom Mahomet ordered to be executed on the day of his victorious entry into Mecca. In the region of El Nagir, it was recounted that some women had rejoiced when the Prophet died and Abu Bake, the first of the Caliphs, ordered their hands and feet to be cut off. Thus women who dared to give voice to their protest or opposition could be exposed to cruel punishment. Their hands might be cut off, or their teeth pulled out, or their tongues torn from their mouths. This last form of punishment was usually reserved for those who were singers. It was said of these women that they used to dye their hands with henna, brazenly display the seductions of their beauty, and beat time with their fingers on tambourines and drums in defiance of God, and in derision towards the rights of God and his Prophet. It was therefore necessary to cut off their hands and tear out their tongues.

Muhammad was particularly unforgiving to anyone who ridiculed him or his Quranic verses. According to al-Tabari’s Alseera Al Nabawiya (2:463) Muhammad explicitly ordered the murder of Om Kerfa (Mother of Kerfa), one of the most revered Meccan matriarchs who was torn in half by camels at the age of 90 for writing poetry ridiculing him:

She is Fatima daughter of Rabia son of Badir son of Amru al Fazari. Mother of Kerfa married a prince of the tribe of Hathifa and bore for him 13 children the first of whom was Kerfa by whom she is surnamed. All her children became leaders of their tribes. She was the dearest of all Arabs, and an example of honor and pride to them. It was said if two tribes fought and Mother of Kerfa sent her scholl on a spear that was displayed to both parties, then they would reconcile out of respect for her. She used to annoy the prophet with her poetry so in the sixth year of the Hijra he sent Zaid son of Haritha on a military expedition to kill her in the most heinous of ways. For he tied her legs with ropes and tied each of the ropes to a camel so that she was split in two. She was an old woman when this happened and her head was severed as proof to all that she had died.

Deuteronomic Stoning for Adultery

Deut 22:20 But if this thing be true, and the tokens of virginity be not found for the damsel: Then they shall bring out the damsel to the door of her father’s house, and the men of her city shall stone her with stones that she die.

Deut 22:22 If a man be found lying with a woman married to an husband, then they shall both of them die, both the man that lay with the woman, and the woman: so shalt thou put away evil from Israel. If a damsel that is a virgin be betrothed unto an husband, and a man find her in the city, and lie with her; Then ye shall bring them both out unto the gate of that city, and ye shall stone them...
with stones that they die; the damsel, because she cried not, being in the city; and the man, because he hath humbled his neighbour's wife: so thou shalt put away evil from among you.

Multiple other religious crimes, from apostasy and blasphemy to homosexuality and being an unruly son were also punished by stoning, except that, in later times, the caveats became so stringent that it virtually never occurred.

In the period prior to early Christianity, particularly in the Mishnah, doubts were growing in Jewish society about the effectiveness of capital punishment in general (and stoning in particular) in acting as a useful deterrent. Subsequently, its use was dissuaded by the central legislators. The Mishnah states:

A Sanhedrin that puts a man to death once in seven years is called destructive. Rabbi Eliezer ben Azariah says that this extends to a Sanhedrin that puts a man to death even once in seventy years. Rabbi Akiba and Rabbi Tarfon say: Had we been in the Sanhedrin none would ever have been put to death. Rabban Simeon ben Gamaliel says: they would have multiplied shedders of blood in Israel.

In the following centuries the leading Jewish sages imposed so many restrictions on the implementation of capital punishment as to make it de facto illegal.

Islamic Stoning for Adultery

The outstanding difference with Islam is that these practices continue to be religiously sanctioned. Four Hadith below show that Muhammad used the Deuteronomic punishment claimed to be for Jewish offenders to instil stoning for adultery as an Islamic punishment, centuries after the practise had been effectively discontinued in Judaism.

Hadith Stoning for adultery al-Bukhari 2:23:413 Narrated 'Abdullah bin 'Umar: The Jew brought to the Prophet a man and a woman from amongst them who had committed (adultery) illegal sexual intercourse. He ordered both of them to be stoned (to death), near the place of offering the funeral prayers beside the mosque.

Hadith Stoning for adultery al-Bukhari 4:56:829 Narrated 'Abdullah bin 'Umar: The Jews came to Allah's Apostle and told him that a man and a woman from amongst them had committed illegal sexual intercourse. Allah's Apostle said to them, "What do you find in the Torah (old Testament) about the legal punishment of Ar-Rajm (stoning)?" They replied, (But) we announce their crime and lash them." 'Abdullah bin Salam said, "You are telling a lie; Torah contains the order of Rajm. They brought and opened the Torah and one of them placed his hand on the Verse of Rajm and read the verses preceding and following it. 'Abdullah bin Salam said to him, "Lift your hand." When he lifted his hand, the Verse of Rajm was written there. They said, "Muhammad has told the truth; the Torah has the Verse of Rajm. The Prophet then gave the order that both of them should be stoned to death. (Abdullah bin 'Umar said, "I saw the man leaning over the woman to shelter her from the stones.")

Hadith Stoning for adultery al-Bukhari 6:60:79 Narrated 'Abdullah bin Umar: The Jews brought to the Prophet a man and a woman from amongst them who had committed illegal sexual intercourse. The Prophet said to them, "How do you usually punish the one amongst you who has committed illegal sexual intercourse?" They replied, "We blacken their faces with coal and beat them," He said, "Don't you find the order of Ar-Rajm (i.e. stoning to death) in the Torah?" They replied, "We do not find anything in it." 'Abdullah bin Salam (after hearing this conversation) said to them, "You have told a lie! Bring here the Torah and recite it if you are truthful." (So the Jews brought the Torah). And the religious teacher who was teaching it to them, put his hand over the Verse of Ar-Rajm and started reading what was written above and below the place hidden with his hand, but he did not read the Verse of Ar-Rajm. 'Abdullah bin Salam removed his (i.e. the teacher's) hand from the Verse of Ar-Rajm and said, "What is this?" So when the Jews saw that Verse, they said, "This is the Verse of Ar-Rajm." So the Prophet ordered the two adulterers to be stoned to death, and they were stoned to death near the place where biers used to be placed near the Mosque. I saw her companion (i.e. the adulterer) bowing over her so as to protect her from the stones.

The prescription in Sharia is stoning a woman to death for adultery submerged to her neck so only her head shows:

The penalty for adultery under Article 83 of the penal code, called the Law of Hodoud is flogging (100 lashes of the whip) for unmarried male and female offenders. Married offenders may be punished by stoning regardless of their gender, but the method laid down for a man involves his burial up to his waist, and for a woman up to her neck (article 102). The law provides that if a person who is to be stoned manages to escape, he or she will be allowed to go free. Since it is easier for a man to escape, this discrimination literally becomes a matter of life and death. Article 104 provides that the stones should not be so large that a person dies after being hit with two of them, nor so small as to be defined as pebbles, but must cause severe injury. This makes it clear that the purpose of stoning is to inflict grievous pain on the victim, in a process leading to his or her slow death.

"In Muslim law the punishment of lapidation is only inflicted for adultery. Under Jewish law idolaters or bearers of false witness were also stoned. It is founded not upon the Qu`ran where the only punishment Sura 24:2 is one hundred stripes but upon the traditions where Muhammad is related to have said 'Verily God hath ordained for a man and a woman not married to one hundred lashes and expulsion from their home town for one year; and for a man and a woman having been married one hundred lashes and stoning'." When a woman is to be stoned, a hole or excavation should be dug to receive her as deep as her waist. ... The purpose of the hole is to conserve 'decency' for the female. Neither boulders nor pebbles may be used, so that death is neither mercifully quick nor endlessly prolonged" (Hughes - Dictionary of Islam).Islamic Death for Apostasy
Hadith Death for Apostasy al-Bukhari 4:52:260 Narrated Ikrima: Ali burnt some people and this news reached Ibn 'Abbas, who said, "Had I been in his place I would not have burnt them, as the Prophet said, 'Don't punish (anybody) with Allah's Punishment.' No doubt, I would have killed them, for the Prophet said, 'If somebody (a Muslim) discards his religion, kill him.'

The prescription in Sharia for Apostasy is death:

Apostasy in Islam is commonly defined as the abandonment of Islam by a Muslim, in thought, word, or through deed. It includes not only explicit renunciations of the Islamic faith by converting to another religion or abandoning religion altogether, but also blasphemy or heresy, through any action or utterance which implies unbelief, including those who deny a "fundamental tenet or creed" of Islam. While classical Islamic jurisprudence calls for the death penalty of those who refuse to repent of apostasy from Islam, the definition of this act and whether and how it should be punished, are disputed among Islamic scholars and strongly opposed by Muslim and Non-Muslim supporters of the universal human right to freedom of faith. According to classical Islamic law, an apostate can only be killed if there are two just Muslim eyewitnesses of the apostasy or if the apostate self-confesses, according to some schools, both conditions are required. Jurists allowed flexibility in the application of the death penalty, allowing judges to interpret the apostasy law in different ways, sometimes, they leniently interpreted it and at other times, they strictly interpreted it.

As of 2014, there were eight Muslim-majority countries where apostasy from Islam was punishable by death, and another thirteen where there were penal or civil penalties such as jail, fines or loss of child custody. From 1985 to 2006, only four individuals were officially executed for apostasy from Islam and unrelated political crimes by governments, but apostates have suffered from other legal punishments as well as extra-judicial punishments which have been inflicted upon them by vigilantes—imprisonment, the annulment of their marriages, the loss of their rights of inheritance and the loss of custody of their children. Mainly, the loss of life has resulted from killings which have been perpetrated by "takfiri" insurgents (ISIL, the GIA and the Taliban).

This is not to exonerate other religions or to focus unjustified blame on Islam. Christianity has been plagued by centuries of religious bloodshed, fomented by obsessive martyrdoms, violent Crusades, religious wars, and centuries of Inquisition seeking to root out heretics from witches, through gnostics, to reformationists and mystics such as Marguerite Porete. All religions from, Buddhism through Hinduism to Zoroastrianism are marked with the blood of homicidal violence.

It is estimated that the witch hunts resulted in 70,000 to 100,000 deaths but others have suggested a much higher figure. During the Crusade against the Cathars and Albigenses, after the siege of Beziers alone, 20,000 were summarily executed on the spot.

Fig 79:(Lep) The Gnostic 'heretics' being led out of Carcassone to be killed for apostasy 1209. (Right) Auto de Fe in the execution of Anne Hendricks in Amsterdam 1571 41 Jan Luyken.

41 Anneken Hendriks was an Anabaptist of Friesland, living in Amsterdam. Through treachery she was taken prisoner by the city officials. Because she held firm to her faith, she was severely tortured on 27 October 1571, with the intent of learning from her the names of other Mennonites. But even this ill treatment could not make her recant, and consequently she was put to death on the town square (Dam) on 10 November 1571. The execution took place in an unusually cruel manner. Anneken was tied to a ladder; her mouth was filled with gunpowder, and in this condition she was carried from the city hall to the ignited stake and thrown into the flames. She was fifty-three years old and an ordinary woman who could neither read nor write. In her sentence she was condemned because "she was married according to Mennonite custom, and at night in a country house." The Martyrs Mirror records that there is a song concerning her, but gives no further information, apparently meaning the song found in the Dutch hymn book Veelder-hande Liedekens (1569), which begins "Ick moetu nu gau verclaren, Watter t'Amsterdam is geschiel" (I must now declare to you, What took place at Amsterdam).
In 1209, a crusade from Pope Innocent III began against the Cathars. Both Cathars and Catholics were besieged by an army of the Church within the walls of Beziers. On the day of the feast of Mary Magdalen they killed their viscount in the church dedicated to her name and were in turn horrendously punished on the same day for repeating the Albigensian heresy that she was Christ's concubine. When the city fell, the commanding general was asked who to slaughter: heretics, his men assumed, must surely be separated from believers.

Their leader's reply was simple:

"Kill them all," he said, "the Lord will know his own". Our forces spared neither rank nor sex nor age. About twenty thousand people lost their lives at the point of the sword. The destruction of the enemy was on an enormous scale. The entire city was plundered and put to the torch. Thus did divine vengeance vent its wondrous rage.

The situation was similar in Carcassone:

After discussion, our men entered the town of Carcassonne with the cross in front. When the church had been restored they placed the Lord's cross on top of the tower ... for it was Christ who had captured the town and it was right that his banner should take precedence. ... The venerable abbot of Vaux-de-Cernay went to a great number of heretics who had gathered in one of the houses wishing to convert them to better things, but they all said with one voice 'Why are you preaching to us? We don't want your faith We deny the church of Rome. You are wasting your time. Neither life nor death can turn us from the beliefs we hold.' He then went to see the women gathered in another building but the female heretics were more obstinate and difficult in every way. Simon de Montfort first urged the heretics to convert, but having no success, he dragged them out of the castle. A huge fire was kindled and they were all thrown into it. It was not hard for our men to throw them in, for they were so obstinate in their wickedness that they threw themselves in. Only three women escaped, whom a noble lady snatched from the flames and restored to the Holy Church.

This is also reflected in the tragic execution of Marguerite Porete, the first to die in the auto da fé in Paris:

The Mirror of Simple Souls is an early 14th-century work of Christian mysticism by Marguerite Porete (1996, 1999) dealing with the workings of Divine Love. Written originally in Old French when Latin was the prescribed language for religious literature, it explores in poetry and prose the seven stages of 'annihilation' the Soul goes through on its path to Oneness with God through Love. Enormously popular when written, it fell foul of the Church authorities, who, detecting elements of the anomian Heresy of the Free Spirit in its vision, denounced it as "full of errors and heresies", burnt existing copies, banned its circulation, and tried and executed Porete in the first Auto da Fé in Paris in April 1310. Marguerite remained silent throughout her trial, with a plain refusal to elaborate, explain nor deny her teachings. Marguerite went to the stake in total silence and endured her fiery end in silence. Those watching were moved to tears.

Love in this book layeth to souls the touches of his divine works privily hid under dark speech, so that they should taste the deeper draughts of his love and drink. — 15th-century English translator's preface.

Sixthly, the Brain on Religion, Spirituality and Mysticism: The idea of an innate religious propensity in evolution for the good is not so much about transformative mystical states, as the blessings of religious security, for example that conservative morality or the love of God is an innate or evolved ‘instinct’. But, while we have found evidence for natural morality in humans, conservative morality presents rather as as a superimposed meme. As we have seen with Marguerite Porete, the mystical people are often cast wearing sackcloth and ashes, or being burned at the stake for their visions. Both the conformist patterns of religious belief and the diverse mystical experience of transcendence have been explored in brain studies. But the propensity discovered scientifically in the brain is that both meditative and psychedelic states are associated with quietening of the default mode network and the relaxing of identity-defining dynamics leading to integrated states of consciousness rooted in first person mystical experience.

The nature of subjective conscious volition over the world around us and its implications is our central existential dilemma because we gain our entire knowledge of the world through our subjective experiences of it. This is the central existential dilemma that animism has always encompassed, and which its offspring in religion and religion’s backroom “soul” in spirituality⁴², seek to reveal. Scientific consciousness research opens the abyss of subjective

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⁴² Spiritualitas L. from spiritus n. which means ‘the breath of life’, also psyche, or soul. Traditionally, spirituality referred to a religious process of reformulation which "aims to recover the original shape of man", oriented at "the image of God" as exemplified by the founders and sacred texts of the religions of the world and within early Christianity to refer to a life oriented toward the Holy Spirit and broadened during the Late Middle Ages to include mental aspects of life. In modern times, the term broadened to refer to a wider range of experience, including esoteric and religious traditions. Modern usages refer to a subjective experience of a sacred dimension and the “deepest values and meanings by which people live”, often in a context separate from organised religious institutions. It may involve belief in a supernatural realm beyond the ordinarily observable world, personal growth, a quest for ultimate or sacred meaning, religious experience, or an encounter with one’s “inner dimension”.

—15th-century English translator’s prologue.
experience, as the most outstanding unresolved scientific problem in the universe and that is what mystical and visionary propensity is actually about.

There is also a pervasive belief in the idea that all spiritual paths lead to one deeper reality, as expressed in the perennial philosophy — a perspective in philosophy and spirituality that views all of the world’s religious traditions as sharing a single, metaphysical truth or origin from which all esoteric and exoteric knowledge and doctrine has grown (Huxley 1946). Perennialism has its roots in the Renaissance interest in neo-Platonism and its idea of the One, from which all existence emanates, e.g. to integrate Hermeticism with Greek and Jewish-Christian thought. Ultimately this idea comes down to direct first person mystical experience, contemplative, meditative or entheogenic as the ultimate chthonic and illuminating groundswell of numinous reality, unbound from traditional religious assumptions.

In "The Idea of the Holy", Rudolph Otto (1917) writes that while the concept of “the holy” is often used to convey moral perfection — and does entail this — it contains another distinct element, beyond the ethical sphere, for which he coined the term numinous based on the Latin word numen (“divine power”). He explains the numinous as an experience or feeling which is not based on reason or sensory stimulation and represents the “wholly other”. Otto argues that because the numinous is irreducible and sui generis it cannot be defined in terms of other concepts or experiences, the subject must therefore be "guided and led on by consideration and discussion of the matter through the ways of his own mind, until he reaches the point at which ‘the numinous’ in him perforce begins to stir... In other words, our X cannot, strictly speaking, be taught, it can only be evoked, awakened in the mind.”

Religion raises a serious dilemma for spirituality as a pursuit, because most of its perspective is underpinned by assumptions arising from existing religious viewpoints – memes which we now perceive to have a potentially distorting parasitic influence on the nature of spiritual and mystical experiences, even when these are in the first person. Notions, from God as creator, or legislator, to traditional notions of universal consciousness such as Brahman, all carry type-casting interpretations of spiritual identity. It is one thing to experience forms of transcendence and describe them metaphorically as experiences in terms of notions like Brahman, but it is another thing to a priori declare to third parties that they are evidential facts. They can be empirically verified by mutual affirmation of first person subjective experiences between people in mystical states discovering a commonality, just as the Huichol do experiencing the nieriaka on the peyote hunt. One of the great advantages of entheogenic experience is that it does not have to come with any pre-conceived spiritual assumptions although it is frequently associated with spiritual movements. To have any real potential to understand the nature of consciousness deep in the well of non-ordinary experience, it is absolutely necessary for the spiritually inclined to cleanse themselves of all 'parasitic' memes, such as assumptions about the nature of God or divinity, if they hope to experience genuine moksha, or samadhi. In fact discarding memes is central to meditative practices promoting ego loss and is integral the the entheogenic effects of psychedelics. Erasing personal history is also a technique advocated by Carlos Casteneda (1968).

This is a scientific consciousness research question – what is the actual connection between brain states and spirituality generally? The neuroscientist Vilayanur Ramachandran (Ramachandran & Blakeslee 1998) referred to the part of the cortex between the limbic system and amygdala, on the one hand, and the temporal cortex on the other as the ‘god spot’. The amygdala is the organ of emotional dynamics, from fight and flight, through paranoia to ecstasy, joy and fulfilment. The temporal lobe contains our sense of semantic and symphonic significance. Temporal lobe epilepsy can generate profound spiritual and religious feelings, experienced as states of epiphany by the subject or complex dream like situations. The neuroscientist Michael Persinger had had a similar experience using targeted temporal lobe stimulation, which came to be called the God helmet. This taps into neural circuits involving the sense of self which have come to be associated with the default mode network.

However, Aaen-Stockdale (2012) notes:

As Vilayanur Ramachandran, himself a proponent of a temporal lobe link, says, ‘the changes that have triggered these patients’ religious fervour could be occurring anywhere, not necessarily in the temporal lobes’ (Ramachandran & Blakeslee, 1998, p.187). Neuropsychiatrist and expert on near-death experiences, Peter Fenwick concludes: ‘It is likely that the earlier accounts of temporal lobe epilepsy and temporal lobe pathology and the relationship to mystic and religious states owe more to the enthusiasm of their authors than to the true scientific understanding of the nature of temporal lobe functioning.’

A reduction of activity in the default mode network associated with ego consciousness and rehearsal of strategies to deal with future crises, was noted by Carhart-Harris et al (2012a) in experiments with psilocybin experiences. Griffiths et al. (2006, 2008, 2018) have showed that psilocybin can induce genuine mystical experiences, resulting in beneficial
effects lasting months later and combined the use of psilocybin with meditation and other spiritual practices, in quantum change experiments of lasting benefit, echoing the way in which movements such as the Native American Church and the Union Vegetale provide a spiritually conducive context to engender positive outcome. Justin Brewer has also found a similar default mode reduction in people meditating (Brewer et al. 2011). Zen meditation studies (Pagnoni et al 2008, Ritskes et al 2003) in which subjects are asked to switch from a verbal task to contemplation show transient activity consistent with the default circuit which is more quickly suppressed by experienced meditators more effectively inhibiting verbal thought. Tibetan Buddhists performing compassion meditation for other people’s suffering show specific activation in limbic regions including cingulate cortex and insula, consistent with an empathic response to another’s pain (Lutz et al 2008). This presents the central arena of neuroscience research on “mystical experience” with or without a religious context.

McNamara (2002) claims people engage in religious practices, in part, because these activate the frontal lobes:

Activation of the frontal lobes is both intrinsically rewarding and necessary for acquisition of many of the behaviors that religions seek to foster, including self-responsibility, impulse and emotion modulation, empathy, moral insight, hope, and optimism.

This claim is specious, as frontal lobes are essential for all activity. Critiquing his thesis Schjoedt (2011) states:

McNamara’s claim that there is overlap between the brain sites implicated in religious experience and those implicated in the sense of self and self-consciousness rests on two postulates: (1) that the ‘executive Self’ can be identified as a neural entity in specific regions of the brain; and (2) that the neural correlates of religious experience can be identified as a consistent set of activations in these regions. Although McNamara is clearly well informed in terms of functional neuroanatomy, he fails to make a convincing argument for his first postulate regarding the existence of the self as a controlling entity at the neurological level. This is unfortunate because his claim that religious experience deceters the self from its control over body and cognition in order to contemplate and optimize the self rests on this assumption. Furthermore, with respect to his second postulate, since the data currently available do not afford a description of religious experience as a uniform category, it is difficult to see how this evidence can support McNamara’s general understanding of the nature and function of religious experience.

McNamara’s hypothesis, as summarised in his own words, would clearly make methamphetamine the “God” molecule:

To intensify the ‘god effect’ in people already attracted to religious ideas, my studies revealed, all we had to do was boost the activity of the neurotransmitter, dopamine, crucial for balanced emotion and thought, on the right side of the brain. But should dopamine spike too high, murderous impulses like terrorism and jihad could rear up instead.

He incorrectly implicates psychedelics as dopamine agents when their activity is on serotonin SHT2a receptors coupled to mGluR2 metabotropic glutamate receptors and displays a prejudice against traditional forms of religious practice such as shamanism, treating the renowned Huichol use of peyote as superfluous to their spiritual tradition:

The Huichol Indians practice a form of ecstatic religion, but you do not need peyote or any other drug to experience religious ecstasy. Most scholars of religion believe that the earliest forms of religion were “ecstatic” – that is, religious practices were designed to induce a transformation in the sense of Self to commune with the gods, to experience a sense of euphoria and well-being, and to acquire new personal powers (such as the power to heal others, foresee the future, or communicate with the spirit world). The combination of self-transformation, joy, well-being or euphoria, and personal power defines the ecstatic religious mind and the essential psychological elements in all religions.
Although he claims he is “not very religious” (Kreiter 2011), McNamara (2014) strongly advocates religion, as a means for cultural control of human nature, even to the point of selecting for genetically compliant populations and avoiding adolescent risky behaviour (McNamara et al. 2010), consistent with religion as a defence against perceived autonomous risk:

I think one of the things that religion does when it’s working properly is it strengthens the prefrontal lobes. All those practices that the religious people tell their adherents to do — like prayer, ritual, abstaining from alcohol, controlling your impulses — strengthen the ability of frontal lobes to control primitive impulses. ... If you’ve got a cultural system that produces people who are reliable, who cooperate, who are relatively honest and trustworthy, who can control their impulses, who are good parents, who abstain from ingesting addictive substances — if a cultural system does that — on a consistent basis over the centuries, that’s a pretty valuable system.

Mario Beauregard and co-researchers (Beauregard & Paquette 2006) have similarly explored the neural activity of Carmelite nuns entering oneness with God and report fMRI activations in areas in very specific frontal, parietal, temporal and basal areas consistent with directed control. In doing so, they have unfortunately invented a criterion they call RSME:

The main objective of this novel domain of research is to explore the neural underpinnings of religious/spiritual/mystical experiences (RSMEs). These experiences relate to a fundamental dimension of human existence and are frequently reported across all cultures. One of the basic assumptions of spiritual neuroscience is that RSMEs are brain-mediated, as are all other aspects of human experience. With respect to this issue, it is of paramount importance to fully appreciate that elucidating the neural substrates of these experiences does not diminish or depreciate their meaning and value, and that the external reality of “God” can neither be confirmed nor disconfirmed by delineating the neural correlates of RSMEs.

While I support the non-materialist view of consciousness, in Beauregard’s introduction to “The Spiritual Brain” (Beauregard & O’Leary 2007) he states an unashamed quasi-religious agenda:

Our book will establish three key ideas. The non-materialist approach to the human mind is a rich and vital tradition that accounts for the evidence much better than the currently stalled materialist one. Second, non-materialist approaches to the mind result in practical benefits and treatments, as well as promising approaches to phenomena that materialist accounts cannot even address. Lastly — and this may be the most important value for many readers — our book shows that when spiritual experiences transform lives, the most reasonable explanation and the one that best accounts for all the evidence, is that the people who have such experiences have actually contacted a reality outside themselves, a reality that has brought them closer to the real nature of the universe.

However RSME conflates what anyone can see are diverse and potentially conflicting notions, with religion at one extreme promoting moral avoidance of risk and mysticism at the other invoking first person transformative experiences which religions may perceive to be disruptive to the status quo or even heretical. While they state these to be “Neural correlates of a mystical experience in Carmelite nuns” their tasks were both memorisation:

In the Mystical condition, subjects were asked to remember and relive (eyes closed) the most intense mystical experience ever felt in their lives as a member of the Carmelite Order. This strategy was adopted given that the nuns told us before the onset of the study that “God can’t be summoned at will.” In the Control condition, subjects were instructed to remember and relive (eyes closed) the most intense state of union with another human ever felt in their lives while being affiliated with the Carmelite Order.

The differences in brain activity they detected were:

Significant loci of activation in the right medial orbitofrontal cortex, right middle temporal cortex, right inferior and superior parietal lobules, right caudate, left medial prefrontal cortex, left anterior cingulate cortex, left inferior parietal lobe, left insula, left caudate, and left brainstem. Other loci of activation were seen in the extra-striate visual cortex. These results suggest that mystical experiences are mediated by several brain regions and systems.

These are not dissimilar to the cited results of Newberg et al. (2003) in which Franciscan nuns were at prayer, involving the internal repetition of a particular phrase:

Compared to rest, the prayer state showed increased rCBF in the prefrontal cortex (PFC), the inferior frontal lobes, and the inferior parietal lobe (IPL). In addition, the rCBF change in the left PFC showed an inverse correlation with that in the ipsilateral superior parietal lobule (SPL). Changes in SPL activity were interpreted as reflecting an altered sense of the body schema experienced during the prayer state.

Nickel et al. (2001) likewise reported that:

During religious recitation, self-identified religious subjects activated a frontal/parietal circuit, composed of the dorsolateral prefrontal, dorsomedial frontal and medial parietal cortex.
Each of these studies show activations broadly consistent with both ordered religious thought. In the Carmelite case anterior cingulate activity is actually increased, inconsistent with the default network reduction associated with mystical experience. Again this is a memory task, quite different from having a direct transformative experience in the forms shared by the entheogenic research and meditative states reported above.

In contrast and more consistent with the entheogenic and meditative studies, Brick J et al. (2012) report:

*A frontal-parietal circuit related to spiritual-religious experiences, and specifically that a decreased focus on the self (i.e., selflessness), is associated with decreased right parietal lobe functioning, serves as the primary neuropsychological foundation for spiritual transcendence.*

Much earlier Kokoszka (1999) had proposed two categories of altered conscious states – Superficially Altered States of Consciousness (SACS) and Profoundly Altered States of Consciousness (PASC). PASC are accompanied by extremely strong positive emotions and are experienced with significantly less feelings of cognitive disturbances than in SASC. PASC occur mainly in the context of religion, whereas SASC in everyday life, solitude, and poor well being, but these predate the current neuroscience research involving non-religious mystical states.

Miller (2004) notes of quantum change experiences that these are not necessarily religious, but still transcendent:

*“The person typically experiences mystical quantum change passively, not a product of personal will or control, and has a difficult time expressing the experience in words. They usually are intensely positive, joyful experiences, and often the person senses the presence of an awe-inspiring transcendent Other. Often there is a noetic element of revelation, a sudden knowing of a new truth. An experience of unity is common; for example, an ineffable oneness with all of humankind, with nature, or the universe. In these respects, the mystical type of quantum change is similar to common reports of near-death experiences (Lorimer 1990).”*

However none of these studies go any way towards confirming a transcendental hypothesis for traditional religious practices as a divine manifestation.

**Seventhly, Religions display Extreme Paradigm Change Resistance.** In a diversity of religions, almost impossible barriers are erected to prevent natural paradigm innovation.

Jesus is represented in the Gospels and Revelation as a super-human son of man become the cosmic Son of God as alpha and omega the beginning and the end of the entire created universe. This is an intentional construction of the church fathers, arising out of the Hellenistic heroic tradition, emphasised by Yeshua’s Dionysian miraculous nature and laced with warnings of false prophets that he will return on the right hand of Power.

Muhammad is likewise cast as the final prophet, with prophetic pretenders accused of blasphemy. To give an example, the Bahai faith has three central figures: (1) The Báb (1819–1850), a herald who taught that God would soon send a prophet in the same way as Jesus or Muhammad, and who was executed by Iranian authorities in 1850. (2) Bahá’u’lláh (1817–1892) who claimed to be that prophet, was born in Iran and was exiled due to his adherence to the messianic Bábí Faith. In 1863, in Iraq, he first announced his claim to revelation from God, and spent the rest of his life in further imprisonment in the Ottoman Empire. (3) His son, ‘Abdu’l-Bahá (1844–1921). At the age of eight his father was imprisoned during a government crackdown on the Bábí Faith and the family’s possessions were looted, leaving them in virtual poverty. His father was exiled from Iran, and the family went to live in Baghdad. They were later called by the Ottoman state to Istanbul before going into another period of confinement. He remained a political prisoner there until the Young Turk Revolution freed him in 1908 at the age of 64. The Baha’i Faith is the largest religious minority in Iran, but the Islamic government has never formally recognised the Baha’is. The persecution of Baha’is is largely due to the perceived political threat posed to the Islamic state by another widely practiced religion. Iranian laws protect the human rights of religious minorities, except those that conspire against Islam. In direct opposition to the Baha’i belief that all religions are important components of a larger world religion, Iranian officials, religious leaders and the media position the Baha’is as a direct threat to the practice of Islam and the survival of Iran.

The few major paradigm revolutions that have occurred, remain outstanding for their violence. The transition of Hebrew worship to Christianity was achieved only through Yeshua’s crucifixion during times of apocalyptic conflict. Likewise the transition to Islam was accompanied by a genocide of Jewish men in the souk of Medina. By contrast, Buddhism emerged from the Hindu tradition apparently without bloodshed. Even smaller shifts such as the Reformation, which maintains the core principle of Christian faith unchanged, occurred during tumult, corruption and violence. Finally we come down to the endless religious sects, numbering in the hundreds to thousands.
Democratic Capitalism, Commerce and Company Law

We now turn to a different kind of institution, how corporate business operates, to try to understand its role in survival of humanity and the biosphere over evolutionary time scales as gene-culture co-evolution. In the interests of private enterprise in a democratic society elected by the common will, the general principle is to allow legal entities to be constructed which can collectively perform the same roles of intentional agency that genetic individuals possess in an evolving human society.

Life has existed on earth for a full third of the universe's lifetime. The reason for this stability is twofold. Firstly, unlike larger short-lived stars which gave us our rich array of atoms in earlier supernova explosions, the sun is a small very long lived star with only very slowly evolving brightness. Secondly and more pertinently, life is genetic and genetic inheritance and evolution is cumulative over generations. It is also extremely conservative, striving to preserve genetic encoding through error correcting enzymes with evolution occurring only differentially through occasional adventitious beneficial mutation amid recombination to escape Muller's ratchet.

This means a lion cannot turn overnight into a lamb, nor can a tiger eat an antelope and metamorphose into a shark. However companies possess no such genetic stability and can liquidate their assets in the face of crisis and turn to entirely different occupations, as appeared to be the case when a Canadian fishing firm devastated the cod fishery and then cashed up its stock of assets and entered another kind of business such as prawn farming. They can also consume one another in takeovers to become entirely new corporate giants. This lack of long-terminability.

Moreover the cumulative dynamics of genetic organisms generates long-term ecological relationships, which provide non-linear feedbacks that tend to stabilise complex relationships and increasing species and genetic diversity in biospheric symbiosis. We may consider predators and disease-bearing parasites as evidence for the brutality of nature, but the ecosystemic relationships tell another story. Without predators such as lions, the population of gazelles will enter boom and bust as they eat out all the available fodder leading to their wipeout in escalating episodes of famine. This was intriguingly illustrated in the return of wolves to Yellowstone spurring the recovery of the bears. The removal of the wolves had caused the elk population to explode, consuming all the berries the bears depended on for their vitamins leading to a loss of fitness. But an ecosystem consisting entirely of economic predators cannot survive.

Climax diversity is the cosmological apex of complex system generation, in which human society stands at the pinnacle. We can continue to coexist in this complex system only if we fashion our economic and developmental impacts in a way that maintains the long term stability of the living systems on which our continued existence depends.

By contrast with the cumulative stability of genotype, and incremental evolution by mutation and natural selection, the capitalist economy is based on a purely social model of competing fragmented democracies. Company law stipulates a democratic basis for a group of shareholders to incorporate and sets out a legal and financial basis for them to pursue business based on the two nested democracies of the general meeting and the board of directors who are accountable to the shareholders, at least in principle. In larger companies, there is also a line-managed hierarchy of employees, forming a pyramid from the CEO at the apex down through the executive branch to salaried workers.

Outside this framework only the limits of government regulation provide highly varying degrees of protective feedback intended to guarantee a modicum of corporate accountability and responsibility, lacking in company law itself, for example in fair trading acts, clean air acts, and environmental protection acts. However these are in turn subject to political and commercial influence and often act too late to prevent the collateral damage.

Corporate competitiveness, by contrast with genetic mutation and natural selection, is a much more primitive form of selectivity, which does have a degree of survival of the fittest optimisation of efficiency, but in the complete absence of any cumulative genetic mechanism to ensure long term stability. The end results are thus much more prone to the breakdown of ecological complexity into huge conglomerate enterprises, with a high degree of collateral fallout due to short term impacts lacking any long-term foresight, or even any natural feedback mechanisms to ensure at least medium term stability.

Because they are vulnerable to manipulative share trading, companies are prone to mergers and acquisitions by friendly, or often hostile, takeover. These can be by competitors seeking to expand their niche in the market by eliminating competition, or providing collective efficiencies by laying off redundant staff, or they may simply be forays
by hedge funds to gain strategic control over large profitable operations, or at another extreme can be asset stripping companies taking an undervalued company to pieces for its assets in plant, property and goodwill.

Fig 80: While the impact of corporate operations is clear in the figures in the anthropocene cultural niches, the lack of responsible corporate action causes other profound unintentional forms of collateral damage. (Left) The Deepwater Horizon oil spill of 2010 shows us how lethal misadventure and devastating environmental damage can occur when corporate responsibility becomes fragmented into self-serving cost-cutting conflicts of interest when large transnational corporations hire other large transnational companies as contractors in highly sensitive engineering projects, given a lack of effective monitoring from the federal government agencies that commissioned the projects in the first place. The Deepwater Horizon oil spill in the Gulf of Mexico on the BP-operated Macondo Prospect, is considered the largest accidental marine oil spill in the history of the petroleum industry. A 2017 report in Science puts the damage at $17.2 bn. The consolidated trial's first phase began on February 25, 2013, to determine the liability of BP, Transocean, Halliburton, and other companies, and to determine whether the companies acted with gross negligence and willful misconduct. As of September 2014 Halliburton has reached a $1.1 billion settlement over its role in the 2010 spill. Deepwater horizon was caused by failures of due care when the regulating officials got into bed with the corporations, causing widespread pollution costing billions of dollars to seal and clean up. (Top right) Dioxin pollution by Hooker Chemical in the Love Canal, Niagara was converted into a Faustian pact, when the land was sold for a nominal $1 to a financially strapped school board on condition no responsibility would be taken by the company for any pollution. In 1978 crusading liberal journalist Micheal Brown discovered an alarming incidence of birth defects among residents living near the site. He advised the local residents to create a protest group, which was led by resident Karen Schroeder, whose daughter had about a dozen birth defects. The New York State Health Department mounted its own investigation and found an abnormal incidence of miscarriages. A survey conducted by the Love Canal Homeowners Association found that 56% of the children born from 1974–1978 had at least one birth defect. In one case, two out of four children in a single Love Canal family had birth defects; one girl was born deaf with a cleft palate, an extra row of teeth, and slight retardation, and a boy was born with an eye defect. Ten years after the incident, New York State Health Department Commissioner David Axelrod stated that Love Canal would long be remembered as a "national symbol of a failure to exercise a sense of concern for future generations." In 1988 United States District Judge John Curtin found Occidental who had taken over Hooker, jointly and severally liable for clean-up costs under CERCLA. In 1995 Occidental Petroleum agreed to pay $129 million in restitution. The real cost of the cleanup is estimated at $250 million. (Lower right) Fifty years ago, children in Newfoundland could catch fish by dipping a basket into the ocean. By 1992 Canadian research vessels were sweeping the seas in vain, finding not a single school of cod in what was once the world's richest fishery. The destruction of the Grand Banks cod is one of the biggest fisheries disasters of all time. Although the cod fishery supported workers for hundreds of years, a variety of changes occurred during the 20th century that made the industry much less sustainable than ever before. Foremost among these were advances in fishing technologies that dramatically increased the ability of fishers to find and harvest large quantities cod. By 1980 the Newfoundland fishery was dominated by three large complexes, each propped up by provincial government funds and bank loans: Fishery Products, Nickerson-National Sea Products and Lake Group. The fear of having to allow foreign fleets into Canada's exclusive economic zone if there was any surplus fish, as stipulated under the law of the sea, ensured the rationale would be that there would be no surplus fish. This is a classic tragedy of the commons enacted by the Canadian federal government for capitalistic purposes. Ultimately the companies supporting this collapse of the cod fishery converted their operations to becoming providers of seafood in the foodservice market, offering shrimps, crab, lobsters, shellfish and fish and fish products including seafood starters, sea cuisines, nuggets, oven ready products, and others to America's largest restaurant chains and national distributors.
An Economist editorial of 1998 shows that the ease with which companies are born and fail is clearly one reason why Taiwan's total factor productivity had improved faster than that of all other Asian countries since 1960.

In 1991, 40% of Taiwan's chemical output came from firms that did not exist in 1986. One-third of the value of Taiwan's plastics production and half its output of fabricated metal products were also attributable to firms less than five years old. The newcomers established their place in the market by forcing older firms out of business. Firms that had accounted for 58% of Taiwan's chemical production in 1981 had left the business by 1991. In other sectors - including ones which were expanding rapidly overall - the carnage was even worse. Four out of five firms that manufactured clothing, metal products, textiles and plastics in 1981 either closed or changed lines of business over the next decade.

As the successful entrants tend to be more efficient than the firms that die, they boost productivity across the economy. Between 1986 and 1991, total factor productivity - the increase in output due to more efficient use of inputs such as labour and capital - in Taiwan's electrical-machinery industry rose 23.6%. Over a third of that, the researchers estimate, came from new firms pushing out less efficient ones. In the chemicals industry, where productivity growth was slower, a whopping three-fifths of the gain was due to the entry of highly efficient firms and the exit of stodgier ones.

But at the same time, this concrete jungle form of survival of the fittest shows no signs of providing any sort of long-term stability for the people, and the environment in which these companies operate or even for the market conditions on which these industries depend long term. Companies are simply incorporated agents founded by a contractual memorandum of understanding under company law, by their founding shareholders for their collective capital and revenue gain. They have no cumulative stability beyond the boardroom decision-making horizon and as they stand they have no covenant of responsibility to their workers, to the consumers of their products, to the general public and least of all to the natural environment in which they operate. Like a malignant cancer, the only principle on which they depend is relentless growth of income for the investors.

Given this one-sided covenant of corporations only with their internal investors, it naturally falls to governmental regulation, to labour laws, the Clean Air Act, the Consumer Protection Act and other legislation to safeguard society from the deleterious impacts of corporate activity. When the new right call for an unregulated economy because this will increase production and profitability, they are being deceptively disingenuous about the actual purpose of much of such regulation, which is designed to protect society the natural environment and our long-term future from potentially irreversible misadventure intrinsic to the corporate model, not simply to waste 'our' money on inefficient government interference.

There is no direct accountability to the workers, to the consumers, to society as a whole or to the planetary environment, unless laws covering questions like air, chemical or other forms of pollution, or environmental or social impacts are transgressed. Moreover the process is an unrealistic one based on pure financial competition, as if it is a society of predators with no prey apart from the living environment of the planet, its biological and non-renewable resources. There is no inbuilt sense of emotion, compassion, or foresight that we expect from live human agents, although these may also act psychopathically over issues of power and wealth.

But we have already seen that cultural evolution is much more rapid and unstable that genetic evolution which in terms of long-term survival remains the only incremental selective anchor that avoids triple witching hour instabilities leading to a Fermi paradox extinction. This leads to a completely unstable economic paradigm where corporations can engage tragedies of the commons (Hardin 1968), in a first-come first-served rush to exploit every profitable resource in sight for the benefit of their shareholders. We start with a model where we have genetic and phenotypic evolution of living organisms. Then we invent culture and witness the growth of gene-culture co-evolution between living organisms and their social culture. But then we introduce a third component, corporations which have no genetic identity but act economically as massively inflated versions of living agents assuming the same powers of autonomous agency we accept for ourselves as members of a free democracy. This means we now also have gene-culture co-evolution and a more insidious phenomenon of corporate-culture coevolution.

This is a primary situation where we have to come to terms with the inadequacy of purely contractual models of corporate agency and redesign corporate and economic investment to bring it into line with sustainable ecological and evolutionary principle of replication under incremental cumulative change subject to selective advantage in a context of overall symbiosis.
Wilson D et al. (2014) address this question in terms of evolutionary mechanics:

The growing scale of human society over the course of human history is increasingly being studied from a multilevel biocultural evolutionary perspective. According to Turchin (2003; 2005), empires tend to originate in geographical regions chronically at war, which acts as a crucible for the cultural evolution of exceptionally cooperative societies. The most cooperative expand into empires, but then cultural evolution within the empires favors practices that eventually lead to their collapse. New empires almost invariably form at the boundaries of old empires, whose centers become “black holes” for cooperation at a large scale. (See also Putnam 1992). In this halting fashion, with much carnage along the way, modern human society manages to function at a remarkably large scale. However, there is enormous room for improvement, especially with respect to global problems such as climate change and the worldwide economy. There will be no between-planet selection, so addressing these problems will require another kind of selection – the intentional selection of policies with large-scale and long-term human welfare in mind. Devising such enlightened policies will require a sophisticated knowledge of evolution. The challenges will be daunting, but at least in principle, the right kind of environmental intervention could cause the difficult to become easy, as is already beginning at the level of individuals and small groups.

A step in this direction is to achieve a consensus that the paradox of elaborate genetic innateness and an elaborate capacity for open-ended change can be reconciled through the concept of Darwin machines. Variation, selection, and heredity comprise an open-ended process capable of adapting organisms to their current environments according to the selection criteria. An evolutionary process built by genetic evolution must be elaborately innate for variation and selection to take place in a way that leads to genetically adaptive outcomes, on average. The immune system is an outstanding example of a Darwin machine that is both elaborately flexible and elaborately innate, providing a guide for how to study the human capacity for behavioral and cultural change. An important implication of Darwin machines is that a capacity for change requires certain forms of stability and homeostasis. For all inheritance systems, a complex system of interlocking processes is required to create variation, select according to certain criteria, and faithfully replicate the traits that have been selected. If this system breaks down, then so does the evolutionary process.

However his two cited examples fall far short of avoiding climate crisis, nuclear holocaust or the mass extinction of biodiversity:

We describe two interventions from the field of prevention science that successfully changed cultural practices at the level of counties, states, and nations. The first intervention reduced the very specific practice of convenience store clerks in Wyoming and Wisconsin illegally selling cigarettes to minors. The second intervention employs a population approach to improving parenting practices, which has been assessed in RCTs at the country level and is in the process of being implemented around the world. These examples fall short of addressing the gravest problems afflicting our planet, but they still show how evolutionary science can be used to accomplish intentional positive change above the level of individuals and small groups.

This has to go much further than Darwinian machines. *Homo sapiens* is already a natural species evolving by Darwinian principles but it has evolved through intentional selection as a species to dominate and exploit the natural world. The paradigm shift required is that cultural evolution can help bring this dominance to heal in the interests of the survival of the biosphere as a whole in cosmological time scales. We have to be able to turn to culture to achieve this because it is through our cultural heritage that we come to know and understand the potential mass extinction of life an unmitigated Anthropocene will bring about. But to do this, cultural evolution will have to engage a transformative paradigm of long-term incremental change that can balance and complement human dominance with biospheric symbiosis.

As a director of a company devoted to perpetual conservation and regeneration of a wilderness reserve, that had in the nineteenth century been native reserve land, and was still forested rather than farmed, I have designed a company constitution to care for this land in perpetuity, by drafting a constitution that binds the shareholders in a covenant to protect the land and its flora and fauna, not to sell it or wind up the company without unanimous approval and to pay the costs of upkeep and protection in the event the land is not profitable during any period. All decisions are made by unanimous signed agreement and are binding on the shareholders who can sell only at the consumer price index adjusted nominal value if they want to opt out. This gives an illustration how corporate structures can be given a measure of medium-term stability, albeit still on a much shorter time scale than evolutionary change and liable to demographic shifts in the shareholding as descendants become spread out over the face of the Earth. Commercial law can be redesigned to make financial enterprises a symbiotic part of a sustainable economy rather than a shrinking pool of predators endeavouring to grab the remaining resources before they all become extinguished.

So far, as we have seen, cultural evolution has remained an ephemeral player in the closing circle sustainability stakes, operating on much shorter and more unstable time scales than genetic evolution. Thus none of the processes we have examined, language, religion, or commerce have introduced any stabilising factors to the existential crisis we face.
Symbiotic Existential Cosmology is designed to do precisely this because it is a comprehensive memeplex, or symbotype, which far from being efficient, as the simple explanation of the Sabbatic Creation endeavours to do, is fully as complex as the living universe itself because it is a true and accurate cosmology of symbiotic existence. By being cosmologically accurate on evolutionary and cosmological time scales, it provides exactly the kind of dire warning that moral religions attempt incorrectly to do about eschatological reality and does so in a fully scientifically validated way that hopefully can stand the test of time.

The Noosphere, Symbiosis and the Omega Point

The noosphere is a philosophical concept developed and popularised by the Vladimir Vernadsky, and Pierre Teilhard de Chardin. Vernadsky defined the noosphere as the new state of the biosphere and described as the planetary "sphere of reason". The noosphere represents the highest stage of biospheric development, its defining factor being the development of humankind's rational activities. The word is derived from the Greek νόος ("mind", "reason") and σφαῖρα ("sphere"), in analogy to "atmosphere" and "biosphere". Vernadsky and de Chardin developed two related but starkly different concepts, the former being grounded in the geological sciences, and the latter in theology. Both conceptions of the noosphere share the common thesis that together human reason and the scientific thought has created, and will continue to create, the next evolutionary epoch as part of the evolutionary chain – geological to biological to mental.

Teilhard de Chardin (1955, 1959) perceived a directionality in evolution along an axis of increasing Complexity/Consciousness. For Teilhard, the noosphere is the sphere of thought encircling the earth that has emerged through evolution as a consequence of this growth in complexity/consciousness. As a result, he sees the "social phenomenon [as] the culmination of and not the attenuation of the biological phenomenon." These include legal, educational, religious, research, industrial and technological systems. In this sense, the noosphere emerges through and is constituted by the interaction of human minds. He argued the noosphere evolves towards ever greater personalisation, individuation and unification of its elements. He saw the Christian notion of love as being the principal driver of "noogenesis", the evolution of mind. Evolution would culminate in the Omega Point — an apex of thought/consciousness – which he identified with the eschatological return of Christ.

Henri Bergson's "L'évolution créatrice" (1907), was one of the first to propose evolution is "creative" and cannot necessarily be explained solely by natural selection through a vital force which animates life and fundamentally connects mind and body. In 1923, C. Lloyd Morgan took this work further, elaborating on an "emergent evolution" which could explain increasing complexity (including the evolution of mind). Morgan found many of the most interesting changes in living things have been largely discontinuous with past evolution. Therefore, these living things did not necessarily evolve through a gradual process of natural selection. Rather, he posited, the process of evolution experiences jumps in complexity, in a qualitative punctuated equilibrium. The emergence of human culture facilitated a quickening of evolution in which cultural evolution occurs more rapidly than biological evolution, consistent with gene-culture co-evolution in the light of human impact on the biosphere.
The idea can be contrasted both with the Gaia hypothesis where the Earth is an organismically responsive dynamical system, if not pushed beyond irreversible tipping points, and utopian concepts of technological human dominance.

Wilson DS (2021), in a supportive review of De Chardin’s ideas notes:

*He has been largely forgotten by modern evolutionary scientists but remains widely read by those who are inspired by his vision of conscious evolution leading to a planetary superorganism. This working paper examines the major tenets of Teilhard’s vision from a modern evolutionary perspective in an effort to integrate “hard” evolutionary science with conscious efforts to manage cultural change.*

In fact Teilhard was a panpsychist and saw consciousness as emergent in all the universe in a manner completely confluent with Symbiotic Existential Cosmology:

*The apparent restriction of the phenomenon of consciousness to higher forms of life has long served science as an excuse for eliminating it from its models of the universe. ... It is impossible to deny that, deep within ourselves an ‘interior’ appears at the heart of beings, as it were seen through a rent. This is enough to ensure that in one degree, or another this ‘interior’ should abrade itself as existing everywhere in nature from all time. Since the stuff of the universe has an inner aspect at one point of itself, there is necessarily a double aspect to its structure, that is to say in every region of space and time – in the same way for instance as it is granular: co-extensive with their Without, there is a Within to things.*

*The consequent picture of the world daunts our imagination but it is in fact the only one acceptable to our reason. Taken at its lowest point particularize matter more is than the swarlings so so marvelously analysed by modern physics. Beneath this mechanical layer we must think of a ‘biological’ layer that is attenuated to the uttermost, but is absolutely necessary to explain the cosmos in succeeding ages. The within, consciousness and spontaneity – three expressions for the same thing. Here and throughout this book, the term ‘consciousness’ is taken in its widest sense to indicate every kind of ‘psychism’ from the most rudimentary forms of interior perception imaginable to the human phenomenon of reflective thought.*

Symbiotic Existential Cosmology shares this picture of conscious evolution and it is also precisely the aim of this discussion – to determine to what extent this cosmology and Teilhard’s viewpoint fulfils the ability to engender a sustainable noosphere. Wilson further notes:

*The noosphere was not just the increasingly dominant physical presence of humans on earth, but also had a mental component. Teilhard emphasized “the psychic phenomenon of hominization” in the form of freedom of choice, foresight, and the ability to plan and construct. In the Phenomenon of Man, he describes humankind as “evolution becoming conscious of itself”.*

Yet gene-culture co-evolution and the notion of emergence of language as a memetic “virus” is a natural sociobiological co-evolutionary process, that is not teleological in the sense that “hominization” implies.

Wilson justifies the qualitative punctuated transition between the biosphere and noosphere in terms of multilevel selection and major evolutionary transitions.

*Multilevel selection (MLS) is acknowledged as a legitimate accounting method for evolutionary change. Higher-level selection is a significant evolutionary force in many species and especially in the case of human cultural evolution, as elaborated in more detail below. Social insect colonies and a growing list of other animal societies are studied as superorganisms, complete with social physiologies and groups minds. The concept of Major Evolutionary Transitions (MET) affirms Teilhard’s account of human cultural evolution but also goes beyond it in important ways. The concept follows directly from MLS theory. Most social species are a mosaic of selfish traits that evolve by within-group selection and cooperative traits that evolve by between-group selection. However, the balance between within- and between-group selection is not fixed but can itself evolve. When mechanisms evolve that sufficiently suppress the potential for disruptive within-group selection, between-group selection becomes the dominant evolutionary force and the group becomes so cooperative that it qualifies as a higher-level superorganism.*

He then advances a valid argument that cultural history has had such sudden transitions due to the rise of dominant power and wars between them with new cultures emerging from the conflict zones:

*Peter Turchin explains human history as a series of METs in a way that maps nicely onto Teilhard’s account, as outlined in more detail below.*

*However he then draws a conclusion about the eucaryote symbiosis between bacteria and archaea:*

*But METs are not restricted to human cultural evolution. The concept originated with the symbiotic cell theory of Lynn Margulis, in which nucleated cells evolve not by small mutational steps from bacterial cells but as cooperative communities of bacterial cells. Even the origin of life might be explained as communities of cooperative molecular reactions.*
This is a biologically incorrect extrapolation, which is misleading. Firstly the eucaryote endosymbiosis was in no way in conflict with gradual mutational change, which was essential to arrive at the point where the endo-symbiosis to form the mitochondria actually occurred and swept aside its precursors in the radiative adaption of newer fitter eucaryote life forms. Secondly it was not just a community of bacteria, but a symbiosis between the two quite disparate and complementary kingdoms of bacteria and archaea, who had diverged before becoming cellular DNA-based organisms. It is manifestly untrue that nucleated cells do not evolve by small mutational steps – they all do – and the only transition of similar significance that has occurred occurred since, is the entry of chloroplasts into the plant kingdom. It is also unclear either of the cells in the transition were nucleated, which is a step that may have arisen through a further symbiosis with a double-membraned DNA virus. Neither the α-proteobacterial cousins of the mitochondria are nucleated, nor are the Asgard cousins of the founding archaean.

The statement also treats the endo-symbiosis as merely an incidence of a major evolutionary change, without recognising symbiosis is the “live-or-die koan” of the anthropocene, not just an incidental example of pro-sociality.

Wilson states that conscious evolution is restricted to humans, an opinion that appears to have no empirical basis and contradicts Darwin’s own insight on animal free-will:

Hence, Teilhard was wrong to state that coalescing events are restricted to human cultural evolution. That said, the concept of METs in both biological and human cultural evolution fits easily within his overarching evolutionary epistemology and it remains true that conscious evolution is restricted to humans.

In Wilson et al. (2014) it is noted that:

Human evolution increasingly is seen as a major transition, similar to the evolution of eukaryotic cells, multicellular organisms, and eusocial insect colonies (Boehm 1999; Maynard Smith & Szathmary 1995; Sober & Wilson 1998; Wilson 2011a).

It is fair and correct to see human cultural emergence as a major evolutionary transition, but a fair standard of this is the effect it has on the biosphere as a whole. Thus the origin of life and the eucaryote transition are two outstanding examples. Multicellularity is a more gradual transition, with a variety of transitional species still in existence and the major gene systems already present in single celled species. Insect colonies are not a major evolutionary transition of the biosphere as a whole, and the human transition will qualify only if we can bring ourselves into a state of sustainable survival as a species rather than our own extinction coupled with a mass extinction of biodiversity as a whole, so without being unduly pessimistic, as Symbiotic Existential Cosmology stands to resolve this question, the jury remains out on the human evolutionary future.

It is thus true that biogenesis and the eucaryote endo-symbiosis were major evolutionary transitions and that the anthropocene is rapidly becoming another such transition, but as things stand, it will qualify as an evolutionary epoch only if it presents a sustainable paradigm of human co-evolution with the biosphere on cosmological time scales. There is simply no evidence that such a transition to stability is occurring and gene-culture coevolution of itself, whether applied to commerce, science, language or religion remains an unstable short-term process, inadequate to sustain such a transition to long-term sustainability without a symbiotic human world view.

There are two principal difficulties with the concept of the noosphere. Firstly in many of its utopian forms it invokes simply an age of intelligent thought and technological supremacy via a super-computational singularity that becomes a form of culture replacing nature and effectively leaving it in the dust of history, as an intermediate biological stage between geological and mental. While Teilhard envisaged humanity as a manifestation of biological evolution and not the end of it, the notion of the major evolutionary transition actually signals the phase transition of the Anthropocene, in which human impact on climate, habitat and biodiversity has rapidly become unsustainable.

The second difficulty is that it invokes a convergent unification of consciousness as a teleological process, in conflict with the actual realities of both evolutionary and neurodynamic processes operating at the edge of chaos, which is how the natural universe actually works and is in empirical disagreement with what we are culturally experiencing in real time. Yes there are good pro-social patterns in human interaction that we can associate with the original virtue of our founding gatherer-hunter ancestors, as manifest in the references above cited in Wilson et al. (2014). It is these features we do need to tap to ensure a stable future for humanity.
The emergence of the internet, and world wide web and the explosion of digital technology has indeed created a cyber space, which at first had all the hope and inspiration of the global village. But we know real world evolution, both biological and cultural occurs at the edge of chaos and with the global village came other spectres – the decline of traditional media, in favour of an ever expanding thicket of disinformation, political subterfuge, false internet identities, hacking, droid armies seeking to purvey trojan horses, and ransomware, amid incipient AI takeover, in which societies and individuals alike, instead of gravitating toward a collective consciousness, have become ever more finely divided, splitting not just political parties, but local communities, families and partners. In the words of the I Ching, “the bed is split up to the skin – misfortune” (Wilhelm ed 1960 Splitting apart line 4).

This is cultural evolution at the edge of chaos, not the neat, simplistic, teleological convergence to “Christ consciousness” originally conceived. This invokes all the complexities of strategic deceit and Machiavellian intelligence exponentiated in a manner that makes verifiable trust a major challenge to incorporate, let alone to achieve spontaneous, autonomous psychic unity without oppressive uniformity. Yes it is compensated for by a hugely enhanced capacity to use these interconnected facilities to research and unearth the ‘truth’, that have become singularly powerful, as this research work attests, but the conclusion remains clear.

Without the inclusion of human symbiosis with the diversity of life as a whole, in gene-culture-biosphere co-evolution the entire concept of the noosphere or “thought-sphere”, as it actually is, runs the direct risk, like any other utopian vision, of human intellectual dominance in the technological era, or even the loss of manifest conscious reality in favour of it-from-bit abstractions of reality, not actually manifest in conscious experience itself, simply providing a fast track to a Fermi paradox extinction, through unremitting short-term instability, ungrounded to the evolutionary diversity of life in cosmological time scales.

By comparison with Symbiotic Existential Cosmology, Teilhard’s concept appears in its simplicity to be a more efficient transformational vision that looks more direct and more fulfilling in its immediate teleological convergence to a state of unmitigated grace. But the key to locking in this prospect is cosmological symbiosis with the long-term evolutionary and cosmological process that underpins the entire manifestation, not leaving it behind in an ever accelerating process of human cultural transformation that assumes that the biosphere will look after itself, without alleviating the human impacts this very process of cultural change is causing.

Teilhard argued that the Omega Point resembles the Christian Logos, namely Christ, who draws all things into himself, who in the words of the Nicene Creed, is “God from God”, “Light from Light”, “True God from true God”, and “through him all things were made”. In the Book of Revelation, Christ describes himself thrice as “the Alpha and the Omega, the beginning and the end”.

Tipler, along with co-author physicist John D. Barrow, defined the “final anthropic principle” (FAP) in their 1986 book The Anthropic Cosmological Principle as a generalisation of the anthropic principle: Intelligent information-processing must come into existence in the Universe, and, once it comes into existence, will never die out. One paraphrasing of Tipler’s argument for FAP runs as follows: For the universe to physically exist, it must contain living observers. Our universe obviously exists. There must be an "Omega Point" that sustains life forever.

The trouble with the spiritual viewpoint is twofold. Firstly as we have seen, it carries the distorting weight of religious memes. But secondly it looks to the end point rather than the living process. In the hurtling rush to divinity, all eyes point to the sky and forget that the journey is the destination. The psychedelic view is that the destination is the journey. It is the trip mortality takes across the Styx, deeply aware of its eternal psyche, and its immortal link in the web of life, making best use of the fleeting time available to do that good thing in the best of all possible worlds.

Symbiotic Existential Cosmology also looks to this future of grand unification, but neither as a Christological parousia, which memetics will immediately recognise as the nemesis of cosmological truth, nor as a simple annihilating final observer as Tipler invokes, but a long experiential journey of discovery into the abysmal depths of conscious experience, in full fecundity of spontaneity, over millions and billions of years, if we take due care of the long-term survival of life, enabling the conscious universe to fully realise itself through the biota it took most of its lifetime to manifest. In this way the journey to Omega is a very long deepening unfolding – the extraordinary vision quest of all our lifetimes, eternally strung from alpha to Omega in the process, amid the reflowering of the diversity of life anew in evolution into forms unconceivable in the simplicity of the Omega point as an eschatological singularity. This is Paradise on the Cosmic Equator in Space Time, where all the good things come to pass!
Not only is the journey long, but the cosmic mind is realised and manifest through the evolving biota of the universe, because we are the conscious beings fully embodied in the quantum universe through our brains. The evolving conscious brain-minds of the biota form the natural interface for the cosmic mind to become fully manifest in the universe.

Omega is a state of being, not an endpoint, it is the heightening conscious process extending though space-time, not the end point of time, as in eschatological cosmologies and the Noosphere Christology. The flaw of the eschatological view is that history and experience are consumed, and natural life is abandoned in the pursuit of Omega.

Stanley Klein (psychophysicist): Could you slightly expand that final sentence to clarify what you meant by it.

Religions, particularly Monotheism, but also the Eastern traditions to a degree, are obsessed with the eschatological singularity of the Godhead, of Brahman, of eternal life in maha-samadhi now, of the day of Judgment, of the new Jerusalem achieved by the triage and destruction of all life, to be moulded anew by God the creator, the legislator of laws like Sharia and of compulsive moral commandments like not to take the name of the Lord in vain.

We are (hopefully) mid-flight on a conscious evolutionary journey with a vast living future to experience. If we learn to undertake this journey without immediate climatic crisis, biodiversity extinction or nuclear self-destruct, we could/should have another billion years to unfold the deepest dimensions of the conscious condition in us or in another progenitor species in fulfilling the flowering of the conscious universe and enabling the mind at large to really come alive in us and in all life.

Human hubris keeps gravitating, either to technological Utopias, in which experience just becomes information, and survival just becomes an algorithm, or religious accounts, in which humanity has dominion over nature, as God has dominion over us, and seeks union with God, at the expense of our incarnate responsibility to participate in the flowering of conscious life throughout the universe over vast cosmological episodes, all of which are there for us to experience and realise over these vast stretches of time spanning space-time itself, if we bring forth what we have within us, rather than seek a short quick route to annihilation.

The lesson of the snowflake is that the omega point end product is death of the growth process. Yes each whole beautiful flake grew and became eternal in space-time as a whole, but the journey IS the destination, so the destination IS the journey, not the end.

If we pass off the awe and wonder of existence, as it has already come to pass in enabling humanity to evolve and life with us, to ask the existential questions we do, and for us to experience the scent of a flower, the shimmering rainbows off a butterfly’s scales, the singing of the crickets in the moonlit grass, and the ecstatic joys of sex – to know that we know that we know that we are aware that we are aware, and to dream, and to have entheogenic visions, then we should settle for paradise on the cosmic equator and live our transient mortal lives in symbiosis with the totality of existence, because everything we do for life as a whole will further and flower, but nothing else shall, or can.

No utopian pretence of technological dominion in the age of thought, no religious pretence of the will of God – just I/we ourselves bearing witness to the truth of existence and the un-utterable gift this is, even in times of great pain and torment, traversing the Styx between birth and death at the centre of the cyclone, in the best of all possible worlds.

If we stuff this up, as we so easily could, that will be it for life, the universe and everything – God included, unless there is conscious life elsewhere, which we don’t yet know. We are the interface of the cosmos – that’s what conscious mortality is. Without conscious life, neither God nor the Universe can manifest. The Godhead is realised through the biota. We are sorely needed, we are the pivot. Life IS the Axis Mundi, not a disposable option along the way.
Fractal biocosmology (King 2020a) is an indisputable empirical feature of the universe, with only one partially unresolved link, in the biogenesis pathway from organic molecules found in galactic gas and dust clouds to the first evidence for life on Earth in rock formations some 3.6 billion years ago, shortly after the oceans formed. Recent research has however filled in many of the gaps in this account, so that there is a high degree of confidence that this stage is also cosmological in nature.

Traditional cosmology treats life as a phenomenon superfluous to the universe at large because the energies and forces of, not just of the big bang, or giant black holes at galactic centres, but even a small star like the Sun, are on a scale which would fry life to a crisp.

Fig 82: Fractal biocosmology synopsis (See text below for discussion).
All the four symmetry-broken forces of nature, gravitation, the colour force, the weak force and electromagnetism display non-linearities, leading to chaotic dynamic regimes. Gravitation and electromagnetism are both inverse quadratic, leading to Mandelbrot-like dynamics.

Life is present so far as we know only on planetary surfaces at much lower energies, where there is an incoming source of free energy in solar radiation, complemented by chemical gradients in the chaotic planetary environment, so it would appear that life can have little consequential affect on the evolution and fate of the universe as a whole.

However this picture, based on relative energy strengths, fails to appreciate the full scope of the interactive process set off by the symmetry-breaking of the forces of nature at the end of the inflationary era.

The physical universe and its laws hinge on investigations at two extremes, unified field theories of the fundamental forces at the quantum level and the evolution of the universe as a whole at the cosmological scale. At the quantum level, matter ends up being composed of multi-layered quantum structures, in which the strongest forces form interactive bonds first, and the rest follow in sequence of relative strength. The most complex of these quantum structures are atoms and molecules on the planetary surface, where all the forces come into structural interaction.

Along with amino-acids, all the nucleotide bases A, U, G, and C have been detected in carbonaceous chondrites, such as the Murchison meteorite, a carbonaceous chondrite containing primitive material from the Solar System’s origin chemically altered by water during time on asteroidal bodies, before falling to Earth. These also contain amphophilic membrane forming products. Over 15 amino acids have been identified in the Murchison meteorite. The amino acids found have also been synthesised in laboratory experiments by the action of electric discharge on a mixture of methane, nitrogen, and water with traces of ammonia. A complex mixture of alkanes was isolated as well, similar to that found in the Miller-Urey experiment. Alanine has been found to have a chiral excess of the L-enantiomer and in 1997, L-excesses were also found in isovaline, suggesting an extraterrestrial source for molecular asymmetry in the Solar System. Ribose has been found in carbonaceous chondrites, including the Murchison. The ribose in the Murchison has C13 levels 43% higher than terrestrial, confirming an extraterrestrial origin.

Lost city vents are formed by a chemical garden reaction between basic olivine and acidic sea water with dissolved CO₂. Olivine is cosmologically abundant on asteroids, Earth and the Moon and was far more abundant on the early Earth. Resulting H₂ and CO can drive the formation of organics including C1-4 hydrocarbons. Lost-city vents have been
found to form carbonate columns with pores which have been demonstrated to be able to concentrate organics and in particular nucleotide molecules by a factor of over 1000 (Baaske et al. 2007), bringing them up to molar concentrations where a reactive metabolism and informational replication could be sustained. This provides a prospective nursery environment for life to emerge as a cooperative progenote of replicating nucleotide molecules with cell membranes and the genetic code arising later as an evolutionary product.

The “hard problem” of the critical step to replication has all but been solved in laboratory one pot reactions both capable of generating nucleotides from primitive precursors (Powner et al. 2009, Patel et al. 2015, Stairs et al. 2017) and a pyrimidine ribo-nucleotide and purine deoxyribo-nucleotide alphabet in the same pot (Xu et al. 2020).

As shown above, the colour force gluons bind quarks in triplets of three colours and two base weak force flavours, forming protons and neutrons. These in turn become bound together by the strong nuclear force, a secondary effect of the colour force like the van der Waal’s force in chemistry. Electromagnetism and the weak force have broken symmetry with one another. The equivalent of the electromagnetic photon, the $\gamma$, and $Z$ are both charged and inherited a large mass from coupling to the Higg’s particle, discovered by the LHC. This means the weak force is very short range and operates primarily in the nucleus, exchanging the identities of neutrons and protons to minimise the energy in atomic nuclei and mediate the electromagnetic repulsion between positively charged protons. A planetary surface, with a free energy source of incident solar radiation, held together by gravitation, sets the context for the negentropic quantum structural explosion we call replicative life.

On the cosmic scale, following primal symmetry breaking, the universe forms a fractal structure of clusters of galaxies shaped by dark matter gravitational mass, called the cosmic web, illustrated above for the local Laneakea supercluster. Galaxies form, containing billions of stars, generally with massive black holes at their cores, as illustrated by Centaurus A above. Supernovae and colliding neutron stars end up generating the 100 or so atomic nuclei, seeding later smaller long-lived stars with the mineral elements. Among these galaxies are nebulae, consisting of gas clouds, in which star and planetary formation are taking place, such as the Orion Nebula above. These also contain gas clouds containing molecular precursors of life, from HCN and HCHO above to amino acids, enabling biogenesis of evolutionary life.

The chemical elements form a complex sequence of quantum structures, with orbital electrons captured by the positive charge of the nucleus, having non-linear energetics driven by the inverse quadratic electromagnetic force. These orbital electrons are able to enter into a graduated series of chemical bonding structures, from strong covalent and ionic bonds, to weaker so-called hydrogen bonds and van der Waal’s forces. Due to the non-linear energetics of cooperative weak bonding, in the context of the maximally covalent first row elements C, N and O in association with H and additional elements of life, in a second symmetry-breaking shown in fig 82. The table of elements of life in fig 82 shows that these form symmetry-broken quantum interference arrangement, centred on optimally covalent HCNO as backbone-building elements complemented by ionic pairs $K^+\text{Na}^+$, $Ca^{++}/Mg^{++}$ and Cl second row P, S adding additional pathways, then extended by transition elements such as Zn, Cu, Co, Fe Mn through to Mo. Interactively in a negentropic environment, these become able to generate fractal quantum structures on a macroscopic scale, as illustrated by serotonin, the protein EGF and the ribosome complex above — the factory to make proteins instructed by DNA, composed of RNAs and a number of ancillary proteins.

On a larger fractal scale again, these form sub-cellular organelles, such as the membrane, as shown above and the endoplasmic reticulum. We then reach the scale of the single cell, illustrated above for a kidney cell of a green monkey. Finally, we reach tissues in multi-celled organisms such as the olfactory bulb of the mouse above (Sakaguchi et al. 2018), then organs, illustrated above by the conscious human brain, the whole organism and the planetary biosphere.

Thus the climax of the cosmological interactive sequence emerging from the symmetry-breaking of the fundamental forces is conscious life. The brains of higher mammals and birds are the most complex coherent quantum structures we know of in the universe and thus, in terms of the cosmological interaction sequence, form their ultimate consummation. This structurally inverts the Copernican principle that humanity does not have a privileged view of the universe. Not only does it have a privileged view because we are conscious, both of ourselves and of the universe as a whole, but because we are its ultimate structural and dynamic expression, arising from the cosmic origin.

A major concern is that of the Fermi paradox — the lack of astronomical evidence for extraterrestrial life. One critical hypothesis is not that intelligent life is unlikely, but that its probability for self-destruction destabilises the evolutionary paradigm through cultural misadventure, just as we are seeing with human-induced climate and biodiversity crisis.
Darwinian Cosmological Panpsychism

Darwinian panpsychic cosmology provides a description in which the subjective aspect is an integral complement to the objective physical universe, encapsulated in a series of evolutionary forms in: (a) individual quanta, (b) critically unstable multi-quantum dynamical systems including (c) living cells, (d) in sentient form in eucaryotes (e) in organismic form in multi-celled organisms (f) in the evolving biosphere and (g) collectively in the universe. This is basically an evolutionary classification with edge-of-chaos phenomena and quanta linked by the butterfly effect. It replicates the results of standard quantum mechanics and of molecular biology, except in so far as idiosyncratic outcomes of quantum uncertainty, associated with collapse of the wave function are concerned, where the subjective aspect has functionality without disrupting physical causality.

It’s perfectly reasonable to say that “the weather has a mind of its own”; it just happens to be a mind whose details and “purposes” aren’t aligned with our existing human experience (Stephen Wolfram 2021).

Darwinian Panpsychic Cosmology

1. The individual idiosyncrasy of a single quantum, when viewed as a particle within its wave function can be interpreted as its “universal set” acting within its probability envelope, masked by the belief in irreducible randomness.
2. Likewise one can interpret its consciousness as its integrated “awareness” of the universal quantum entanglement over space-time through its wave function.
3. Quanta are thus capable of both acting as “observers” collapsing other superimposed quanta and as superpositions of states, whose wave functions are collapsed by quantum observation.

1. Multiverse open quantum systems which have sustained self-organised critically leading to edge of chaos quantum dynamics inherent state-bowel fractal dynamics from the butterfly effect which can amplify and potentially fix instabilities at the quantum level by wave function collapse.
2. Those include turbulent atmospheric, terrestrial and oceanic conditions and far from equilibrium thermodynamic stability structures associated with the planetary solar interface, leading to chemical biogenesis.

1. Procaryote cells achieve sustained genetically replicable membrane excitability as sustained by from equilibrium systems generating free energy through membrane ionic gradients.
2. Because the external membranes of both bacteria and archaea are also the primary source of ATP energy through these ion gradients and the membrane bound ATPase, the ability of the membrane for informational signalling remains limited.

Fig 84: Darwinian panpsychic cosmology synopsis
The cosmology thus replaces irreducible randomness of the Copenhagen interpretation of quantum mechanics with pan-psyhic collapse generated through space-time quantum entanglement as input expressed in individual quantum events as output. Because irreducible randomness leaves the individual quantum free to manifest at any location in its equi-probable space normalised by the wave function, as consistent with the pilot wave interpretation’s replication of standard quantum mechanics, no other inconsistencies arise. Because quanta may be also able to act under certain circumstances as interactive pansyhic “observers”, the universe is able to collapse its own wave functions with human observer collapse just being a special case acting on unstable brain states, the multiverse becomes a real universe with an ongoing history as we perceive it.

These systems all inherit the capacity to avoid approach to classical macroscopic, limit as they are processes which are not IID systems generated by independent and identically distributed measurements (Gallego & Dakić (2021). Similarly, in the approach of stochastic electrodynamics (SED) (de la Peña et al. 2020), in which the stochastic aspect corresponds to the effects of the collapse process towards the classical limit \(^43\), consciousness has been proposed to be is represented by the zero point field (ZPF) (Keppler 2018).

Fig 85:(1) The quantum stadium illustrates suppression of chaos in closed quantum systems. Top: Experimental realisation of scarring of the wave function around wave eigenfunctions, biasing the probabilities around unstable classical repelling orbits. Mid: Cellular automata simulation (King 2013). Bottom: Classical chaotic ergodic trajectory. (2) While the classical kicked top (above) shows similar regions of chaos to (1) in the Poincare map sections (top), the quantum kicked top (middle and bottom) shows chaos inducing entanglement with nuclear spin (Chaudhury et al. 2012). Entanglement between the electron and nuclear spins is quantified by the linear entropy, of the electron reduced density operator. (3) Weak quantum measurement demonstrating Bohmian trajectories (Kocsis et al. 2011). (4) Experiment confirming the existence of surreal Bohmian trajectories (Mahler et al. 2016).

Conceptual diagram of the result of reading out the which way measurement (WWM) in a double-slit apparatus in the near field (A) and in the midfield (B). Color indicates the slit of origin of a Bohmian trajectory, and vertical position indicates the result of the WWM. This surreal behaviour is the flip side of the demonstrated nonlocality. This nonlocality is due to the entanglement of the two photons, which, in Bohmian mechanics, makes their evolution inseparable even when the photons themselves are separated. Because entanglement is necessary for the delayed measurement scenario, this nonlocal behaviour is to be expected and is the reason for the surreal behaviour.

The Darwinistic pansybic description deals with seven broad evolutionary classes: (1) individual quanta (2) edge of chaos physical phenomena (3) excitable cells (4) eucaryote cells with informationally sentient membranes (5) organisms (6) evolving biospheres and (7) the universe as a whole.

In this description processes (1) – (3) consist of primitive subjectivity, while there is a discrete transition to sentient consciousness in (4) with the sequestering of respiration in the mitochondria with the eucaryote endosymbiosis, freeing the cell membrane for excitable sensitivity and social informational signalling via the molecules such as serotonin which evolved to become the principal neurotransmitters in the brain. This in philosophical terms, primitive subjectivity which philosophers call phenomenal consciousness is universally pansybic and but the transitive structural details of subjective consciousness is emergent in a discrete transition with the eucaryotes, culminating in organismic consciousness through the constraints of neurodynamics. However it is not a physicalist form of panspsychism, as advocated by Galen Strawson (2006).

\(^43\) The approach of SED is guided by the hypothesis of the existence of the (random) zero-point radiation field, ZPF. This rather more elaborate approach goes through a statistical evolution equation in phase space, to arrive at a description in x-space, in which the dissipative and diffusive terms are seen to bring about a definitive departure from the classical Hamiltonian dynamics.
Many natural phenomena, take the form of edge-of-chaos processes, such as wind, waterfalls, thunder and lightning storms, from turbulent mountain summits to the ocean, which from the point of view of symbiotic panpsychism are strong candidates for primitive coherent subjectivity, consistent with animistic views.

This has a view of physical complexity which differs from integrated information theory (IIT), (Tononi and Koch 2015) in that it stresses the features of having unstable but coherent subjectivity as an unstable anticipatory property rather than system complexity as in the Markov complexity parameter of IIT, which is just an abstract mathematical formulation. Unlike Goff’s notion of raw cosmic consciousness, possessing only elementary properties of agency and future awareness, the universe, like the biosphere possess forms of consciousness through the collective and individual subjective awareness of its participant biota.

While closed quantum systems such as nuclear energetics and the quantum stadium display suppression of chaos by energy separation of the eigenfunctions and by scarring of the wave function, as shown (1) in fig 85, chaotic systems where there is possible coupling to other interactions, such as the quantum kicked top (2) display additional quantum entanglement in the chaotic regime, exemplified by entanglement between electronic and nuclear spins in (2). This shows quantum chaos induces deeper levels of entanglement.

In weak quantum measurement (3), a photon released from a laser-excited quantum dot can demonstrate Bohmian trajectories by making a weak measurement which slightly disturbs the wave function without inducing collapse by absorbing the particle, which can then be used over multiple trials to map out individual trajectories over different time delays by detecting the particle’s absorption. A significant aspect of this approach is that it involves a form of retrodiction, or backward causality we have seen in the Wheeler delayed choice experiment. Bohm’s pilot wave theory involves a particle with a definite position shaped by a quantum potential derived from the wave function that carries all the other features such as spin.

Englert et al. (1992) noted that, in certain circumstances, the pilot wave theory could cause overlap of these real trajectories in such a way as to cause some trajectories in a two-slit interference experiment to behave as if they had come through the opposite slit to the one the Bohm interpretation implied, invoking a conflict with standard quantum mechanics. This caused a debate in the physics community, with opponents decrying the pilot wave interpretation. This was opposed by Basil Hiley, an original co-researcher with David Bohm. Hiley et al. (2000) stated: "We also argue that contrary to their negative view, these trajectories can provide a deeper insight into quantum processes 44."

"This suggests that it may still be possible to retain the notion of a ‘particle’ even in the quantum domain. ... Alternatively we could give a more general meaning to these curves. For example, we could imagine a deeper, more complex process, which is not localised, but extends over a region of space where the wave function is non-zero. The curve could then be interpreted as the centre of this activity as this process evolves in space"... "In spite of these limited successes, the nature of this deeper process is still very illusive and arises essentially from the non-commutative structure of the quantum algebra."

Mahler et al. (2016) demonstrated the actual existence of such trajectories, which are equivalent to streamlines of the probability currents in standard QM (Tastevin & Laloe F 2018), noting that their existence did not imply a conflict between the theories, but indicated instead a new level of quantum entanglement between the particles:

"This nonlocality is due to the entanglement of the two photons, which, in Bohmian mechanics, makes their evolution inseparable even when the photons themselves are separated. Because entanglement is necessary for the delayed measurement scenario of ESSW, this nonlocal behavior is to be expected and is the reason for the surreal behavior they identify. Indeed, our observation of the change in polarization of a free space photon, as a function of the time of measurement of a distant photon (along one reconstructed trajectory), is an exceptionally compelling visualization of the nonlocality inherent in any realistic interpretation of quantum mechanics".

Taking Hiley et al. and Mahler et al. at face value, we again have a situation where Bohmian trajectories are found to be consistent with quantum mechanics, confirming their validity in this context, but that the situation invoked by the experiment demonstrates deepening entanglement in these interacting systems.

44 “It is interesting to note that the surrealist movement in art claimed that there was more to reality than mere outward manifestations. There was a deeper reality (literally surreal means super reality) that lay behind outward appearances. When the word surreal is used with its intended meaning, then surreal trajectories is the correct term to describe them! Unfortunately [Englert et al.] use the term in a pejorative sense” (Hiley et al.)
The validity of the pilot wave theory in these situations, when no issues of conflict arise with the Feynman path integral formulation means it is also legitimate to propose that the deeper entanglement is playing a role in determining the position of the particle in the wave as any position in the probability space normalised by the probability amplitude is equally legitimate under the concept of irreducible randomness. Thus the panpsychic cosmology is effectively consistent with both pilot wave and standard interpretations but suggests trajectories are derived from deep entanglement.

When a theoretical explanation of any such quantum experiment is made, the quantum equations used to describe the outcome presume the only entanglements are the ones defined by the experimental apparatus used, but the quanta in the universe at large are all carrying a host of subtle entanglements from their past and future interactions and those of the other quanta they have interacted with. The equations are thus a first order ideal that masks the deep entanglement in both the experimental situation and the world at large.

Thus while panpsychic cosmology appears to introduce an ephemeral subjective complement to the universe, the effect is to give us back the real historical universe we experience, rather than the shadow multiverse of superimposed wave functions, because the subjective aspect of quanta participate in wave function collapse. The universe is thus not stranded from manifesting historically in the absence of conscious animate observers, but these animate observers through their consciousness are nevertheless able to also collapse wave functions in contexts like Schrödinger’s cat for example those that are involved in brain function. Indeed this makes von Neumann’s comment that collapse can happen anywhere up to the point of conscious observation prescient. In fact the traditional cat paradox experiment might collapse at the cat who is/was also conscious. But there are also diverse human strategic situations where tipping points occur and small acts of idiosyncrasy can have world-changing consequences.

Critically, it restores our subjective conscious ability to apply volitional will to affect the physical world around us. As noted in the introduction, all sane people have an implicit existential awareness that we make subjectively conscious intentional decisions and apply our volitional will to produce change in the physical world. We act and feel that we are intentional agents subjectively applying our will in our decisions and our actions and can do so through our intuitions. In this sense I am defining agency as the ability of subjective conscious experience to affect the physical world through the application of consciously experienced volition, resulting in physical effects, in our behaviour and actions. As noted in the introduction, affirming the efficacy of conscious volitional will leads directly to panpsychism, because some matter (brains) can manifest subjective consciousness affecting the physical universe, but because the brain is normal matter, obeying the four core quantum forces, even though these may involve exotic quanta such as quasi-particle excitations, subjectivity is a property complementing the physics of the universe. In this sense agency is subjective conscious volition intentionally affecting physical reality, unlike the purely objective notions of Moreno & Mossio (2015), where weak and adaptive agency are just objective dynamical structures.

The brain, in which continuous wave excitations and complementary discrete phased pyramidal action potentials are forming, is a process at face value homologous to quantum observation of edge of chaos dynamics at unstable tipping points. The role of consciousness as a quantum observer of the brain’s own attention dynamics, noted in Graziano’s (2016) AST model, would enable a quasi-causal role for volitional will to avoid lethal misadventure, by filling in the uncertainty gaps in edge of chaos computation and thus validate our veridical impression of possessing autonomous will as real rather than the delusion materialists claim. Human decision-making has a similar idiosyncratic nature to single quantum events I shall call a quantum instance, just as evolution is a sequence of adventitious quantum transformations, every one of which is a single unrepeatable quantum instance, none of which individually converge to the classical expectation of the probability amplitude. In this way there is a deep correspondence between human decision making, evolutionary mutation and the cosmological idiosyncrasy of a single quantum instance, which is completely uncertain. Hence the free-will of the quantum is its instance and our volitional will is also an instance.

9 Cosmological Symbiosis

We next explore how the fractal and panpsychic cosmological pictures fit into a deeper symbiotic picture, in which biological life, the universe and consciousness all enter into a symbiotic relationship extending the manifest biological symbiosis that is the basis of the endosymbiotic eucaryote cell, eucaryote sexuality, cell-virus symbiosis and the natural and sexual selection (Darwin 1859, 1889), that is universal in the biosphere.

45 idiosyncrasy a mode of behaviour or way of thought peculiar to an individual idiosunkrasia, from idios ‘own, private’ + sun ‘with’ + krasis ‘mixture’.
Cosmological Symbiosis

Cosmological Complementarity
1. The physical universe has a veridical 46 complement – cosmological consciousness, or the “mind at large”, the subjective manifestation of the cosmos. Individual human consciousness is an encapsulated instance of the whole.
2. The mind at large shapes physical history in the quantum multiverse, through volitional will collapsing the superimposed, quantum-entangled wave functions.

Biogenesis
3. Cosmological fecundity: The physical universe is the most complex quantum fractal conceivable in space-time, due to cosmic symmetry-breaking of the four quantum forces – gravity, the weak and colour forces and electromagnetism.
4. Consequently emergent molecular action is a complex fractal quantum process, culminating the symmetry-broken interaction of the four quantum forces of nature.
5. At the same time, planetary conditions permeate the degrees of freedom for biogenesis, due to chaotic dynamics of gravitation and the other forces.
6. Consequently, due to ergodicity 47, replicative life will take root in an open subset of cosmological conditions.

Evolution
7. Computational catastrophe: With the advent of genetic evolution, molecular interaction becomes a complex massively-parallel quantum computer, accumulating adaptive information through mutation and natural selection.
8. Cellular excitability: Edge of chaos excitable cells gain a coherent encapsulated form of panpsychism, which is adaptive to survival and is thus selected for.
9. Eucaryote symbiosis between the two founding branches of life, archaea and bacteria, triggers a complexity catastrophe.
10. Cellular consciousness: Adaption to environmental modes of quantum perturbation of cell excitability in eucaryotes results in cellular sentience. This is the critical transition to existential consciousness. The transition to brains is a secondary extension.
11. Signalling molecules, such as serotonin, evolve to mediate modes of social interaction conducive to survival of the collective organism in single celled eucaryotes, also affecting epigenetics and, by selection over the result, genetics.

Organism
12. As organisms evolve to become multi-celled, cellular consciousness becomes organismic consciousness via neuronal coupling.
13. Fractal culmination in the Biota: Conscious organisms become the consuming fractal interactive expression of cosmological symmetry-breaking, running from quarks through nuclei, atoms and molecules, to molecular complexes such as the membrane and ribosome, to cell organelles, cells, tissues, organs such as the brain, societies of organisms and the symbiotic biosphere.
14. The brain’s organismic consciousness becomes evolutionarily adapted to aid the survival of the organism and the family.
15. In mammals, this involves limbic emotions, invoking a dynamic network for survival that we consciously identify with the ego.
16. At the same time, the brain, as a closely-coupled society of neuronal cells, interacting via the same signalling molecule types, remains dependent on elementary amine-based neurotransmitters, to modulate key survival strategies, because these arose from modalities directly ensuring the survival of the collective organism in single-celled species.
17. Involution: Again at the same time, given the variety of niches on an Earth-like planet, several species are likely to evolve to synthesise modified amino acid derivatives (e.g. psilocin, DMT, mescalin), capable of altering the dynamics of consciousness in such a way as to bring individual consciousness back into relationship with the mind at large using the same receptor pathways.

Biospheric, Psychic and Cosmological Symbiosis
18. All living species, including humans, survive through evolutionary niches in effective biospheric symbiosis with the whole.
19. Because Homo sapiens, the currently dominant species on Earth has evolved an ego-based form of individual consciousness, evidenced in our tribal emergence, our species is not adapted to, and thus lacks the intrinsic ability to care for the planet mindfully enough to avoid exploiting it to the extent that it becomes critically compromised, threatening human survival.
20. Entheogenic species bearing psychedelic neurotransmitter analogues, by tweaking a central brain survival mode at the receptor level, can precipitate ego dissolution, leading to moksha – reunion with the “mind at large”, thus evolving a psychic symbiosis with humanity complementary to our inter-dependence with food, medicinal, and biosphere-supporting species.
21. This psychic symbiosis enables humanity to find its role as the guardians of the living planet and the flowering of conscious existence in evolutionary and cosmic time scales, rather than becoming its tragic “espèce fatale”, thus resolving the existential and planetary crises, fulfilling the spiritual, eschatological and scientific quest for the meaning and purpose of intelligent life.
22. Psychic symbiosis is potentially as significant as the eucaryote symbiosis, because the future survival of the planet’s entire living diversity is at stake and it is thereby manifesting cosmological symbiosis of the physical universe and mind at large, thus providing a means to avoid a mass extinction of biodiversity invoking the self-destruct scenario of the Fermi paradox.

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47 ergodic – relating to, or denoting (e.g. chaotic) systems or processes with the property that, given sufficient time, they include or impinge on all points in a given space and can be represented statistically by a reasonably large selection of points.
Symbiosis and its Cosmological Significance

There are seven reasons why a symbiotic solution to the central enigma of cosmology and the hard problem of consciousness is critical and why the panpsychic postulate of the existential reality of the mind at large is valid.

Firstly, it is critically important in this discussion to understand how pivotal symbiosis is to the continuity of life in the universe. When we talk about survival of the fittest and the notion of the selfish gene seeking its own replication, these both occur in the context of natural selection, which is selection by symbiosis with the biosphere as a whole. Apart from a few extremophile archaea whose niches are predominantly geospheric, all evolutionary niches are biospheric, relative to the living diversity of all other species defining the niche, so natural selection is the key vector of biospheric symbiosis. Thus the capitalistic notion of survival of the fittest in the concrete jungle of human economic business as usual is a biospheric tragedy of the commons, (Hardin 1968) resulting only in planetary crisis, as a misaligned manifestation of human tribal origins. Species we see as predatory, or parasitic, also have symbiotic roles in ensuring the survival of their hosts and prey. For example, carnivore predation also avoids their herbivore prey populations going into boom and bust extinction by eating out all their vegetative food supplies.

All the interesting things in the universe happen at the edge of chaos. Cosmological symmetry-breaking causes the structure of molecular matter to be potentially fractal so with bio-elements we get the fractal structure of tissues. The edge of chaos is an abstract principle we can find throughout nature and cosmology. It is manifest in complementary regimes of order and chaos in both continuous and discrete dynamics and in discrete cellular automata where edge of chaos system 110 is a universal computer. It is a fundamental concept in key transitions in brain states in the Freeman model of neuronal dynamics and is a critical aspect of evolution’s rise to climax diversity.

We have also noted that there is a beautiful Goldilocks scenario for the origin of life. Firstly the galactic nebulae are flush with the primordial molecules that readily polymerise to nucleic acid bases and amino acids. Secondly the acidic CO2 filled ocean reacts with crustal alkaline olivine to form chemical gardens just like the one’s I made as a kid. They were rife on the early Earth and still occur today in the Lost City vents. Experiments have shown they can also concentrate biomolecules 1200 times up to biological concentrations and feed them on the chemical reactions produced.

Fig 87: Left: Emergence of archaea and bacteria as complementary cellular life forms with differing membrane structures from the common progenote (Lane & Martin 2003). Top right: The divergence happened before the evolution of DNA polymerases (Leipe et al. 1999). Lower right* The electro-chemiosmotic foundation of cellular life (Lane & Martin 2012).

The end result is the chemiosmotic origin of life where membrane electrochemistry set the whole process going. This gave rise to two fundamentally complementary life forms, archaea and bacteria as well as a lot of viruses emerging from a cooperative milieu called a progenote. The archaea are geological organisms in salt pans, hot smokers, methane swamps, and volcanic hot pools. They don’t cause diseases. Bacteria are fast metabolic organisms that decompose, photosynthesise and respire and can be pathogenic.

Archaea have different kinds of cell walls from bacteria, so it is likely that each emerged from the progenote and became cellular as they escaped gaining metabolic autonomy via the membrane energetics. The DNA polymerases of archaea and bacteria are also different, so it also looks as if they evolved and diverged before DNA-based life had
stabilised, at a point where DNA and RNA were flipping cyclically using the reverse transcriptase that is still in retroviruses like HIV and in the endogenous retroviruses in our genomes and in telomerase!

Life thus started out with two complementary life forms, but then about 2 billion years ago an edge of chaos event happened, when a very slowly growing archaean, with long protruding filaments started to grow alongside alpha-proteo-bacteria like our gut bacteria escherichia coli, using the relationship to live off their high value respiratory electron transport chain energy while also giving them value in return by exchanging metabolites. You can see close relatives of these two species top right in the figure below. There are still some archaea and bacteria that do this today, but basically what happened is that the symbiosis was so successful that it wiped all trace off the face of the Earth in a rapid quantum leap of evolution to form the higher nucleated eucaryote cells that make amoebio-flagellates and complex organisms. Without this symbiotic quantum leap complex life could not exist!

(a) Eucaryote endo-symbiosis In the 1960s Lynn Margulis (Sagan 1967, Margulis 1970, Mann 1991, Haskett 2014) first published the theory that both the mitochondria universal to eucaryotes and the chloroplast in plants were endosymbionts. She also suggested that the kinetochore essential for the eucaryote flagellum and ordered separation of the chromosomes was an endosymbiont. Genetic analysis has subsequently proved that all complex cells are symbiotic with their mitochondria, and plants are in a three-way symbiosis more ancienly with mitochondria and more recently with chloroplasts.

About half our genes, the metabolic ones, were derived from the bacterium and are now in the nucleus while the informational processing genes came from the archaea. Now the mitochondria have only a skeleton set of key genes constituting the maternally inherited mitochondrial DNA that showed us that the African Eve was a San woman.

Elucidating how this happened genetically from previous organisms didn’t happen until a few years ago. In 2019 Lokiarchaea, the first of the Asgard archaeans to be discovered was finally successfully grown in culture. It had originally been identified as a unique archaenal organism from microbial mud, dredged near Loki’s Castle, a sea-floor hydrothermal vent field off the coast of Greenland. In a 2015 study in metagenomics, Ettema and his colleagues
sequenced genetic fragments from the microbial portion in the sediment and assembled them into fuller genomes of individual species. One genome stood out. It was clearly a member of the archaea. But dotted throughout this genome were eukaryotic-like genes, named Lokiarchaea, after Loki, the trickster of Norse mythology (Lambert 2019). However, unbeknown to the metagenomics researchers, Hiroyuki Imachi and colleagues (Imachi et al. 2019) had been working since 2007 to cultivate microbes from deep-sea sediments. They built a bioreactor that mimicked the conditions of a deep-sea methane vent. Over 5 years, they waited for the slow-growing microbes in the reactor to multiply and then took samples placed these, along with nutrients, in glass tubes, which sat for another year before showing any signs of life. Genetic analysis revealed a barely perceptible population of Lokiarchaea. The researchers patiently coaxed the Lokiarchaea -- which took 2-3 weeks to undergo cell division -- into higher abundance and purified the samples. Over 12 years, in a breakthrough work, the researchers produced a stable lab culture (Prometheoarchaeum syntrophicum) containing only this new Lokiarchaeon and a different methane-producing archaean in a symbiotic relationship. The researchers sequenced all the microbe’s DNA, confirming that it does contain some genes that look like those found in eukaryotes. This has now enabled verification that the cultured genome contains the eucaryote-related genes from the metagenomics analyses and enables a much more retracted investigation of this critical group of organisms.

There is also circumstantial evidence from key genes involved in both viral and eucaryote replication and transcription, that both the cell nucleus and mitosis and sexual meiosis arose from a DNA virus with a double membrane envelope that invaded the endo-symbiont, or its archaeal precursor, and rather than just altering its transcription to the virus’s advantage, went further and captured the archaean genetic organisation, to the extent that replication of the viral nucleus became coupled to replicating the entire archaean and viral genome, with transcription sequestered outside the nuclear envelope (Bell 2001, 2006, 2009, 2019, 2020, Chaikeeratisak et al. 2017a, b, Claverie 2006, Trevors 2003, Takemura 2020, Villareal & Witzany 2009).

(b) Sexuality (King 2015) is universal in both procaryote archaia and bacteria through a symbiosis between cellular and viral genomes, where plasmids and viruses also serve to exchange genetic material between hosts. Concomitant with the establishment of the archaeal-bacterial symbiosis, eucaryotes established symmetry-broken sperm-ovum dyadic sex to avoid genetic warfare in the symbiotic mitochondria, resulting in the two genetic sexes in each species (more in fungi), each becoming genetically interdependent with one another for survival and hence symbiotic. A key role of eucaryote sexuality is to enable a red-queen race between parasites and hosts, where sexually inherited genomic differences act to prevent total extinction of a monoclonal parthenogenetic host species, so that with very few exceptions, obligatory, or at least cryptic (intermittent), sexuality is universal. But sperm-ovum sex is a prisoners’ dilemma of highly asymmetric reproductive investments, leading to sexually antagonistic co-evolution, starkly displayed in humans in attempts by men to assert patriarchal dominion over female reproductive choice in an evolving climate of female gatherer reproductive cooperation.

(c) Cell-virus symbiosis is also rife in the human genome (King 1985, 2020c), where transposable elements (TEs) occupy 46%, of the human genome, making the TE content of our genome one of the highest among mammals, second only to the opossum genome with a reported content of 52%. LINE-1 elements which have co-evolved in the human germ line with a history running back to the Eukaryote origin, numbering 100,000-950,000 partially defective copies, around 100 of which remain fully active in humans, and their 300,000 dependent smaller fellow traveller Alu SINEs, together comprise 33% of the human genome. Long terminal repeat (LTR) retro-transposons 8% and DNA transposons 3%. Retroviruses related to HIV also exist in endogenous forms in the human germ-line, comprising up to 5 to 8%. Giving an evolutionary comparison, Dictyostelium has both LTR- and retro-transposons occupying 10% of a gene dense genome in which around 66% code for proteins (King 1985, Malicki et al. 2017). The survival of such a high proportion of transposable elements in such a tightly packed genome is strong evidence for symbiosis. In terms of the selfish gene (Dawkins 1976), transposable elements not withstanding, organism genomes are one huge genetic symbiosis, through organismic survival and selection.

Having integrated with our germ line, such elements both result in transpositions, which can cause mutations and genetic disease, but have also co-evolved to perform essential symbiotic tasks. Many of the historical transpositions have also caused adventitious mutations, giving the inserted elements key functions in coordinated gene expression. LINE-1 elements are key to forming the blastula, have key expression in neural progenitor cells and are essential in collapsing one of the two X-chromosomes which are poisonous to females except in their germ line. Endogenous retroviruses have provided membrane budding genes which aid the formation of the syncytiot, the super-cellular membrane that enables diffusion from the mother to the baby and immunity evasion, which avoids rejection of the
embryo. The recombination activating gene protein RAG1/RAG2, essential for the mutational variability of the vertebrate immune system, appears to have evolved from an ancient DNA transposon common to the metazoa.

(d) **Biospheric symbiosis**: Organismic symbiosis is then realised in biospheric symbiosis of each species within the biosphere as a whole, in which natural and sexual selection is a measure of survival of the most successfully symbiotic species within the biosphere, whether parasites, prey, predators or hosts. In fact predators for example function to stabilise the biosphere from unstable fluctuation, by taking out the herbivore stragglers, avoiding the herbivores eating out their food supplies and starving in a boom and bust.

There are outstanding examples of competitive survival of the fittest in evolution. Genetic systems as simple as transposable elements and simple molecular viroids, such as the potato spindle viroid above display competitive life cycles, giving rise to the notion of the “selfish gene” (Dawkins 1976). Competitive survival also resounds in male sexual combat, ensuring genetic fitness of the resulting offspring. Competition also occurs between species, as illustrated above right in cheetahs stealing from a lion.
However many of the most outstanding features of tooth and claw that give us the image of the brutality of nature actually abet biospheric symbiosis. Robert May (1976) used the logistic iteration to model a rabbit population $X_i$ eating the remaining grass $1 - X_i$ and we get $X_{i+1} = rX_i(1 - X_i)$. Depending on the reproduction rate $r$ we get equilibrium, period doubling, and chaos, which eventually disrupts in a high chaos bust at $r = 4$, where the population hits unity, consuming all the grass and then zero in extinction. This shows that two component herbivore-plant ecosystems are intrinsically unstable to lethal oscillation of the herbivore. When we include herbivore predators, the Lotka-Volterra equations give us precipitous but sustainable oscillations, as growing carnivore populations assimilate the herbivores to low levels, leading to seasonal rebounds in each.

The lesson from all this, in naively simplistic mathematical terms, is that predators appear to be destructive to the herbivores, but actually ensure their long-term survival, by avoiding genocidal famines. Out on the savannah, these seasonal oscillations may be less predominant although, wet and dry seasons and the vagaries of the climate will also cause fluctuations. The carnivores tend to opportunistically take out stragglers, and some of the young and old, so we rise to a climax of interacting species.

The same picture is occurring with plant evolution. The rise of plant climax diversity is symbiotically moderated by the wide spectrum of herbivorous parasites and predators. The reason weedy plant don’t rule the Earth is because insects, animals and fungal, bacterial and viral diseases all selectively target massive distributions of genetically similar plant material. The grasslands are subject to plagues of locusts. Plant diseases likewise target predominant species. Thus plant diversity is aided by insect predation, which explains why rainforest reach climax diversity rather than dominance of weedy species. Although plants also engage inter-individual and inter-species competition, Forrister et al. (2019) tested two mechanisms thought to underlie negative density dependence (NDD): plant competition for resources and attack by herbivores and confirm that it is the load of insect predation which results in the related species separation of climax diversity. After a long undisturbed period, wilderness habitats thus reach climax biodiversity because the overall interactive species-specific forms of natural and sexual selection promote maximal genetic symbiosis and optimal species diversity.

A founding reason why all complex life is sexual and why we thus have the dilemma of individual mortality is that the diversity of sexual individuals in a species protects the species in the peacock’s tail race against its sexual parasites.

We are just beginning to emerge from a Corona virus pandemic that occurred because of human impact on animals harbouring Corona viruses, forcing wild animals into close contact with other species, which would not occur in the wild, that gave rise to a new disease, when bat corona viruses, which are in a symbiotic relationship with bats, were knocked out of their symbiosis and became a world plague, affecting not only humans, but massive numbers of mink in dense mink farms and even rhinos. Bats roost in vast “urban” cave communities, where multiple pathological diseases, from rabies to corona viruses, occur endemically. Bats have figured out how to dampen down the corona presence to an asymptomatic level using interferons. With the rise of the Omicron variant, involving recombination with other corona virus elements, the pendulum is potentially swinging back to endemic symbiosis. Thus again the plagues and pestilences we abhor as the worst aspects of nature in the raw are actual vectors of symbiotic climax.

Lynn Margulis has been pivotal, both in establishing the correct view of eucaryote endosymbiosis, and in conveying the importance of symbiotic relationships in evolution generally, and finally in biospheric terms, in her cooperation with James Lovelock, in establishing the Gaia hypothesis.

Lynn Margulis opposed competition-oriented views of evolution, stressing the importance of symbiotic or cooperative relationships between species. She later formulated a theory that proposed symbiotic relationships between organisms of different phyla or kingdoms as the driving force of evolution, and explained genetic variation as occurring mainly through transfer of nuclear information between bacterial cells or viruses and eukaryotic cells. Her organelle genesis ideas are now widely accepted, but the proposal that symbiotic relationships explain most genetic variation is still something of a fringe idea (Mann 1992, Wikipedia).

Margulis also held a negative view of certain interpretations of Neo-Darwinism that she felt were excessively focused on competition between organisms, as she believed that history will ultimately judge them as comprising “a minor twentieth-century religious sect within the sprawling religious persuasion of Anglo-Saxon Biology.” She wrote that proponents of the standard theory “wallow in their zoological, capitalistic, competitive, cost-benefit interpretation of Darwin – having mistaken him for ... Neo-Darwinism, which insists on [the slow accrual of mutations by gene-level natural selection], is in a complete funk.” (ibid)
Margulis met with Lovelock, who explained his Gaia hypothesis to her, and very soon they began an intense collaborative effort on the concept. One of the earliest significant publications on Gaia was a 1974 paper co-authored by Lovelock and Margulis, which succinctly defined the hypothesis as follows: "The notion of the biosphere as an active adaptive control system able to maintain the Earth in homeostasis we are calling the 'Gaia hypothesis.'" Like other early presentations of Lovelock’s idea, the Lovelock-Margulis 1974 paper seemed to give living organisms complete agency in creating planetary self-regulation, whereas later, as the idea matured, this planetary-scale self-regulation was recognized as an emergent property of the Earth system, life and its physical environment taken together (Lovelock 1972, Lovelock & Margulis 1974).

This view is reinforced by the dynamical relationships for example between predators and their herbivore prey, where the assumption of an exploitative relationship belies the fact that the population dynamics of each, particularly with the carnivores taking out the stragglers, avoids the herbivores entering boom and bust by denuding the landscape of plants they depend on.

Ultimately, society and culture are also examples of symbiotic survival, however human emergence has been fraught with species-focused selection, leading to egotistical consciousness, tribal and civil warfare, as well as sexual wars of dominance between the male and female sexes, in which patriarchy has compromised the sexual prisoners’ dilemma, inhibiting female reproductive choice essential for XY-based evolution and breaching human equilibrium with the biosphere, in exponentiating devastation of the natural habitats of the planet, climate crisis and resource crisis. The prosocial effects of psilocybe species have also been proposed to have played a role in the emergence of human culture (Rodríguez & Winkelman 2021). The natural correction to this scenario comes from the complex sensitivity of conscious existence not being the exclusive dominant possession of a single species Homo sapiens, but is achieved in psychic symbiosis.

Fig 90: A spectrum of natural psychoactive substances are all of optimal activity and not superseded by synthetics except for LSA in morning glory which is superseded by LSD and to a certain extent muscimol is eclipsed by GABA-ergic Z-drugs. This illustrates efficient but incomplete biospheric evolution of psychoactives. Pink: corresponding natural neurotransmitters. Blue: synthetic pharmaceuticals.

(e) Psychic symbiosis with entheogenic species is a well-established reality. Although traditional use of mushrooms and peyote has tended to involve collection from the wild, since their rediscovery, sacred mushrooms have become symbiotically cultivated worldwide. Cannabis indica, Papaver somniferum and Erythroxylon coca have each had several millennia of cultural cultivation. Salvia divinorum originated in the Oaxaca region of Mexico, where it has been cultivated and used for centuries by the Mazatec people as a healing herbal remedy including Maria Sabina herself, and in religious ceremonies. The species has so adapted to being kept as hidden cultivars, that an event after the pollen tube reaches the ovary is aberrant and no fully developed nutlet has been collected from a Mexican plant.

Fig 90 shows a variety of species bearing psychoactive substances. Certain synthetic molecules such as selective serotonin uptake inhibitor (SSRI) anti-depressants, which inhibit serotonin transporters and tricyclics are absent, but, apart from the lysergic acid amide (LSA) in Ipomoea, these substances are optimal, in the sense that no synthetic drug has effectively superseded them and many remain essential medicines. Most are receptor agonists, or antagonists, for example the psychedelics psilocin, dimethyl-tryptamine (DMT) and mescaline are serotonin SHT2a receptor super-agonists, but cocaine inhibits dopamine transporters increasing pleasure and alertness and cathinone has similar stimulant effects to amphetamine by activating the trace-amine receptor (TAAR1) responsible for regulating dopamine and nor-epinephrine levels via transporters. By and large those synthetics which transcend the activity of these natural
substances, from methamphetamine to fentanyl and synthetic cannabinoids, have markedly more damaging social effects. Even cocaine in its natural context is a revered spiritual ally, for example the Kogi of the Andean cloud forest, who use coca as their principal spiritual ally, believe that natural coca civilises men. Tobacco (not included in the figure) agonises nicotinic acetyl choline receptors, while scopolamine antagonises muscarinic ones. Morphine agonises µ-δ-opioid receptors while salvinorin-A agonises κ-opioid receptors. THC partially agonises CB1, CB2 anandamide receptors in neurons and neuroglia. Caffeine antagonises adenosine receptors, blocking effects of fatigue.

This is an expression of symbiotic edge of climax. This doesn’t mean that entheogens are an exclusive route to the cosmic mind, but they are in my view sang raal – royal blood. Just like the fractal molecular architecture of the H–CNO bio-elements are a sang raal of biogenesis, the entheogens are sang raal of biospheric union – they are a genuine spiritual experience evoked by union with and interdependence with another species.

Of course this is not the exclusive or only route to moksha. We can also do deep transcendental meditation, but full blown moksha is rare and generally a more controlled experience of union, which tends to invoke mind-sky mysticism in which humanity remains the dominant pinnacle of divinity under deity. In some religions such as the Jains, all life is revered but it is linked to the idea of reincarnation and the life forms are simply sentient beings rather than genetic biological organisms. Reincarnation is really an opt out clause for the rarity of moksha based on the moral law of karma. And yes it is also a manifestation of the animistic inclusion of souls of all beings which is good. But entheogens are prima facie empirical psychic symbiosis because moksha is achieved in sacred interaction with another species, closing the biospheric symbiotic circle.

Fig 91: The Huichol nierika or portal to the “spirit world”: Cosmological symbiosis realised through psychic symbiosis.

(f) **Cosmological symbiosis.** This provides a basis for recognising that symbiosis is a foundational principle of the interactive consummation of the physical universe, invoked as a key manifestation of complementarity, evident in the eucaryote symbiosis between archaea and bacteria, sexual complementarity, and the symbiotic relationship between all living species and the biosphere as a whole, on which we all co-depend. This then becomes extended in the following description as a cosmological principle, both in psychic symbiosis with entheogenic species and the ensuing symbiosis between the organismic and cosmic mind and between the cosmic mind and the physical universe as a result of human symbiosis with the cosmos, leading to planetary refowering and abundance over evolutionary and cosmic time scales.

Secondly, a key element of this description is that it gives a succinct, biologically realisable account of how the subjective aspect of reality i.e the panpsychism in quanta becomes coherently evoked in living systems, revealing a coordinated functional relationship with the physical universe.

Fig 92: An extreme example of single-celled eucaryote adaption to a quantum mode. The dinoflagellate *Nematodinium* possesses an occlusum forming an eye, with a retina made from coopted chloroplast light sensors and a lens with inset wave plate made from mitochondrial membranes (Gavelis et al. 2015).

This is a three stage-process, (1) with the formation of excitable cells in both archaea and bacteria. (2) with the symbiosis between archaea and bacteria to form complex eucaryote cells we reach the emergence of
cellular consciousness. With cell organelles and nuclei, the excitable eucaryote cell gains the full edge-of-chaos sentence associated with physical quantum modes, from light, molecular vibration and the perturbation of chemical orbitals on the excitable membrane, leading to sensory organelles, social signalling, epigenesis and genetic evolution modified by cellular sentence. This is where the major quantum leap of consciousness takes place. (3) We reach organismic consciousness through dynamic elaboration via neuronal coupling in multi-celled organisms, and genetic diversification of function with increasing organismic complexity, we arrive at the conscious brains of organisms, utilising coupled cellular sentence, as manifested in our subjective consciousness accompanying brain dynamics. This has in turn induced an explosive increase in complexity so that the human brain has around $10^{10}$ neurons with $10^{15}$ synapses, forming a massively parallel quantum computer, making transitions at the edge of chaos (King 2014) involving quantum measurements of its own wave excitations, through discrete pyramidal action potentials timed to the progression of wave coherence (Qasim et al. 2021) as highlighted in fig 31. This complexity has in climax species from humans, through dolphins to elephants reached a cosmological level unknown elsewhere in the universe than in the biota.

"The fact is, I don’t even know that you’re conscious. The only thing I know beyond any doubt—and this is one of the central insights of Western philosophy—is Cogito ergo sum. What Descartes meant is the only thing I’m absolutely sure of is my own consciousness". (Chris Koch)

Fig 93: Upper Left: Satin bowerbird courtship involves complex two-stage cues in female reproductive choice (Robson et al. 2005). Centre: Peacock spider courtship. The male has to very carefully signal with his hairy mid legs from under her leaf to seduce her willingness to mate, rather than eat him, before fertilising her with his palps. Inset: One male ~2 mm in size on the tip of a human finger. Upper Right: *Dictyostelium* slugs, each containing 1000 or so individual amoeba, swimming purposefully and making individual chemotactic decisions coordinated through coherent membrane excitability. Lower left: Cichlid fishes have evolved into over 1500 species in the isolated lakes of the Great Rift Valley. Competition is fierce, and this mother shelters her offspring in her mouth at any sign of danger and takes them to a safe spot to release. Lower right: Hierarchical rank of female dominant hyenas is a key social feature of survival. At 12 weeks young hyenas need to learn to observe the rank of all 60 in the clan. Here an alpha female with two young offspring, teaches them to extract a head-bobbing concession from an older adolescent of lower rank (BBC).

Just as we don’t directly perceive the subjective consciousness in others, but infer it in their lively, purposeful behaviour, in a combination of sentence and volitional will, which we sense we can subjectively identify as conscious, cellular subjective consciousness is universal but unrealised. We see subjective consciousness more easily in other mammals, such as our pets, but we also see it in the creatively extraordinary mating dances of birds and spiders because here sexual selection horns the sheer creativity of evolution through mate choice. We also see in parenting and cooperative social activity in animal societies. We can also experience subtle expressions of conscious purposiveness in the collective mating songs of crickets in the field, and in the synchronised flashing of fireflies.

"To see a puppy playing [one] cannot doubt that they have free-will" and if "all animals, then an oyster has and a polype." (Darwin ex Smith 1978)

“The agency of all sorts of creatures is the most fascinating, self-explanatory, self-manifesting thing and phenomenally and experientially the most indubitable fact in the world” (Vetlesen “The Cosmology of the Anthropocene” 2019)
And evolution shows us that these patterns of purposive activity run all the way down the evolutionary tree to the first single-celled eucaryotes. Dictyostellium are single-celled free-living amoeba that show individual purposiveness in their feeding behaviour and have extensive behavioural and genetic homology to human phagocytes. Dictyostellium slugs also show coordinated purposeful behaviour in a highly active colony of a thousand aggregated myxamoeba. These are electrically excitable, pluripotent, motile stem-cells, engaging coordinated, motile actions and clear decision-making manoeuvres as a consensual organism. This is an organismic manifestation of cellular consciousness in action even though myxamoebae have only graded potentials. Individual amoeba likewise show purposeful activity very similar to human macrophages. This is the closest we can come to a scientific verification of the kind of consciousness we associate with higher animals in social single celled eucaryotes.

The problem facing verification is not that the complementary subjective aspect is fuzzy or vitalistic, or ill-defined, but that, by its very subjectivity it is not objectively evident just as we don’t see one another’s consciousness directly and it non-local and largely indivisible, as Buddhist philosophy suggests, forming encapsulated instances of a phenomenon complementary to the universe as a whole. Replication is thus achieved not through objective observation, but veridical verification by empirical experience. This is straightforward with other humans by mutual affirmation, but very difficult with single-celled species and even more so with individual quanta, which manifest subjectivity only through idiosyncratic individual particle trajectories which approach statistical average in the wave amplitude.

Thirdly, no matter how subtly we try to monitor brain states, and unravel their biology, chemistry and physics, including edge-of-chaos dynamics and quantum effects, subjectivity cannot be conjured up by an objective interaction of purely objective structures. No assembly of objective elements that has no subjective components can have subjective existence. We may find a dynamic structure of excitons, just as we do in subtle quantum experiments, such as weak quantum measurement and quantum entanglement, but none of these complex structures will have subjective nature if none of the elements do, as we learn from the failure of complex digital systems to demonstrate verifiable features of subjective existence. Therefore a purely objective description founded only on the brain is categorically intractable and incomplete. On the other hand, all physical experiences of the world around us are actually consensual forms of conscious experience, so it is clearly possible to construct a complete cosmology from consensual conscious experiences. A complementary description in which consciousness and the physical universe co-exist can thus solve the hard problem, while retaining all the empirical features in brain dynamics key to a biological realisation of the Cartesian theatre (Baars 1995, 1997). At the same time it resolves the quantum measurement problem through the subjective aspect collapsing the wave functions of the probability multiverse. Moreover the symbiotic cosmology depends only on the current status of the core model of physics, and the standard probability interpretation of the wave function, and does not need to invoke the anthropic cosmological principle (Barrow & Tipler 1988) although this is obviously consistent with it.

Fourthly, both a purely physical cosmology in which human actions are ruled by mindless physical circumstance and religious cosmologies ordained by the will of God place fundamental impediments on our personal autonomy. The materialist physical world view regards consciousness as merely an internal model of physical reality constructed by the brain and volitional will as a delusion having no real effect on the physical world. The religious view asserts that we do possess free will, but casts the entire universe as a moral test for God’s will under pain of dire punishment. The only way out of this dilemma is that subjective consciousness has an effect upon the world at the level of fundamental physics. In the symbiotic cosmology volitional will has a real part in determining the course of history, thus verifying our veridical autonomy of decision-making, i.e. free will, validating and completing our experience of the world around us. Indeed only in such a cosmology can personal autonomy have any real meaning, as opposed to

Fifthly, since we know we no longer exist in a flat Earth universe with beaten-dome firmaments, deity or its alternatives have to be envisaged in more subtle ways, as something that stands outside and beyond the universe but shapes it in some manner outside physical cosmology. It is also extremely unlikely that a God who created the universe as we now know it, with symmetry-breaking forces, galaxies permeating the heavens, and on Earth, evolution leading to climax genetic diversity, including parasites and hosts, predators and prey, did so as a simple moral test of obedience. But we do know that the one and only tangible entity that stands outside and beyond the objective physical universe is subjective conscious existence itself. In fact all religious notions, such as Heaven and Hell are consciously envisioned realms, just as animist spirit realms are conscious visionary experiences and all personal religious experiences of deity, that are not simply religious doctrine taken on faith, including all mystical transformative encounters come as conscious and generally visionary experiences.
All realisable hope of a tangible “deity” existing thus now resides in the realms of consciousness. Panpsychism also explains how “God consciousness” could arise as a conscious interaction with the universe as a whole. This is the same concept as the atman becoming one with Brahman in Indian spiritual philosophy. We have to accept that if such interaction is unreal, then tangible interaction with any form of “deity” is unreal. However if the panpsychic postulate is true then the mind at large has reality as the fully manifest form of the subjective aspect existence on a cosmic basis and then our individual conscious existences are extant as functionally encapsulated instances of the mind at large.

**Sixthly**, there are fundamental evolutionary reasons why the entheogenic species are bound to occur and why they may be able to induce a form of “primary consciousness” evoking cosmic consciousness or the mind at large, as a result of evolution in a universe governed by fractal laws of nature.

The core neurotransmitters involved are modified elementary amino acid amines going back to the origin of life. Their pathways have been conserved since the foundation eucaryotes, as social signalling molecules, to provide feedback modes ensuring the survival of the collective organism. The brain is effectively a close-knit social organisation of neurons and neuroglia communicating almost exclusively through neurotransmitters, with the core pathways, such as serotonin and dopamine continuing to have key conserved survival-related modes to ensure a purely electrochemical brain doesn’t deviate from organismic survival. Evolution has honed this by natural selection, so that these modes, as expressed in the default mode network and others, focus on an emotional and cognitive dynamic that gives rise to what we consciously experience as ego. However, this has proven not to be hard wired, but like the senses, is adaptive. Moreover the highly-conserved evolutionarily role of serotonin in development from social amoeba to the human brain noted above means that the ancient roles of serotonin in development may maintain evolutionary forces in humans also favouring serotonin and other target neuronal circuits to favour collective, rather than individual survival.

Because individual consciousness is actually an encapsulated form of cosmic consciousness, modified forms of these neurotransmitters produced by other species among them psilocybe, lophophora and psychotria, are able to tweak the serotonin 5HT2a receptor system in such a way as to impede “secondary consciousness”, as in the DMN, allowing the conscious brain to revert to an ego-dissipated form of “primary consciousness”. It appears that, simply by doing so, a form of long-term potentiation results, which has lasting beneficial effects, by allowing the individual to “no longer see through a glass darkly”, in Paul’s words, but now “face to face, knowing even also as we are known”.

**Seventhly**, this makes the notion of unfolding from encapsulated individual consciousness into the universal cosmic consciousness of the mind at large, clearly and unambiguously identifiable with the traditional notion of moksha – escaping the round of birth and death of mortal existence in union of Brahman and atman and in Buddhist satori. The *Upanishadic* notion of atman or inner self, which can become united with Brahman the cosmic self, provides a central vision of this unification. However in the Buddhist perspective, the reality of the self is transcended by the unbroken wholeness and essential voidness of undivided consciousness central to the ability to experience moksha, which requires an approach where there is no dualistic distinction between subjective and objective aspects. Psychic symbiosis is again a complete realisation of the Shakti-Shiva tantra. As noted in fig 35, the moksha epiphany “is not something you can experience from without, neither is it something just within in the heart’s desire”, but arises when you completely “let go and give your consciousness back to the universe”.

The Chan/Zen notion of Buddha-nature, encompasses the idea that the awakened mind of a Buddha is already present in each sentient being. This Buddha-nature was initially equated with the nature of mind, and meditations introspecting on perceiving the mind as a mirror, but this was challenged by Hui-neng in the Zen doctrine of no mind:

*The body is the Bodhi-tree.  
The mind is like a mirror bright;  
Take heed to keep it always clean  
And let not dust alight.*  
Shen-hsiu

*There is no Bodhi-tree  
Nor stand of mirror bright  
Since all is void,  
Where can the dust alight?*  
Hui-neng

The idea of the immanent character of the Buddha-nature took shape in a characteristic emphasis on direct insight into, and expression of this Buddha-nature. It led to a reinterpretation of Indian meditation traditions, and an emphasis on the idea that the teachings and practices are comprehended and expressed “suddenly” — “in one glance”,

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48 *satori* – sudden enlightenment Oxford Lang. See also *subitism* derived from the French *illumination subite* (sudden awakening).
uncovered all together” – “together, completely, simultaneously”, as opposite to gradualism, the original approach which says that following the dharma can be achieved only step by step, through an arduous practice, possibly taking several lifetimes. This attests to the validity of entheogenic experiences giving sudden insight of lasting value, contradicting the mistaken notion that genuine enlightenment can be achieved only through a supreme effort of dispassionate top down control through mindfulness and suppression of ego in favour of compassionate equanimity.

Fanaa (Arabic: فناء) “to die before one dies” in Sufism is the “passing away” or “annihilation” (of the self). Some Sufis define it as the annihilation of the human ego before God, whereby the self becomes an instrument of God’s plan in the world (Baqaa). Other Sufis interpret it as breaking down of the individual ego and a recognition of the fundamental unity of God, creation, and the individual self. Persons having entered this enlightened state are said to obtain awareness of an intrinsic unity (Tawhid) between Allah and all that exists, including the individual’s mind – being united with the One or the Truth. This second interpretation is condemned as heretical by orthodox Islam. al-Hallaj was crucified when he cried: “ana al-Haqq - I am the truth” and preached overthrow of the Caliphate:

\[
\begin{align*}
\text{I am He whom I love, and He whom I love is I;} \\
\text{We are two spirits dwelling in one body.} \\
\text{If thou seest me thou seest Him,} \\
\text{And if thou seest Him thou seest us both”} \\
\text{(al-Hallaj Armstrong 1993 263).}
\end{align*}
\]

Moksha also lies at the source of shamanism and visionaries who initiate and inspire major religions, as exemplified by Yeshua’s statements in the Gospel of Thomas – “the kingdom is inside of you, and it is outside of you. When you come to know yourselves, then you will become known, and you will realize that it is you who are the sons of the living father” (3) – “It is I who am the light which is above them all. It is I who am the all. From me did the all come forth, and unto me did the all extend. Split a piece of wood, and I am there. Lift up the stone, and you will find me there” (77). The “ultimate reality” experienced in quantum change experiences also has parallels with the Christian Holy Spirit.

Because psychedelics play directly into the visionary state, in an intense, but consciously negotiable experience, with outstanding transcendent features, it is natural that they should be regarded as central tools, sine qua non, in the discovery process of the central enigma of existential cosmology – the role and function of consciousness in the universe, complementing projects such as the LHC seeking to elucidate the foundations of physical cosmology.

Erwin Schrödinger (1944) in dealing with the paradox of many minds in one world stated:

“There is obviously only one alternative, namely the unification of minds or consciousnesses. Their multiplicity is only apparent, in truth there is only one mind.” “Mind is by its very nature a singulare tantum 49, I should say: The overall number of minds is just one. I would say it is indestructible, since it has a very peculiar time table, namely mind is always now. There is really no before and after for mind. There is only a now that includes memories and expectations”

Schrödinger quotes Persian Sufi mystic Aziz Nasafi, enlightening the darker gnostic beliefs of Heracleon:

“On the death of any living creature, the spirit returns to the spirit world and the body to the bodily world. In this way however, only the bodies are subject to change. The spiritual world is one single spirit who stands like unto a light behind the bodily world and who, when any single creature comes into being, shines through it as through a window.According to the kind and size of the window, less or more light enters the world. The light itself however remains unchanged”.

Fig 94: Symbiotic cosmology was prefigured in George Greenstein’s “Symbiotic Universe” (1988).

The reality of the mind at large is consistent with the biological and physical reality of a human brain in a transformative state where the brain processes supporting consciousness are freed from their boundary constraints and become unbundled from subject-object polarisation. Since the the only manifestations of subjective consciousness we know of in the universe are the biota, organismic consciousness, particularly in such mental states may be the key and perhaps only realisable way that cosmological consciousness of the universe at large can become fully manifest.

49 singulare tantum a noun which appears only in the singular form – objects which may in principle be counted but are referred to as one.
We know that the Cartesian theatre of consciousness (Baars 1997) is a complex affair. It is not just the external senses of sight, sound, touch and smell which mediate varying quantum modes – photons, phonons and molecular orbital perturbations. It includes emotions, bodily sensations, trains of conscious thought, involving semantic, symbolic and auditory dimensions. Thought is visual, verbal and abstract. We know we experience these subjective modes together, as a totality, in the midst of a dynamic encounter in the real world. But we also know we can experience intense situations in dreams that are perceived as real rather than merely imagining something. We also experience visionary states which may have complex scenes and encounters, but also other more exotic abstract or ecstatic states of consciousness, unbound from these same constraints also having veridical reality value and that these can approach a state of moksha. Some aspects of our sentence are also shaped by the varying types of receptors for each of the senses, and the way these are processed in wave excitations and action potentials in the nervous system.

This makes it obvious that major aspects of the form of our conscious life and of our brain processing shape the human nature of consciousness. What is critically at stake is the foundation subjective nature of experiential consciousness, complementing the physics, not the particular human evolutionary design of the encapsulation. It is obvious that, even for a person in a state of samadhi, their cosmic consciousness is appearing through a human viewpoint. For example we more easily identify with mammals as we share their limbic system emotions and find arthropods more alien.

On the other hand, we have seen that the key transition in the emergence of subjective consciousness is the founding eucaryote cell. This means that both the features of neuronal excitation and the roles of neurotransmitters are widely shared across all metazoan phyla, with some secondary variation. Thus the physics evoking subjective consciousness in an arthropod, or an octopus is fundamentally homologous to ours, despite major differences in neural circuit design. A key example is the role of serotonin, where we find it maintains the development of the fruiting body sporulation tip in Dictyostelium, and likewise plays in humans the role of a fundamental organiser of human brain structure, from the neural groove, to differentiating the layers of the prefrontal cortex. Thus, although humans are very very different from slime moulds, core aspects of their excitability and social signalling are strongly conserved and remarkably similar.

The fact that people have such similar experiences during quantum change attests to their universality and potentially cosmological status and hence to the validity of psychedelics as a key oracle for discovery of the foundations of consciousness in the mind at large. Realising the symbiotic mind at large solves the hard problem of consciousness and the central enigma of existential cosmology, the nature and purpose of conscious existence, thereby resolving the scientific, eschatological and theistic quests in one "fell swoop", in a compact, coherent synthesis.

Symbiotic existential cosmology is thus empirically verified in three principal ways:

(1) Existential cosmology, as an interaction between subjective consciousness and physical reality, is verified through affirmation by empirical experience between conscious human volitional agents, in the same manner that legal transactions, such as sworn evidence, fiduciary duties of care and terms of trust are veridically affirmed. This is necessary for applying Occam’s razor to eliminate materialistic cosmologies failing the volitional efficacy test fundamental to human decision-making autonomy and personal responsibility for our actions upon the world.

(2) The extent of subjective consciousness across the evolutionary tree can be verified through empirical observation of volitional purposiveness in eucaryotes.

(3) Cosmological symbiosis is verified by statistical evaluation of quantum change experiences of “ultimate reality” in psychedelic and meditational states, as demonstrated in studies by the Johns Hopkins team and others.

Stanislav Grof (1980) notes: “In one of my early books I suggested that the potential significance of LSD and other psychedelics for psychiatry and psychology was comparable to the value the microscope has for biology or the telescope has for astronomy. My later experience with psychedelics only confirmed this initial impression. These substances function as unspecific amplifiers that increase the cathexis (energetic charge) associated with the deep unconscious contents of the psyche and make them available for conscious processing. This unique property of psychedelics makes it possible to study psychological undercurrents that govern our experiences and behaviours to a depth that cannot be matched by any other method and tool available in modern mainstream psychiatry and psychology. In addition, it offers unique opportunities for healing of emotional and psychosomatic disorders, for positive personality transformation, and consciousness evolution".
I have now to take this to its cosmological conclusion, by taking a Galilean interpretation of Groff’s position that also cosmologically inverts the Copernican principle. That is, I am asserting that subjective consciousness does make human observers, by possession of it, privileged observers of, and participants in the universe, and that a cosmic view of this privileged position is both achievable and facilitated through psychedelics and that this knowledge or “knowing” invokes upon us a primary responsibility to care for and ensure the survival and flowering of sentient life and consciousness within the universe throughout the generations of life.

All the evidence that we have at our disposal indicates that subjective consciousness is manifest in the biota and that only the biota possess it in the fully fleged form we witness it. Notwithstanding the cosmic web, which has fractal similarities to neural tissue (Vazza & Feletti 2020), and the hypothetical idea that some small stars might be conscious (Matloff 2016), the brain appears to be the most complex coherent system in the universe, as the cumulative manifestation of all the forces of nature interacting in consummation of their fractal interaction on all scales, from cosmological symmetry-breaking, running through quarks, protons and neutrons, atomic nuclei, atoms and molecules, to molecular complexes such as the ribosome and membrane, to cell organelles, cells, tissues, organs such as the brain, societies of organisms and the symbiotic biosphere. We know of no other process in the universe, from black holes to stars and the gas clouds of nebulae, or even dark matter, that cumulatively complete the interaction of the fundamental forces in this way.

The evidence also indicates that, while psychedelics create diverse forms of altered conscious states, spanning the entire spectrum, from the paradisiacal to the diabolical, requiring careful guidance, and having significance varying from the sublime to the ridiculous, they constitute humanity’s most powerful research avenue to discover what the inner dimensions of conscious experience are, complementing experiences of dreaming and other states, with a central avenue which can be induced and explored, both scientifically and personally by the waking mind. And finally, underlying these diverse visionary phenomena is a deeper enlightenment at the centre of this cyclone, which has the potential to resolve what the existential status of conscious experience is cosmologically, in the experience of moksha, transcending the cycle of birth and death in mystical transformative experiences of long-lasting psychic benefit, whose common features imply they are accessing a common primary conscious condition.

Working to validate entheogenic experiences and conscious states generally requires a different type of verification from physical to establish a phenomenology of the subjective psychedelic state. Peoples experiences of daydreaming and dreaming sleep confirm that very real events can occur, particularly in dreaming. The nature of space and time in dreaming is also undetermined as some people report precognitive dreams (Dunne 1927). We don’t usually assess the reality value of internal mental states as the same as everyday experience of the world, but they still often possess features which we recognise and identify as having veridical reality. Likewise some psychedelic states form a diverse population from frank delusions to common claims of profound experiences of a life-changing nature.

Ralph Metzner’s (2017) radical empiricism approach gives the foundations of how to assemble such a phenomenology:

“Over 100 years ago the American philosopher William James said that radical empiricism would not dismiss any observations just because we don’t have a theory or model to explain them in our current worldview. For that reason, James allowed drug experiences [with nitrous oxide], mystical visions, parapsychological or psi-phenomena and telepathic communications, into science for consideration and further observations. HH the Dalai Lama has formulated a similar epistemology, by his notion of “first person empiricism” – empirical observations made with our own senses. Repeated observations of similar situations by the same observer or similar observers gradually make the observations less “purely subjective” and step-by-step more objective. So the basic formula of radical empiricism is objective = subjective plus one or more. If only one person sees something, it remains purely subjective, like a fantasy or a dream. But if at least one other person sees it and can say “yes, I see it” it becomes a little bit more objective, and this can have profoundly healing implications. ... So when people speak about “entities” or “spirits” or “demons” or “visions” or “hallucinations” we want to first separate the observations from the speculations. Then we can gather further observations – which might have been recorded in various books or in works of art, and start the process of making systematic comparisons. ... Our intuitions and subtle inner perceptions can be mistaken just like any outer perceptions – and can and should always be subject to repetition and repeated verification”.

50 In physical cosmology, the Copernican principle states that humans, on the Earth or in the Solar System, are not privileged observers of the universe. (Wikipedia)
Entheogens are a/the key instrument providing the subjective conscious equivalent to the LHC’s role in physical cosmology. Just as there are many visions, surrounding one nierika portal to the ‘spirit’ world, so there have been a multitude of particle showers, for one Higgs particle discovery. Future generations will feel betrayed by Western culture, discovering that:

(a) A scientific discovery which has features consistent with being the subjective equivalent of the LHC, a consciousness reactor that could give us access to the core cosmological secrets of the universe, had been suppressed for half a century by the very culture that claims to be the climax of scientific enlightenment.

(b) That this had happened because this very discovery was perceived by political leaders to be threatening to a consumption-driven society based on venture capital exploitation of the planet’s resources for financial gain, combined with adherence to a religious belief which requires the drinking of the saviour’s blood and eating His flesh because “without the shedding of blood there is no remission of sin.”

(c) That this repression, reminiscent of the dark ages, has intentionally acted in such a way as to seek to prevent us from attaining moksha or psychic union with the cosmos, the very ideal that lies at the heart of the spiritual and religious quest for enlightenment and transcendence, because it risks unraveling the status quo.

(d) That Entheogens giving the respect due could also have critically helped alleviate the planetary crisis that has ensued from human evolutionary emergence as a tribal society, and unfold a symbiotic psychic relationship with reality, just as we are obligately symbiotic with the food and medicinal species on which we depend.

(e) That instead of helping enable humanity to ensure its survival and the survival of the diversity of life on this planet on which humanity depends, this repression had caused a 50 year delay in addressing a climate and biodiversity crisis, significantly risking the economic welfare, health and survival of these future generations.

This appears to be the situation we are just beginning to emerge from, and yet are still facing today. For the planet to continue to survive over evolutionary and cosmological time scales, climax consciousness is, and has to be, fully sensitive as a complex system to the biosphere. This is necessary to be able manifest a cosmologically conscious response, consistent with perennial survival on evolutionary time scales. The fully evolved consciousness is thus, in its complete form symbiotically biospheric. Its fullest and complete manifestation is biospheric and cannot, in evolutionary terms, be the exclusive provenance of a single dominant species, *Homo sapiens.*

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51 Large Hadron Collider responsible for discovering the Higgs boson completing the standard model of physics, fig 29.
2 Animism, Religion, Sacrament and Cosmology

The inclusion of agency in Symbiotic Existential Cosmology realises the intimate relationship between panpsychism and animism, which is based centrally on agency, as a manifestation of the widespread perspective held by ethnic cultures and in shamanism, of agency being a feature of all living and perhaps even non-living entities. Animism also holds the key to the Weltanshauung of Immortality that has sustained the human spiritual sense of meaning since our emergence as a cultural species. Animism is the belief that all things – animals, plants, rocks, rivers, weather systems etc. possess a distinct spiritual essence – as animated and alive – extending ultimately to the Gaia hypothesis that living systems and the geosphere are in a self-sustaining feedback loop which could be disrupted by tipping points (Lovelock 1972, Lovelock & Margulis 1974). It thus aligns closely with panpsychism and is said to describe the most common, foundational thread of indigenous peoples’ “spiritual” or “supernatural” perspectives, especially before organised religion. The Dictionary of the Social Sciences (Gould and Kolb 1965) sums it up as “the belief in the existence of a separable “soul-entity”, complementary to the physical and biological “embodiment” of a living individual or material organism.” Modern society still treats certain phenomena, from hurricanes to boats, which are often given a female figurehead as a historical protection against misfortune at sea and are generally given names as agents.

Several of these natural entities take the form of edge-of-chaos processes, such as wind, waterfalls and storms from turbulent mountain summits to the ocean, which from the point of view of symbiotic panpsychism are strong candidates for coherent subjectivity.

“In the earliest times, when both people and animals lived on earth, a person could become an animal if he wanted to, and an animal could become a human being. Sometimes they were people and sometimes animals and there was no difference. All spoke the same language. That was the time when words were like magic” – Nalungiaq, Netsilik woman storyteller (Rothenberg 1972: 45)

In addition to a span of cultures, from Amazonian to migratory African peoples who escaped slavery in India, I shall focus on two founding human peoples, the Pygmies of the Congo Basin Forests and the Bushmen of the Kalahari desert and surrounding more fertile regions, both of which have consistent cultures running back for tens to hundreds of millennia, originally comprising the main populations of southern sub-Saharan Africa. Both of these cultures manifest both animism and gatherer-hunter symbiosis with the natural environment pivotal to humanity’s survival over evolutionary time-scales. The San Bushmen have an extremely long-standing cultural and genetic history running back to the mitochondrial African Eve, over 150,000 years, with cultural evidence dating back over 100,000 years. Likewise pygmies have had a largely unchanging culture for referred to by the Egyptians 4000 years ago as “the people of the trees”.

Animistic beliefs are also confluent with the use of entheogenic and psychotropic sacraments, as evidenced by the San Bushmens’ use of cannabis and experience of the trance dance and the cultivation the use of Tabernanthe iboga among the Biaka Pygmies and the use of ayahuasca by the Shipibo and peyote by the Huichol.

Fig 96: Distribution of African populations 8000 BC (Comrie et al. 2003)

Magical Consciousness, Animism and Human Psychic Unity

J D Lewis-Williams (2013) notes the enigmatic lines running through San rock art that have an unforeseen cosmological significance connecting the visionary worlds:

Across southern Africa from the Drakensberg in the east to the Cederberg in the west there are painted lines that

\[52 \text{animism (Latin: anima, 'breath, spirit, life')}\]

\[53 \text{It is empirically true that global heating "punishes" humanity in clear functional terms, but not as a moral punishment in the religious sense. Gaia may even have full agency in a sense we don't yet appreciate. "Why not?", as physicist Brian Josephson commented to me citing James Lovelock. The question we have to ask is this: Is a tornado less alive than a prokaryote? A prokaryote is tightly controlled as a genetic process and likely not conscious, but a thunder storm is in a sense more alive in the way our brains are dynamically. If alive means primitive subjectivity then a thunder storm should be accepted as alive in that sense. Any physical system capable of unstable autonomous dynamics is a candidate. Attributing agency in this way might have a deeper basis in consciousness understanding quantum reality from personal experience. What kind of form tornado or Gaia secret life might take is no easier to estimate than the putative "free will" of a quantum. But it IS an empirical question!}\]
meander through densely constructed panels, entering and leaving human and animal depictions, bifurcating and weaving in and out of the rock face. Sometimes these lines are fringed with white dots, sometimes they take other forms. ... But the northern ethnographies hold the explanation. The Kalahari San speak of “threads of light” that come down from the sky and take trancing shamans (n/omkaosi) up to visit god and his vast herds of animals. Shamans, who are the only people who can see these “threads,” climb them as if they were ropes or walk along them as if they were paths. They also simply glide just above the “threads.” All these various manifestations are clearly depicted in the southern African rock art. Moreover, those lines that seem to penetrate the rock face (as do other images) lead to the spirit realm that was believed to lie behind the “veil.”

Fig 97: The painted line on San Rock art at Drakensberg seems accidental but has huge spiritual significance (Witelson et al. 2021).

Elaborating on his theme, he cites in three points, the need to understand the evolution of consciousness, including alternative states, as well as the evolution of intelligence in human societies:

First, the evolution of “modern human behavior” (a difficult concept) depended as much on the evolution of consciousness as on intelligence. By focusing on intelligence and ignoring consciousness researchers have missed a fundamental human characteristic—the ability to conceive of alternative realities. Second, all religions are founded on shifting consciousness and the alteration of consciousness by meditation, rhythmic movement, sensory deprivation, psychotropic substances, and many other means. Third, religion is not a peripheral “add-on.” It is intimately involved in social change.

In “Magical Consciousness: An Anthropological and Neurobiological Approach”, Susan Greenwood and Erik Goodwyn (2015) delineate the contrasting relationship between the neuroscientific implications of analytical thought for our understanding of consciousness and the deeper mythopoetic, analogical and creative existential views generated by the “magical thinking” of animism. Citing Lewis-Williams (2013) they note the contrast between these two modes:

More than 20,000 years ago, prehistoric humans in southern Africa painted lines on cave walls, bringing them to life with images of humans and animals. Neuropsychological studies of altered states of consciousness suggest that these marks might be indications or recordings of certain kinds of brain activity, but when asked for an explanation, some contemporary Kalahari San people explain them as “threads of light” from the sky to take shamans ... while in trance to visit god and his vast herd of animals. One explanation of the cave art is based on materialistic neurobiology, whereas the other relies on indigenous “magical” meanings, such as those studied by anthropologists. If each explanation for the prehistoric painted lines is seen as plausible, then we need some form of incorporating these very different interpretations. The issue is to find a basis for a common ground.

They see analogical thinking as inherently animistic in nature:

The practical application of analogical reason as opposed to logical reason) is inherent within the notion of participating in an interrelated, inspired world best described as "animistic. Animism is a relational psychic ontology found cross-culturally. Magical thinking is predominantly animistic; indeed, magical consciousness could be said to be animist thinking in action. On a vernacular or everyday level, many societies can be said to operate within a generalised animist perspective, one that views positive and destructive powers pervading the universe, particularly focussed on specific places and things, 'Animist perspectives most likely co-exist with the major religious traditions of Hinduism, Buddhism, Judaism, Christianity, and Islam — particularly in non-Western locations, Such animist world views rely on a relational magical ontology that denies categorising "the inner" (what we might call the psychological) and -the outer" (a social or cultural context) in any dualistic fashion. Animism is also gaining popularity as an advocacy for a certain relational, ecological worldview.
They suggest such analogical thinking has been the basis for a common sense of “psychic unity” across evolving human cultures: The nineteenth-century German ethnologist Adolf Bastian first coined the term “psychic unity” to express the conviction that all human beings shared the same basic mental framework; this indicated a species-wide similarity in mental reasoning capabilities. Indeed, mitochondrial DNA evidence suggests that for 200,000 years, all humans have essentially shared the same bloodline, and many scholars are “beginning to concede the existence of a core human psyche”.

Greenwood & Goodwyn’s view from magical thinking presents a completely counterposed position to that of rational materialism, in relation to the hard problem of consciousness:

In magical thought, we begin with the non-material domain of spirits and/or minds, and matter becomes the odd thing that needs explanation! In an animistic perspective, spirits do not require understanding in terms of physical facts, and they are not felt to “derive” from physical, "naturalistic" (which usually means mechanical) laws. ... On the contrary, under an animistic worldview, the exact opposite is true: the physical world is derived from the action of non-physical, consciously experiencing spirit beings; the world is full of spirits or minds pervading everything. Causality itself is different: things do not cause other things, but within an animistic orientation, spirits or minds cause things to happen through their intent. ... From an animistic perspective, minds do not require explanation in terms of physical facts, and minds are not felt to "derive" from physical, "naturalistic" (which usually means mechanical) laws. On the contrary, under an animistic worldview, the exact opposite is true; the physical world is derived from the action of non-physical, consciously experiencing minds, and the world is full of minds pervading everything.

Animism also confirms a cosmological viewpoint accepting the veridical truth that the physical world is manifest through subjective consciousness, although it may be somewhat indiscriminate in attributing agency to entities which do not. Broadly speaking however in the natural world of the gatherer-hunter the “lion’s share” of intervening risks to survival or health are from active agents, whether human enemies, parasites, predators, or unstable natural phenomena such as storms and floods. It is only in technological society, where the majority of intervening events can often be mechanical that this begins to appear naive or silly. Even so, ships have been traditionally crowned by a female figurehead as a guardian of the waves and a favourite vehicle is often patted and treated as a living being:

This essentially animistic worldview looks at the minds responsible for the physical world, not only those minds mysteriously associated with other humans and animals, but the minds behind other chaotic, self-motivated, and typically unpredictable phenomena, including the day-to-day events in one’s life and the very motions of the universe itself. For animism, the world is full of non-physical minds that act according not to the mechanical laws of physical causation, but by the mental laws of motivation, intention, desire, and emotion.

The animist point of view causes the hard problem of consciousness to evaporate:

Responding to the hard problem of consciousness, the animist and magical thinker would say there is no hard problem, because minds are not created by matter. Rather, minds are primary and explain the phenomena of the physical world, perhaps creating matter itself during the acts) of creation. To exclude the mind from the explanation because of an adherence to such axioms as the causal closure of the physical world (a popular axiom in physical science and philosophy that posits only efficient causation and denies final causation) is therefore to eliminate the mind from the equation as - causally irrelevant".

They also bring up a core issue that is ignored by analytical materialism. There are always two ways of looking at an intervening event such as a disease or accident, the contextual (physical or biological) causes and the exact specific train of coincidences that brought this idiosyncratic event onto being. This is also a fundamental characteristic of the quantum universe stemming from quantum uncertainty. Covid is a perilous disease so we can try to vaccinate ourselves to address the contextual risks but this does not protect us from freak occurrences by being in the wrong place at the wrong time e.g. in an unanticipated super-spreading event, so it is as relevant to ask what caused me to catch this now? For this reason anthropologists acknowledge that an animistic viewpoint has unique survival value because it does protect from unpredictable threats from intentional agents, even though it may result in overkill on attributing physical causes to conscious agency because everything is treated as alive:

The classic example of this dichotomy is in Evans-Pritchard’s description of the Zande rationale for the granary collapse: the Zande knew full well that the granary collapse was “caused” by termites eroding the foundational structures. This physical explanation was, however (in converse to the Western philosophical viewpoint) “ - causally irrelevant” to their inquiry, which was, “Which mind intended for the granary to collapse at just this moment?” ... The Zande might not care about universal gravitation or termite biology, they want to know who made the granary collapse at just the moment a friend was under it.

They arrive at a compromise position proposing dual-aspect monism in almost identical form to symbiotic existential cosmology:

One solution is dual-aspect monism: that is, that the mind and matter are both properties of a single monistic substance that is not directly observable: when viewed under "objective" circumstances it looks like the brain, and when viewed -subjectively," it looks like...
the mind. From this view, the mind is not seen as deriving from matter, but is rather proposed to be another property of matter (or vice versa).

Is Polyphasic Consciousness Necessary for Global Survival?

In “Is Polyphasic Consciousness Necessary for Global Survival”, Tara Water Lumpkin (2001) invokes the urgent need to reinstate polyphasic consciousness, enlivening analytical reasoning responsible for its monoclonal destructiveness on human society, to the full breadth and depth of human conscious awareness and biodiversity as a whole:

To perceive is to become aware. Human perception is created by the interaction of human biology, the physical environment, an individual’s personal development, and a person’s culture (Lazlo and Krippner 1998:65). Perception is a complex, synergistic system, with numerous feedback loops, allowing for the generation of meaning and subsequent communication of that meaning. Perception evolves and changes as an individual, culture, or environment changes.

She makes clear that perceptual diversity is a long standing intrinsic part of human consciousness which is increasingly under risk:

A growing number of psychologists and anthropologists have become interested in the value of perceptual diversity, seeing the use of multiple perceptual processes as positive rather than pathological. Anthropologist Charles Laughlin has proposed that cultures are “monophasic” or “polyphasic” (1992). Polyphasic cultures value perceptual processes that use altered states of consciousness, such as dreaming, lucid dreaming, contemplation, ecstatic and trance states, as well as ordinary, waking consciousness (Walsh 1993:125). Roland Fischer presents a model of altered states of consciousness based on neurophysiology (1970a; 1970b). According to Fischer, states of consciousness are based along a continuum of arousal of the central nervous system. States of reduced central nervous system arousal (or hypoarousal) are represented by tranquil meditation or the Yogic state of samadhi. States of increased arousal (or hyperarousal) are represented by sensitivity, creativity, anxiety, ecstasy, and mystical rapture.

She notes, as a founding example, !Kung trance dancing, which we shall discuss in detail later with the San:

The Kalahari !Kung in Botswana are an example of a polyphasic culture. Anthropologist and clinical psychologist Richard Katz lived with them in the 1970s and documented that one-third of all adult !Kung “routinely and without drugs altered their state of consciousness, thereby releasing healing energy to the entire community” (1982:3). Katz defines states of consciousness as “patterns of human experience, which include ways of acting, thinking, perceiving, and feeling.” And he defines an altered state of consciousness as being “radically different from the usual everyday patterns” (1982:3). When the !Kung were camped at a permanent watering hole, they conducted their communal, all-night healing dances as often as twice a week. If camped in the bush, the dances occurred only two to three times per month (1982:37). Katz noted that the healers had rich fantasy lives, which he pointed out were another type of altered state of consciousness. And, according to Katz, the !Kung healing process demanded intuition and emotion rather than logic and rationalism, meaning such processes were valued in creating the !Kung cultural, cognitive map (1982:236).

The risk to perceptual diversity and its alternative experiential states has dire consequences also for social, cultural, and cognitive survival and the survival of the diversity of life and the human species:

Perceptual diversity allows human beings to access knowledge through a variety of perceptual processes, rather than merely through everyday, waking reality. Many of these perceptual processes are transrational (meditation, trance, dreams, imagination) and are not considered by science (which is based primarily upon quantification, reductionism, and the experimental method) to be valid. In the past, perceptual diversity was valued by a majority of cultures. Now it is being devalued and replaced by the monophasic culture of “developed” nations. Just as we are losing (1) biodiversity (or biocomplexity) in the environment and (2) cultural diversity among societies, we also are losing (3) perceptual diversity among human cognitive processes. All three losses of diversity (bio, cultural, and cognitive) are inter-related.

Loss of perceptual diversity disables the polyphasic map of existence that has enabled people throughout history to navigate their lives in a way conducive to their continued survival:

Individuals and cultures create cognitive maps to help them navigate the landscape of socio-cultural and physical environments (Lazlo and Krippner 1998:66). These cognitive maps are used by individuals and cultures to adapt and evolve. The cognitive map of “developed” nations is one of specialization that disavows multiple perceptual processes, whereas the cognitive maps of most “less developed” cultures are more holistic, providing for a multitude of processes with which to access knowledge, including altered states of consciousness.

The ultimate fatal error is the loss of biodiversity:

When societies devalue and lose perceptual diversity, they lose varied ways of accessing knowledge. The loss of perceptual diversity homogenizes societies, reducing cultural diversity. And the loss of cognitive maps that use a variety of perceptual processes,
including altered states of consciousness, results in navigation of physical environments based only upon monophasic consciousness. When humans interact with the environment using only monophasic consciousness (or the scientific method), the end result is that they reduce biodiversity and biocomplexity.

The Grim Ecological Reckoning of History

Ridley (1996) noted that Chief Seattle, leader of the Duwamish Indians, delivered a famous speech to the governor of Washington territory in 1854. The governor had offered to buy the chief’s land on behalf of Franklin Pierce’ president of the United States. Seattle replied in a long and shaming speech that is now among the most widely quoted texts in all environmental literature. It presages almost every thread in the philosophy of the modern conservation movement. The speech exists in various slightly different versions, one of the most moving being that which Albert Gore quoted in his book Earth in the Balance:

How can you buy or sell the sky? The land? The idea is strange to us ... Every part of this earth is sacred to my people. Every shining pine needle every sandy shore, every mist in the dark woods, every meadow, every humming insect. All are holy in the memory and experience of my people ... will you teach your children what we have taught our children? That the earth is our mother? What befalls the earth befalls all the sons of earth. This we know: the earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man does not weave the web of life, he is merely a strand in it. Whatever he does to the web, he does to himself.'

However one cannot afford to be naive. Although Ridley highlights the evolution of trust as a core human virtue, The rape of mother Earth and her living diversity has not just been committed by modern technological civilisation, nor by apocalyptic religions alone. Ridley (1996) again notes that history abounds with evidence that the limitations of technology or demand, rather than a culture of self-restraint is what kept tribal people from over-exploiting their environment. Methods of hunting have remained opportunistic, often taking easier prey such as females, sometimes specifically including pregnant ones and seeking the richest hunting grounds.

Ridley notes many examples from the pre-Columbian Americas. The Mayan empire reduced the Yucatan peninsula to scrub and fatally wounded itself. Chaco Canyon was abandoned by the Anasazi before the Spaniards arrived when the extraction of pine timber for their 650 room settlement containing 200,000 huge pine beams removed all the pine trees requiring a 50 mile road to drag pine logs to the increasingly eroded site. At Olsen-Chubbock the Colorado site of ancient bison massacres, where people regularly stampeded herd of a cliff the animals lay in such heaps that only the one on top were butchered and only the best joints were taken from them.

But the initial extinctions on the arrival of humans were even more telling:

Coincident with the first certain arrival of people in North America, 11,500 years ago seventy three percent of the large animal genera quickly died out. Gone were the giant bison, wild horse, short-faced bear, mammoth, mastodon, sabre-toothed cat, giant ground sloth and wild camel. By 8,000 years ago eighty percent of the large mammal genera in South America were also extinct – giant sloths, giant armadillos, giant guanaco, giant capybaras, anteater the size of horses.

Maoris sat down and ate their way through all twelve species of the giant Moa bird (the biggest weighting a quarter of a ton) before turning cannibal in desperation. At one Moa butchering site near Otago, at least 30,000 were killed in a short time – and on average a third of the meat was left to rot, only the best haunches being taken. Entire oven with haunches still in them were left unopened, so abundant was the supply of meat. It was not just moas. Half of New Zealand’s land birds are extinct.

It took a little longer to wipe out Australia’s large mammals. Yet soon after the arrival of the first people in Australia, possibly 60,000 years ago, a whole guild of large beasts vanished marsupial rhinos, giant diprodons, tree fellers, marsupial lions, five kinds of giant wombat, seven kinds of short faced kangaroos, eight kinds of giant kangaroo, and a 200 kilogram flightless bird.

By contrast he notes that Africa and Eurasia saw no such sudden bursts of extinctions of large mammals and that mammoth hunting persisted for 20,000 year in Eurasia, although extinction still occurred in the end. We shall also see that founding cultures of the Bushmen and Pygmies do practice an ecologically reverent non-exploitation of nature.

Anthropological Assumptions and Coexistential Realities

The idea of animism was developed by Edward Tylor (1871), defining it as “the general doctrine of souls and other spiritual beings in general”, noting “an idea of pervading life and will in nature”. Georg Ernst Stahl had developed the
term animismus in 1708 as a biological theory that souls formed the vital principle and that the normal phenomena of life and the abnormal phenomena of disease could be traced to spiritual causes.

Bird-David (2000) notes that Tylor’s position was that “animists” understood the world childishly and erroneously, and under the influence of 19th-century evolutionism he read into this cognitive underdevelopment. Tylor argued that in the savage view every man had, in addition to his body, a “ghost-soul,” a “thin unsubstantial human image,” the “cause of life or thought in the individual it animates,” capable “of leaving the body far behind” and “continuing to exist and appear to men after the death of that body” Tylor suggested that modern religion had evolved in stages from animistic beliefs, through which early peoples had tried to explain the world to themselves, and these beliefs had survived into the present and (re)appeared universally among children and “primitive” people and in certain modern cults. In Tylor’s view, “it was as though primitive man, in an attempt to create science, had accidentally created religion instead, and had spent the rest of evolutionary time trying to rectify the error”.

19th-century anthropologists argued an evolutionist position, that “primitive society” was ordered by kinship and divided into exogamous descent groups related by a series of marriage exchanges. Their religion was animism, the belief that natural species and objects had souls. With the development of private property, the descent groups were displaced by the emergence of the territorial state. These rituals and beliefs eventually evolved over time into the vast array of “developed” religions and the more scientifically advanced a society became, the fewer members of that society believed in animism. Modernism is characterised by a Cartesian subject-object dualism that divides the subjective from the objective, and culture from nature. In the modernist view, animism is the inverse of scientism, and hence is deemed inherently invalid.

Durkheim (1915) in a marginally less derogatory analysis suggested that “primitive peoples” regarded as kin and friends some entities that were animated by them, noting that “primitives” believed that the bonds between them and these natural entities were “like those which unite the members of a single family”: bonds of friendship, interdependence, and shared characteristics and fortunes arguing that they mistook the spiritual unity of the totemic force, which “really” existed, only for a bodily unity of flesh. Anthropology textbooks continue to introduce animism as “the belief that inside ordinary visible, tangible bodies there is normally invisible, normally intangible being: the soul . . . each culture [having] its own distinctive animistic beings and its own specific elaboration of the soul concept” (Harris 1983, 186).

Stewart Guthrie (1993) describes animism as an evolutionary strategy to aid survival – that both humans and other animal species view inanimate objects as potentially alive as a means of being constantly on guard against potential threats: Scanning the world for what most concerns us — living things and especially humans – we find many apparent cases. Some of these prove illusory. When they do, we are animating (attributing life to the nonliving) or anthropomorphising (attributing human characteristics to the nonhuman), thus relegating animistic beliefs to “mistakes”.

Animism differs from pantheism, although they are sometimes confused. One of the main differences is that while animists believe everything to be spiritual in nature, they do not necessarily see the spiritual nature of everything in existence as being united, the way pantheists do. As a result, animism puts more emphasis on the uniqueness of each individual soul. In pantheism, everything shares the same spiritual essence, rather than having distinct spirits or souls.

Some postmodern anthropologists theorise that all societies continue to “animate” the world around them, characterised by humanity’s “professional subcultures”, as in the ability to treat the world as a detached entity within a delimited sphere of activity. Human beings continue to create personal relationships with elements of the aforementioned objective world, such as pets, cars, or teddy-bears, which are recognised as subjects.

In a review of Graham Harvey’s “Animism: Respecting the Living World” (2006), Wright (2010) outlines the key features of the “new animism” Harvey espouses:

The ‘New Animism’ elaborated by Harvey and others proposes that humans participate in a subjective ‘pan-spiritism’ that involves all living and even—to the Western mind—non-living beings such as stones and the deceased. Furthermore, there is a kind of meta-communication that is possible among beings of different species. This meta-communication consists of different powers of subjectivity and mentality possessed by all species and even spirits of the dead. These powers make possible communication by humans with natural entities independent of human culture. This universal ‘pan-spiritism’ is as natural as the distinct bodily forms of the different species that share in it. Thus, ‘nature’ consists of different bodily forms, but ‘spirit’ (anima) is universal and homogeneous. All beings share in it, despite the differences in bodily forms; and no natural being is excluded from it, that is, no
natural being is excluded from participation in the cultural domain with human beings. Spirit is the common denominator of all natural beings.

The new view of animism emerged from Irving Hallowell’s (1960) ethnography of the Ojibwa, in which personhood concepts and ecological perception have become two fruitful areas to reevaluate theories of animist practices and beliefs. The Ojibwa sense of personhood, which they attribute to some natural entities, animals, winds, stones, etc. takes the axiomatic split between "human" and "nonhuman" as essential. The Ojibwa conceives of "person" as an overarching category within which “human person” “animal person”, “wind person” etc., are subcategories. Echoing Evans- Pritchard’s account of Azande magic (1937), Hallowell argues that experience itself does not rule out Ojibwa animistic ideas. On the contrary, experience is consistent with their reading of things, given an animistic viewpoint. This reinforces the view that animism is a functional form of "symbiosis" between culture and nature, in which relationship, rather than individual identity becomes key to the success and survival of a people.

Cultural ecologist and philosopher David Abram (1996) promotes an ethical and ecological understanding of animism grounded in the phenomenology of sensory experience. In the absence of intervening technologies, he suggests, sensory experience is inherently animistic in that it discloses a material field that is animate and self-organising from the beginning. He suggests that such a relational ontology is in close accord with our spontaneous perceptual experience; it would draw us back to our senses and to the primacy of the sensuous terrain, enjoining a more respectful and ethical relation to the more-than-human community of animals, plants, soils, mountains, waters, and weather-patterns that materially sustains us.

Nurit Bird-David explains that animism is a "relational epistemology" rather than a failure of primitive reasoning. That is, self-identity among animists is based on their relationships with others, rather than any distinctive features of the "self". Instead of focusing on the essentialised, modernist self (the "individual"), persons are viewed as bundles of social relationships ("dividuals"), some of which include "superpersons" (i.e. non-humans).

In her critically oriented comparison of the Melanesian and the Euro-American "person", Strathern (1988) argues that the irreducibility of the individual is a peculiarly modernist notion. It is not everywhere that the individual is regarded as "a single entity", "bounded and integrated, and set contrasting against other such wholes and against a natural and social backgrounds". The Melanesian "person" is a composite of relationships, a microcosm homologous to society at large. This person objectifies relationships and makes them known. She calls it a "dividual", in contrast with the (Euro-American) "individual".

Bird-David’s work centres on the Nyaka of the Karnataka hills in India. These are a group who claim ancestry as slaves taken to India, who cannot recall their exact origins, and who immediately escaped and ran to the mountains, where they have since lived, regarded by surrounding people as siddi or "wise-ones", who have an animistic belief in spirits dwelling in the mountain tops. She notes that their sense of personhood stems from relationships rather than individual identity:

Transcending idiosyncratic, processual, and multiple flows of meanings, the Nayaka sense of the person appears generally to engage not the modernist subject / object split or the objectivist concern with substances but the above-mentioned sense of kinship. The person is sensed as "one whom we share with". It is sensed as a relative and is normally objectified as kin, using a kinship term. Their composite personhood is constitutive of sharing relationships not only with fellow Nayaka but with members of other species in the vicinity. They make their personhood by producing and reproducing sharing relationships with surrounding beings, humans and
others. They retain immediate engagement with the natural environment and hold devaru performances even when they make a living by different means such as casual labor. These relationships constitute the particular beings as devaru.

To summarize this point of the argument, the devaru objectify sharing relationships between Nayaka and other beings. A hill devaru, say, objectifies Nayaka relationships with the hill; it makes known the relationships between Nayaka and that hill. Nayaka maintain social relationships with other beings not because, as Tyler holds, they a priori consider them persons. As and when and because they engage in and maintain relationships with other beings, they constitute them as kinds of person: they make them "relatives" by sharing with them and thus make them persons. They do not regard them as persons and subsequently some of them as relatives, as Durkheim maintains. In one basic sense of this complex notion, devaru are relatives in the literal sense of being "that or whom one interrelates with" (not in the reduced modern English sense of humans connected with others by blood or affinity). They are superrelatives who both need and can help Nayaka in extraordinary ways.

“Wherever there are Nayaka, there are also devaru, for Nayaka want to have them and always find them”. (Karriyen)

The devaru are objectifications of these relationships and make them known. In another sense devaru are a constitutive part of Nayaka’s environment, born of the "affordances" of events in-the-world. Nayaka’s “attention” ecologically perceives mutually responsive changes in things in-the-world and at the same time in themselves. These relatednesses are devaru in-the-world, met by Nayaka as they act in, rather than think about, the world. Lastly, I argue that devaru performances — in which performers in trance “bring to life” devaru characters, with whom the participants socialize (talking, joking, arguing, singing, sharing or just demand-sharing, and asking for advice and help) — are social experiences which are nested within (not dichotomized from) social-economic practice. These performances are pivotal in both “educating the attention” to devaru in-the-world (Gibson 1979) and reproducing devaru as individual persons.

The third part of her paper argues that hunter-gatherer animism constitutes a relational (not a failed) epistemology. This epistemology is about knowing the world by focusing primarily on relatednesses, from a related point of view, within the shifting horizons of the related viewer. The knowing grows from and is the knower’s skills of maintaining relatedness with the known. This epistemology is regarded by Nayaka (and probably other indigenous peoples we call hunter-gatherers) as authoritative against other ways of knowing the world.

Shipibo: Split Creations and World Trees

An insight into the complex dynamic animistic cosmologies of the lowland Amazonian peoples can be gleaned from Peter Roe’s (1982) “The Cosmic Zygote: Cosmology in the Amazon Basin”. These are highly evolved cosmologies of the pre-Colombian era that are characterised by their extremes of creation and destruction, light and dark. They are not the simple hospitable symbiosis we shall see in the Pygmies of the Congo Basin. Because of the disruptive influences of colonial missionary activities, even in this relatively remote region since the arrival of Columbus, the original cosmology of the Shipibo has become fractured and is only revealed in scattered myths, so has had to be reconstructed by Roe from the broader sweep of beliefs of the surrounding lowland people as a whole.
Fig 100: The giant lupuna tree, now under threat of extinction due to deforestation and the lowland Amazonian cosmology of the cosmic zygote and world tree. Lower right: Permutations of the World Tree as Key Symbol: (a) Dragon Tree, (b) Fish woman, (c) Phallic World Tree with Woman Shaman Guardian, (d) First Woman and the Ambulatory Phallus, (e) Botanical Tree with the Dragon (Frog Variant) on the Inside, and (f) Woman Tree, Alias the Wooden Bride.

The cosmology has at its heart the World Tree which supports the sky, whose roots are deep in the underworld and its role is repeated at the cardinal points by other world pillars: “At the cardinal and inter-cardinal points of the universe, there are world mountains that are believed to be gigantic petrified trees”. The world tree is a motif present in diverse religions and mythologies, from Indo-European, through Siberian, to Native American, represented as a colossal tree which supports the heavens, connecting the heavens, the terrestrial world, and, through its roots, the underworld. It may also be strongly connected to the motif of the tree of life, but it is the source of wisdom of the ages. Specific world trees include őgig erő fa in Hungarian mythology, Ağaç Ana in Turkic mythology, Andndayin Ca’r in Armenian mythology, Modun in Mongol mythology, Yggdrasil in Norse mythology, Irminsul in Germanic mythology, the oak in Slavic, Finnish and Baltic, Iroko in Yoruba religion, Jianmu in Chinese mythology, and in Hindu mythology the Ashvattha (a Ficus religiosa).

South American cosmologies are dynamic in time, not static. The worlds depicted are members of only one cyclic variation, the current one. These worlds are the successors of previous imperfect worlds, destroyed long ago by flood or fire, just as in the Andean and Mexican systems. They were populated by doomed creatures and imperfect protohumans who were turned to stone. The base of these oscillations is a dyadic succession of a terrestrial flood ending the world followed by the extinction of life on the second world by celestial fire. In turn, the current world will also end in a way that repeats the initial emergence of mankind, devoured by monsters, by having the huge demons become houses to swallow their human inhabitants. This primal cosmic periodicity is linked to the yearly periodicity of the wet season-dry season. That, in turn, is linked to the monthly periodicity of women’s physiological cycle: menstruation-receptivity. Last, all these levels are represented in the daily periodicity of the night-day cycle.

The symmetry of the worlds above and below the earth also complements other kinds of symmetries. For example, the souls or spirits of the dead are found both in the underworld(s) and in the sky world; or there may be two realms of darkness, one in the lowest underworld and one, paradoxically, in the highest heaven where the sun lives. Summarising this symmetry is the prevailing symmetry of good and evil. However many superimposed worlds there may be, good is always associated with the upper levels and increases as one goes higher, whereas evil is always linked with the lower realms and increases as one goes downward. In keeping with the dualism of Shipibo cosmology, there
are two shamans, one specialising in good and the other in evil. Each are responsible for the contrasting worlds of golden yellow celestial sun, birds, and curing, and the black night of raw poisons, stinging insects, snakes and thorns, devouring anacondas, disease, and cold waters.

This relationship between good and evil differs from Monotheism where a moral regime stipulates a battle of good against evil as the ultimate enemy subject to dire punishments by God in the life hereafter. Here it is the good and bad, or light and dark aspects of reality as a whole, just as nature is a dynamic between symbiotic paradise and the tooth and claw of predation and disease, in the endless round of decomposition and regeneration.

By a complicated train of associations, the World Tree is usually associated with the devouring Dragon and its minor form, the frog, and then, via the powerful poisons certain species of tree frog possess, with fish poison. It is a tall, beautiful tree, 25 to 50 meters in height. Its crown is spreading and umbrella-like and forms its most characteristic feature. The tree occurs on the lower Rio Santiago and Huallaga, and on the Middle Ucayali... Its sap is said to be very poisonous.

![Shipibo textiles and ayahuasca shamans. Shipibo culture has become a popular psychedelic tourism destination.](image)

The effects of the drug ayahuasca or *nishi* are accompanied by nausea and often vomiting after the first infusion of the pungent mud-coloured brew. Then a series of phosphors fill the peripheries of one’s vision, floating in the blackness of the night. They are followed by a brilliant kaleidoscope of shifting, multi-colored geometric patterns that succeed themselves in a bewildering array, filing one’s field of vision. Then, as the vision deepens, animal figures appear, large felines and large snakes taking pride of place. They can menace the novice celebrant, but the experienced shaman knows them well. At the same time there is a feeling of the dissolution of one's body, or of flying. It is at this stage that the shaman ascends to heaven escorted by flocks of radiant birds. If the good shaman uses *nishi* to cure his patients, the bad shaman uses *toé* prepared from a species of Datura to bewitch them. Whereas the good shaman consumes a “cooked,” and therefore cultured, hallucinogen, the evil shaman drinks a “raw” and bewitchingly natural *toé* brew.

The soul of the lupuna tree is an evil demon or *joshin*, which appears to the Indian narcotised by ayahuasca as an evil wizard smoking an enormous pipe. The sap of the tree forms the mysterious poison which the wizard secretly sends against those whom he wants to harm. Every particular tree and plant has its indwelling spirit, which forms the principle of its life and growth. When a tree is felled, this is regarded as an offence against its spirit. Every tree has what the Indians call its “mother” (and which he equates with “soul”).

In the centre of the human world stands the maloca (“communal house”). Its central post is an axis mundi. Perhaps the best model for the human geography of the surface of the world-platter would be a series of concentric rings, beginning with that central house pillar; moving out to the walls of the hut itself; and then beyond, to the cleared plaza, a testament to the power of collective human labor to keep the ever-encroaching jungle at bay; then to the house garden and its familiar useful plants; and finally to the bordering lake, river, or stream, where the spirits begin; or in the opposite direction, toward the interior of the dark tropical forest where other spirits dwell.

Because the maloca is a central place, it is associated with the central part of the female body the belly. This anticipated my finding that the World Tree, which sits in the very centre of this central place, has a trunk (belly) pregnant with fish, just as the first mythical Fish Woman has. Thus the house pillar of the maloca is simultaneously a symbol of the World Tree out of which it is metaphorically carved. The Makiritare, for example, liken the central house
post to the connection between heaven and earth, a centre that is filled with water.

Fig 102 “The Spirits or Mothers of the Plants” (Luna & Amaringo 1991). A Shipibo ayahuasca session (lower left) in which the visions include the spirits of the plants and trees perceived as persons, snakes, and a group of bushes whose spirits are women in a conversation, forest animals and spiritual sages.

The House Pillar Tree is also a phallic entity via its masculine-associated long dance staff. This stick-rattle, like the World Tree it represents connects the three levels of the universe; yet it is solid not hollow. All of its attributes are masculine in contrast to the feminine, hollow attributes of the World Tree. The top of the staff is decorated with feathers of a male-associated bird, the hummingbird. It is related to the jaguar, in his yellow guise a quintessentially masculine animal, and to the sun, the masculine symbol par excellence. When the dance staff is plunged into the feminine earth, it becomes like a digging stick in its metaphorical restatement of the fertilising sexual act. Drops of semen flow down the stick to fertilise the earth. Later, up the stick crawl the result of fertilisation: human progeny. They come from the watery depths and flow upward just like the souls of the dead, which rise up the World Tree through its roots, which penetrate the underworld by a kind of capillary action.

In short, the maloca itself is a microcosm of sex that replicates the macrocosmic egg of which it is a part. Its central armature, the House Pillar Tree = Phallic Staff, copulates with the round shell of the roof that encloses it. Thus it is the beginning of life, the central shaft hard and solid, whereas the leafy exterior wall is soft and hollow. But at the end of life the central pillar turns into a hollow trunk. It rots, and water is found in its soft interior at the same time that, paradoxically, its solid branches above give new life through their dangling fruits. The Tukano symbolize this essentially ambiguous figure by seeing in their drug-induced hallucinations the house pillars covered with undulating snakes.

The World Tree as House Pillar Tree also has ties with that other connecting symbol, the mountain. Mountains are hollow like the World Tree; they have caves that communicate with the lower aqueous realms. The Kogi make this transitive association when they refer to a hut as a cave, and a cave as a womb. The Warao synthesize these two metaphors-hollow wooden tree and hollow stone mountain-when they refer to the gigantic central petrified wood tree trunk that helps hold up the world and that descends to the underworld. By its side there is an entrance to a cave that leads into the mountain. The rapidly opening and shutting doors of the cave stand for the devouring vagina-jaws of the dangerous subterranean serpent that lives within the mountain and swallows the unlucky souls of those who fail to clear the gate, reducing them to bones. This establishes a mountain = serpent equation congruent with both the World Tree = serpent association and the World Tree - mountain linkage.

The trunk of the World Tree emerges from the underworld and passes through the earth of living men. Its leafy crown pushes into the firmament, just as the forest giants of the triple-tiered tropical forest shoulder their way up through the highest canopy into the sun. There, in the celestial realm, as the Shipibo version has it, the branches of the World Tree are associated with fruits and birds. In addition to having all the alimentary plants such as plantains hanging from its branches, the food tree is also festooned with the hides of all animals and people who wait anxiously below for their coverings so they can assume their respective natures. Thus the Food Tree gives all life: vegetable, animal, and human. It is not only the source of provisions and living beings; it is also the source of the technological means to those provisions. In the Shipibo myth this great tree plays a central role in creation as it mediates the forest giant, Niwëru that grew at the sacred site of Cumancayacocha. It is identified by them as being the location of the first Shipibo village. Again we see that the origin of the group is linked with the central place or origin of the universe.
When the sun first emerged, its rays hit the branches of the tree hanging heavy with fruit. The fruit dropped into the lake like rain. Fish, attracted to the surface by the sound of their splashing impact, began to eat the bobbing fruit. As the fish took bites out of them there emerged all the species of birds there are in the world. The leaves of the tree were later used by a woman shaman to prepare flight medicine that levitated the entire site off the ground and sent it flying off through the air to the accompaniment of drums and flutes until it eventually descended to earth again on a mountain downriver at Canshahuaya.

From bottom to top, the World Tree is a symbolic continuum incorporating both male and female aspects, life and death, in a single concrete object. The roots themselves are filth, strings of mucus, ridden with vermin, which penetrate beneath the earth and enter the pathogenic waters of the subaquatic underworld, it is interesting that there is a further connection between the World Tree and the Milky Way, which has equally pathogenic aspects, although it is a celestial phenomenon. The Mocovi and the Bororo believe the Milky Way to be the ashes of the Tree of the World after it had been burned down. If the worlds reverse themselves at nightfall, then so too do the parts of the World Tree; its branches become its roots, and its roots, branches. The verminous roots, therefore, now spread as branches against the dark orb of the night sky and there connect with the flowing river of sickness, the Milky Way, which is itself the leaking product of the World Tree’s upended trunk. The right side of the enormous petrified tree is covered with leaves while the left side is covered with the thorns so prevalent on Amazonian vegetation. This vertical division corresponds with the general lowland associations of left = negative and right = positive, which are then related to female and male, respectively.

Fig 103: Amazonian Minga movement protest at Cop26 November 2021.

The forest is a conscious ecosystem from which
they are ontologically inseparable ...
A ritual ecology is in place, one in which man’s ritual
must conform to the relationship between
the species to maintain an ideal balance between
the beings that inhabit and constitute the forest. (Wastian 2016)

Meso-American Animism and the Huichol

The contrast between the dark side of the night and the light side of the day, also has parallels with the Meso-American tonal and the nagual. In Nahuatl the word tonalli is used to refer both to a day and to the animal associated with that day. Where the tonal is the day spirit itself, the nagual is the witching familiar spirit of the day – the nighttime aspect of the tonalli. In rural Mexico, nagual is sometimes synonymous with brujo (“wizard”) – one who is able to shapeshift into an animal at night. The nagual trait is acquired at birth, along with other characteristics associated with a person’s birth day. Nagualism is linked with pre-Columbian shamanistic practices through Pre-classic Olmec depictions, interpreted as human beings transforming themselves into animals. In Aztec mythology the god Tezcatlipoca was the protector of nagualism, because his tonal was the jaguar and he governed the distribution of wealth. In some indigenous communities the nagual is integrated into the religious hierarchy. The community knows who is a nagual, tolerating, fearing and respecting them. Nagualis are hired to remove curses cast by other nagualis. Carlos Castaneda (1968) defined the nagual as, "the teacher who becomes the gateway, the doorway, the intermediate between the world of the 'seeker' or apprentice, and the world of the spirit."

The Huichol or Wixárika living in the Sierra Madre Occidental range of Mexico traditionally use peyote (hikuri) cactus in religious rituals which accurately reflect pre-Columbian practices. These involve singing, weeping, and contact with ancestor spirits. They travel long distances by foot over 600 km in all from their homeland to Wirikuta the high desert with a mountain above beside the old silver mining town of El Catorce Real, where they go each year to collect peyote (Meyerhoff 1974, Furst 1972 136). The journey involves many ritual steps and many days of journey involving hardship. The confessing of marital infidelities is done without recrimination. The Huichol are polygamous and traditionally accept such revelations with a light heart. A knot is placed in a string for each occasion and then burned.

One of the greatest Mara’kame discussed in the entheogens chapter was don Jose Matsuwa who at 1990 was the venerable age of 109.

"Might the sacred country be a kind of “Great Mother”? If so we would have at least one explanation for the emphasis on ridding oneself of all adult sexual experience before embarking on the journey, lest the whole enterprise come to naught and the offender go
and prepare himself. The world repopulated quickly; Watakame was given a wife, but he found that his offspring had no one. Huichol Watakame was saved, being warned by Nakawe Great Grandmother Growth that he should gather seeds, build a canoe and prepare himself. The world repopulated quickly after Watakame was given a wife, but he found that his offspring had no one.

They cross steppes, including the "Cloud Gate" and "Where the Clouds Open". Crossing the 'dangerous passage' the gateway of the clouds they are blindfolded. "From there one travels to the place called Vagino .. and from there directly to Tatei Matiniieri - Where Our Mother Dwells." (Furst 162). They pass by the sacred springs of Tatei Matiniieri ("Where Our Mother Lives"), the house of the eastern rain goddess. Also notable is the place where the penis hangs.

This pilgrimage takes place annually as a desire to return to where life originated and heal oneself, assuming the roles of gods along the trail. Upon arrival in the high desert of Wirikuta, the hunt begins and the first cactus is found. With rising excitement the mara’akame- spiritual leader rushes ahead and fires arrows to enclose the first peyote on all quarters and exclaims 'how sacred, how beautiful, the five-pointed deer!'. He then cuts the hikuri leaving some root to regrow new crowns and it is shared among everyone. Then they harvest enough peyote for the year (since they only make the trip one time every year). After the work is done, they eat enough peyote and have visions to be able to speak to the gods and ensure the regeneration of the souls of the people. The return to Wirikuta the sacred mountain is seen as a return to paradise.

"One day it will be all as you have seen it there in Wirikuta. The first people will come back. The fields will be pure and crystalline. The world will end and it will all be pure again."

"The Peyote Hunt represents a historical and mystical return to the original Huichol homeland and way of life, and a symbolic recreation of "original times" before the present separation occurred between man, gods, plants, and animals; between life and death, between the natural and supernatural; and between the sexes. On the Peyote Hunt, men become gods and at the most dramatic moment of the event, when the first peyote is "slain" and eaten, the important social distinctions of age, sex, ritual status, regional differences and family affiliations, are eliminated. A state of unity and continuity, which epitomizes the Huichol view of "the good," is reached and this continuity is between man, nature, society, and the super-natural. The "retrieval" of this unity is seen as perhaps the most important function of the ceremony, and of the entire symbol complex" (Meyerhoff 1970).

The Nierika is the cosmic portal through which those observing the rituals and taking peyote can enter the spirit world:

Back in the first times after the sun [Tayaupa] had a dream of a new world he sent Kauyumari to find it. The Little Deer Spirit was informed by the sun where a great swirling tunnel of light existed, through which he was to pass. This is the nerika. He was led by Tatewari, Great Grandfather Fire, and quite a number of uricate. They travelled through the portal arriving in the world in which we now live. They created everything. So beautiful was the new world that even the sun travelled through to take his place in the sky. Because Kauyumari became too enamoured of the Huichol girls and disrupted the sacred rituals dedicated to the sun with jealousies, resulting in suffering and prompting the sun to free them from their misery, he caused rains to come and flood the entire world. Only one Huichol Watakame was saved, being warned by Nakawe Great Grandmother Growth that he should gather seeds, build a canoe and prepare himself. The world repopulated quickly after Watakame was given a wife, but he found that his offspring had no
In their rituals they interact with the primal ancestor spirits of fire, deer, and other elements of the natural world. Their principal deities are the trinity of Corn, Blue Deer and Peyote, and the Eagle, all descended from the Sun God, "Tao Jreeku". They believe that two opposed cosmic forces exist in the world: an igneous one represented by Tayaupa, "Our Father the Sun, and an aquatic one, represented by Nacawe, the Rain Goddess". "The eagle-stars, our Father’s luminous creatures, hurl themselves into the lagoons and ... Nacawe’s water serpents ... rise into the skies to shape the clouds". In their creation, the Sun made earthly beings with his saliva, which appeared as red foam on the surface of the ocean’s waves. "New things are born from "hearts” or essences, which the Huichol see in the red sea foam that flowed from Our Father the Sun ... . The Sun itself has a “heart” that is its forerunner. It adopts the shape of a bird, the tau kukai. The bird came out of the underworld and placed a cross on the ocean. Father Sun was born, climbed up the cross, in this way killing the world’s darkness with his blows".

The Huichol shamans say we are perdido, lost. They say we are bringing doom and destruction to Yurianaka, Mother Earth, and that Taupa, Father Sun, is coming closer to the earth to purify it. They are concerned for the future and for the life of their children. They are holding great ceremonies calling in shamans from many areas to try and “hold up the sun.” But they know they cannot do it themselves, for they are not the ones soiling the collective nest. We are. We are the ones who have to wake up, who have to find our lives.

For the Huichols, this is the purpose of their sacred pilgrimage to the holy land of Wiricuta — to find their lives. This is what all their ceremonies involving the ritual use of the peyote help them to accomplish. For shamanic peoples such as the Huichols, the purpose in changing channels is not for escapism, to get lost in imaginary hallucinations that have no basis in reality. Their purpose is to get a more accurate reading of the nature of reality. They seek entrance through the nierika into the numinous universe underlying the limited, material world of the sensory— the “mysterious, ubiquitous, concentrated form of non-material energy... loose about the world and contained in a more or less condensed degree by all objects” (Bob Calahan in his introduction to Jaimie de Angulo’s Coyote Man and Old Doctor Loon).

Why? To obtain information, healing, and power, which they can use here on this plane of existence to better their lives and the lives of their people. Entering into the depths of the mystery is not something to take lightly, for the mystery is all about power and power can manifest itself in many ways. Out of respect, the Wisdom Elders observe, listen, and commune with this power in all its manifestations. From this base of phenomenological data of mind in nature, nature in mind, they came to learn the order and structure of life’s connectedness and that all things are dependent upon each other and thus related. Recognizing this, the norm of reciprocity in all interactions is raised to the status of sacred. Balanced reciprocity with all of creation is observed at all costs, for without this practice, the fragile web of life is irreversibly damaged, a fate that faces us today.

The Kami of Japanese Shinto

Shinto is polytheistic and revolves around the kami, supernatural entities believed to inhabit all things. The link between the kami and the natural world has led to Shinto being considered animistic.

Although historians debate at what point it is suitable to refer to Shinto as a distinct religion, kami veneration has been traced back to Japan’s Yayoi period (300 BC to AD 300). Buddhism entered Japan at the end of the Kofun period (AD 300 to 538) and spread rapidly. Religious syncretisation made kami worship and Buddhism functionally inseparable, a process called shinbutsu-shūgō. The Kami came to be viewed as part of Buddhist cosmology and were increasingly depicted anthropomorphically. In Japan, it has long been considered acceptable to practice different religious traditions simultaneously. Japanese religion is therefore highly pluralistic. The earliest written tradition regarding kami worship was recorded in the 8th-century Kojiki and Nihon Shoki.

Kami (Japanese: 神, [ka⁴ mi]) (often taken to mean “gods”, though the concept is more involved than that) are the spirits, phenomena or “holy powers” that are venerated in the religion of Shinto. They can be elements of the landscape, forces of nature, as well as beings and the qualities that these beings express; they can also be the spirits of venerated dead people. Many kami are considered the ancient ancestors of entire clans (some ancestors became kami upon their death if they were able to embody the values and virtues of kami in life). Traditionally, great or sensational leaders like the Emperor could be or became kami.

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*perdido – lost, done for, ruined, defeated or about to be killed etc. Cambridge Dictionary*
In Shinto, kami are not separate from nature, but are of nature, possessing positive and negative, and good and evil characteristics. They are manifestations of musubi (結び), the interconnecting energy of the universe, and are considered exemplary of what humanity should strive towards. Kami are believed to be "hidden" from this world, and inhabit a complementary existence that mirrors our own: shinkai (神界, "the world of the kami"). To be in harmony with the awe-inspiring aspects of nature is to be conscious of kannagara no michi (随神の道 or 慎神の道, "the way of the kami").

When Amaterasu the sun goddess sent her grandson to earth to rule, she gave him five rice grains, which had been grown in the fields of heaven (Takamagahara). This rice made it possible for him to transform the "wilderness". The kami are not necessarily considered omnipotent or omniscient and can have flawed personalities and are capable of ignoble acts. In the myths of Amaterasu, she could see the events of the human world, but had to use divination rituals to see the future.

There are considered to be three main variations of kami: Amatsukami (天津神, the heavenly deities), Kunitsukami (国津神, the gods of the earthly realm), and ya-o-yorozu no kami (八百万の神, countless kami). ("八百万" literally means eight million, but idiomatically it expresses "uncountably many" and "all-around"—like many East Asian cultures, the Japanese often use the number 8, representing the cardinal and ordinal directions, to symbolize ubiquity.)

The word from Western philosophy that deals with the same concept is numinous, which has been variously taken to mean both a subjective sense of spiritual awe and any entity that evokes that sense, indicating or suggesting the presence of a divinity.

Likewise, according to the Ainu of Hokkaido, spirits reside in all natural objects. Ainu regarded natural phenomena that are useful to human beings, including flora and fauna, as well as daily life necessities such as fire, water, living implements and forces beyond human control like the weather, as kamuy, and paid homage to them. Some kamuy are thought to cause diseases, earthquakes, thunder and other natural phenomena. In addition to these naturally occurring kamuy, man-made implements—boats, hearth hooks, mortar and mallets— are also believed to be kamuy. Some kamuy protect humans, so that they can live in safety. Others, such as fire, offer assistance beyond human ability and listen to humans’ appeals and wishes that have to be conveyed to other kamuy. The fish owl is viewed as a kamuy whose role is to watch villages, and it is highly considered by the Ainu people. Some kamuy of plants have the power to keep evil spirits away. The term is equivalent to kami in Shinto.
Maori Maatauranga

Fig 107: Left: Papa and Rangi were locked in tight embrace. Centre: Tane Mahuta the Kauri world tree of Aotearoa — a tall Kauri - Agathis australis, up to 2000 years old. Right: Tumakoha, the Arawa Tohunga – priest, mystic, bard and genealogist, was the highest tohunga of the old religion in the Arawa tribe surviving in modern times.

Thanks-giving to Tane – Guardian of the World Tree

At the beginning of time stood Te Kore,
the nothingness - Io.
Then there was Te Po the Great Night,
the Long Night the intensely Dark Night,
the Gloom-laden Night the Night to be Felt, the Night Unseen.

Then Rangi the sky, dwelt with Papa tu a nuku the Earth,
and was joined with her, and land was made.
But their numerous offspring lived in darkness,
for their parents were not yet parted,
the sky lay upon the earth and no light came between them,
and the land was unfruitful, and the sea was all dark water.

The war god Tu matauenga said “let us kill them”,
but Tane mahuta, god and father of the forests
and all things that inhabit them answered
"No, not so. It is better to rend them apart,
and to let the Sky stand far above us
and the Earth lie below here.

Let the Sky become a stranger to us,
but let the Earth remain close to us as our nursing mother."

Over vast time, the Kauri pushed them apart.
With heavy groans and shrieks of pain,
the parents of the sons cried out
"Why did you do this crime,
why did you slay your parents' love?

For this section, I have chosen three short quotations to avoid misinterpreting the cultural translation. Maori history differs from many other ethnic cultures in that they have, despite colonial oppression, held their own. When Kawiti and Hone Heke in 1845 cut down the flagpole of British authority, reducing Kororareka the original colonial capital to smoking ruins. They later retreated into the forest where they perfected developing the art of trench warfare, 70 years before the First World War, holding the forces of the British Empire at Bay in a stalemate. The debate about the Maori world view Maatauranga and its relationship with the scientific world view continues to be hotly debated in 2021-2 (In defence of Science NZ Listener 2021 Jul 31 4, Aug 7 4, 18, 14 4-5, 28 6-7, 31 4-5, Sep 4 5-7, Dec 18 5, 2022 Jan 8 4, Mar 22 7, Apr 2 5), in the light of a decision resulting in both gaining a comparative status in the education system, attesting to the fact that in at least some parts of the world, the animistic view of life and nature can stand alongside physical materialism. The Maori party has recently petitioned that New Zealand be officially named Aotearoa – the land of the long white cloud – although this is already recognised as the country’s name in our dual
language system, although it is actually the Maori name for the North Island, attesting to the resurgence of a more long-lasting vision of cultural history than Western commercial materialism can lay claim to.

Fig 108: Hōne Heke with Te Ruki Kawiti and Hāriata Rongo (Alexander Turnbull Library, C-012-019)

Paul Moon (2013), commenting on criticism of Marama Muru-Lanning’s research on the Waikato river – He piko, he taniwaha – as being unscientifically spiritual, notes the central place of animism in the Maori world view:

Animism is the belief that natural things and phenomena have a life force of their own. Māori would call this life force mauri. The pre-European Māori spiritual way of being was exactly, a belief that everything had a life force. Given that, our tipuna (ancestors) practised animism every day of their lives. Christianity has not caused that belief to disappear among us; instead the two co-exist.

Fig 109: Taniwha – a Maori supernatural serpent. In the prehistoric age of early human occupation, nomadic Maori hunters created New Zealand’s earliest surviving artworks in caves and shelters as long ago as the fifteenth century or earlier. Then all of a sudden between 700 and 400 years ago, most of the east coast forests were destroyed in a series of huge, man made fires. The exact reason is heavily debated and will never be known. What is known is that the fires resulted in a razing of the habitat of many of the birds. A number of species including all the Moas became extinct. The areas formerly favoured for hunting and where many of the rock shelters occur, became barren and inhospitable (Narbey 2013).

Maori today are fully scientific about the preservation of their rivers, although treating them as living agents and have recently brought a class action suit against the NZ Government for allowing the farming sector to pollute them indiscriminately:

Anne Salmond (1985) outlines Maori epistemology and the way Maori cosmology leads to an ongoing concept of knowledgable destiny in the pursuit of survival:

Maatauranga, or reliable knowledge, is a term in Maori almost synonymous with moohiotanga, knowledge acquired by familiarity and the exercise of intelligence. A particular form of maatauranga is waananga, ancestral knowledge which enabled its possessor to communicate directly with the ancestor-gods and to activate their power. In this conception of the universe, men and women existed at a threshold or pae between sky and earth, life and death, light and dark, and exerted themselves to influence destiny. Just
as Tane, the ancestor of humanity, forced earth and sky apart to create a world of light, growth, and life, so people worked through ritual to focus ancestral and essential power (mana atua), and to harness it for their survival: At moments when this power entered the phenomenal world it was said, “Te ihi, te wehi me te wana!” (essential force, fearful force, awesome power!). Wild and extraordinary phenomena were attributed to the interventions of such power, and so were termed ‘atua’; (god, supernatural being: anything strange and extraordinary). Tohu or omens, on the other hand, were predictive indicators of the workings of the phenomenal world, and tohunga (priests or knowledgeable experts) were the skilled interpreters of such signs. Waananga, or knowledge for activating ancestral power, included cosmological and ancestral histories—both expressed in a genealogical language of description since all matter proceeded from a common source; ritual practices; and karakia or formulae of power. This sort of knowledge was regarded as a family treasure (taonga).

James Cowan (1930), although an earlier colonial interpreter of Maori customs, spoke fluent Maori and has given an insightful historical view of Maori animism that carries with it the freshness of a first hand verbal account:

The Maori-Polynesian religion, broadly stated, consisted in a reverence for the personified powers of nature, and a worship or propitiation of the spirits of ancestors. A belief in the animation of all nature pervaded and influenced the whole life of the Maori, and equally strong was his faith in the divinity of his great Ariki forefathers, ancestors who had long passed to the Reinga-land, yet whose spirits still held dominion over their descendants and were powerful to bless or ban. The Maori invested the elements and forces of the cosmos with names and human attributes; these and his revered dead stood to him for deities. That universal primitive religion which takes the form of animism is nowhere to be found more copiously embodied in priestly karakia, or ritual, and sacred legend than among the New Zealanders and the islands of Polynesia; and nowhere are ancestral spirits so venerated, their names held so sacred that their repetition is in itself a prayer. So carefully are the genealogies preserved that their recitation forms a large portion of many a karakia; any mistake in the repetition destroys the efficacy of the prayer or formula, and is even fatal to the supplicant.

There is much that is sublime in the ancient cosmogonies. The Maori could conceive of uncountable aeons of Chaos and primeval Darkness (Po), gradually giving place to light until the Ao-māramai the World of Light was evolved. Ages upon ages of Nothing (Kore), as the old tohungas recited, preceded the gradual Dawn of Life and the coming into being of the Heavens and the Earth. Many tribal genealogies go back to the source of all things, to the time when the world was “without form and void.” The idea that seems most strongly to pervade the Maori mind, the conception that colours all his theories as to the origin of everything in nature, is the dual principle, the generative power of male and female, of the active and passive forces. Everything he endowed with sex, even the successive periods of Darkness and of Light, before man was. Light was to him the primal active generating force, operating upon Po, the Darkness, the passive, the receptacle for the mysterious Vivifier.

It was Tane-mahuta who forced his parents apart by standing on his head and thrusting Rangi upwards with his feet. Tane’s limbs were the trees; it was with these forest-pillars that he propped up the leaning sky, so that the Sky-Parent henceforth dwelt on high, dropping down his tears on Papa’s face in the form of rain and dew. “Tears” are a poetic euphemism for the procreating and fecundative powers of the Sky, the Clouds, the Rain, and the Sun. These potent influences Rangi showers upon his spouse the Earth, who in return brings forth abundantly of all plants and trees and foods, and who ever exhales her tokens of love or aroha in the form of mists and soft clouds. These vapours of aroha are night after night wafted on high to her Sky-Husband, her Tane, whose face and breast are so grandly adorned with myriads of stars. Papa (a term interchangeable, as word-students know, with the equally universal “mama”), is the all-nourishing, all begetting one, the great Mater Genetrix.

Beyond and above the personification of natural forces and objects, the Earth, the Ocean, the Wind, the Sun and Moon and Stars, there was the belief in a Great First Cause. This supreme being is Io, a name exceedingly sacred and not to be mentioned lightly. “Io was really the God,” says a Maori. The protection or shelter of Io (“Te Maru a Io”), is an expression in an ancient prayer. In a Ngati-Porou (Takitimu) cosmological recital, written for me by an old chief, Io is coupled with Hā as one of the two high deities. Hā, however, means the breath of life, the vivifying force. Io may be from the original iho, the care, the animating force of all things.

“The was Io-mata-ngaro [Io-the-hidden-face], which name means that he is never seen by man. His third name is Io-mata-aho [Io-seen-in-a-flash], so called because he is never seen except as in a flash of light or lightning. A fourth name is Io-tikitiki-o-rangi [Io-exalted-of-heaven], called so because he dwells in the highest and last of the heavens. A fifth name is Io-nui [Io-the-great-god], because he is greater than all the other gods that are known as dwelling in the heavens or the earth.

Nature-worshipper as the Maori was, everything was personified—the trees, the streams, the rain and dew, the mist and sunshine. He had deep respect for the forest of tall timbers—the “Vast and Holy Woods of Tanē.” In the fags that rose like fleecy wraiths from the rivers and the swamps were the Hau-Maringiringi, the dewy children of Rangi and Papa. These, too, were the divine offspring of the Sky-Father and Earth-Mother: Hau-nui and Tomairangi the dew; Tane-uarangi, the heavy rain; Hau-maroroto, rain in big drops; and the grateful warmth of midsummer days was the Tou-a-Rangi. Besides the great deities, the seven of Rangi and Papa, there were the innumerable lesser deities of the Maori pantheon, a vast company of atua, to whom invocations and propitiatory incantations were addressed; atua of earth and sky, of cultivation and food, of fishing and seafaring, of the forests and waters, and particularly of war. These were in general deified beings of mortal origin. Amongst a people whose great glory was in battle, deities of war held high place. Each tribe had its war-god, and each god had its kaupapa or medium.
However the Amazonian peoples, the Northern Ojibwa, the Maori and the trafficked Nayaka are highly evolved migratory ethnic groups, so it is pertinent when considering the ancient origins of animism to look back to our founding human cultures to see how animism figures in their societies and cultural practices.

**Pygmy Cultures and Animistic Forest Symbiosis**

The Mbuti and Biaka/Aka/Baka pygmies both practice forms of animism giving expression to a deeply symbiotic relationship with the forest in which they live. The Mbuti share significant ancient characteristics with the Bushmen and form the largest single group of pygmy hunters and gatherers in Africa (Sanday 1981:93). Around 2250 BC the Egyptian pharaoh Nefitare referred to the Mbuti as ‘the people of the trees’ renowned for their singing and dancing. These records support the Mbuti remaining stably in this habitat for 4000 years. Because of fission into small isolated groups they have lost their original language and adopt those of neighbouring Bantu tribes, however the Biaka have retained their native language, diaka, as well as speaking the language of their Bantu neighbours. Neither group have formally defined sex roles. Sexual relations are extremely egalitarian and cooperative. Both groups practice net hunting which involves both sexes young and old promoting a non-violent egalitarian culture.

According to Wilhelm Schmidt (1868–1954), an ordained priest and ethnologist interested in the origin of religion, the Pygmy peoples represented humanity in its childhood; they were a living equivalent of one of the earliest stages of human culture. Since early evidence seemed to indicate the existence of monotheistic belief in primitive societies, for years the Pygmies were studied by Catholic missionaries seeking to support the idea that monotheism (rather than animism or fetishism) was the earliest form of religion. The Jesuit missionary anthropologist Paul Schebesta (1887-1967) claimed the Mbuti believed that God, Muungu, a high deity, created the universe (that is, the forest) and all its creatures and forces. God then retired into the sky, ending his participation in earthly affairs. The first human, a culture hero named Tore, became god of the forest; he gave the Mbuti both fire and death and is seen as the source of game, honey, and protection. Likewise the Aka believe in bembe, the creator of all living things, but they believe also that bembe retired soon after creation. Religion in the lives of tropical forest foragers has thus increasingly reflected borrowings from neighboring African groups and from colonial missionary influences.

Colin Turnbull (1965) the major ethnographer of the Mbuti, disagrees with this theistic account of Mbuti cosmology. According to him, there is no creator god; instead, the Mbuti worship God as a living benevolent being personified by the forest. To them, God is the forest.

Tropical forest foragers believe in totemic spirits (sitana) - animals whose spirits and characteristics represent the group’s unity. They also believe in a water animal, called nyama ya mai in Swahili, who is responsible for any serious water accidents. Tropical forest foragers also practice magical rituals called anjo to help control the weather and improve hunting. Turnbull also diverges from Schebesta’s account of the mediating forest spirits, for he views the Mbuti as a practical people who have a direct relationship with the forest as sacred being, so unlike their neighbours they are not centrally concerned with propitiating “magic” as an effect, but for the pygmies, it is not so much the act itself that counts, but the manner in which the act is performed and the thought that goes with it.

![Fig 111: Mbuti (left) and Biaka Pygmies (right) including a man tending Tabernanthe iboga for visionary experience.](image-url)
Their habitat and their heaven is the Ituri Forest. The forest is their godhead, and different individuals address it as ‘father’, ‘mother’, ‘lover’, and/or ‘friend’. They say that the forest is everything: the provider of food, shelter, warmth, clothing, and affection. Each person and animal is endowed with a spiritual power that “derives from a single source of power whose physical manifestation is the forest itself”. Disembodied spirits deriving from this same source are also considered to be independent manifestations of the forest. The forest lives for the Mbuti. It is both natural and supernatural, something that is depended upon, respected, trusted, obeyed, and loved. The forest is a good provider. At all times of the year men and women can gather an abundant supply of mushrooms, roots, berries, nuts, herbs, fruits, and leafy vegetables. The forest also provides animal food.

Decision making is by common consent: Men and women have equal say because hunting and gathering are both important to the economy. The forest is the ultimate authority. It expresses its feelings through storms, falling trees, poor hunting all of which are taken as signs of its displeasure. But often the forest remains silent, and this is when the people must sound out its feelings through discussion. Diversity of opinion may be expressed, but prolonged disagreement is considered to be ‘noise’ and offensive to the forest.

The most important ritual ceremony is the molimo. It is held whenever hunting becomes unproductive or a special problem demands a solution. Explaining to Colin Turnbull the reason for the molimo ceremonies, held when the Mbuti feel that all is not well between themselves and the forest, upon which they depend for everything, an old Mbuti man said: “The forest is a father and mother to us and like a father or mother it gives us everything we need food, clothing, shelter, warmth . . . and affection”. Normally everything goes well because the forest is good to its children, but when things go wrong there must be a reason. Things go wrong, the old man said, at night when the people are asleep, when no one is awake to protect humans from harm. At night army ants may invade the camp or leopards may come in and steal a hunting dog or even a child. The old man said that such things would not happen when people are awake. Thus, he reasoned, ”When something big goes wrong, like illness or bad hunting or death, it must be because the forest is sleeping and not looking after its children.” Because things go wrong when the forest is ‘asleep,’ the forest must be ‘awakened’ so that it looks after the interests of the people. The old man said: “We wake it up by singing to it, and we do this because we want it to awaken happy. Then everything will be well and good again. So when our world is going well then also we sing to the forest because we want to share our happiness.

An old man told Colin Turnbull how all pygmies have different names for their god, but how they all know that it is really the same one:

Just what it is, of course, they don’t know, and that is why the name really does not matter very much. ‘How can we know?’ he asked. ‘We can’t see him, perhaps only when we die will we know and then we can’t tell anyone. So how can we say what he is like or what his name is? But he must be good to give us so many things. He must be of the forest. So when we sing, we sing to the forest.’

The most consistently mentioned divinity or spirit for the Aka is likewise that of dzengi, a forest spirit. Aka male-female relations are extremely egalitarian by cross-cultural standards. Husband and wife are together on a regular basis to net hunt, collect caterpillars, termites, honey, fruit, and sometimes fish. On net hunting days husband and wife are within view of each other about half of the time. Aka fathers do more infant care giving than fathers in any known culture. The Aka are fiercely egalitarian and independent. No individual has the right to coerce or order another individual to perform an activity against his/her will. Even when parents give instructions to their children to collect water or firewood, there are no sanctions if they do not do so.

San Bushmen as Founding Animists

Foundational human cultural influences can be seen in the animistic, spiritual and religious beliefs of our oldest surviving culture of the San Bushmen, a founding human culture, in genetic, evolutionary and archaeological terms, whose historical presence goes back over 100,000 years and whose ancestor, the mitochondrial Eve is literally the “mother of all living” (Fielder & King 2017). Although over the course of the last two millennia, the San may have had contact with other religious influences, their cosmology of animistic trickster heroes and deities have a fresh natural quality, just as engaging as the Sabbatical creation.

Guenther notes that the spirit realm, while preternatural (beyond what is normal or natural) in a number of ways, is also of this world, being located somewhere beyond the hunting ground and accessible, by different pathways, to humans, especially shamans. It may also be situated within the sky, rather than the veld, or somewhere in-between, in lower-sky regions, the spatial-ontological domain within which, preindustrial people tend to locate spirits as gods at eye-level – thereby rendering them ontologically ambiguous “supernatural beings whose ancestry is neither unequivocally human nor divine”.

*Xam story teller/Hanǂkasso’s statement to Lucy Lloyd is as fundamental a postulate about human and animal ontology to San cosmology as is its reverse, Darwinian, counterpart to Western cosmology. Its clearest expression is found in the stories San tell about myth time, the First Order of Existence, whose denizens, for the most part, were therianthropes, that is, animals that “were once people”. As such, these people—the Early Race — contained in their being, their First Order human’ness and elements of their Second Order animal’ness. Humans and animals from both myth and historical time are thus blended ontologically, explaining why, as we will see in the second section, we also find therianthropes, of a mythic, Early Race cast, in the Second Order of Existence.*

These human animal transformations tally closely with the trickster hero /Kaggen or mantis — a human-insect-bird being – “a little green thing” that “looks like a long thin Locust”, at times spreading its feathered wings and fly off, after a scrape or misadventure. Mantis’s sister then berates him for his dereliction of duty. Unlike Mantis’s other sister, Blue Crane, the sister here featured is of indeterminate nature her springbok child suggests that she is, springbok-linked.

Mantis’s nephew, the Little Springbok, has human speech, as, at the beginning of the story, he is engaged in animated prattle with Mantis, in a tone different from the hectoring he always gets from his own grandson, a precocious Ichneumon Lad, whose mother is a Porcupine woman and whose father’s family are Meerkat and Lion People.

*Fig 113: Therianthrope transforming from human to antelope (Guenther).*

For the Bushmen of Lesotho, Mantis or, /Kaggen, the first being, made all things by ordering them to appear. He created the Sun, Moon, Stars, wind, mountains and animals. A quarrel began between /Kaggen and his wife Cotl over a knife she made blunt by using it to sharpen her digging stick. As a result of his anger, she gives birth to an eland calf in the fields. /Kaggen leaves the calf in the bush while he goes away for three
days to obtain arrow poison, his two sons find the calf and kill it for food. /Kaggen accuses his sons of ‘spoiling’ the eland. He instructs his sons to put the blood of the calf in a pot and churn it with a stick. The blood splatters and becomes snakes. They try again, and the blood that is spilled turns into hartebeest. /Kaggen is still not satisfied. He orders his wife to clean out the pot and to bring fresh blood from the paunch of the little eland. To this he adds fat from the heart, and when the blood sputters this time, each drop becomes an eland bull, and all the bulls surround /Kaggen and his sons and menace them with their horns. ‘See how you have spoilt the elands,’ says /Kaggen, and he chases them away. The next time the blood is churned it produces eland cows, in such numbers that the earth is covered with them. ‘Now go and hunt them and try to kill one’, says /Kaggen. ‘That is now your work, for it was you who spoilt them.’ But they fail, and so /Kaggen himself goes out and spears three bulls. Thereafter, with his blessing, his sons are also successful.

Some myths speak of regeneration. The mythical Mantis, in his human person as one of the ‘early race’, finds that his grandson has been killed by baboons, who are playing a ball game with the child’s eye. Mantis joins in the game and, gaining possession of the eye, places it in a pond, where it once more becomes the complete child, the grandson whom the baboons had killed.

Richard Katz (1982) gives a detailed account of the !Kung San trance dance reported first hand during his field work. This provides both numinous consciousness expansion for the practitioner to enter the spirit worlds and is also a process strengthening the community:

For the !Kung, healing seeks to establish health and growth on physical, psychological, social, and spiritual levels: it invokes work on the individual, the group, and the surrounding environment and cosmos. Healing is a fundamental integrating and enhancing force far greater than curing or the application of medicine. The healing tradition supports the culture’s emphasis on sharing and egalitarianism, its belief in the life of the spirit, and its strong community ties.

The central event in the healing tradition is the all-night dance. Four times in a month, on the average, the women sit around the fire, singing and rhythmically clapping as night falls, signalling the start of a healing dance. The men, sometimes joined by the women, dance around the singers; the entire village participates. As the dance intensifies, n/um, or energy, is activated in those who are healers, most of whom are among the dancing men. As n/um intensifies in the healers, they experience an enhanced consciousness called !Kia during which they heal all those at the dance. The dance usually ends before the sun rises the next morning. Those who are at the dance confront the uncertainties and contradictions of their experience, attempting to resolve issues dividing the group, reaffirming the group’s spiritual cohesion. They find it exciting, joyful, and powerful. ‘Being at a dance makes our hearts happy,’ the !Kung say. While experiencing !Kia, one can heal. Those who have learned to !Kia-heal are said to possess n/um.

They are called n/um k’ausi = “masters of nium” or simply “healers.” N/um resides in the pit of the stomach and the base of the spine. As the healer dances, becoming warm and sweating profusely, the n/um heats up. becomes a vapor, and rises up the spine. When it reaches the base of the skull, !Kia results.

Kinachau, an experienced healer, talks about the !Kia experience:

You dance, dance, dance. Then n/um lifts you up in your belly and lifts you in your back, and then you start to shiver. [N/um] makes you tremble, it’s hot. Your eyes are open but you don’t look around; you hold your eyes still and look straight ahead. But when you get into !Kia, you’re looking around because you see everything, because you see what’s troubling everybody… n/um enters every part of your body right to the tip of your feet and even your hair.

N/um is held in awe, considered very powerful and mysterious. It is this same n/um that the healer “puts into” people in attempting to cure them. Once heated up, n/um can both induce !Kia and combat illness. … But it is only as one learns to control or regulate one’s boiling n/um that one can apply it to healing. One then learns to #twé, to “pull” or “pull out sickness.” K’au #Dwa, a powerful healer, describes how one can heal while experiencing !Kia: “When you !Kia, you see the things you must pull out, like the death things god has put into people… you see people properly, just as they are… your vision does not whirl.” !Kia intensifies emotions, be they fear, exhilaration, or seriousness. During !Kia, !Kung healers perform cures, and as part of their effort to heal, may handle and walk on fire, see the insides of peoples’ bodies and scenes at great distances from their camp, or travel to god’s home, activities never attempted in their ordinary state.
Fig 114: Left: A young San couple. Mitochondrial tree of humanity traces its oldest ancestor to an ancestral San female and shows evidence of the separation of San into two groups some 140,000 years ago for some 100,000 years, possibly by a long drought in the Kalahari. Remains from caves in the San area such as Blombos and the Border cave show cultural and spiritual use going back up to 100,000 years, painted stone fleck (73,000 years) representing the oldest human rock art, shell ornaments and scored red ochre possibly for cosmetic use. Right: Fulton cave drawing 1000 BC celebrating the eland rite of menarche, Drakensberg Mountains. The young woman is held in great reverence (Fielder & King 2017). Inset An eland rite with the headman impersonating the eland bull follows the same pattern as in the cave drawing.

≠Toma Zho, a strong experienced healer, speaks of the feeling Ikiam gives, that of becoming more essential, more oneself:

I want to have a dance soon so that I can really become myself again.” A transcendent state of consciousness, Ikiia alters a Kung’s sense of self, time, and space. Another experienced healer says: “When I pick up n/um, it explodes and throws me up in the air and I enter heaven and then fall down.

Ikiia makes others feel they are “opening up” or “bursting open, like a ripe pod.” Through Ikiia, a IKung transcends ordinary life and can contact the realm of the gods and the spirits of dead ancestors. Sickness, incipient in everyone, is a process in which these spirits (the //gauwasi) try to carry people off into their own domain.

In addition to their trickster heroes and first person experience of the numinous in the trance dance, the Bushmen also, possibly influenced by interactions with other cultures, believe in the existence of two gods: a greater god manifesting the creative force and a lesser god invoking the malevolent forces of uncertainty and misfortune, each with a shadowy consort (Johnson et al 2000, van der Post 1986). They have many names, but the IKung Bushmen most commonly call them ≠Gao!na and //Gauwa, while to the /Gwi they are Nlodima and G//awama. The Bushmen do not see these as a good and bad god.

When a missionary inquired into a Bushman’s ideas of good and bad he was told it was ‘good’ to sleep with another man’s wife, but ‘bad’ if he slept with yours. Still lamenting the Bushman’s ignorance of absolute morality, he later asked the man, whom meanwhile he had discovered ‘was in the habit of smoking wild hemp’, what he thought was the most wonderful thing he had seen. The reply he was given, that no one thing was more wonderful than any other and that all the animals were the same.

≠Gao!na, the IKung Great God, using one of his seven divine names, created himself:

“I am Hishe. I am unknown, a stranger. No one can command me. I am a bad thing. I follow my own path.”

Then ≠Gao!na created a Lesser God who lives in the western sky where the sun sets; and after this two wives for himself and for the Lesser God. ≠Gao!na, tallest of the Bushmen, was in his earthly existence a great magician and trickster with supernatural powers, capable of assuming the form of an animal, a stone or anything else he wished, and who changed people into animals and brought
the dead back to life. But as the Great God who lives beside a huge tree in the eastern sky, he is the source and custodian of all things. He created the earth with holes in it where water could collect and water, the sky and rain both the gentle 'female' rain and the fierce 'male' rain thunder and lightning, the sun, moon, stars and wind. He created all the plants that grow on the earth. He created the animals and painted their individual colours and markings, and gave them all names. Then came human beings, and he put life into them; and gave to them all the weapons and implements they now have, and he implanted in them the knowledge of how to take all these things for themselves. Thus their hunting and gathering way of life was ordained from the very beginning and #Gao!na ordained that when they died they should become spirits, //Gerais, who would live in the sky with him and serve him. He set the pattern of life for all things, each in accordance with its own rules.

The !Kung pray to #Gao!na not as a remote being, but as intimately involved with their lives, sometimes calling him father. They pray for rain, for success in hunting, for healing both of physical and social ills. Only a really great medicine man might see #Gao!na face to face, but this is said to be very rare; much more frequently he may appear to anyone in a dream to encourage or advise. He does not reveal himself to ordinary humans, for so great is his power that, were he to come too close, he would destroy them unintentionally. But he nevertheless retains an interest in them. He is in no way concerned with their misdeeds, but is aware of them, and if they offend him he will deal with them appropriately.

But he is not a god of vengeance. When he deals harshly with someone, it is not an act of retribution but a demonstration of his power. This is the power of the unknown, the 'stranger', which explains why lightning strikes one man dead, and not the other standing beside him. The dead man, it is reasoned, must have offended #Gao!na by referring to him by one of his divine names, or perhaps he abused food. But he is not continually on the look-out for offenders. It is only when they happen to come to his attention that he demonstrates his power, and so sometimes people do offensive things and get away with it. Chiefly he acts for the benefit of mankind, for he supplies rain, food, children and poison for the arrows.

//Gauwa, the lesser god, who lives between two great trees in the western sky, also performs deeds that may be either beneficial or harmful to humans, but most are harmful. He is pictured as a very small Bushman, an incompetent who, even when well-intentioned, may bring misfortune by mistake. Although he is supposed to be subservient to #Gao!na and to act at his behest, he also sometimes acts on his own initiative while travelling about in a whirlwind, causing sickness and death to those he touches in passing. The people say that at certain times they catch glimpses of //Gauwa among the shadows of the trees.

In "Nisa" (1981) Marjorie Shostak provides an engaging detailed portrait of a !Kung San woman, her sexual relationships with men and her trials of familial life. What emerges from this account is the life of a spirited woman who throughout struggles to maintain her autonomy of choice over her life in a nominally patriarchal society in which the headmen would like to assert a patriarchal imperative, but in which the society has remained remarkably free of the oppressive influences of civilisation succeeding the agricultural revolution which itself was discovered by female gatherers, thus having remarkable similarities to features of sexual relations Western society is only recently re-engaging. We cannot thus assume that history dictates the dominance of patriarchy.

\[ Fig\ 115:\ Nisa \]

\[ When\ the\ gods\ gave\ people\ sex,\ they\ gave\ us\ a\ wonderful\ thing. \]
\[ Sex\ is\ food:\ just\ as\ people\ cannot\ survive\ without\ eating, \]
\[ hunger\ for\ sex\ can\ cause\ people\ to\ die.\ !Kung\ saying -\ Nisa. \]

There is an obvious evolutionary rationale for animism in Gatherer-Hunter society, in that reality is formulated in relationships spanning family and kinship and coexistence with nature in both the gathering and hunting phases of securing nutrition and health. Hunting particularly as it is done by the San is a silent cooperative act of communal stealth by a band of hunters using expert arrow poisons. Central in successful hunting is adopting the persona of the hunted animal to identify with its habits and movements and temperament as closely as possible. Good hunting is critical to a man’s success as it is key to gaining sexual favours, and indeed 19th century Hottentot Bushmen were reported to have been forced to steal cattle to satisfy their women’s demands for meat as the colonists invaded their natural domains. This power of identification with the animal is manifest in the eland dance in which a girl’s menarche is celebrated as a pivotal spiritual event in which the headman taking the role of the eland leads the young warriors in a dance around the hut where the girl is secluded, so that they cannot see her for fear that it will disturb their hunting prowess. The gatherer-hunter existence is aimed at securing a diverse diet in a few enough hours of the day to enable social concourse, and non-disruption of the ecosystem, taking only what one needs from the environment in a way which sustains the abundance of nature, preserving the biosphere.
Geunther notes that, despite the advent of the new anthropological climate, this largely bypassed studies on the San which remained confined to the older evolutionary analysis centred on material success in the modernist vision, rather than a “symbiotic” ontological world view:

Yet, the ontological turn, for all of its paradigm-shifting effects on the study of hunter-gatherers during the last and first decades of the previous and present centuries, all but by-passed the Kalahari, amongst whose hunting-gathering people ethnographers were wont to examine the human-animal relationship not in social, cosmological, mystical fashion but instrumentally and strategically, as a meat-on-the hoof resource, cherished—more so than plant—for its high caloric yield and thus a key concern of the “foraging mode of production” and its modus operandi, “optimal foraging strategy”. The effect of all of this was to render this foraging group as the optimal forager, whose “immediate-return” subsistence economy was seen to afford people “affluent” lifeways.

He thus sets out to correct this hole in the anthropological account by invoking the relationship ontology:

I set out in this book to show that San worldview and lifeways are in fact also, at the ontological level, the way people conceive of, perceive and experience their interaction with animals, along with other beings of their (preter)natural world, pervaded with relationality and intersubjectivity (and have done so in the past, on the basis of ethnohistorical and archaeological evidence largely on southern San that will be marshalled). In filling this gap in our understanding of San ethnography and culture I will also fill the gap in ontological anthropology, which has excluded these southern hunting people from its neo-animistic purview. Apart from adding new insights to the relational ontology perspective in anthropology, this study, of “Sanimism”, also underscores the important insight that animism is not some monolithic schema or cosmologically-religious complex but something diverse and multiplex, structurally varied, ecologically and historically contingent. Indeed, as I will also argue, one such included in many and varied animisms of people and cultures of this world are Westerners.

The latter is given the widest scope phenomenologically for humans engaging with their expressive culture, ritual and hunting, as animal-beings and as being-animal. These two ontological concepts and experiences—and the process that links them, transformation—highlight the non-human beings that hold centre-stage in this study: animals. They are central also to this book’s theoretical framework, animism (the “new” version), the core concept of which, “anima” (“soul”), is semantically linked to “animal”. Animals are front and centre also in San myth and cosmology. Animal stories are generated through the hunt, which provides an inexhaustible supply of narrative to San story tellers, who, in retelling the hunt and the animals encountered, through exciting or dangerous hunting endeavours or because of uncanny, “counter-intuitive” behaviour on the animal’s part rendering it beguiling and “attention-demanding” and transporting it into the realm of legend and myth.

This suggests as well that the “hunting magic” model for interpreting San rock art which the shamanism-based “trance hypothesis” rejects needs to be “reconfigured”, in terms of an “animism”-based model focused on the hunter-animal prey relationship rather than one based on shamanism and focused on the healer-human patient relationship. Mikko Ijäs (2017) in his study of San rock art, suggests that shamanic trance healing ritual developed from the experience of altered states of consciousness brought on by persistence hunting – “the hallucinatory hunting experience of transformation into an animal” – which he deems the primal hunting technique of Palaeolithic and Holocene hunters.

Alan Barnard notes the long-standing unity of both the eland dance and the religion and spirituality of the otherwise diverse San groups:

Male initiation involved fasting, dancing and hunting magic, including tattooing. Initiates also had to avoid unmarried women. Female initiation, as among the Naro, involved an Eland Bull Dance. All these rituals, where they occur, are remarkably similar across the Kalahari. It would seem that whereas there may be great diversity in matters of use of the micro-environments that characterize Bushman lands, in matters of religious belief and practice there is a unity. This is borne out especially in a recent article by Mathias Guenther. He concentrates on hunting, but his main point is that in the context of a New Animism, elements of ritual, myth, rock art and mysticism blend. This is true of the /Xam, but it is also true for the Ju/hoansi. Lewis-Williams is also writing in this vein, in a way updating the Old Animism of the Bleek and Lloyd material to take in newer perspectivist ideas: instead of thinking like an outsider, learn to think more like a Bushman.

In his conclusion, Barnard focuses on the issues of religion and spirituality, both acknowledging the ancient foundational role of animism and the key role it may need to play in rescuing modern technological and religious society from the impending destruction of nature raising dire risk of our own demise:

The idea of the earliest theories of religion (by which I mean religion in the Middle Stone Age) has cropped up here and there throughout this book, but only in passing. We have left behind what is actually more interesting. This is the problem of human spirituality in general, a problem that surfaced in the very beginning of the book when I quoted a philosophical piece by Peter Nilsen and Craig Foster. They suggest that the earliest human societies had their roots in art, music, myth and symbolism and more specifically in animistic religion. If there were a global religion prior to 10,000 years ago, it was Animism. Or, as they put it: ‘At our core, we are all Animists, carrying remnants of a profoundly imprinted mindset and way of life based on a reverent and functional
Entoptic phenomena are images not observed by the eye, but are generated internally by the brain, usually during altered states.

**The Key to Our Future Buried in the Past: Philosophical thoughts on saving us from ourselves**

Nilsen and Foster (2017) emphatically underscore the need for humanity to learn from our founding cultures ways to correct the planetary crisis human civilisation has set in motion to draw from our emergence in effective symbiosis with nature to enable our future survival. I will largely quote for their article in their own words because it is a brief account that is stunningly succinct and the literal key to our survival as a species:

An abundance of scientific data shows that in the last few millennia humans have placed life under severe stress and are expediting the sixth extinction event. It seems obvious then that the thrust of current research should focus on securing our future. Archaeology can be a key player in that regard. If human behaviour has brought us to this point, and if science is suggesting that we are at the end game, then we have answers to the why and when. What remains unanswered is the how. How do we alter human behaviour to achieve function and sustainability? The archaeological record is important because it is a road map of our development, with signs of where we have been, what we have done, what has worked and what has not. If our early ancestors survived and thrived in Africa prior to the introduction of food production and socio-political systems, then it is reasonable to suggest that their recipe for life worked. Currently our species is barely surviving and certainly not thriving; our recipe for life has failed. Maybe a glance at the past can provide some sorely needed wisdom and guidance. We are not suggesting a return to the Stone Age but rather a return to the original human ethos as a way to secure our future.

In real time, humans first appeared about 200 000 years ago and the origins of food production occurred some 10 000 years ago. This means that humans lived in and connected with nature for at least 95 per cent of our time on earth. It is only for the last five per cent or so that we have been manipulating nature for our own short-term benefit, to the long-term detriment of life in general. It is hardly surprising then that most of us find comfort, peace and joy in nature as opposed to the discontent associated with the sights, sounds and smells of industry and modern life. Our deep-seated relationship with nature, and 95 per cent of our genetic coding and heritage, is part of the original human design – gatherer-hunters are at the core of who and what we are.

We know of animals that use tools. Chimpanzees use ‘fishing’ sticks to extract termites from a termite mound. Birds drop shellfish or tortoises onto rocks to open them up for eating. We have the ability to make novel associations between separate items or ideas to create what we call composite tools. The bulk of our technology today consists of composite tools. The second characteristic that separates us from other animals involves symbolic behaviour. We know that animals use symbols, but they only do so to protect themselves, their territory and their reproduction. Humans also use symbols for such reasons, but we take symbolic behaviour to a different level. We use it to express our position with respect to our understanding and perception of ourselves and the world we occupy. The start of symbolic behaviour was the first step towards creating the tools that led to our industrial life today. However, early humans used symbolism sparsely, whereas today we use it to such a degree that we have completely lost touch with what is real. ... Since the start of food production and the development of complex society our mindset is that of ego: self-seeking and intent on the manipulation and domination of nature. We are driven to the infinite consumption of finite resources. This situation is radically different from that which pertained in the prehistoric past. We can thus surmise that a major component of the human dilemma and a major cause of our failure to care for the environment results from our disconnection from it.

Prior to the origins of food production and before the advent of complex societies, the vast bulk of human societies based their belief systems in Animism. In this system, which is still practised today, a life force is attributed to everything that exists, including the elements, plants, insects, animals and earth itself. Everything is revered and considered critical to the chain of being. As a practitioner’s awareness expands, it is common to experience a profound lack of separation, where the entire known world is perceived as one sentient living form. This experience has been repeated across the ages. Most of the world’s great spiritual leaders report very similar experiences of oneness. This experience in many ways is much more real than normal wakefulness as the psyche’s ability grows exponentially during heightened awareness. The so-called real world of everyday human existence often feels like an illusion in comparison with this expanded state. It follows that the behaviour of these early ancestors was guided by a reverence for and consciousness of all life, and that their very lives depended on a functional relationship with nature.

Central to Animism is the hunter-gatherer ‘trance dance’. It is not the prehistoric equivalent of today’s trance parties in which people take recreational drugs and dance to loud music. Rather, through repetitive rhythmic dancing to clapping-singing-chanting-percussion around a fire, the trance dancers aim to reach an altered state of awareness, which they describe beautifully as ‘the little death’, the death of the ego. It is during these altered states that people have visions of entoptic phenomena and therianthropes – beings or entities that are part human and part animal. ... A second unnatural element in rock art, but one that also occurs around the globe, is entoptic phenomena. These include cross-hatchings, zigzags, nested curves, spirals and other geometric shapes. Entoptic phenomena are images not observed by the eye, but are generated internally by the brain, usually during altered states.
During trance states people achieve the overview or connectedness effect that reinforces the belief system founded in Animism. Several South African Middle Stone Age sites dating to 100,000 or more years ago contribute to our understanding of our very deep human origins.

The variety of entopic phenomena on ochre, ostrich egg shell and bone suggests that these people were involved in altered-state practices and were very likely associated with Animism. Looking at our origins reveals that our early ancestors had at least two ingredients in their recipe for success, namely a combination of cognition (intelligence) and symbolic behaviour (beliefs or spirituality).

So, what is the contemporary standing of our species? The status of society and its constructs are a perfect reflection of great intelligence in the absence of wisdom. The overall emphasis on the development of intelligence and efficiency, and the near absence of authentic spiritual development has resulted in a not-able and often crippling imbalance in the human psyche. The ingredient we have lost is the spiritual aspect of what makes us human. It is this spiritual bankruptcy, evidenced by fame, famine, fear, wars, abuse of everything and lack of reverence that has brought our species to its knees, that has robbed us of our humanness. After food production, the evolutionary tree of belief systems becomes top heavy and complex, with the emergence of thousands of different religions and denominations. Christianity alone boasts several thousand denominations. Mostly these religions view humans as the pinnacle of ‘evolution’ who have the self-appointed right to dominate and control.

If Animism was the global belief system prior to food production and if we can push the beginnings of symbolic behaviour back to the emergence of humans, then at least 95 per cent of our genetic coding and heritage concerning belief systems relates to Animism. At our core we are all Animists, carrying remnants of a profoundly imprinted mindset and way of life based on a reverent and functional relationship with nature.

We are imprinted with the notion that we are separate from everything, including nature and each other, and that we are successful human beings if we can accumulate external wealth and power. We are thus imprinted to be part of an ego-based consumer society with only a secondary regard for nature, the environment and fellow human beings. Our resultant behaviour is causing the death of our oceans and the onset of the sixth mass extinction. Humans are the single most dangerous mammal on the planet, responsible for more human deaths than any other, yet, ironically, very fragile compared with many other smaller species. Some scientists predict human extinction within a few hundred years unless radical change occurs in human behaviour.

All this relates to a tiny fraction – five per cent or less, or less than one per cent if we include the hominin lineage – of our time on earth. For the balance of our past we were imprinted with the notion of the interconnectedness of all things and reverence for life; it was these nature-based knowledge and belief systems that allowed our species to thrive. The inter-connectedness of all, the law of one, as taught by spiritual leaders since the dawn of time, is now supported by quantum physics, which states that at the foundation of it all there is only one thing, a singularity, a unified field of energy, one intelligence, one consciousness. Everything is connected.

The point is simply this: we stand at the tipping point: either we change our habits and tendencies, or our future is in serious doubt.

There is a critical message here for all of us. Not only are the San Bushmen one of or the oldest known human cultures, possibly shared with the tropical pygmy peoples of the Congo, representing the mitochondrial African Eve, but they have the archetype of how humanity can survive ecologically over hundreds of thousands of years including some of the toughest most inclement environments. Given the combination of this with the ability to live with nature symbiotically, not intervening in it any any way, but to collect its surplus bounty, while espousing a world view of integrated relationship with it over millennia, they hold our deepest and most insightful key to our own survival.
3 Eastern Spiritual Cosmologies and Psychotropic Use

This perspective fits closely with a long-standing cosmological position in Eastern philosophy, where mental states are envisaged as being ‘finer’ than gross physical states, also having an indivisible wholeness to their character, or that the cosmological foundation is itself undivided consciousness. The Upanishads date from 900 to 600 BC. The Brhadaranyaka and the Chandogya are the two earliest Upanishads. They are edited texts, some of whose sources are much older than others. The two texts are pre-Buddhist; they may be placed in the 7th to 6th centuries BCE, give or take a century or so. The fundamental concern of the Upanishads is the nature of reality (Purohit & Yeats 1937). They teach the identity of the individual soul (atman) with the universal essence soul (Brahman). In contrast with Buddhism, which believes that there is neither a soul nor self, Hindu philosophy (Hiriyanna 1932) has argued that qualities such as cognition and desire are inherent qualities which are not possessed by anything solely material, and therefore, by the process of elimination must belong to a non-material self, the atman, thus seeing one’s spiritual goal as moksha – liberation from the cycle of reincarnation. Śaṅkara held that the mind, body and world are all held to be appearances of the same unchanging eternal conscious entity called Brahman, the “creative principle which lies realised in the whole world”, the “unchanging, permanent, highest reality” which is described as Satchitananda (Being, consciousness and bliss).

In the Tantric creation (Rawson 1973), Shiva and Shakti begin as a whole in intimate cosmic embrace, of subject and object, then retreating from this intimacy to become multiple conscious entities perceiving the physical world around them as dualities emerging from the complementary totality coming to recognise itself in individual consciousness only through moksha, due to their psychic and physical fragmentation in Maya. This is celebrated in maithuna the

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55 Advaita Vedanta (Sanskrit: अद्वैत वेदान्त – “non-duality”), propounded by Gaudapada (7th century) and Adi Shankara (8th century), espouses non-dualism and monism. Brahman is held to be the sole unchanging metaphysical reality and identical to the individual Atman. The physical world, on the other hand, is always-changing empirical Maya. The absolute and infinite Atman-Brahman is realized by a process of negating everything relative, finite, empirical and changing. All souls and their existence across space and time are considered to be the same oneness. Spiritual liberation in Advaita is the full comprehension and realization of oneness, that one’s unchanging Atman (soul) is the same as the Atman in everyone else, as well as being identical to Brahman.
sacred sexual union, also in Buddhist Yab-Yum illustrated in Twelve-Armed Chakrasamvara and His Consort Vajravarahi and in the Kaula rite of Yamala (The couple):

“It is consciousness itself, the unifying emission and the stable abode – the absolute, the noble cosmic bliss consisting of both Shiva and Shakti. It is the flowing font of both quiescence and emergence.”

The Receptive and Creative principles of Yin and Yang also reflect this in the Tao (Rawson and Legeza 1973):

There was something complete and mysterious existing before heaven and earth,
Silent, invisible, unchanging, standing alone, unceasing, ever in motion.
Able to be the mother of the world. I do not know its name. Call it Tao. (Lao Tsu).

Fig 119: Shri-Yantra has superimposed yoni-lingam motifs, Yoni (South India), Yin and Yang "The dark has a light spot and the light has a dark spot - that’s how they can relate to one another" (Campbell 1959)

Because symbiotic existential cosmology has turned out to be a direct realisation of both the Tantric creation and the Upanishadic creation of Brahman and atman, in retrospect I have added a synopsis of the principles of the founding cosmology of the Brihadaranyaka Upanishad as a counterpoint. Where the difference lies is that symbiotic cosmology is fully grounded in nature and the diversity of life as a cosmological phenomenon and is not based on mind alone. The cosmic mind is a manifestation of incarnate biodiversity. To make this point clear after our vigil to Jerusalem I made a vigil to Varanasi to pay my respects to Kali as the complementary "ultimate reality" to Shiva's Brahman, fully embodied in nature, fertility and the flow of time.

Tantra

The universe is real embodiment!
Consciousness is real experience!
Each are cosmological complements!
The one cannot exist without the other.

Neither reigns supreme, but together are complete.
A prisoners' dilemma invincibly united in reality.
Just like the yin and yang of our two sexes,
caught in asymmetric reproductive coexistence.

Brahman (Sanskrit: ब्रह्म) connotes the highest Universal Principle, the Ultimate Reality in the universe. In major schools of Hindu philosophy, it is the material, efficient, formal and final cause of all that exists. It is the pervasive, infinite, eternal truth and bliss which does not change, yet is the cause of all changes. Brahman as a metaphysical concept refers to the single binding unity behind diversity in all that exists in the universe. In non-dual schools such as the Advaita Vedanta, Brahman is identical to the Atman, is everywhere and inside each living being, and there is connected spiritual oneness in all existence. Ātman (Sanskrit: आत्मन्) refers to the (universal) Self or self-existent essence of human beings, as distinct from ego (Ahamkara), mind (Citta) and embodied existence (Prakrt).

The Brihadaranyaka Upanishad opens with a cosmological manifestation, echoed in every person’s realisation:

“I am He” – Aham Brahma Asmi (अहम्ब्रह्मास्मि) – “I am Brahman”.

The Brihadaranyaka is the biodiverse Upanishad of the living Universe. It is estimated to have been composed about 700 BCE, with some parts coming later. Brihadaranyaka literally means "great wilderness, or forest". It is credited to
the ancient sage Yajnavalkya, considered as one of the earliest philosophers in recorded history and credited with the term Advaita (non-duality of Atman and Brahman). By comparison, Gautama Buddha's birth dates from 563 or 480 BCE. The Brihadaranyaka Upanishad portrays Yajnavalkya as having two wives, Maitreyi who challenges Yajnavalkya with philosophical questions as a scholarly partner and Katyayani who is silent. While Yajnavalkya and Katyayani lived in contented domesticity, Maitreyi studied metaphysics and engaged in theological dialogues with her husband, in addition to making her own self-inquiries of introspection.

Fig 120: Brihadaranyaka Upanishad literally means the “Upanishad of the great forests of the wilderness”.

The first chapter asserts that there was nothing before the universe started, when Prajapati created from this nothing the universe, imbued it with Prana (life force) to preserve it in the form of cosmic inert matter and individual psychic energy. Prajapati (Sanskrit: प्रजापति), is the ‘lord of creation and protector’, later identified with the creator god Brahma, but also many different gods. In classical and medieval era literature, Prajapati is equated to the metaphysical concept called Brahman as Prajapati-Brahman, or alternatively Brahman is described as one who existed before Prajapati.

Cosmological Complementarity
Brihadaranyaka asserts that the world is more than matter and energy – it is constituted also of Atman or Brahman (Self, Consciousness, Invisible Principles and Reality) as well as Knowledge.

Mental States approaching the Mind at Large The second chapter propounds the theory of dreams, positing that human beings see dreams because the mind draws, in itself, the powers of sensory organs, which it releases in the waking state. It then asserts that this empirical fact about dreams suggests that human mind has the power to perceive the world as it is, as well as fabricate the world as it wants to perceive it. But mind as a means, is prone to flaws. The struggle humanity faces, is in our attempts to realise the "true reality behind perceived reality". That is Atman-Brahman, inherently and blissfully existent, yet inaccessible because it has no qualities, no characteristics, it is "neti, neti" (literally, "not this, not this").

Love is Cosmic Reunion The fourth bramana of the second chapter notes all love is for the sake of the Self, and the Oneness one realises in the Self of the beloved. Knowledge of the Self, the Brahman is what makes one immortal, the connection immortal. All longing is the longing for the Self, because Self is the true, the immortal, the real and the infinite bliss.

Cosmological Symbiosis
The fifth then states that everything is connected, beings affect each other, organic beings affect inorganic nature, inorganic nature affects organic beings, one is the fruit of the other, everyone and everything is mutually interdependent, nourishing and nurturing each other, all because it came from one Brahman.

Immanent and Transcendent Self The fourth brahmana of the third chapter asserts, "it is your Self which is inside all", all Selves are one, immanent and transcendent.

Panpsychic Cosmology The seventh discusses how and why the Self interconnects and has the oneness through all organic beings, all inorganic nature, all of the universe.

Learn three cardinal virtues – temperance, charity and compassion for all life.

तदेतत्त्रयँ धमं दानं दयािमित — Brihadaranyaka Upanishad, V.ii.3

The Self is thus real – the universe is not empty and it is not just matter, but filled with eternal conscious psyche.

56 Brihat Bṛhat (बृहत्).—a. (-ष्टि) [बृह- अति (brh-ati)] (1) Large, great, big, bulky; (2) Wide, broad, extensive, far-extended (3) Vast, ample, abundant (4) Strong, powerful (5) Long, tall (6) Fullgrown (7) Compact, dense (8) Eldest, or oldest (9) Bright. Aranyaka (Aranyaka) "produced, born, relating to a forest" or rather, "belonging to the wilderness". It is derived from the word Aranya (अरण्य), which means "wilderness".
Some of this philosophical and religious perspective has been driven psycho-pharmacologically, with the use of cannabis as a visionary agent central in the life of Shiva sadhus as *Ganga*, the sacred river of Indian spirituality, along with historical evidence for the Soma of the Aryans and ancient ritual uses of cannabis in Israel 700-900 BC (Benet 1975, Arie, Rosen & Namdar 2020), China (500 BC) and among the Scythians (Rudgley 1993), and of ancient opium use in the Near East and Mediterranean.

In this context, one also has to consider the Buddhist tradition. I have during my journeys taken Tibetan Buddhist initiations with both the 16th Karmapa, and with the Ningmapa exorcist Yeshe Dorje, who lived in a kerosine tin shack with a Tibetan wife and several children above McLeod Gang in 1976 and both predicted the rainfall for builders, exorcised mental disabilities and scurried the clouds accompanying the Dalai Lama in Dharmasala. Later he moved to the US, where I took this video of him doing a puja in Santa Fe. Here is also a video I took of the milk baba of Pashupatinah in Kathmandu. All of these have since passed away. I do not follow any tradition. I reserve my path to be natural first person visionary experience, so that it is not beholden to any existing tradition.

I tend to see Buddhism as an outgrowth of the more ancient traditions embracing the principles of the Upanishads, just as Christianity arose out of Judaism, and appreciate the verdant polytheism spanning all the persona from Krishna to Shiva and Kali, harking back to 2500 BC in Mohenjo Daro. I have deep engagement with Brahman as a manifestation of “ultimate reality”. I have concerns that Buddhism is too focussed on mind over physical nature and the feminine as maya. However Tibetan Buddhism also has roots in Bon shamanism, highlighting its ancient syncretic nature.

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Fog 7c: The goddess of the sacred grove, an early Kāli manifestation, Shiva as Pashupatinath the lord of the animals, the sacrifice. Indus Valley 2500 BC (Campbell 1962 166-9). Shakti-Kāli expresses the temporal embodiment of cosmic ultimate reality in nature that tends to be neglected by mind-sky Eastern mysticism.

**Buddhist, Upanishadic and Biospheric Sacramental paths to illumination**

To Anand Rangarajan, a follower of Tibetan Buddhism and a UF CISE information scientist, Paul Werbos a Quaker mystic and machine learning pioneer, and Deepak Chopra a well-known author practicing the Eastern Wisdom Tradition. I have found your conversations interesting and thought it could be helpful to add my perspective on the situation. I have a strong affection for Deepak’s two positions (1) Everything is alive and (2) Consciousness is primary. However, like Paul, I accept (3) The universe is necessary. In fact I see the primary reality of consciousness and the necessary reality of the universe as complementary aspects of a cosmology which is neither monist nor dualist, but is the very Tantra of existence.

I have some experience with Tibetan Buddhism at the hands of Yeshe Dorje and Rangjung Rigpe Dorje the 16th Karmapa, as well as Chogyam Trungpa’s writing, travels in Tibet and Japan and experience of the Vedantic tradition from periods wandering India as a sadhu. For me the true Buddhism is what you see watching the devotions of the pilgrims passing through the Jokhang and the little shrines that surround it and in Hinduism, the wayside shrines and ochre-stained yoni-lingams being spontaneously prayed to by schoolgirls on their way to class. I hold strongly to the underlying Upanishadic traditions.

However my prime numinous and visionary focus for the last 50 years has been sacramental meditation evoked by sacred mushrooms, peyote and ayahuasca, so I want to explain to you how this perspective complements and provides insights into your favoured traditions. Somewhere I have an old Tricycle issue dealing with this from a Buddhist perspective entitled “Just Say Maybe”, so this is still a process in progress.

When I take mushrooms, I go into retreat and adopt a form of Upanishadic meditation which alternates between mindfulness and mindlessness – complete abandonment to the abyss, letting go of everything. This is almost an
impossible task in the maelstrom of psychedelics but it is transfiguring and galvanising when it occurs. The Huichol have a name nierika for the cosmic portal peyote provides between ordinary reality and the spirit world, which is illustrated in yarn paintings as a richly illuminated cosmic orifice surrounded by all the illusory visions of tangential approach. There are several points that emerge.

The first and most devastating point is that this is an experience not achieved in human conscious renunciation, or through lofty spiritual achievement and practice, but in the complete humility of natural psychic symbiosis with the biosphere. So, while I agree with Paul that mindfulness is the road to life, the sacramental approach is putting the sap and dew of nature right into the centre of the cyclone of moksha. Even mindfulness can be mistaken for purely human love for life, but sacramental moksha is the revelation of interconnectedness of all conscious life and of all the diversity of life throughout the universe. This is humanity’s founding vision of animism that all religious traditions later captured and have misused. So the consequences are that the religious traditions confuse the diversity of life and its utter sacredness in the unfolding of consciousness, with notions like animals as simply sentient beings that are a product of previous moral indiscretions, creating a mind-sky view, in which human spiritual attainment is supreme over nature. Sacramental meditation, by contrast, is a true first-person Tantra with no confounding doctrine. It is expressing the complete complementarity of the Shivaic cosmic mind and the embodiment of Shakti in nature and the universe as an inextricable prisoners' dilemma, evoking reality as we know it to be. No longer is the mind alone but reunited with nature, embedded in the immortality of life, with a primary cosmological responsibility to the diversity of life as a whole.

The second point is that all the distinctions you have raised, for example between mindfulness and the void of no-mind, or between gradual enlightenment, rather than the instantaneous flush of satori become meaningless. They are just parts of the overall vision quest. Mindfulness is essential to gather one's focus and equanimity and yes it is pro-life rather than denial, but then one has to relinquish the internal dialogue and the ego-consciousness that accompanies us, to completely give one’s self back to the universe, or more aptly the cosmic mind at large, to gain release from the mortal coil. Then we have the satori! This has a lot of implications. There is no distinction between the Brahman approach and the Zen or Bodhisattva approach. And there’s a warning! The broad sweep of Eastern philosophy is integrally an expression of the meditative practices that support each, coming to pervade Buddhist and Vedantic cosmology. To the extent that these techniques are restricted, the cosmologies become restricted and lose integrity, particularly when applied for coercive moral ends. In this the sacramental approach has a fertilising role to play. So any distinction that the Upanishads are too much about mind are simply a product of contesting disciplines. The reality is much simpler and more direct. I like the Upanishads because their description is a clear direct route to samadhi accepting the atman and Brahman as ultimate reality. Moreover sacramental samadhi adds a completely new dimension to the discourse, because it is bringing another kind of non-ordinary reality to the table, although one that has a lineage of equal antiquity to the Eastern or meditative traditions. This is thus a completion of the human mystical spiritual tradition and not a degenerate, incomplete, or imperfect path.

One can think of the entheogenic moksha epiphany occurring in a neutral state of ego dissolution and sensory withdrawal experiencing organismic moksha as the supermind at the interface of atman and Brahman – the mind at large. This was the central concept of Aurobindo’s metaphysical system, which he claimed can be realised within ourselves, as it is always present, since the mind is in reality identical with the supermind and contains it as a potentiality within itself. In The Integral Yoga he declared that “By the supermind is meant the full Truth-Consciousness of the Divine Nature in which there can be no place for the principle of division and ignorance; it is always a full light and knowledge superior to all mental substance or mental movement.”

The third and final point somewhat distinct from “pure” spiritual experiences is that entheogenic moksha is scintillating with abundance. There is no need to ask questions like “is this or that a construct”, or to try to deconstruct maya through realising all aspects of consciousness including the self are constructs and hence illusory. And it is not just a formless black void of nothing that is somehow construed to be the source of everything, but the light of illumination streaming out of the epiphany of being. Yes it is all in a sense an illusion but it is non-ordinary reality teaching us and it's test is not philosophical but the infinite compassion of the eternal mind at large for the mortal biological being experiencing moksha, so it has an immediate truth to it that is transformative of the mortal condition and the associated sensoria are veridical perception in numinous action. One doesn’t have to be on the other side of the nierika for long, or often, to be transformed by it for the good and to use its teaching in formative and informative ways. Symbiotic Existential Cosmology is an example of this. Also one doesn’t have to do 100,000 prostrations or daily
pujas, so one can get on with the good work of redeeming the material world and the social world with love, compassion and scientific insight.

Symbiotic Existential Cosmology is an empirical quantum cosmology complemented by the mind at large, and so has deep commonalities and yet fundamental differences from the mind primacy of the Eastern tradition. Aurobindo in his idea of soul evolution had a very similar view to the view of Symbiotic Existential Cosmology, in which the universe is capable of moving toward a point of consummating consciousness among its biota in our integration with biodiversity and exploring the abyss of conscious existence through meditation and entheogenic experience. Both visions share a sense of the cosmic mind coming alive through the participation of the conscious sentient beings within the universe.

Aurobindo notes the way in which the heights of the Eastern mystical experience have also, in a sense, left the spiritual corpus behind:

The refusal of life of the ascetics who concentrated on the transcendent divine beyond form; the revolt against gross matter, as the later, medieval, scholars would call it, which dominated Indian spirituality for quite some time—but was not emphasized in the ancient texts—has its place in the evolution of consciousness. Due to this, the psychology of heightening oneself has been worked out in great detail in the Indian tradition. Yet it is important to acknowledge that this is a realization at the summit of the consciousness while the outer nature remains untouched. Or, to say it in the terminology of Indian psychology, in order to realize the Purusa, Prakriti is left behind and uncared for. It is now time for a reconciliation of matter and spirit.

Aurobindo places the evolution of consciousness as occurring before the big bang and subsuming physical reality. Symbiotic Existential Cosmology remains open minded about this question.

In Aurobindo’s view, this is followed by a process where pure consciousness involutes and conceals itself more and more by creating planes of consciousness of increased density, in order to create the density needed for physical manifestation, but the Will of the ultimate consciousness behind this evolutionary process is a gradual unveiling till it reaches a full manifestation of divine life in matter in the process of biological evolution.

...what evolutionary Nature presses for, is an awakening to the knowledge of self, the discovery of self, the manifestation of the self and spirit within us and the release of its self-knowledge, its self-power, its native self-instrumentation. It is, besides, a step for which the whole of evolution has been a preparation... It is only upon earth that the psychic life begins, and it is just the process by which the Divine has awakened material life to the necessity of rejoining its divine origin. Without the psychic, Matter would never have awakened from its inconscience, it would never have aspired for the life of its origin, the spiritual life.

Symbiotic Existential Cosmology sees consciousness as complementary to the physical universe and thus doesn’t invoke a functionally mentalistic process of involition of consciousness to explain matter, as they are asymmetrically symmetry-broken complements, each reflecting the other. It thus differs from soul evolution in that it is not just a return to soul, as if nature is just a supporting vessel. It invokes consciousness and the physical universe as a complementary Tao, or more specifically a fully Kaula Tantra rite of Yamala.

Fig 121: Cosmos as coitus: (Left) The Cakrasamvara Tantra in consort with Vajravārāhī, (Right): Vajravārāhī dominant.
The universe is a sexual union between cosmic consciousness represented in Shiva, and Kali, as cosmological fecundity of the physical, manifest in time and evolution. In doing so it sets nature on the same level of sacredness as cosmic consciousness, not merely below or a precursor to it. There is not a higher spiritual realm, but a fully integrated phenomenon of emergent Paradise on the cosmic equator containing enlightened incarnate beings, not just disembodied spirits.

There is a caveat about pure conscious dominion over reality. As the conscious aspect becomes disengaged from its own incarnate embodiment in the biota, so it loses its sense of integration with life as a whole and its capacity to survive long term enough to reach climax.

This changed perspective, elevating nature to the fully sacred, is a direct product of the entheogenic experience, of integrated consciousness shared within the natural fabric by the interspecies relationship with the sacraments. Ignorant people will use mushrooms just for kicks but they contain this deep well of the conscious abyss which evokes a shamanistic rather than just a higher and higher spiritually elite consciousness.

Likewise the cosmology derives the key aspects of its comprehensive view by being true to the empirical science of observation of nature and uses this careful verified scientific empirical method to elucidate the whole view of the sacredness of nature, from the fractally emergent interactive mandala of the standard model evoking atoms molecules organelles and tissues, through subjective conscious intent implying panpsychism and animism to symbiosis being the key principle of the climax evolving biosphere. By being fully grounded in nature the intuitive presumptions of pure consciousness are found to be incomplete in just the same way the physically materialistic description of science is incomplete about mind and consciousness.

Spiritual paths, from Gnosticism to Tibetan Buddhism, tend to create very ornate spiritual realities, from the pleroma to realms of the Titans to Hungry Ghosts and even more ornate visualisations of spirit entities and the eventual downfall of the entire cosmological edifice, that become their own phantasmic cosmologies unbound to the sap and dew of life itself.

The absolutely key issue is that humanity, whether by business as usual, or religious spiritual elitism, has so far failed the acid test of symbiotic respect for the biosphere that ensures the very evolution that Aurobindo is seeking to realise. This can happen only if the conscious biota retain integration with life as a whole over the full evolutionary times scale of Paradise on the cosmic equator.

Furthermore, Paradise is the whole shebang, incarnate, enlightened, consciously eternal and biologically immortal as one is to one, in our living diversity in wholeness, abundance and resplendence. That is the complete story of the fulfilment of the totality the conscious universe is here to become. So the picture is subtly different form the pure wisdom tradition.
4 Psychedelic Agents in Indigenous American Cultures

However the prominent use of much more potently transformative psychedelic agents in human populations has evaded the mainstream of philosophical and religious practice because it has been focused on the Americas, where *Psilocybe* fungi were consumed as teonanactl – “flesh of the gods” for spiritual and therapeutic purposes by the Mayans from 1000 BC, *Lophophora* cacti from 500 BC as peyote and species of *Psychotria* and *Bannisteriopsis* combined as yage, or ayahuasca, in the Amazon basin, with evidence also of the use of Trichocereus cacti by the Nazca (100-800 CE) and dimethyl-tryptamine containing snuffs.

For the contemporary spiritual entheogenic movements see: Redemption of the Soma and Sangre, Maria Sabina’s Holy Table, The Man in the Buckskin Suit and Santo Daime and the Union Vegetale.

Sacred Mushrooms

The story of the original Quetzalcoatl of the Nahuas who followed the Toltec but predated the Aztec in the valley of Mexico is told in by Dobkin de Rios (1984). They were “quite advanced in their cultural development. Their divinity, Quetzalcoatl was a man of wisdom who gave them a code of ethics and a love for art and science.” Acquaintance with the drug plants goes back to 1000 BC with the Mayan mushroom stones and 300 BC with the Chicameras the Aztec ancestors and the Toltec. Quetzalcoatl is said to have passed knowledge of the mushroom to Piltzintecuhtli a god of hallucinatory plants, including mushrooms. Quetzalcoatl is the plumed serpent, the feathers signifying flight and divinity and the serpent is his organismic aspect entwined in the natural world. He is symbolic of...
Venus the “star” that separates the day and the night. The earliest known iconographic depiction of the deity appears on Stela 19 at the Olmec site of La Venta. Dated to around 900 BC, it depicts a serpent rising up behind a person probably engaged in a shamanic ritual.

Because at the time of the arrival of Columbus, these were used by the Aztecs, who were renowned for their sacrificial violence and were documented by conquistadores vehemently and violently opposed to pre-Colombian culture, historical descriptions of their use are shrouded in diabolical accounts. Dobkin de Rios (1984) notes that the divinatory properties of sacred plants [including mushrooms, peyote, datura, morning glory and tobacco] were of paramount importance to the Aztecs. They believed that whoever ate these sacred plants would receive the power of second sight and prophecy. Thus, one could discover the identity of a thief, find stolen objects, or predict the outcome of a war or the attack of a hostile group.

"Sacred mushrooms played such an important part in Aztec life that Indian groups which owed tribute to the Aztec emperor paid it with inebriating mushrooms. One Spanish priest wrote that for the Aztecs, the sacred mushrooms were like the host in the Christian religion: through this bitter nourishment, ‘they received their God in communion’ The divine mushroom was taken during ritual ceremonies. Successful Aztec merchants sponsored night banquets. The Florentine Codex records that when the participants ate the mushrooms with honey, and they began to take effect, the Aztecs danced, wept, and saw hallucinations. Others entered their houses in a serious manner and sat nodding. Visions included prophecies of one’s own death, battle scenes, or war captives that one would take in battle. Others reported visions that they would be rich. All that could possibly happen to a person could be seen under the effects of the mushrooms. After the effect wore off, people would consult among themselves and tell each other about their visions”.

Schultes and Hofmann (1979) note that early chroniclers such as Fransisco Hernandez, physician to the King of Spain, described several sacred mushroom species:

‘Others when eaten cause madness that on occasion is lasting of which the symptom is a kind of uncontrolled laughter. Usually called teyuhniltli, these are deep yellow, acrid of a not displeasing freshness. There are others again, which without inducing laughter bring before the eyes all kind of things such as wars and the likeness of demons. Yet others are not less desired by princes for their fiestas and banquets, of great price. With night-long vigils they are sought, awesome and terrifying.

Friar Sahagun, one of the earliest chroniclers, remarked of the Aztec mushroom eaters:

‘when they become excited by them start dancing, singing, weeping. Some do not want to sing but sit down and see themselves dying in a vision; others see themselves being eaten by a wild beast; others imagine they are capturing prisoners of war, that they are rich, that they possess many slaves, that they have committed adultery and were to have their heads crushed for the offence ... and when the drunken state had passed, they talk over amongst themselves the visions they have seen.’

Dobkin de Rios further notes:

“during the coronation feast of Moctezuma in 1502, teonanacatl (the divine mushroom) was used to celebrate the event. War captives were slaughtered in great numbers to honour Moctezuma’s accession to the throne. Their flesh was eaten, and a banquet was prepared after the victims’ hearts were offered to the gods. After the sacrifice was over, everyone was bathed in human blood. Raw mushrooms were given to the guests, which one writer, Fray Duran, described as causing them to go out of their minds in a worse state than if they had drunk a great quantity of wine. In his description, these men were so inebriated that many took their own lives. They had visions and revelations about the future, and Duran thought the devil was speaking to them in their madness. When the mushroom ceremony ended, the invited guests left. Moctezuma invited rival rulers to feasts which were held three times a year. One of these important feasts was called the Feast of Revelations, when the invited dignitaries and Moctezuma, or his representative, ate the wild mushrooms. ... During the Aztec king Tizoc’s enthronement feast, all those present ate wild mushrooms - the kind that made men lose their senses. After four days of feasting, the newly crowned Tizoc gave his guests rich gifts and sacrificed the Metztitlan victims”.

The repression of the sacred mushrooms by the conquistadors resulted in their disappearance from the annals of history, except for the troubling appearance of small mushroom stones dating from 1000 B.C. scattered about the
much more ancient ruins of the Mayan civilisation. In 1935 the anthropologist Jean Bassett Johnson witnessed an all night mushroom ceremony at Huautla de Jimenez.

Maria Sabina This report was to lie idle until 1955 when Gordon and Valentina Wasson ‘were invited to partake of the agape of the sacred mushrooms’ in the hills of Oaxaca, among isolated peasant peoples who used them to divine the future and seek a cure of illness, after a long search and a previous unsuccessful season in the town:

“Perhaps you will learn the names of a number of renowned curanderos, and your emissaries will even promise to deliver them to you, but then you wait and wait and they never come. You will brush past them in the market place, and they will know you but you will not know them. The judge in the town hall may be the very man you are seeking and you may pass the time of day with him yet never know that he is your curandero.” – Wasson (Weil et. al. 30).

The sacred mushroom is called by the Mazatec Indians ‘the little flowers of the gods’ or ‘that which springs forth’. ‘The little mushroom comes of itself we know not whence, like the wind that comes we know not whence or why’.

Wasson was deeply struck by the spiritual power of the sacred mushroom, which he referred to as ‘the divine mushroom of immortality’: ‘Ecstasy! The mind harks back to the origin of that word. For the Greek ekstasis, meant flight of the soul from the body. Can a better word be found to describe the bemushroomed state? ... Your very soul is seized and shaken until it tingles, until you feel that you will never recover your equilibrium’ (Furst 198). "... geometric patterns, angular not circular in richest colours, such as night adorn textiles or carpets. Then the patterns grew into architectural structures with colonnades and architraves, patios of regal splendour, the stone work all in brilliant colours, gold and onyx and ebony, all most harmoniously and ingeniously contrived, in richest magnificence extending beyond the reach of sight, in vistas measureless to man ... They seemed to belong... to the imaginary architecture described by the visionaries of the Bible" (Riedlinger 1996 30).

Shortly before his arrival she had had a vision while on the little saints , that non-Mazatec strangers would come to seek nti-si-tho , the little one who springs forth. She had shared her vision with Cayetano García the local sindico or justice who also partook, he agreed that the knowledge should be shared and brought Wasson to her. Her life was beset by many tragedies including a macabre vision she had shortly afterward on the little things , which foretold the murder of her son, possibly in vengeance for opening the knowledge of the mushroom. Her house and little shop were also burned (Estrada 71, 79). The CIA were also in Mexico in search of the mushroom. Within a few days, a Mexican botanist had phoned the CIA to confirm Wassons find and an agent was dispatched as a mole on Wasson’s return trip.

"The father of my-grandfather Pedro Feliciano, my grandfather Juan Feliciano, my father Santo Feliciano - were all shamans - they ate the teonanacatl, and had great visions of the world where everything is known... the mushroom was in my family as a parent, protector, a friend" — Maria Sabina, who lived to the age of 91.

Maria Sabina took sacred mushrooms in abundance as a child. A few days after watching a wise man cure her uncle:

‘Maria Anna and I were taking care of our chickens in the woods so that they wouldn’t become the victims of hawks or foxes. We were seated under a tree when suddenly I saw near me within reach of my hand several mushrooms. If I eat you, you and you” I said “I know that you will make me sing beautifully”. I remembered my grandparents spoke of these mushrooms with great respect. After eating the mushrooms we felt dizzy as if we were drunk and I began to cry, but this disiness passed and we became content. Later we felt good. It was a new hope in our life. In the days that followed, when we felt hungry we ate the mushrooms. And not only did we feel our stomachs full, but content in spirit as well. I felt that they spoke to me. After eating them I heard voices. Voices that came from another world. It was like the voice of a father who gives advice. Tears rolled down our cheeks abundantly as if we were crying for the poverty in which we lived.’ She had a vision of her dead father coming to her. ‘I felt as if everything that surrounded me was god.

Maria Anna and I continued to eat the mushrooms. We ate lots many times, I don’t remember how many. Sometimes grandfather and at other times my mother came to the woods and would gather us up from the ground on which we were sprawled or kneeling. “What have you done?” they asked. They picked us up bodily and carried us home. In their arms we continued laughing singing or crying. They never scolded us nor hit us for eating mushrooms. Because they knew it isn’t good to scold a person who has eaten the little things, because it causes contrary emotions and it is possible that one might feel one was going crazy’ (Estrada 39).
After the death of her first husband Maria Sabina performed a velada for Maria Anna, who was sick with an internal bleeding. After expressing the blood she had a vision of six or eight people who inspired her with respect - 'the Principal Ones of whom my ancestors spoke'. One of the Principal ones spoke to her and showed her the book of wisdom. She realised that she was reading her book. Afterwards she had the contents always in her memory, and became herself one of the Principal Ones who became her dear friends. After this vision, she had another vision of Chicon Nindo the lord of the mountains, a being surrounded by a halo, whose face was like a shadow. She realised that she had become his neighbour. She entered the house and had another vision of a vegetal being covered with leaves and stalks that fell from the sky with a great roar like a lightning bolt. "I realized that I was crying and that my tears were crystals that tinkled when they fell on the ground. I went on crying but I whistled and clapped, sounded and danced. I danced because I knew I was the great Clown woman and the Lord clown woman" (Estrada 49).

Maria Sabina notes (Schultes and Hofmann 1979):
"There is a world beyond ours, a world that is far away, nearby and invisible. And there is where God lives, where the dead live, the spirits and the saints, a world where everything has already happened and everything is known. That world talks. It has a language of its own. I report what it says. The sacred mushroom takes me by the hand and brings me to the world where everything is known. It is they, the sacred mushrooms that speak in a way I can understand. I ask them and they answer me. When I return from the trip that I have taken with them I tell what they have told me and what they have shown me'. 'The more you go inside the world of teonanactl, the more things are seen. And you also see our past and our future, which are there together as a single thing already achieved, already happened . . . I saw stolen horses and buried cities, the existence of which was unknown, and they are going to be brought to light. Millions of things I saw and knew. I knew and saw God: an immense clock that ticks, the spheres that go slowly around, and inside the stars, the earth, the entire universe, the day and the night, the cry and the smile, the happiness and the pain. He who knows to the end the secret of teonanactl – can even see that infinite clockwork'.

Traditionally the mushroom was taken not merely to see god, but to cure physical maladies (see section 2). The healing process could be severe and terrifying. At a velada 57 attended by Wasson, a young boy took the mushrooms to seek a cure. However Schultes and Hofmann comment:

"upon learning from Maria that the mushrooms prognosticate death, the boy falls to the ground in despair. He did in fact die a few days later of undiagnosed, but apparently natural causes". Maria Sabina described this somewhat differently: "But there was no remedy for the sick one. His death was near. After I saw Perfecto's appearance, I said to Aurelio 'This child is in a very grave condition'. ... I took the children and began to work. That was how I learned that Perfecto had a frightened spirit. His spirit had been caught by a malevolent being. ... Weeks went by and someone informed me that Perfecto had died. They didn't take care of him like they should have. If they had done several vigils he would certainly have gotten well" (Estrada 72).

Fray Bernadino de Sahagun estimated from Indian chronology that peyote had been known to the Chichimeca and Toltec at least 1890 years before the arrival of the Europeans. Usage for as long as 3000 years is suggested from Tarahumara rock carvings and Peyote specimens found in Texas rock shelters. de Sahagun reports: "There is another herb like [opuntia]. It is called peioltl. It is found in the north country. Those who eat or drink it see visions, either frightful or laughable. This intoxication lasts two or three days and then ceases. It is a common food of the Chichimeca, for it sustains them and gives them courage to fight and not to feel hunger or thirst. And they say it protects them from all danger" (Schultes and Hofmann 132).

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57 velada soirée, nighttime meeting, literally a shamanic mushroom vigil Spanish velar Latin vigilēś ("to watch, guard") as in vigilant.
Fig 123: Diverse sacramental use of psychedelic entheogens over millennia in the Americas. Cueva del Chileno ritual bundle, Lípez highlands of southwestern Bolivia radio-carbon dated to approximately 1,000 C.E. consisting of: outer leather bag (A), expertly carved and decorated wooden snuffing tablets with anthropomorphic figurines (B and C), intricate anthropomorphic snuffing tube with two human hair braids attached to it (D), animal-skin pouch constructed of three fox snouts (L. culpaeus) stitched together (E), two camelid (L. glama) bone spatulas (F), two small pieces of dried plant material attached to wool and fibre strings (G), and a polychrome woven textile headband (H). Artifacts (E and G) were tested using LC-MS/MS analysis. Right: LC-MS/MS results from the fox-snout pouch indicating the presence of cocaine, BZE, harmine, bufotenine, DMT, and peak potentially corresponding to psilocin (Miller et al. 2019). Two Chavin urns with jaguar beside mescaline containing San Pedro cacti (1200-600 BC), Aztec mural showing sacred mushroom deity (Magliabecciano Codex) as an apotheosis of a mushroom taker, a Chavin statue showing snuffing nasal discharge, Amazonian Yanomamo using a hallucinogenic snuffing pipe for Anadenanthera beans containing bufotenine, Nazca gourd showing nasal discharge from hallucinogenic snuffing , and a Nazca pottery (100-800 AD) showing San Pedro use.

**Peyote** The Huichol as discussed in the animism chapter (see also section 2) make a yearly pilgrimage, the peyote hunt, over 600km of rugged desert country. They refer to a portal to the spirit world, the nierika (fig 122) which can be negotiated by the devoted practitioner during the trance-like peyote experience:

> There is a doorway within our minds that usually remains hidden and secret until the time of death. The Huichol word for it is nierika — a cosmic portway or interface between so-called ordinary and non-ordinary realities. It’s a passageway and at the same time a barrier between the worlds” (Halifax 242).

One of the most outstanding Huichol peyote shamans of modern times is don Jose Matsuwa (fig 122), who at 1990 was the venerable age of 109. Besides walking in the sacred journey to Wirikuta, ‘don Jose spent many years living alone in the Huichol sierra learning directly from the ancient ones who reside there in the caves and mountains. In order to become a shaman in the Huichol tradition one must learn to dream consciously and lucidly, for after a healing has been performed, that night the shaman tries to dream about the patient and find out the reason for the illness. Each day the Huichols tell their dreams to “Grandfather fire”. Dreams help to bring together the past, present and the future’ (Halifax 249).

> “The shaman’s path is unending.
    I am an old, old man and still a nunutsi (baby)
    standing before the mystery of the world”

“I have pursued my apprenticeship for sixty-four years. During these years, many, many times I have gone into the mountains alone. Yes I have endured much suffering in my life. Yet to learn to see, to learn to hear, you must do this - go into the wilderness alone. For it is not I who can teach you the ways of the gods. Such things are learned only in solitude.” - Don Jose Matsuwa (Halifax) 238).

Brant Secunda became his apprentice after walking from Ixtlan into the mountains:

> ‘On the third day of my journey, I became completely lost after walking down a deer trail. I became terrified and lay down to die, from sun exposure and dehydration. I then began to have vivid visions of colourful circles filled with deer and birds, but was suddenly awakened by Indians standing over me sprinkling water over me. They told me the shaman of their village had had a dream about me two days earlier and they had been sent out to rescue me’ (Rainbow Network Aug 90 4).

> “When the mara’akame passes through the nierika he moves just as the smoke moves; hidden currents carry him up and in all directions at once ... as if upon waves, flowing into and through other waves ... the urucate. As the mara’akame descends and
passes through the nierika on the return, his memory of the urucate and their world fades; only a glimmer remains of the fantastic journey that he has made” (Halifax 242).

Psychedelic use also goes back centuries in South America. One of the most powerful traditions in shamanic use of sacred plants comes from a complex of plants containing various admixtures of methylated-tryptamines and beta-carbolines used as snuffs and hallucinogenic potions in the Amazon basin. San Pedro use, which like peyote contains mescaline, is evident in the cactus found alongside a leopard in a vase in Chavin culture (1200-600 BC) and San Pedro and sculptures showing snuff use among Nazca (100-800 CE).

**Ayahuasca** is a potently psychedelic admixture based on both dimethyl-tryptamine (DMT) and harmine. The bark of the vine of certain Banisteriopsis species is mashed and boiled with the leaves of plants such as certain Psychotria species. Sometimes some tropanes are also added. The principle is regarded as a major botanical discovery: the harmine acts as a mono-amine oxidase inhibitor, making it possible for the DMT to both enter the body through the stomach and to remain in action for some four hours. In combination, these substances produce a profound and sustained visionary state of a particularly tumultuous kind.

Michael Harner (1980) gives a striking description of his introduction to ayahuasca by the Conibo Indians:

‘Just a few minutes earlier I had been disappointed, sure that the ayahuasca was not going to have any effect on me. Now the sound of rushing water flooded my brain. My jaw began to feel numb ... Overhead the faint lines became brighter and gradually interlaced to form a canopy resembling a geometric mosaic of stained glass. I could see dim figures engaged in shadowy movements ... the moving scene resolved itself into a supernatural carnival of demons. In the centre was a gigantic grinning crocodilian head from whose cavernous jaws gushed a torrential flood of water. The scene gradually transformed into sky and sea. He then saw two vessels which merged 'into a single vessel with a dragon-headed prow'. I heard a regular swishing sound and saw it was a giant galley. I became conscious too of the most beautiful singing I have ever heard in my life ... emanating from myriad voices on the galley. I could make out large numbers of people with the heads of blue jays'. ‘At the same time some energy essence began to flow from my chest up into the boat’ as if to take his soul away.

His body began to become numb as if his heart was going to stop. His brain became partitioned into an intellectual command level, the numb level and lower levels of the visions.

‘I was told that this new material was being presented to me because I was dying and therefore ’safe’ to receive these revelations. First they showed me the planet earth as it was eons ago. Then appeared large creatures with pterodactyl-like wings which were fleeing from something out in space and showed me how they had created life on the planet in order to hide within the multitudinous forms. He then witnessed the unfolding of plant and animal speciation learning that the dragon-like creatures were inside all forms of life. These revelations alternated with visions of the floating galley which had almost taken my soul on board. With an unimaginable last effort, I barely managed to utter one word: “Medicine!” I saw them rushing around to make an antidote which eased my condition but did not prevent me from having many additional visions. Finally I slept. Rays of light were piercing the holes in the palm-thatched roof when I awoke. I was surprised to discover that I felt refreshed and peaceful (Harner 1980).

In South America, there are two widespread movements supporting the spiritual and therapeutic use of ayahuasca which have also initiated world-wide interest (see section 2), the Union Vegetale and Santo Daima, a syncretic movement combining Catholicism with indigenous beliefs centred on the use of ayahuasca for personal spiritual and religious insight. “Within traditional religious settings, often individuals are required to accept what the religious authorities tell them to accept. In new religious forms, in new spiritualities, such as Santo Daima, the individual is absolutely central to forming the religious beliefs that the individual holds.” (Dr Andrew Dawson)

I have travelled personally to the sources of the natural psychedelics, having been twice to the Amazon to take ayahuasca, having taken peyote, both with the Native American Church and on Wirikuta, the sacred mountain of the Huichol. I have spent much of my life in a psychic symbiosis with sacred plants and fungi, particularly sacred mushrooms and in the scientific discovery of *Psilocybe aucklandii*.

Michael Pollen, in “How to Change Your Mind” (2018) has given an insightful current account of the state of psychedelic research and therapy, including several personal accounts of taking sacred mushrooms, ayahuasca, LSD and bufotenine, which give indicative first-time experiences of a novice under these agents.
Natty Dread and Planetary Redemption
Christianity’s Apocalyptic Tragedy and the Immortal Tree of Life
For Elaine Pagels, in memory of Vibia Perpetua
Chris King 13-6-21

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1. The Scope of the Crisis

Christianity presents a unique threat to world futures by the misleading portrayal of Jesus as a miraculous supernatural “Son of God”, in conflict both with any credible cosmological account of existence and not least with the core principles of Monotheism. The other monotheistic religions also have a scorched-Earth eschatology, particularly to women (Schwartz 1996), in conflict with our primary cosmological responsibility as a sexual species to ensure the diversity of conscious life survives. The Christian canonical account undermines the capacity of humankind to fathom what kind of universe, or existential cosmos we are actually living in and threatens humanity’s ability to survive and flourish in evolutionary time scales without lethal misadventure. It is a cargo cult illusion threatening ours and the living planet’s living future, through a direct conflict of belief with reality, promoted by miraculous fallacy.

Fig 124: Crucifixion, Mathias Grunwald

Fig 125: Akkadian “Temptation seal”: The man, the woman, the tree of life and the serpent (2200 BCE).

When the priestly author wrote Genesis 1, claiming the ‘Elohim said “Let there be light and there was Light”, creating heaven and Earth out of tohu va vohu, casting the plants as created before the Sun and Moon, and making humanity male and female in “our” likeness, we know that black holes and galaxies had been forming long before, and that neutrinos were flashing through the Earth unnoticed. We now know that all people alive and present at the time, were composed of quarks and leptons grouped in baryons, nuclei, atoms, molecules, organelles, cells and organs, with DNA, RNA and proteins coursing through their veins and permeating their tissues. That they/we were not created from clay or breath, but develop naturally from the fertilisation of egg and sperm. This is not materialism speaking, it is cosmology. Genesis is not the oldest book in the Torah, but is a more recent addition.

And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so. And the evening and the morning were the third day.

And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also. And the evening and the morning were the fourth day.

This article and the complementary one “Natural Entheogens and Cosmological Symbiosis: Solving the Central Enigma of Existential Cosmology” were co-conceived out of a quantum change experience. Taken together they inform a sacramental paradigm shift towards planetary survival.

eschatology the part of theology concerned with death, judgement, and the final destiny of the soul and of humankind.
Greek eskhas the part of theology concerned with death, judgement, and the final destiny of the soul and of humankind.
The word subdue is the Hebrew verb *kavash* meaning to place your foot on the neck of your conquered enemy signifying a submission of the enemy to his defeater. The words “have dominion” (from Latin *dominium*, from *dominus* ‘lord, master’) are the Hebrew verb *radah* meaning to rule by going down and walking among the subjects as a benevolent leader.

We can accept the priestly *Sabbatical Creation* as a beautiful allegory based on the understanding available at the time, even though the Yahwistic account in the *Garden of Eden* is a punitive curse on humanity as sexual beings, casting womankind in the role of the “devil’s gateway” enduring the pain of childbirth under the rule of her husband and depriving humanity of immortal Paradise, to battle the thistles and thorns in human conflict with nature.

We know from Jeremiah’s claims of God’s anger and the resulting response of the people, that the religious practices of Jerusalem in the time of the Kings involved diverse forms of worship, including the Goddess by her various names – Inanna/Ishtar, or Asherah the ancient consort of El, and the male god Tammuz/Dumuzi. But we also at once know the people were using *Saccharomyces cerevisiae*, a eucaryote yeast, to make their bread and wine, which a couple of billion years before had arisen from a *pivotal symbiosis* between an Asgard archaean and a proteobacterium, as we all have. Again this is not materialism, but nature speaking.

Jer 7:17 “Seest thou not what they do in the cities of Judah and in the streets of Jerusalem? The children gather wood, and the fathers kindle the fire, and the women knead their dough, to make cakes to the queen of heaven, and to pour out drink offerings unto other gods, that they may provoke me to anger”

Jer 44:17 “But we will certainly do whatsoever thing goeth forth out of our own mouth, to burn incense unto the queen of heaven, and to pour out drink offerings unto her, as we have done, we, and our fathers, our kings, and our princes, in the cities of Judah, and in the streets of Jerusalem: for then had we plenty of victuals, and were well, and saw no evil. But since we left off to burn incense to the queen of heaven, and to pour out drink offerings unto her, we have wanted all things, and have been consumed by the sword and by the famine.”

Psalm 82’s confession of polytheism likewise shows this diversity:

“God standeth in the congregation of the mighty; he judgeth among the gods ... I have said, Ye are gods; and all of you are children of the most High ... But ye shall die like men, and fall like one of the princes.”

History in both the Old and New Testaments is perceived through a glass darkly, in Paul’s own words, distorted by the political bias and religious imperatives of the redactors. The diversity of worship described in Jeremiah in the time of the Kings comes to us through the Yahwistic gloss of the exilic authors in Babylon, sharpened by Zoroastrian apocalyptic ideas, replacing the Hebrew notion of Sheol with a future purification by fire in the end of days, leading to the stark contrast of Heaven and Hell. This originated from the time Cyrus allowed the Jews in exile to return to Israel, where they instituted a more fundamentalistic paradigm, ordering the men of Israel to forsake their gentile wives.

“And Shechaniah ... answered and said unto Ezra, We have trespassed against our God, and have taken strange wives of the people of the land: yet now there is hope in Israel concerning this thing. Now therefore let us make a covenant with our God to put away all the wives, and such as are born of them, according to the counsel of my lord, and of those that tremble at the commandment of our God; and let it be done according to the law” (Ezra 10:2).

Life in Israel up to this point had been culturally diverse. Free worship in the tabernacles from ancient times had been supplanted only a few years before the Babylonian annexation, by Jerusalem-centred worship, by the youthful Josiah. As Wikipedia puts it: “Between the 10th century BCE and the beginning of their exile in 586 BCE, polytheism was normal throughout Israel. It was only after the exile that worship of Yahweh alone became established, and possibly only as late as the time of the Maccabees (2nd century BCE) that monotheism became universal among the Jews”.

Likewise, we know Christian history is a distorted tale, firstly of the supplanting of the original following of Yeshua by born again Pauline revisionism under threat of the anathema maranatha despite Paul having no direct knowledge of the events, or the key character involved, and then by the orthodox victors who suppressed the Valentinian gnostics and many others, causing the Nag Hammadi texts to be buried in jars until the 20th century, just as later developments like the Nicene creed and the Trinity also constitute confabulations of Yeshua’s mission.
2. A Cross-Cultural Perspective

To be fully understood, Yeshua’s apocalyptic journey of redemption thus has to be seen in its context. Israel was in a state of flux, effectively ruled by the Romans, with the Sanhedrin Sadducees and the tetrarchs holding high office, Pharisees spread through the smaller towns and more extreme sects such as the Essenes in desert retreats. By contrast, the Edomite Kingdom of Nabatea which emerged around 300 BCE, was in its cultural prime and was an autonomous state, reaping rich commercial gains as the artery through which trade coursed from the East to and from Europe via Gaza. Edom was a nominally Arab culture whose original female deities, al-Lat, al-Uzza and Manat who continued to be worshipped in Mecca up to the time of Muhammad, along with Dhushara the Lord of Seir. Gen 32:3 “And Jacob sent messengers before him to Esau his brother unto the land of Seir, the country of Edom”.

In the wake of Alexander cutting a military swathe across the Near East and the ensuing Seleucid empire, these deities were imbued with Greek personae as can be seen in the architectural forms of Nabatean deities, where the female deities took on Greek forms like Tyche and Dhushara became a Dionysian deity whose tragic mask had the power to confer immortal life.

Israel, Nabatea and surrounding lands all spoke the Aramaic language of Syria. This was the language of Yeshua in Galilee and this was the language of the Nabateans. Galilean Aramaic is noted in Peter’s exposure: “And a little after, they that stood by said again to Peter, Surely thou art one of them: for thou art a Galilaean, and thy speech agreeth thereto.” (Mark 14:11) Deuteronomy notes of Jacob “A wandering Aramaean was my father”. The word Aram goes right back to the Mari texts of the twelfth century BCE. The whole area around Israel was in a state of inter-communication through commerce and a common language. The rulers of Nabatea and the Herodian dynasty closely intermarried. There was a Jewish population scattered throughout and on all sides diverse beliefs. Nabatea held its own celebrations and religious festivals "on every high hill and under every green tree" as the Jewish curse against the nations goes.

Yeshua’s mission was invoked when John the Baptist cursed Herodias, accusing Herod Antipas of taking the wife of his brother Herod II (Philip) in contradiction to Hebrew law. Lev 18:16 “Thou shalt not uncover the nakedness of thy brother’s wife: it is thy brother’s nakedness.” Josephus and Mark both recount aspects of this event. Herod asked Salome the daughter of Herodias to dance (the seven-veils descent 60) in front of his generals at Macherus on the Nabatean border to their pleasure. Herod also swore unto her “Whatsoever thou shalt ask of me, I will give it thee, unto the half of my kingdom,” echoing the sacrificial ending of the Book of Esther (Ishtar). In return, completing Inanna’s descent, Herodias demanded John’s head on a plate. But this was no ordinary occasion and it’s about a lot more than the morality of divorce and was in fact exposing a mortal threat to Herod. Herod’s generals were present because Herod had sent his previous wife the Nabatean princess royal Phasaelis, daughter of Aretas IV, fleeing in fear of her life. Aretas, who figures as joint ruler with Queen Shaliqat on coinage, then invaded and defeated Herod with the military help of Herod’s other brother Philip, attesting to the cooperation between the Herodian and Nabatean dynasties. The name Phasaelis was also the name of Phasael, Herod the Great’s brother, himself born in the Hasmonean Kingdom to a Jewish aristocratic family of Edomite descent. What this goes to show is how interpenetrating the affairs of Israel and Nabatea actually were, despite their contrasting religious traditions and how Yeshua came to replace John when he was effectively sacrificed in the Inanna’s descent (Wolkenstein & Kramer 1987).

Fig 126: (Left) Aretas IV and Queen Shaliqat jointly on the Nabatean coinage. (Right) Aubrey Beardsley for Oscar Wilde’s “Salome”.

60 Inanna the Queen of Heaven’s descent into Hell, stripped one by one of her seven veils, by the Galla of her sister Ereshkigal’s domain of Hell, before returning to let them sacrifice her beloved husband and partner Dumuzi for usurping the sovereign’s powers in her absence, only to have him resurrected and sacrificed seasonally as a God of fertility.
Thus the apocalyptic mission is portrayed in the Christian gospels as having passed to John’s baptised successor Yeshua. Luke 7:19 “And John calling unto him two of his disciples sent them to Jesus, saying, Art thou he that should come? or look we for another?” Mark 6:16 “But when Herod heard thereof, he said, It is John, whom I beheaded: he is risen from the dead”. John makes this even more explicit: 3:28 “Ye yourselves bear me witness, that I said, I am not the Christ, but that I am sent before him. He that hath the bride is the bridegroom: but the friend of the bridegroom, which standeth and heareth him, rejoiceth greatly because of the bridegroom’s voice: this my joy therefore is fulfilled”.

However it remains historically unclear whether the Baptist intended this succession, as he was beheaded.

Luke has John state emphatically the Yeshua is the Christ “And as the people were in expectation, and all men mused in their hearts of John, whether he were the Christ, or not; John answered, saying unto them all, I indeed baptize you with water; but one mightier than I cometh, the latchet of whose shoes I am not worthy to unloose: he shall baptize you with the Holy Ghost and with fire: Whose fan is in this hand, and he will throughly purge his floor, and will gather the wheat into his garner; but the chaff he will burn with fire unquenchable.” But the winnowing fan is characteristic of Tammuz and Dionysus the dying gods of bread and wine who are combined in the two substances of the eucharist.

To understand his mission and how Yeshua envisaged it, we have to turn to sources of material documented long after the events, by followers with divergent eschatologies. None of these authors had direct experience of Yeshua’s presence or were present during his mission, so all accounts are hearsay and thus non-evidential. Despite Yeshua’s miracles forming a key part of his ministry in the gospels, modern biblical scholars are almost universal in their scepticism of these accounts, although they form the central contradiction of Christian beliefs.

One way of understanding these hearsay scriptural accounts is to combine (a) the three synoptic gospels, beginning from Mark (c 66-74 CE), with earlier dates largely discredited. It is complemented by the proposed Quelle sayings source, assigning John and Revelation to be later (90-100 CE), historically less reliable and in conflict with the synoptics, with (b) the Gospel of Thomas (c 60-120 CE), forming a counterpoint, underpinned by material from other Nag Hammadi texts, (c) the relevant Talmud entries and (d) the works of Flavius Josephus, excepting the Christian redactions concerning Yeshua (Wilson I 1996) Matthew and Luke/Acts are roughly contemporaneous and around half a century after Yeshua’s death and well after the siege of Jerusalem. Most scholars believe Matthew was composed between AD 80 and 90. The most probable date for Luke’s composition, along with Acts is around AD 80–110. Revelation is commonly dated to about 95 AD. The fact that Acts is deeply embedded in the Pauline ‘heresy’ to convert Yeshua’s mission to a new gentile religion, their accounts of Yeshua have to be seen as highly coloured and thus of similar questionable to the Gnostic texts, with the exception of the Gospel of Thomas, which is a collection of source sayings, and particularly in terms of their retrospective apocalyptic emphasis in the light of the Fall of Jerusalem.

Fig 127: Time line of the gospels. The Pauline epistles are at least 20 years after Yeshua’s crucifixion, but before the Fall of Jerusalem. The four canonical gospels and Revelation are all after the Fall, consistent with their apocalyptic stance. The three synoptics have both commonalities and differences. Matthew and Luke are believed to have derived from Mark and the Q (quelle = other) source. The hypothesis of a Hebrew rather than Greek origin, deriving from Papias of Hierapolis, 125–150 CE 65 has been largely discredited. This time line raises major uncertainties about the origin of Christianity and how much of what is in the synoptic gospels is Yeshua’s own world view rather than that of Pauline Christianity. Paul began his epistles in AD 49-50 17 years after Yeshua’s death and Mark was written close to 70 AD, another 20 years later. The key question to ask is how much of the Hellenistic world-view and events in the synoptics, which are essential to establishing the dying saviour role of Son of God did Yeshua conceive?

65 “Matthew collected the logia in the Hebrew dialect and each one interpreted them as best he could.”
The dating of the Gospel of Thomas remains controversial. Broadly speaking, the early camp includes scholars of gnosticism such as Elaine Pagels (2003), Marvin Meyer (2005,7) and April DeConick (2006,7), while the late camp tends to include ordained priests such as John P. Meier and Joshua R. Porter, and professed evangelicals such as Bart D. Ehrman and Craig A. Evans. This highlights the political rather than historical basis of the late camp position.

Evidence for an early origin comes from a number of known parables, including Thomas 8, 9, 31, 57, 63, 64 and 65 where the Thomas version underlies the canonical versions. Thomas 17 modifies Paul’s statement in 1 Corinthians 2:9 (53–54 CE), echoing Isaiah 64:4. The episode in John about the doubting Thomas, with the former attempting to discredit the latter, in the passage about Thomas not fully recognising Yeshua’s divinity, disclaims Thomas-13’s gnostic view in favour of his own, implying Thomas was in existence when John was compiled. In the same vein Thomas 13, criticising both Peter and Matthew’s views of Yeshua, hints at an early stage, when the gospel writers were all vying in their points of view, before the authority of the canonical writers had become established. In Thomas 12, Yeshua refers to James the Just, consistent with Galatians 2:1-14, which most scholars date to 50-60 CE. Sayings 6, 14 and 104 also echo opposition to Jewish traditions, regarding circumcision and fasting agains consistent with Galatians. Although the gospel of Thomas states ”These are the secret sayings which the living Jesus spoke and which Didymos Judas Thomas wrote down” where didymos means”twin” the Thomas sayings 55, 99 and 101 express clear opposition to a family tradition of the despoiny in contrast with later gnostic texts where the family tradition is emphasised in Thomas being Yeshua’s twin brother. Likewise the reference to James in Thomas 12 does not specify that James is the brother.

The late camp tend to interpret the sayings as mid-second century conflations of canonical gospel statements combined with some additional inauthentic or authentic older sayings. For example Thomas 5 ”Recognize what is in your sight, and that which is hidden from you will become plain to you. For there is nothing hidden which will not become manifest.” is claimed to echo Luke 8:17, and 10 ”I have cast fire upon the world, and see, I am guarding it until it blazes.” is claimed to echo Luke 12:49. This reading seems incorrect as the two slants have opposing implications and the Thomas passage is more consistent in its conception. Thomas 16, in which dissension is cast upon the earth is claimed to conflate Luke 12:51-2 and Matt 10:34-5. The difficulty here is that these Thomas sayings could be from an older text. Both these passages are assigned to be from Q. This claim is compounded by the claim that in the Oxyrhynchus Greek passages, 5 uses the language of Luke rather than Mark, but arguing from one passage believed to have been written down around 200 CE, this is not conclusive, especially given the lack of agreement about the original language in which Thomas was written (Coptic, Greek or Syriac). Other arguments centre around the supposed similarity to Syriac compilations of the canonical gospels and the lack of apocalyptic content in Thomas in favour of gnostic realisation that the kingdom is in the mind, but the former is contested and the latter is self-fulfilling orthodox rationalisation, because Thomas’s view clearly differs from orthodox beliefs in the apocalyptic destiny of Christianity.

Elaine Pagels (2012) also notes the antagonism between John and Paul expressed by each in the Epistles and the Euangélion, with John adhering to more orthodox practices on food and sex and Paul becoming the catalyst for a new religion, usurping and violating Jewish practices.

The Nag Hammadi texts, although diverse and apocryphal accounts, most of which are historically much later, can be given some comparable weighting to the Pauline works, as both are derived by followers who did not actually meet Yeshua and were not present during his mission. This is the only unbiased way to give a investigative balance to the question of Yeshua’s actual mission, as opposed to the Christian religious canon, on the basis that checking both sides, of the story, orthodox and gnostic, helps uncover the inconsistencies between them. This approach is again not materialistic, because the gnostic wing of the scripture is both the most spiritually diverse and fantastic and offsets the Pauline works as equally the product of an imaginative rewriting of Yeshua’s mission in the eyes of the beholder.

It is clear that, whatever his strengths or weaknesses, Yeshua was a brilliant transformative innovator, with an unparalleled insight into the spiritual zeitgeist, a literal Einstein of the existential crisis of his time, who embraced the true meaning of apocalypse, to throw the covers of reality, by bridging the full scope of the extant traditions, both to redeem the lost sheep of Israel and to fulfil the expectations of the wider backdrop of fertility worship of the nations, leading to Christianity becoming a world religion through its popularity among the gentiles. That said, one can also fairly claim, unlike some docetic gnostic texts that, whatever else may have subsequently happened, Yeshua the man had human DNA and was composed of molecules and cells, consistent with the natural world as we have now discovered it to be, given that his mission took place only once he became around 30 years of age. Again this is not reductionism speaking, it is evidential realism.
3. Forcing the Kingdom of God

The scope of Yeshua’s mission goes far beyond Essene ideas of the end of days and constitutes a forcible challenge to bring on the Kingdom of the Father, ostensibly in three days, through a sacrificial confrontation, in which the forces of dark and light are brought into violent conflict, in the persona of Yeshua as the baptised Son of God. The span of Yeshua’s mission thus becomes that of a messiah fomenting controversy and chaos focussed on the corruption of Jerusalem, leading to the tragic enactment of the Crucifixion.

This has been portrayed in the Christian account as a sacrificial act, in which God’s only begotten son has to die, so that humanity fatally flawed by being infected with the original sin of the serpent can live, provided they believe in him, but otherwise they will burn in hell fire as unredeemed sinners. But whence the origin of this peculiarly pagan sacrificial idea? Why does the God of Creation require his only begotten son to be killed? It is also completely unclear why attacking only certain factors of society deemed to be corrupt serves this purpose. To redeem the sins of the world would require taking on the entire burden of sin, both in the strong rulers and in the weak. Why does inducing a frenzied level of conflict against the authorities in the enactment of a tragedy leading to his own death serve the purpose of defeating sin as a whole? Why is this necessary, or even helpful cosmologically?

This conceives a universe entirely inconsistent with the universe as we now know it to be. If God created the universe as we now know it, "He" created the black holes, galaxies, and the four forces of nature and their underlying symmetries and symmetry-breakings necessary for the complexity of the universe to emerge. He also therefore created the physical circumstances in which life can evolve and become conscious. Social morality is not the driving force of the natural world, but a product of it, and climax diversity arises from adventitious mutation, a balance between predators and prey and parasites and hosts, amid a counterpoint between competition and cooperation, in which symbiosis has also been pivotal. Humanity could not come to exist unless these processes of complexification had been able to play out unhindered. Morality is not a prime motivating force, but a product of complex animal societies that arises naturally, because reduction of internal strife makes a species, or society, more resilient against external competition (Alexander 1987).

Fig 128: The Cosmos as we now know it to be: (a) The origin and evolution of the universe over 13 billion years. (b) Andromeda our sister galaxy, like the milky way, contains around 100 billion stars many of which could also contain life, whose organic basis pervades the galaxy from supernovae. (c) The core model of physics involves symmetry-breaking of four wave-particle forces from a unified superforce. (d) Evolutionary diversification of genes has occurred over around a quarter of the universe’s lifetime with a principal burst of protein gene creation 3 b.y. ago. (e) DNA and protein structures interacting. (f) Life evolved from complementary roles of archaea and bacteria, in which complex eucaryotes including plants, animals, fungi and protists, including human cells (g), arose from a symbiosis between them. (h) Viruses including corona viruses, although parasitic, complement the role of cells. (i) The "Mandala of Evolution" Dion Wright illustrates evolution as a cosmological process. This is cosmology speaking, not materialism.

There is thus no way that, if a God, or "The" God, created the natural universe, that the appeal of Yeshua to create a religious suicide bomb to blow apart the presumptions of a corrupt and sinful generation, would abruptly, in three days, bring on the Kingdom in power, by annihilation of a physical universe of 13 billion years stable existence, necessary for conscious life to be able to emerge and evolve.
4. The Messiah of Light and Dark

What is clear throughout the canonical gospels is that Yeshua’s mission, as conceived by the Evangelists, has two complementary and yet discordant themes, leading to inevitable catastrophe.

A. The light side provides the wisdom for which Yeshua is renowned, composed of astute sayings, particularly those which stress compassion. To fully understand the breadth and scope of these it is essential to also consider the contrapuntal sayings of the Gospel of Thomas, which are pivotal in gaining a true perspective.

A key example of the astute sayings is Yeshua’s golden rule, which is an inversion of Hillel’s earlier (110 BCE – 10 CE) silver rule: “That which is hateful to you, do not do to your fellow. That is the whole Torah; the rest is the explanation; go and learn”, which Yeshua inverted: Matt 7:12 “Therefore all things whatsoever ye would that men should do to you, do ye even so to them: for this is the law and the prophets”.

One can immediately see that Yeshua’s statement is derived from Hillel’s, complete with the trailing “law and prophets” repeating Hillel’s “torah”. It is also notable that Hillel’s statement was prefigured 500 years before by Confucius: “Never impose on others what you would not choose for yourself”. This gets to the quick of the issue. Both Hillel and Confucius are stating an ethic of avoiding bad acts, respecting the autonomy of others, but Yeshua is going further, invoking active intervention ostensibly for the good. While this may seem beneficial, there is a pitfall demonstrated throughout history. What if the other person or social group doesn’t want you to do to them what you would like them to do to you? If a large group of people want a conservative society of a certain kind for themselves, even for their own protection, does this mean it is reasonable for them to pass restrictive laws to enforce it on a diverse society, or is mutual tolerance of differences essential for humanity and for nature to flower? If I want you to have sex with me, is it reasonable for me to proactively have sex with you? The answer is no.

The Sermon on the Mount goes further than mere cooperation and invokes actively rewarding ones enemies twofold:

Matt 5:38 “Ye have heard that it hath been said, An eye for an eye, and a tooth for a tooth: But I say unto you, That ye resist not evil: but whosoever shall smite thee on thy right cheek, turn to him the other also. And if any man will sue thee at the law, and take away thy coat, let him have thy cloak also. And whosoever shall compel thee to go a mile, go with him twain ... Ye have heard that it hath been said, Thou shalt love thy neighbour, and hate thine enemy. But I say unto you, Love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you”.

The central question here is this: Are we invoking a paradigm of natural survival in perpetuity, or one in which all care is cast to the winds, because our rewards are in eternal life in Heaven and not on this Earth? Christians extol these passages as pivotal to Yeshua’s compassionate teachings, in contrast to the narrower, more punitive “eye for and eye” of Old Testament teachings, but they are unsustainable in the natural world of living survival.

These questions pivot around the prisoners’ dilemma of tragic temptation universal to the dilemma of cooperation and defection, and hence good and evil. Two prisoners are arrested for a crime. If they cooperate and remain silent they will receive a moderate sentence, but if one betrays the other the one cooperating with the prosecution may get off altogether and the other will go down severely. But this can lead to temptation and both defecting, so they both receive a long punitive sentence. This is the central question around which the ethics revolves and it is also illustrated in the tragedy of the commons (Hardin 1968), where winner-take-all gains tempt people to exploit the common resource before others do and the entire commons is destroyed, just as humanity is doing to the planet today.

Elementary evolutionary prisoners’ dilemma game theory (Fielder & King 2004 D) has established that both tit-for-tat – doing to others what they last did to you and win-stay lose-shift – switching between cooperation and defection depending on how the payoffs of the last round worked out, out-survive both systematic cooperation and systematic defection. However tit-for-tat strategies can lead to endless rounds of retaliation characteristic of clan hostilities. Marcus Frean (1994) established a middle ground between eye-for-an-eye and turn-the-other-cheek, called firm-but-fair. This is a form of tit-for-tat that turns the other cheek about a third of the time and leads to the firm-but-fair population reaching 98% of the whole, when each party can make their response asynchronously. Always cooperate is a suckers game, which can be invoked only when we have the out of a quick exit to Heaven, in fear of Hell, otherwise it is cumulative suicide. Social dynamics is a prisoners’ dilemma between cooperation and rejections generalised into order and chaos, in which both sides have essential roles. Violent criminal defection is harmful, while movements opposing oppression by people in power are essential. Complex societies thus involve an equilibrium of cooperation
and defection. Again, this is not materialism speaking, but the ethics of constructive diplomacy, to protect the whole for the future of all and the survival of human life and nature.

Fig 129: Prisoners’ dilemma of the patriarchs – patriarchal oppression inhibits independent women but cooperating faithful wives and defecting whores can flourish overtly and covertly. Rarity is precious, preventing extinction. A single scarlet woman in a country of faithful wives can claim any man she pleases. A single faithful maiden in a society of loose women may claim the king’s hand in marriage.

The Sermon on the Mount also has a strong current of having no care for even moderate self protection of one’s own life. Matt 6:25 “Therefore I say unto you, Take no thought for your life, what ye shall eat, or what ye shall drink; nor yet for your body, what ye shall put on. Is not the life more than meat, and the body than raiment?”

Nor is there any thought for the future, nor the future of life: Matt 6:34 “Take therefore no thought for the morrow: for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof.”

The sayings on the mount are thus being made in a context where no thought needs to be given for survival because of the immanent Kingdom of God in Heaven and the much more dire consequences of being thrown into Hell.

These positive sayings are also mixed with destructive sayings: Matt 5:29 “And if thy right eye offend thee, pluck it out, and cast it from thee: for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell. And if thy right hand offend thee, cut it off, and cast it from thee: for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell”.

This generosity does not apply to anything except the material: Matt 7:6 “Give not that which is holy unto the dogs, neither cast ye your pearls before swine, lest they trample them under their feet, and turn again and rend you.”

It is wonderful that Yeshua considers the lilies of the field, who “toil not” as plants, to be more beautiful than Solomon in all his glory, but the rains fall on good and bad people alike because that is how nature works. The fowls of the air are not fed by God’s grain. The hawks are also part of nature, as are the lion, and all carnivores. Climax life requires an interplay of cooperation and defection. Carnivores’ tooth and claw killings ensure the herbivores don’t become extinct by eating all the plants. Even parasitic diseases end up playing a role in the evolutionary process. Sexuality and hence all complex life has arisen from a Red Queen race between parasites and hosts, in which the endless variations of sexual individuals avoid a pandemic that would wipe out a non-sexual species. Hence individual mortality arises from sexuality and we could not have evolved as humans, or be alive without sexuality and hence the mortal coil.

Yeshua also intimates that any sexual feelings are against the law. Matt 5:28 “But I say unto you, That whosoever looketh on a woman to lust 62 after her hath committed adultery with her already in his heart”. In a sense anyone who looks on a woman with lust is committing adultery, but as long as they don’t act upon it without the consent of the other, that is an essential manifestation of the natural fertility of sexuality, through which all human beings on this planet have come to exist. Lust is natural and fertility incarnate. It is sexual exploitation that is an evil.

B. The dark side, all the more ominous because it would ultimately lead to Yeshua’s crucifixion, stands out as completely alien to the Hebrew prophetic tradition, claiming to perform nature miracles walking on water and calming the storms on Galilee, bringing people back from the dead, and other actions causing him to be typecast by the scribes as “Baal Zebul” the Lord of Flies, when he cured a man by mere sleight of hand, rather than the traditional methods of faith healing at the time. Yeshua’s response was incendiary, claiming that the scribes were cursing themselves because the devil can’t cast our devils.

Some “miracles” were outright grotesque: After exorcising the legion of spirits of a madman, Yeshua drives a helpless herd of pigs into the lake to drown: Luke 5:13 “And forthwith Jesus gave them leave. And the unclean

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62 Matthew’s Greek uses ἐπιθυμεῖν (epithumeō) to set one’s heart on a thing, desire, covet. Passion has a more benevolent sexual meaning involving infatuation and love, but the Greek πάσχω (paskhō) is “to suffer, to be acted on, to undergo, experience” rather than an act, or desire.
spirits went out, and entered into the swine: and the herd ran violently down a steep place into the sea, (they were about two thousand;) and were choked in the sea”.

The credibility of the miracles wanes in the presence of more familiar company of people rather than excited superstitious crowds seeking faith healing, as noted in Nazareth Mark 6:4:

“A prophet is not without honour, but in his own country, and among his own kin, and in his own house. And he could there do no mighty work, save that he laid his hands upon a few sick folk, and healed them.” Even the disciples did not have confidence in the miracles at least until the wind died on the lake: Mark 6:51 And he went up unto them into the ship; and the wind ceased: and they were sore amazed in themselves beyond measure, and wondered. For they considered not the miracle of the loaves: for their heart was hardened.

Yeshua’s mission became a three year long enactment of a Dionysian tragedy, just as Dionysian theatre and the three tragedies for one comedy became the cathartic portal in which the lives of men and gods intertwined in ancient Greece, as it remains the nuclear core of all dramatic productions, movies and television series today.

One can have little doubt that controversy and confrontation was anything other than intentional on Yeshua’s part, in the light of his first sermon at the synagogue in Nazareth, where despite admitting his own affliction (possibly the lameness mentioned in the Talmud), his incendiary claims caused the people to seek to throw him off the cliffs.

Luke 4:23 “And he said unto them, Ye will surely say unto me this proverb, Physician, heal thyself: whatsoever we have heard done in Capernaum, do also here in thy country. And he said, Verily I say unto you, No prophet is accepted in his own country. But I tell you of a truth, many widows were in Israel in the days of Elias, when the heaven was shut up three years and six months, when great famine was throughout all the land; But unto none of them was Elias sent, save unto Sarepta, a city of Sidon, unto a woman that was a widow. And many lepers were in Israel in the time of Eileus the prophet; and none of them was cleansed, saving Naaman the Syrian. And all they in the synagogue, when they heard these things, were filled with wrath, and rose up, and thrust him out of the city, and led him unto the brow of the hill whereon their city was built, that they might cast him down headlong. But he passing through the midst of them went his way”.

Luke’s (80–100 CE) description can be taken in one of two ways. A sceptic would say this is a contrivance of the Christian forefathers, calculated to destine Yeshua’s mission as being at the outset to the Gentiles rather than Israel, where he will not be accepted and indeed betrayed by the Jews. However, if we accept Luke’s account as genuine, then it is Yeshua saying he is opening mission to envelop the gentile religious paradigm from the outset in a clash of the cultures against the existing hierarchy in Israel. This duality extends throughout all the descriptions of Yeshua’s mission by all the gospels. Either Yeshua is being misrepresented as forming a bridge to the gentiles by the Christian forefathers to further the Christian interpretation of history as a gentle religion, or Yeshua was himself seeking to form an apocalyptic bridge transcending both the Hebrew religion of the Israelites and the fertility traditions of the nations, when Christianity did not yet exist.

Yeshua’s purported miracles fall into three types (a) Healing miracles involving (i) curing sickness, (ii) exorcisms of evil spirits or devils and (iii) three resurrections; (b) Procedural “miracles” in which loaves loaves and fishes are shared among a large congregation in much the manner of a communion wafer; and (c) nature miracles including water into wine, cursing the fig, driving swine to drown after an exorcism and calming and walking on the waters. Ranke-Heinmann (1992) notes Yeshua disdaining demands for the miraculous “unless you see signs and wonders, you will nor believe” (John 4.48). “Why dies this generation seek a sign? Truly I say to you, no sign shall be given to this generation” (Mark 8.22). She attributes their occurrence to “a naive addiction to miracles on the part of the authors of the Gospels and their sources”, noting Elisha’s miracles in 2 Kings (4.34 & 6.18).

Spiritual healings were mainstream activities in an era where spiritual cures were sought given limited medical knowledge. It’s thus not simply that crowds seek a faith healer because they heal many people but can be the reverse – they appear to heal many people because crowds gather round them seeking a cure. As Ranke-Heinmann puts it “Crowds didn’t stream towards Jesus because he healed many people; rather, because crowds streamed toward him, he healed many people”. The pool at Bethesda was famous for healing simply via troubled waters. John 5:4 “For an angel went down at a certain season into the pool, and troubled the water: whosoever then first after the trouble of the water stepped in was made whole of whatsoever disease he had.” The procedural “miracles” were not fundamentally miraculous but just anticipating the communion rite. However, the nature miracles both set Yeshua completely outside the framework of Hebrew religious principles and are systematically consistent with Dionysian traditions.
John begins with Yeshua’s first miracle at Cana, where his mother says “They have no wine.” Yeshua says “Woman, what have I to do with thee? mine hour is not yet come”, but Mary tells the servants “Whatsoever he saith unto you, do it” and Yeshua says “Fill the water pots with water.” When they take them to the governor, they are fresh wine. This miracle is likely to be an account derived from a lost earlier source listing miracles, as shortly after casually declaring the son of a nobleman near death to be healed, John notes “This is again the second miracle that Jesus did, when he was come out of Judaea into Galilee” (Bultmann 1962 78).

This raises several issues. Why is Yeshua’s mother asking him to perform a miraculous feat over a trivial request for alcohol at a wedding? Doesn’t this indicate a family operation in miraculous cures? But the third issue is pivotal. Why is Mary inciting Yeshua to perform a miraculous feat known throughout the Near East as the signature of Dionysus as the god of wine and miraculous altered states?

The word Epiphany from the Greek and means “manifestation,” “appearance,” or “revelation.” … A festival of Dionysus’ Advent was kept on this day in the Aegean and Anatolia. The Christian world has conflated three events, all to Jan 6th, the Magi, John’s baptism and Cana.

We keep this day holy in honour of three miracles:
this day a star led the wise men to the manger, this day water was turned to wine at the marriage feast, this day Christ chose to be baptised by John in the Jordan, for our salvation, alelu-Yah (Magnificat antiphon)

In a rural area situated in Greece, in Eastern Macedonia, rituals take place at the Epiphany, that coincide with the Orthodox Christian holiday of the baptism of Christ. The locals see no contradiction between the pagan character of their customs and their Christian context, since these rituals are meant to be "a praise to a fertile and good year", a gesture which in turn "rests on the pillars of fruitfulness and productivity". Dionysus, the god of wine, fertility and theatre, was worshipped in the region. A temple dedicated to Dionysus (4th and 3rd centuries BC) is located at the nearby village Kali Vrissi. The vineyards of Drama surround it on all sides. The region’s Dionysian heritage is marked by the annual Twelve-Day (Dodekaimero) celebrations, which culminate every year between January 6 to 8 in the region’s villages. Noisy parades are held to herald fertility, during which participants strike large bells to awaken Mother Earth. Lots of dancing to the sound of traditional tunes, played with the gaida (bagpipe) and daire (drum), takes place over three days and three nights at the villages of Monastraki, Kali Vrysi, Petrousa, Pyrgi and Volakas.

Rudolf Bultmann (1962) puts it this way: "In fact the motif of the story, the transformation the water into wine is a typical motif of the Dionysus legend, in which this miracle serves to highlight the god’s epiphany. And hence it is timed to coincide with the feast of Dionysus, from January 5th to 6th. In the ancient church, this affinity was still understood when … the 6th of January was taken to be the day that the marriage feast was celebrated at Cana". The same Christian cooption of pagan festivals occurred with Easter (Eostre) and Yuletide/Christmas (Odin, Mithras, Saturnalia), but with the Epiphany, Cana implicates Yeshua in the contrivance.

Uta Ranke-Heinman’s (1992) position is clear: “The 6th January became for Christians, the feast of the power revelation (epiphany) of their God, thereby displacing the feast of Dionysus’s epiphany. As Bultman says ‘No doubt the story has been borrowed from the pagan legends and transferred to Jesus’. On his feast day Dionysus made empty jars fill up with wine in his temple in Elis; and on the island of Andros, wine instead of water flowed from his spring or temple. Accordingly, the true miracle of the marriage feast at Cana would not be the transformation by Jesus of water in wine, but the transformation of Jesus into a sort of Christian wine god".
Yeshua’s relationship with his family and his friends became more troubled as his spell-binding approach to the mission evolved. “After this he went down to Capernaum, he, and his mother, and his brethren, and his disciples: and they continued there not many days” (John 2:12). “And when his friends heard of it, they went out to lay hold on him: for they said, He is beside himself.” (Mark 3:21). “There came then his brethren and his mother, and, standing without, sent unto him, calling him”, upon which he replied “whosoever shall do the will of God, the same is my brother, and my sister, and mother” (Mark 3:31). “His brethren therefore said unto him, Depart hence, and go into Judaea, that thy disciples also may see the works that thou doest. For there is no man that doeth any thing in secret, and he himself seeketh to be known openly. If thou do these things, shew thyself to the world. For neither did his brethren believe in him” (John 7:3). This is also an indirect swipe against James the Just, mentioned as the leader in Thomas:

‘The disciples said to Jesus, “We know that you will depart from us. Who is to be our leader?” Jesus said to them, “Wherever you are, you are to go to James the righteous, for whose sake heaven and earth came into being.”’ (Thom (12)

Metaphors of the winebibber pervade Yeshua’s mission. Luke 7.33 “For John the Baptist came neither eating bread nor drinking wine; and ye say, He hath a devil. The Son of man is come eating and drinking; and ye say, Behold a gluttonous man, and a winebibber, a friend of publicans and sinners! But wisdom is justified of all her children.” Mark 2:18 “And no man putteth new wine into old bottles: else the new wine doth burst the bottles, and the wine is spilled, and the bottles will be marred: but new wine must be put into new bottles.” John 15:1 “I am the true vine, and my Father is the husbandman.”

This enactment of his mission as a destined dramatic tragedy on a catastrophic collision course with the forces of darkness, perceived in both the devil and the Jerusalem authorities, religious and secular, ultimately culminated in a series of ritual events, from the necromancy of Lazarus in John, through the march of the palm king and turning the tables in the temple, resulting in Yeshua’s trial and crucifixion for both insurrection against the Romans and blasphemy against the Hebrew tradition, ostensibly set at nought (i.e. castrated) in the Saturnalia by the Roman guards, and later crucified on the Cross, echoing both Psalm 22 and the Canaanite cry of the death god Mot to El:

“And at the ninth hour Jesus cried with a loud voice, saying, Eloi, Eloi, lama sabachthani? – My God, my God, why hast thou forsaken me? ” (Matt 15:34)

This doesn’t mean that Yeshua was posing as Dionysus but that he was bringing together all the spiritual currents extant in the greater Israel and its neighbour nations, and adopted currents of Dionysian magical transformation and fertility worship notions of sacrifice of the sacred king, as well as the apocalyptic expectations of the Jewish eschatology in its Zoroastrian-inspired end of days form. These then form a bridge to a new Heaven and a new Earth.

To imbue prophetic validity to Yeshua’s apocalyptic mission, Christian scriptures attempt to conflate these assumed events with passages from the prophets such as Zechariah, where the foolish shepherd brings about an apocalyptic denouement replete with echoes of Judas’ betrayal:

“And the LORD said unto me, Cast it unto the potter: a goodly price that I was prised at of them. And I took the thirty pieces of silver, and cast them to the potter in the house of the LORD” (Zech 11:13).

But the Christian accounts incorrectly attribute this to Jeremiah and Matthew is in double contradiction with Acts:

“Then Judas, which had betrayed him, when he saw that he was condemned, repented himself, and brought again the thirty pieces of silver to the chief priests and elders, Saying, I have sinned in that I have betrayed the innocent blood. And they said, What is that to us? see thou to that. And he cast down the pieces of silver in the temple, and departed, and went and hanged himself. And the chief priests took the silver pieces, and said, It is not lawful for us to put them into the treasury, because it is the price of blood. And they took counsel, and bought with them the potter’s field, to bury strangers in. Wherefore that field was called, The field of blood, unto this day. Then was fulfilled that which was spoken by Jeremy the prophet, saying, And they took the thirty pieces of silver, the price of him that was valued, whom they of the children of Israel did value. And gave them for the potter’s field, as the Lord appointed me” (Matt 27:3).

“Men and brethren, this scripture must needs have been fulfilled, which the Holy Ghost by the mouth of David spake before concerning Judas, which was guide to them that took Jesus. For he was numbered with us, and had obtained part of this ministry. Now this man purchased a field with the reward of iniquity; and falling headlong, he burst asunder in the midst, and all his bowels gushed out. And it was known unto all the dwellers at Jerusalem; insomuch as that field is called in their proper tongue, Aceldama, that is to say, The field of blood” (Acts 1:16-19).
Either these “prophecies” were part of a Dionysian enactment, with Jesus and Judas both complicit, or they are a contrived imputation by later writers, who did not have first hand experience of the mission.

5. The Dionysian Heritage

Evidence from the Mycenaean period shows that Dionysus is one of Greece’s oldest attested gods 1400 years before Yeshua. His attribute of “foreignness” as an arriving outsider-god may be inherent and essential to his cults, as he is a god of epiphany, sometimes called “the god that comes”. With the advent of viticulture in archaic Greece, Dionysus became a god of transformation, and eternal life. His cult involved bands of married women (thiasoi - adherents of a deity) periodically retreating to the mountain forests at night to hold an ecstatic revel rout, where through dances and other rituals they experienced the divinity of Dionysus and the release and liberation he afforded as liber, associated with the orgiastic and ecstatic frenzy of his worshipers, including the maenads (“raving ones”) who were said to use nightshade to dilate their pupils to make them ‘dolorous’ from which nightshade’s name Belladonna (“beautiful lady”) comes. In Athens there was a procession on his feast day, when his image was paraded before the crowd, after which he performed a sacred marriage ritual with the king’s wife.

Fig 131: Dionysian parallels: Simone Martini’s “Carrying the Cross” shows Mary Magdalene, her face smitten with streaks of blood following Jesus in despair. "The watchmen that went about the city found me, they smote me, they wounded me; the keepers of the walls took away my veil from me" Canticles (5:7). Suggested to be one of several secret codas by medieval artists to support the idea that Mary was Yeshua’s lover. The women of Galilee figure as the effective maenads of Yeshua, in supporting him out of their substance, in anointing him for his burial and in watching from far off during the crucifixion and announcing his resurrection. Gospel accounts of Yeshua walking on water and rescuing Peter are prefigured in the story of Dionysus miraculously turning the pirates into dolphins when they jump into the ocean in fear of his miraculous manifestations. Inset: two Nabatean and Syrian tragic masks used to confer immortal life on the bearer prefiguring the apocalyptic notion that the death of the saviour is the key to immortal life.

Dionysus, who was the twice born and resurrected son of God Zeus by mortal Semele, was said to perform a variety of miracles in connection with grapevines and wine, all to do with the god’s seasonal epiphany at the time of his festival, evidencing his presence of his divinity. Epiphania means “appearance” in Greek and refers to the revelation of the Lord’s power in his appearance. In pagan antiquity, 6 January was the epiphany of Dionysus. Vase paintings depict wine flowing directly from grape clusters, presenting wine as a product of the divine. On the occasion of Dionysus’s festival called Thyria (“raging”), when Dionysus was thought to be present there, priests under the watch of witnesses placed three empty basins in a building under seal. The next morning when the seal on the door was broken and people entered, the basins were full of wine. In Euripides’ Bacchae, a maenad struck the ground with her thyrsus, “and the god at that spot put forth a fountain of wine.”

Dionysus, of all deities, stands as the manifestation of miraculous dread at a level unsurpassed by Yeshua’s miracles on Lake of Galilee. The magical metamorphoses of Dionysus are rendered on the Dionysus Cup from around 540-530 BCE by Exekias. A band of Tyrrenian pirates sailing by the shore happens upon Dionysus and kidnaps him for ransom, believing him to be a wealthy prince binding him to the mast. To their surprise, the

63 Dionysus, the son of Zeus, was a horned child who was torn to pieces by Titans who lured him with toys, then boiled and ate him. Zeus then destroyed the Titans by thunderbolt as a result of their action against Dionysus and from the ashes humans were formed. However, Dionysus’ grandmother Rhea managed to put some of his pieces back together and brought him back to life.
his burial as a sacred king. Inanna's Descent enacted by Salome at Macherus. Rather than being anointed by a high priest, as was David and Solomon, Yeshua is anointed by a woman, either on his feet or head and in Mark and John ominously for his burial as a sacred king.

What is distinctly different about the Dionysian tale is that it is and has always been recognised as mythopoetic allegory, not a physical fact, while Yeshua’s alleged miracles and his promises of a return from the dead in power have been crafted by the Christian forefathers to be a claimed cosmological fact more real than the word around us. This is profoundly dangerous, because it lays a false cosmological claim in complete contradiction to every verified form of knowledge, to jam pack the persona of the Son of God into the portal of reality to make a claim of ultimate ascendency over nature on the part of the Son of Man become the Son of God under pain of eternal torment.

The Dionysian connection pervaded the Near East with the rise of Alexander and the ensuing Greek empires and became integral to Syria and Nabatea. Dhushara was an ancient Arabic deity originally represented by a simple stone block in a similar manner to the worship of a stone pillar at Bethel by Jacob, as a non iconic face of the abstract God, as Yahweh was. Gen 35:14: “Jacob set up a pillar in the place where he had spoken with him, a pillar of stone; and he poured out a drink offering on it, and poured oil on it”. However with the rise of Nabatean commerce and viticulture, Dhushara gained the persona of the Greek Dionysus, just as al-Uzza, al-lat and Manat gained the forms of Tyche, Atargatis and Aphrodite. Nabatean culture had shrines scattered far and wide across the fertile landscape.

Astral worship came to involve elaborate repasts on triclinia overseen by “the consecrated and inviolable possession of” Dhushara, in which concern for making detailed preparations for immortal life had a pivotal focus. Dhushara became the god with the tragic death mask conferring immortal life on the wearer: “The Nabatean use of the tragic mask furnishes yet another example of their preoccupation with immortality and their intense desire to become identified with their divinity. The mask served as a portrait of the deathless God Dushara, Dusares Dionysos and its wearer became united with him through its use for life everlasting escaping thus the limitations of the mortal span” (Glueck 242).

Given that these forms of worship extended across the East of the Jordan from Arabia in the South to Syria in the North, and the commercial currents running between East to West by sea, it is inescapable that these currents of deity would have been grist to the mill of religious and apocalyptic ferment.

6. The Women of Galilee and the Daughters of Jerusalem

Yeshua’s mission is intimately bound up in the affairs of key women who ministered unto him out of their substance, effectively providing the financial funding for the mission: Luke 8:1 “And it came to pass afterward, that he went throughout every city and village, preaching and shewing the glad tidings of the kingdom of God: and the twelve were with him, and certain women, which had been healed of evil spirits and infirmities, Mary called Magdalene, out of whom went seven devils, and Joanna the wife of Chuza Herod’s steward, and Susanna, and many others, which ministered unto him of their substance”.

The seven devils are the seven Galla of Inanna-Ishhtar that pursued and ravaged Tammuz-Dumuzi, corresponding to the seven layers of hell when the goddess of heaven does her descent, so mentioning them specifically in the gospels casts Mary Magdalene as the sacrificial Queen of Heaven in the piece, preemptively anointing him for his burial after his sacrifice as a sacred king in the shadow of Dumuzi and Tammuz. This means that, as we converge on the crucifixion, there is a relentless parallel with John the Baptist’s death in Inanna’s Descent enacted by Salome at Macherus. Rather than being anointed by a high priest, as was David and Solomon, Yeshua is anointed by a woman, either on his feet or head and in Mark and John ominously for his burial as a sacred king.

The women play a pivotal role in Yeshua’s mission and are thus portrayed as witnesses and ritual participants in all the critical events, from the baptism, ministering unto him out of their substance, with Mary Magdalene, out of whom went the seven Galla of Inanna (above) anointing him for his burial, watching over his crucifixion and witnessing the risen Christ.

John’s account has Mary performing the task. John 12:3 “Then took Mary a pound of ointment of spikenard, very costly, and anointed the feet of Jesus, and wiped his feet with her hair: and the house was filled with the odour of the ointment. Then saith one of his disciples, Judas Iscariot, Simon’s son, which should betray him. Why was not this ointment sold for three hundred pence, and given to the poor? This he said, not that he cared for the poor; but because he was a thief, and had the bag, and bare what was put therein. Then said Jesus, Let her alone: against the day of my burying hath she kept this”. This appears to link to Luke’s reference to Mary playing “that good part” in the Dionysian ritual: Luke 10:41 “And Jesus answered and said unto her, Martha, Martha, thou art careful and troubled about many things: But one thing is needful: and Mary hath chosen that good part, which shall not be taken away from her.”

In Mark, Yeshua is anointed on his head and the pharisees murmur against him because of the cost: Mark 14:3 “And being in Bethany in the house of Simon the leper, as he sat at meat, there came a woman having an alabaster box of ointment very precious; and she brake the box, and poured it on his head. And there were some that had indignation within themselves, and said, Why was this waste of the ointment made? For it might have been sold for more than three hundred pence, and have been given to the poor. And they murmured against her. And Jesus said, Let her alone; why trouble ye her? she hath wrought a good work on me. ... She hath done what she could: she is come aforehand to anoint my body to the burying.

In Luke this woman is described as a “sinner”, interpreted as a prostitute and they murmur because she is a sinner: Luke 7:37 “And, behold, a woman in the city, which was a sinner, when she knew that Jesus sat at meat in the Pharisee’s house, brought an alabaster box of ointment, And stood at his feet behind him weeping, and began to wash his feet with tears, and did wipe them with the hairs of her head, and kissed his feet, and anointed them with the ointment”.

This sinner has also been associated with Magdalen and with the woman caught in adultery: John 8:3 “And the scribes and Pharisees brought unto him a woman taken in adultery, saying to Yeshua “Master, this woman was taken in adultery, in the very act” to which he replied He that is without sin among you, let him first cast a stone at her, And they which heard it, being convicted by their own conscience, went out one by one, and so Yeshua said “Woman, where are those thine accusers? hath no man condemned thee? She said, No man, Lord. And Jesus said unto her, Neither do I condemn thee”.

Yeshua’s very fanciful genealogy in Matthew, as King of the Jews, descends through five “fallen” women: (1) Tamar who covered her head with a veil as a prostitute to become impregnated by her father-in-law when he failed to honour betrothing her to a husband’s brother on the death of her husband according to Hebrew law. (2) Rahab, the prostitute who let the Israelite spies into Jericho. (3) Ruth who lay with Boaz at night and later became his wife. (4) Bathsheba who sired Solomon with David, although then married to Uriah, whom David later had killed and (5) mother Mary who was found with child out of wedlock and was partnered by Joseph: “Then Joseph her husband, being a just man, and not willing to make her a publick example, was minded to put her away privily” (Matt 1:19).
All these women are perceived to be virtuous, but all have at face value sexually transgressed, despite the fact that Mary is claimed by the Christian account to be impregnated by God in the form of the Holy Ghost, just as Semele was impregnated by Zeus.

Likewise the parable of the foolish virgins, which is clearly apocryphal, as it appears only in Matthew, overlaps an intensely sexual theme of the Bridegroom entering a marriage ceremony with multiple virgins, at least five of which he consorts with. This is of course an echo of the Jewish relationship of God with the bride Israel, expounded throughout the Old Testament in God’s jealousy and violent opposition to the whoring of the nations, taken to a pastoral climax with Rabbi Akiva’s adoption of the Song of Songs, one of the most fertile and haunting love songs ever committed to scripture, as the Holy of Holies, the inner temple sanctum, and which despite its myrrh on the locks enigmatically remains in the Christian bible as the same metaphor.

However the dark side of this parable is that it is used sacrificially. Luke 2:19 “And Jesus said unto them, Can the children of the bridechamber fast, while the bridegroom is with them? as long as they have the bridegroom with them, they cannot fast. But the days will come, when the bridegroom shall be taken away from them, and then shall they fast in those days”, again echoing the Dionysian winebibber “And no man putteth new wine into old bottles: else the new wine doth burst the bottles, and the wine is spilled, and the bottles will be marred: but new wine must be put into new bottles.”.

Christianity thus waits endlessly for the messiah’s Second Coming, in contrast to the fertile quest of the Jews to go forth and multiply as a living species. It thus constitutes a hijacking of the fertility principle to enshrine Christianity as the cosmic portal of salvation.

The women also play a pivotal role in the tragic enactment of the Crucifixion, with the daughters of Jerusalem and the women of Galilee playing opposing parts as a contrapuntal dramatic chorus:

Luke 23:27 “And there followed him a great company of people, and of women, which also bewailed and lamented him. But Jesus turning unto them said, Daughters of Jerusalem, weep not for me, but weep for yourselves, and for your children. For, behold, the days are coming, in which they shall say, Blessed are the barren, and the wombs that never bare, and the paps which never gave suck”.

Luke 23:48 “And all the people that came together to that sight, beholding the things which were done, smote their breasts, and returned. And all his acquaintance, and the women that followed him from Galilee, stood afar off, beholding these things”.

Consistent with the Dionysian maenads and fertility traditions of the nations, the women are intimately involved, while the male disciples are scattered like sheep in Yeshua’s hour of need. The women of Galilee were pivotal and Magdalen prominently among them for pronouncing the risen Christ: “And the women also, which came with him from Galilee, followed after, and beheld the sepulchre, and how his body was laid. And they returned, and prepared spices and ointments; and rested the sabbath day according to the commandment” (Luke 23:55). Luke 24:10 “It was Mary Magdalene and Joanna, and Mary the mother of James, and other women that were with them, which told these things unto the apostles.”

7. Whom do Men say that I Am?

The canonical gospels pivot on the critical assumption that Yeshua is Christ the Son of God who must die and rise again on the third day. Luke 9:20 “He said unto them, But whom say ye that I am? Peter answering said, The Christ of God. And he straitly charged them, and commanded them to tell no man that thing; Saying, The Son of man must suffer many things, and be rejected of the elders and chief priests and scribes, and be slain, and be raised the third day.”

Mark has the latter discussions in more detail which indicates that the entire mission was conceived as a confrontational assault on the division of dark and light in which the sacrifice would bring about the Resurrection in three days. When Peter rebukes Yeshua, his response is to call him Satan, confirming the war of dark and light – Matt 12:30 “if you are not with me, you are against me”, “Mark 8:31 And he began to teach them, that the Son of man must suffer many things, and be rejected of the elders, and of the chief priests, and scribes, and be killed, and after three days rise again. And he spake that saying openly. And Peter took him, and began to rebuke him. But when he had turned about and looked on his disciples, he rebuked Peter, saying, Get thee behind me, Satan: for thou savourest not the things that be of God, but the things that be of men.”
Matt 16:13 “When Jesus came into the coasts of Caesarea Philippi, he asked his disciples, saying, Whom do men say that I the Son of man am? And they said, Some say that thou art John the Baptist: some, Elias; and others, Jeremias, or one of the prophets. He saith unto them, But whom say ye that I am? And Simon Peter answered and said, Thou art the Christ, the Son of the living God.”

In his trial, Yeshua confirms he is the Christ and will return in power. Mark 14:61: “But he held his peace, and answered nothing. Again the high priest asked him, and said unto him, Art thou the Christ, the Son of the Blessed? And Jesus said, I am: and ye shall see the Son of man sitting on the right hand of power, and coming in the clouds of heaven”.

In complete contrast, in The Gospel of Thomas, which begins “Whoever finds the interpretation of these sayings will not experience death” Yeshua says he is NOT the disciples master, but they are drunk on his Dionysian spring: Thom (13) Jesus said to his disciples, "Compare me to someone and tell me whom I am like." Simon Peter said to him, "You are like a righteous angel." Matthew said to him, "You are like a wise philosopher." Thomas said to him, "Master, my mouth is wholly incapable of saying whom you are like." Jesus said, "I am not your master. Because you have drunk, you have become intoxicated from the bubbling spring which I have measured out.” Again a Dionysian metaphor, but also a veridical declaration of truth.

Likewise, the Kingdom, which the canonical gospels declare will come with apocalyptic cataclysm, is the natural world around us obscured by our own barriers to knowing and appreciating reality: Thom (113) ‘His disciples said to him, “When will the kingdom come?”’ Jesus said, “It will not come by waiting for it. It will not be a matter of saying ‘here it is’ or ‘there it is’. Rather, the kingdom of the father is spread out upon the earth, and men do not see it’.”

Rather than a future day of judgment, the new world is already here: Thom (51) His disciples said to him, "When will the repose of the dead come about, and when will the new world come?" He said to them, "What you look forward to has already come, but you do not recognize it.

The Kingdom is preceded and evoked by the natural condition in which we all become the sons of God: Thom (3) Jesus said, "If those who lead you say to you, 'See, the kingdom is in the sky,' then the birds of the sky will precede you. If they say to you, 'It is in the sea,' then the fish will precede you. Rather, the kingdom is inside of you, and it is outside of you. When you come to know yourselves, then you will become known, and you will realize that it is you who are the sons of the living father.

Thom (20) The disciples said to Jesus, "Tell us what the kingdom of heaven is like." He said to them, "It is like a mustard seed. It is the smallest of all seeds. But when it falls on tilled soil, it produces a great plant and becomes a shelter for birds of the sky.”

The end of days is not an end but is as it was in the beginning. Thom (18) The disciples said to Jesus, "Tell us how our end will be." Jesus said, "Have you discovered, then, the beginning, that you look for the end? For where the beginning is, there will the end be. Blessed is he who will take his place in the beginning; he will know the end and will not experience death.”

Nevertheless he reinforces that he is there to provoke conflict and conflagration: Thom (16) Jesus said, “Men think, perhaps, that it is peace which I have come to cast upon the world. They do not know that it is dissension which I have come to cast upon the earth: fire, sword, and war. For there will be five in a house: three will be against two, and two against three, the father against the son, and the son against the father. And they will stand solitary.”

Yet he will do this by instilling new vision: Thom (17) Jesus said, "I shall give you what no eye has seen and what no ear has heard and what no hand has touched and what has never occurred to the human mind.”

Perceiving ultimate reality with the mind counterpoints Paul’s quote, which stresses loving God: “But, as it is written, “What no eye has seen, nor ear heard, nor the human heart conceived, what God has prepared for those who love him” (1 Corinthians 2:9). This is again different from the Old Testament original “From ages past no one has heard, no ear has perceived, no eye has seen any God besides you, who works for those who wait for him” (Isa 64:4), which emphasises Yahwistic monotheism, waiting in in faithful covenant.

The key to the kingdom is childlike innocence: Thom (46) Jesus said, “Among those born of women, from Adam until John the Baptist, there is no one so superior to John the Baptist that his eyes should not be lowered (before him). Yet I have said, whichever one of you comes to be a child will be acquainted with the kingdom and will become superior to John.” Thom (37) expands hinting that unravelling the Edenic Fall brings back the immortality of the Tree
of Life claimed in the opening passage: Jesus said, "When you disrobe without being ashamed and take up your garments and place them under your feet like little children and tread on them, then [will you see] the son of the living one, and you will not be afraid."

He says we all have it within us, but warns that what we lack through denial can also kill us. Thom (70) Jesus said, "That which you have will save you if you bring it forth from yourselves. That which you do not have within you [will] kill you if you do not have it within you."

And that the undivided unity removing the duality of division is the key: Thom (106) Jesus said, "When you make the two one, you will become the sons of man, and when you say, 'Mountain, move away,' it will move away."

Thom (22) Jesus said to them, "When you make the two one, and when you make the inside like the outside and the outside like the inside, and the above like the below, and when you make the male and the female one and the same, so that the male not be male nor the female female; and when you fashion eyes in place of an eye, and a hand in place of a hand, and a foot in place of a foot, and a likeness in place of a likeness, then will you enter [the kingdom]."

Yeshua sees himself as pure cosmological spirit permeating the natural world. Thom (77) Jesus said, "It is I who am the light which is above them all. It is I who am the all. From me did the all come forth, and unto me did the all extend. Split a piece of wood, and I am there. Lift up the stone, and you will find me there."

Yeshua feels afflicted by human ignorance of his insights: Thom (28) Jesus said, "I took my place in the midst of the world, and I appeared to them in flesh. I found all of them intoxicated; found none of them thirsty. And my soul became afflicted for the sons of men, because they are blind in their hearts and do not have sight; for empty they came into the world, and empty too they seek to leave the world. But for the moment they are intoxicated. When they shake off their wine, then they will repent."

Some of the sayings tend to a gnostic pessimism about the natural world, but accepting of its potential to produce conscious enlightenment: Thom (29) Jesus said, "If the flesh came into being because of spirit, it is a wonder. But if spirit came into being because of the body, it is a wonder of wonders. Indeed, I am amazed at how this great wealth has made its home in this poverty."

He does not say physician heal thyself but acknowledges deftly that a physician does not treat their friends: Thom (31) Jesus said, "No prophet is accepted in his own village; no physician heals those who know him."

He makes a cryptic observation that the king will die after the sacred union: Thom (61) Jesus said, "Two will rest on a bed: the one will die, and the other will live." Salome said, "Who are you, man, that you ... have come up on my couch and eaten from my table?" Jesus said to her, "I am he who exists from the undivided. I was given some of the things of my father." ... "I am your disciple." ... "Therefore I say, if he is destroyed he will be filled with light, but if he is divided, he will be filled with darkness."

There is a mention of apocalyptic times, but no hint of Christ returning in power: Thom (79) "A woman from the crowd said to him, "Blessed are the womb which bore you and the breasts which nourished you." He said to [her], "Blessed are those who have heard the word of the father and have truly kept it. For there will be days when you will say, 'Blessed are the womb which has not conceived and the breasts which have not given milk.'"

Although he rejects Peter’s patriarchalism, he still entertains a notion that the male is spiritual: Thom (114) Simon Peter said to them, "Let Mary leave us, for women are not worthy of life." Jesus said, "I myself shall lead her in order to make her male, so that she too may become a living spirit resembling you males. For every woman who will make herself male will enter the kingdom of heaven.

In complete contrast to the canonical succession through Peter to Paul, Thomas has Yeshua declare that James the Just, his brother the original founder fo the Jewish Christian movement was his ordained successor: Thom (12) The disciples said to Jesus, "We know that you will depart from us. Who is to be our leader?" Jesus said to them, "Wherever you are, you are to go to James the righteous, for whose sake heaven and earth came into being."

As a counterpoint to the Gospel of Thomas, Thunder Perfect Mind remains the most enigmatic of the Nag Hammadi texts. It reveals a female presence at least as enigmatic and paradoxically transcendent as Yeshua’s persona. Here her statements and Yeshua’s are presented as a refrain between female thunder and male lightning.
Thunder - Perfect Mind

A: 'Look upon me you who reflect upon me and you hearers hear me. You who are waiting for me take me to yourselves.

For I am the first, and the last. I am the honored one and the scorned one. I am the whore, and the holy one. the virgin and the wife.

I am [the mother] and the daughter.... I am the barren one, and many are her sons. I am she whose wedding is great, and I have not taken a husband....

En/lightning El-Nino

B: Look upon me you who reflect upon me.

For I am alpha and omega, the divine and the blasphemer, Ba’al Zebul and the Holy Ghost, the Father and the Son of Man. I am the father of my mother and it is my wife who begot me or ever I was born.

I am the Bridegroom whose communion is celebrated and I have not taken a wife.

A: I am knowledge and ignorance.... I am shameless and ashamed. I am strength, and I am fear... I am senseless, and I am wise....

I am the silence that is incomprehensible and the idea whose remembrance is frequent. The voice whose echo is reverberating the thunder that intoxicates.

I am the one whom you have pursued. I am the one that you have seized. I am the one that you have scattered and you have gathered me together.

B: I am the word made flesh and yet the bread of life. I am the good shepherd and yet the paschal lamb.

I am the true vine and yet the sprouting rod. I am the fisher of men and yet the eye of the storm.

I am the lightning uniting heaven and earth in rains of plenty. I am the light of the world and the darkness at noontide.

A: The union and the dissolution. I am the judgment and the acquittal. I am the shameless one before whom you are ashamed.

Though sinless, I am the root of sin. The solace even of my labour pains. I am the meaning of the word and the very sound of the name.

I am the one whom they call Life and you have called death. In my weakness do not ever forsake me, nor ever fear my power.

B: Split a piece of wood and you will find me there. Lift up a stone and you will find me there for I am the light above the All and to me did the All extend.

I am not your master but you’ve become drunk from the bubbling stream that I have measured out and whoever discovers this interpretation will never experience death.

I am the one who returns to loosen the bands and open the prison to them that are bound. I am the din that is unendurable. The epiphany of miraculous dread.

A: I am the intimate companion of the savior. He would come to kiss me on my mouth He asked them “Why do I not love you, as I love the one who permeates the All?”

I am lust in [outward] appearance and yet I’m the very soul of discretion, for many are the forms... and fleeting pleasures which men embrace, till they become sober and go up to their resting place. And there they will find me and live and not die again.’

B: I am the one who is called Truth and I am cast upon the face of the earth. I am the one who you have despised and yet you love me all the more.

Why do you curse me and honour me? Why do you consume and sanctify me? Why do you leave the body hanging there when the fire is already alight?

I bring you to weave, the garments of salvation and offer you the requital of true love. In our blood flows the fruit of the Tree of Life and in our flesh the healing of the nations.

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64 Titled in recognition of The Dialogue of the Saviour (Robinson 1990).
8. Descent into Hades and Harrowing Hell

Yeshua’s crucifixion and resurrection on the third day, echoes Inanna-Ishtar’s descent as the Goddess of Heaven and Earth, into her sister, Ereshkigal’s domain of Hell in the three days of the dark moon, stripped naked of her garments one by one in the dance of the seven veils, by the galla, who later sacrifice Tammuz-Dumuzi on her return. Hellenistic writers have, since the crucifixion sought to explain Yeshua’s death and perceived ascension, in terms of the Greek cosmology of Hades as the realm of the dead, echoing the Hebrew Sheol, later becoming the increasingly apocalyptic Harrowing of Hell, to delineate a revealed cosmology of God’s cosmic manifestation, both forwards in time to the eschatologic apocalypse and backwards in time to the very beginning in Adam, thus trumping both the pagan world and the Judaic Hebrew traditions, as incomplete flawed realisations of the invincible cosmic deity manifesting in history, in the final conversion of Yeshua, the person and apocalyptic prophet into a Hellenistic man-God.

The word “Hell”—from the Norse, Hel; in Latin, infernus, infernum, inferni; in Greek, ᾍδης (Hades); in Hebrew, שָאול (Sheol)—is used in Scripture and the Apostles’ Creed to refer to the abode of all the dead, whether righteous or evil, unless or until they are admitted to Heaven. This abode of the dead is the “Hell” into which the Creed says Christ descended. This distinction between Hades and Hell continues, from the earliest creeds to this day, in the varying accounts of the Apostles Creed and its precursors: “he descended to the dead” and “he descended into hell”. In the time before it entered the creed, the descent was frequently taken to mean that Christ had gone to rescue the souls of the Old Testament faithful from the underworld, from what Western Catholic theology eventually called the limbo patrum.

The Old Testament view of the afterlife was that all people, whether righteous or unrighteous, went to Sheol when they died. No Hebrew figure ever descended into Sheol and returned, although an apparition of the recently deceased Samuel briefly appeared to Saul when summoned by the Witch of Endor. The New Testament maintains a distinction between Hades or Sheol, the common “place of the dead”, and the eternal destiny of those condemned at the Final Judgment, variously described as Gehenna, “the outer darkness,” or a lake of eternal fire, otherwise known as Hell. The Hellenistic views of heroic descent into the Underworld and successful return follow traditions that are far older than the Orphic and other mystery religions popular at the time of Christ, including that of Gilgamesh and the Odyssey.

Milavec (2021) notes the progression in the view of Christ’s descent, which undergoes an apocalyptic extrapolation as time ensues. In Acts 2:23, Peter says that Christ “was not abandoned by God in Hades [ο τε νεκατελείφθη ες ιδην],” but says nothing about Jesus preaching in Hades. In 1 Peter however this is specifically described:

“By which also he went and preached unto the spirits in prison, which sometime were disobedient, when once the long suffering of God waited in the days of Noah, while the ark was a preparing, wherein few, that is, eight souls were saved by water.” (3:20).
Justin Martyr (d. 165 C.E.) claims it is the Jews who had died prior to the coming of Jesus: “The Lord God remembered his dead people of Israel who lay in their graves, and he descended to preach to them his salvation” (Dial. 72.4). The intent here appears to be that the good news of the soon-to-arrive Kingdom of God was being shared with the hundreds of thousands of those Jews from Abraham to John the Baptist. Even though they are admittedly laying in their graves, they receive the message of God’s future salvation intended for those “sleeping” in hope. Clement of Alexandria (d. 215 C.E.) tells that the Apostles, following their own deaths, descended into Hades where they preached to the pagan philosophers who had lived righteous lives (Strom. VI, 6:45, 5). The third-century Gospel of Bartholomew portrays the “King of Glory” as descending the stairs of a thousand steps into the underworld. Hades, the god of the underworld, is trembling uncontrollably as he descends. Jesus “shattered the iron bars” of the gates of Hades and grabs the god Hades himself and pummels him “with a hundred blows and bound him with fetters that cannot be loosed" in an operation to save “Adam and all the patriarchs”. When Christ meets Adam, he specifically says: “I was hung upon the cross for your sake and for the sake of your children”, establishing the backwards causality.

The Catholic Catechism states this forward and backward causality from end to end of time. “In his human soul united to his divine person, the dead Christ went down to the realm of the dead. He opened Heaven’s gates for the just who had gone before him.” His death is claimed to have freed from exclusion from Heaven the just who had gone before him: “It is precisely these holy souls who awaited their Saviour in Abraham’s bosom whom Christ the Lord delivered when he descended into Hell”, echoing the words of the Roman Catechism, His death was of no avail to the damned. "By the expression 'He descended into Hell', the Apostles' Creed confesses that Jesus did really die and through his death for us conquered death and the devil 'who has the power of death' (Hebrews 2:14):

Forasmuch then as the children are partakers of flesh and blood, he also himself likewise took part of the same; that through death he might destroy him that had the power of death, that is, the devil; And deliver them who through fear of death were all their lifetime subject to bondage. For verily he took not on him the nature of angels; but he took on him the seed of Abraham.

Given this annihilating redemptive power over the devil, it remains opaque why deadly sin is still deemed to exist.

This Hellenistic view of the underworld extends from the Synoptic Gospels through to Revelation:

"And you, Capernaum, who are exalted to heaven, will be brought down to Hades; for if the mighty works which were done in you had been done in Sodom, it would have remained until this day." (Matt 11:23, Luke 10:15).

"I am He who lives, and was dead, and behold, I am alive for evermore. Amen. And I have the keys of Hades and of Death." (Revelation 1:18)

"The sea gave up the dead who were in it, and Death and Hades delivered up the dead who were in them. And they were judged, each one according to his works." (Revelation 20:13)

In the parable of the rich man and Lazarus the beggar, Luke 16 has Yeshua referring to Hades in a manner that anticipates the punishments of Hell in the Day of Judgment, preordaining it for the guilty as an antechamber of woe. Versions of the Bible continue to predominantly refer to this as Hades or “the dead”, with only King James using Hell:

"And being in tormented in Hades, he lifted up his eyes and saw Abraham afar off, and Lazarus in his bosom. And he cried and said, Father Abraham, have mercy on me, and send Lazarus, that he may dip the tip of his finger in water, and cool my tongue; for I am tormented in this flame. But Abraham said, Son, remember that thou in thy lifetime receivedst thy good things, and likewise Lazarus evil things: but now he is comforted, and thou art tormented".

The Gospel of Matthew allegorically relates that many people rose from the dead, and after the resurrection walked about in Jerusalem and were seen by many people there:

"And, behold, the veil of the temple was rent in twain from the top to the bottom; and the earth did quake, and the rocks rent; And the graves were opened; and many bodies of the saints which slept arose, And came out of the graves after his resurrection, and went into the holy city, and appeared unto many. Now when the centurion, and they that were with him, watching Jesus, saw the earthquake, and those things that were done, they feared greatly, saying, Truly this was the Son of God." (Matt. 27:53)
9. Balaam the Lame: Talmudic Entries

In contrast to the Christian gospels, the Talmudic entries cast Yeshua as a false messiah who led Israel into misfortune. These entries portray an antagonism which in itself explains the attitude in the gospels is not merely anti-Jewish polemic based on the betrayal by the high priests, but genuinely records a spiritual tension about cosmological pretensions that arose from the Crucifixion and the claim to be the Son of God.

The Lexicon Talmudicum and Talmud babli Sanhedrin 106b, 43a, 51a and the Toldoth Jeshu states (Graves 1946 6, 1953 23, 288): Commentators refer to Jeshu-ha-Notzri [Jesus of Nazareth] by mention of the wicked kingdom of Edom, since that was his nation... he was hanged on a Passover eve... He was near to the kingdom [genealogically].

Likewise the Qur’an refers to Jesus as Isa after Esau the “red man” of Edom. It thus appears that both the Jews and the Arabs recognised the Edomite character of Jesus’ mission in a way not understood by Christians themselves.

Balaam the lame was 33 years old when Pintias the Robber [Pontius Pilate] killed him... They say that his mother was descended from princes and rulers but consorted with carpenters.

The Mishnah (Baraitha and Tosefta) note the following passages highlighting the tension between conventional Jews and Jesus’ followers: “It has been taught: On the eve of the Passover they hanged Yeshu ... because he practised sorcery and enticed and led Israel astray ... Our Rabbis taught Yeshu had five disciples Mattai, Nakkai, Netzer, Buni, and Todah.”

Rabbi Elizah ben Damah is cited asking that Jacob came to heal him in the name of Yeshu[a] ben Pantera. He died being forbidden to do so.

A disciple of Yeshu the Nazarene is cited in Sepphoris capital of Galilee saying “It is written in your Torah ‘Thou shalt not bring the hire of a harlot...’ How about making it a privy for the high priest? Thus did Yeshu ... teach me ‘For the hire of a harlot hath she gathered them, And unto the hire of a harlot shall they return’, from the place of filth they come, and unto the place of filth they go.

The Jewish citing of Jesus as son of a Roman ‘Pantera’ [panther] has been cited as another term of derision insinuating Dionysian heritage, but a Roman gravestone has been found in Bingerbrück Germany for Julius Abdes Pantera, an archer of Sidon, dating from the appropriate early Imperial period.

Another Sanhedrin entry 103a by Rabbi Hisda comments on Psalm 91:10 “There shall no evil befall thee, neither shall any plague come nigh thy dwelling” that “Thou shalt have neither a son nor a disciple who will publicly let his food burn (forfeit his salvation in a public display) like did Jesus the Nazarene”. Rabbi Abbahu taught “If a man say unto thee ‘I am God’ he lieth; if he saith ‘I am the Son of Man’ he will live to rue his words; and if he saith ‘I ascend into Heaven’ he will not bring to pass that which he saith”.

10. Soma and Sangre: No Redemption without Blood

Given the time sequence outlined in fig 127, the credibility of the canonical gospels remains tenuous to contrived. The Hellenistic role of Paul as the founder of the church as its entire religious view of Yeshua’s mission is analysed in detail in the section on Christian cosmology. Paul, whose conversion on the road to Damascus is claimed to have occurred 31–36 CE shortly after the crucifixion dated to 33 CE , admits he had no direct contact with Yeshua: “Last of all, as to one untimely born, He appeared to me also.” He was martyred in Rome in 64-67 CE around the time of the Fall of Jerusalem. Mark was written 66–74 CE with earlier dates 35–45 generally dismissed. But Luke’s account in his gospel and Acts dates from 80–90 CE and possibly as late as 110 CE. How then can Acts portray direct personal accounts of the Apostles leading up to Pentecost, remains as implausible as the canonical gospel accounts of Yeshua’s mission.

Moreover, the ensuing events are fraught with conflicts with the Jews, or Jewish Christian resisters to the gentle mission, and negative ‘miraculous’ events associated with anything but compassion or realisation. Ananias and Sapphira donated to the cause, but kept back some of their capital and were both literally
frightened to death for not giving all, ostensibly by the Holy Ghost, but actually by the assembled company, contrived as a miraculous act, demonstrating the need for utter submission to the Christian cause.

Having lost his sight on the Road to Damascus, while persecuting early disciples of Yeshua, possibly Hellenised diaspora Jews converted to Christianity, and blinded by a “light from heaven”, Saul had his sight restored by Ananias. He is initially rejected by the disciples as “they were all afraid of him, and believed not that he was a disciple”. Later Paul appears in a conflict with Barjesus, a Jew, disclaimed as a sorcerer, whose superior the deputy Sergius Paulus sought to “hear the word of God”. But Elymas the sorcerer withstood them:

“He that believeth, and is baptized, shall save his soul; but he that believeth not shall be damned. For this is the word of God, which shall destroy the flesh: but the word of the Lord endureth for ever.”

Then Saul, (who also is called Paul,) filled with the Holy Ghost, set his eyes on him. And said, O full of all subtlety and all mischief, thou child of the devil, thou enemy of all righteousness, wilt thou not cease to pervert the right ways of the Lord? And now, behold, the hand of the Lord is upon thee, and thou shalt be blind, not seeing the sun for a season. And immediately there fell on him a mist and a darkness; and he went about seeking some to lead him by the hand. Then the deputy, when he saw what was done, believed, being astonished at the doctrine of the Lord.”

How far have we fallen into misuse of the very principles of redemption? Who is the wicked sorcerer here? The man who curses another with blindness, or the man who sought to avoid the cult indoctrination of the deputy?

The Crucifixion and the account of the last supper leads to the cannibalistic Eucharist – to seek immortal life by consuming the bread and wine as body and blood of the Saviour: “Then Jesus said unto them, Verily, verily, I say unto you, Except ye eat the flesh of the Son of man, and drink his blood, ye have no life in you. Whoso eateth my flesh, and drinketh my blood, hath eternal life; and I will raise him up at the last day” (John 6:53).

This becomes the central Christian thesis: “Without the shedding of blood, there is no remission of sin”, from “And almost all things are by the law purged with blood; and without shedding of blood is no remission” (Heb 9:22), in an erroneous exegesis of Lev 17:11: “For the life of the flesh is in the blood: and I have given it to you upon the altar to make an atonement for your souls: for it is the blood that maketh an atonement for the soul.”

Hence the Eucharist – consuming the soma and sangre of the Christ – becomes the central rite of Christianity as a sacramental religion. But the blood spilled is not merely metaphorical, but actual, as ensuing waves of Christian martyrdom, the blood of the Crusades, and the deaths of the Inquisition and Witch Hunts and the genocide of native Americans by the Conquistadors attest.

Elaine Pagels (1988 33-6) describes the way in which the Kingdom of the Father has led to precipitate and tortured death on the part of a young female Christian believer. Whatever their courage and conviction, the prophesied Kingdom has been too long in coming to justify such needless loss of life. The fallacy that the Kingdom was about to arrive was shared by groups such as the Montanists. Perpetua’s sacrifice of herself is even more poignant in a young girl. Because her name is Perpetua she remains forever a living symbol in her precipitate martyrdom of that physical immortality which is vested in the passage of the generations through the fecundity of the female line.

Vibia Perpetua, fluent in both Greek and Latin, wrote about her experiences from the time of her arrest until the evening of her execution. Perpetua, twenty-two years old, recently married, and nursing her infant son, was arrested...
along with her friends and her personal slave Felicitas. Perpetua and her companions were scourged and thrown into a stifling and crowded African jail. After her arrest, Perpetua's father, "out of love for me," she wrote, "was trying to persuade me to change my decision." Refusing his pleas to give up the name Christian, Perpetua rejected her familial name instead, although she says she grieved to see her father, mother, and brothers "suffering out of compassion for me." At first, she wrote, "I was tortured with worry for my baby there," but after she gained permission for him to stay with her in prison, "at once I recovered my health, relieved as I was of my worry and anxiety for the child."

Then my brother said to me, "Dear sister, you already have such a great reputation that you could ask for a vision indicating whether you will be condemned or freed." Since I knew that I could speak with the Lord, whose great favors I had already experienced, I confidently promised to do so. I said I would tell my brother about it the next day. Then I made my request and this is what I saw. There was a bronze ladder of extraordinary height reaching up to heaven, but it was so narrow that only one person could ascend at a time. Every conceivable kind of iron weapon was attached to the sides of the ladder: swords, lances, hooks, and daggers. If anyone climbed up carelessly or without looking upwards, he/she would be mangled as the flesh adhered to the weapons. Crouching directly beneath the ladder was a monstrous dragon who threatened those climbing up and tried to frighten them from ascent. I began my ascent. At the summit I saw an immense garden, in the center of which sat a tall, grey-haired man dressed like a shepherd, milking sheep. Standing around him were several thousand white-robed people. As he raised his head he noticed me and said, "Welcome, my child." Then he beckoned me to approach and gave me a small morsel of cheese he was making. I accepted it with cupped hands and ate it. When all those surrounding us said "Amen." I awoke, still tasting the sweet cheese. I immediately told my brother about the vision, and we both realized that we were to experience the sufferings of martyrdom. From then on we gave up having any hope in this world (Young 47).

Hilarianus the governor, who had received his judicial powers as the successor of the late proconsul Minicius Timinianus, said to me: "Have pity on your father's grey head; have pity on your infant son. Offer the sacrifice for the welfare of the emperors." "I will not," I retorted. "Are you a Christian?" said Hilarianus. And I said: "Yes, I am. When my father persisted in trying to dissuade me, Hilarianus ordered him to be thrown to the ground and beaten with a rod. I felt sorry for my father, just as if I myself had been beaten. I felt sorry for his pathetic old age. Then Hilarianus passed sentence on all of us: we were condemned to the beasts, and we returned to prison in high spirits."

On the day before her execution, Perpetua wrote down another vision: She dreamed that she was led to the amphitheater, where enormous crowds waited to see her fight with a ferocious Egyptian athlete. 'Then a certain man appeared, so tall that he towered above the amphitheater. He wore a loose purple robe with two parallel stripes across the chest; his sandals were richly decorated with gold and silver. He carried a rod like that of an athletic trainer, and a green branch on which were golden apples. He motioned for silence and said, "If this Egyptian wins, he will kill her with the sword; but if she wins, she will receive this branch" Then he withdrew. "My clothes were stripped off, and suddenly I was a man." She fought and wrestled until she got him into a headlock and so won the fight. "But when I saw that we were wasting time, I put my two hands together, linked my fingers, and put his head between them. As he fell on his face I stepped on his head. Then the people began to shout and my assistants started singing victory songs. I walked up to the trainer and accepted the branch. He kissed me and said, 'Peace be with you, my daughter' And I triumphantly headed towards the Sanavivarian Gate. Then I woke up realizing that I would be contending not with wild animals but with the devil himself, but I knew that I would win the victory."

Two days before the execution, the Christians prayed for her in one torrent of common grief, and immediately after their prayer the labor pains came upon her. She suffered a good deal in her labor because of the natural difficulty of an eight-month delivery. One of the Christian women took the infant daughter to raise as her own, leaving Felicitas free to join her companions.

When the day arrived, Perpetua and Felicitas, together with their Christian brothers Revocatus, Saturninus, and Saturus, were led out of the prison to the gates of the amphitheater. The officer in charge, following the common practice, ordered the men to dress in robes of priests of the god Saturn, and the women to dress in the costumes of priestesses of the goddess Ceres, as if they were offering their deaths in sacrifice to the gods. Perpetua adamantly refused, saying: "We came to this of our own free will, so that our liberty should not be violated. We agreed to pledge our lives in order to do no such thing as sacrifice to the gods. And you agreed with us to do this." Again her plea prevailed, and the officer yielded. But just as Perpetua and Felicitas were to enter the arena, they were forcibly stripped naked and placed in nets, so that even the crowd was horrified when they saw that one was a delicate young
girl, and the other woman fresh from childbirth, with milk still dripping from her breasts. A mad heifer was set loose after them; Perpetua was gored and thrown to the ground. She got up and, seeing Felicitas crushed and fallen went over to her and lifted her up, and the two stood side by side. Then after undergoing further ordeals and seeing their friend Saturus endure agonising torture. Perpetua and Felicitas, along with the others were called to the centre of the arena to be slaughtered. A witness records that Perpetua "screamed as she was struck on the bone; then she took the trembling hand of the gladiator and guided it to her throat".

11. The False Dawn of the Prophesied Kingdom

The acid test of Yeshua’s mission is the actual appearance of the Kingdom with power in the same generation of those present when he was alive:

Mark 8:38 “Whosoever therefore shall be ashamed of me and of my words in this adulterous and sinful generation; of him also shall the Son of man be ashamed, when he cometh in the glory of his Father with the holy angels. And he said unto them, Verily I say unto you, That there be some of them that stand here, which shall not taste of death, till they have seen the kingdom of God come with power."

Luke 21:32 Verily I say unto you, This generation shall not pass away, till all be fulfilled. Heaven and earth shall pass away: but my words shall not pass away. And take heed to yourselves, lest at any time your hearts be overcharged with surfeiting, and drunkenness, and cares of this life, and so that day come upon you unawares. For as a snare shall it come on all them that dwell on the face of the whole earth.

But in Matthew 24 the passage is stunning in its sweep and unremitting declaration of a cosmological Armageddon apocalypse in Yeshua’s own generation:

And as he sat upon the mount of Olives, the disciples came unto him privately, saying, Tell us, when shall these things be? and what shall be the sign of thy coming, and of the end of the world?

The ensuing apocalypse in true Revelation style, is then claimed to be Yeshua’s own words:

And Jesus answered and said unto them, Take heed that no man deceive you. For many shall come in my name, saying, I am Christ; and shall deceive many. And ye shall hear of wars and rumours of wars: see that ye be not troubled: for all these things must come to pass, but the end is not yet. For nation shall rise against nation, and kingdom against kingdom: and there shall be famines, and pestilences, and earthquakes, in divers places. All these are the beginning of sorrows.

The persecution of the Christians is then declared:

Then shall they deliver you up to be afflicted, and shall kill you: and ye shall be hated of all nations for my name’s sake. And then shall many be offended, and shall betray one another, and shall hate one another. And many false prophets shall rise, and shall deceive many. And because iniquity shall abound, the love of many shall wax cold. But he that shall endure unto the end, the same shall be saved. And this gospel of the kingdom shall be preached in all the world for a witness unto all nations; and then shall the end come.

We then come to the abomination and tribulations of Daniel:

When ye therefore shall see the abomination of desolation, spoken of by Daniel the prophet, stand in the holy place, (whoso readeth, let him understand:) Then let them which be in Judaea flee into the mountains: Let him which is on the housetop not come down to take any thing out of his house: Neither let him which is in the field return back to take his clothes.

Then the woe to the pregnant and breastfeeding mothers:

And woe unto them that are with child, and to them that give suck in those days! But pray ye that your flight be not in the winter, neither on the sabbath day: For then shall be great tribulation, such as was not since the beginning of the world to this time, no, nor ever shall be. And except those days should be shortened, there should no flesh be saved: but for the elect’s sake those days shall be shortened.
Then we have accounts of the false Messiahs:

Then if any man shall say unto you, Lo, here is Christ, or there; believe it not. For there shall arise false Christs, and false prophets, and shall shew great signs and wonders; insomuch that, if it were possible, they shall deceive the very elect. Behold, I have told you before. Wherefore if they shall say unto you, Behold, he is in the desert; go not forth: behold, he is in the secret chambers; believe it not. For as the lightning cometh out of the east, and shineth even unto the west; so shall also the coming of the Son of man be. For wheresoever the carcasse is, there will the eagles be gathered together.

Then we enter full fledged Armageddon with the stars falling from the sky, angels and trumpets:

Immediately after the tribulation of those days shall the sun be darkened, and the moon shall not give her light, and the stars shall fall from heaven, and the powers of the heavens shall be shaken: And then shall appear the sign of the Son of man in heaven: and then shall all the tribes of the earth mourn, and they shall see the Son of man coming in the clouds of heaven with power and great glory. And he shall send his angels with a great sound of a trumpet, and they shall gather together his elect from the four winds, from every corner of the earth. Now learn a parable of the fig tree; When his branch is yet tender, and putteth forth leaves, ye know that summer is nigh: So likewise ye, when ye shall see all these things, know that it is near, even at the doors.

But in the very midst, Yeshua is said to claim all his supernatural unveiling and cosmic cataclysm will occur in the same generation as those present:

Verily I say unto you, This generation shall not pass, till all these things be fulfilled.

Next Noahs flood re-ensues in which half the living are taken:

Heaven and earth shall pass away, but my words shall not pass away. But of that day and hour knoweth no man, no, not the angels of heaven, but my Father only. But as the days of Noe were, so also shall the coming of the Son of man be. For as in the days that were before the flood they were eating and drinking, marrying and giving in marriage, until the day that Noe entered into the ark, And knew not until the flood came, and took them all away; so shall also the coming of the Son of man be. Then shall two be in the field; the one shall be taken, and the other left. Two women shall be grinding at the mill; the one shall be taken, and the other left. Watch therefore: for ye know not what hour your Lord doth come.

Finally Christ comes as a thief in the night in the parable of the goodman, but here Luke 12:40 is earlier in the mission contradicting Matthew 24:44 in the timing:

"And this know, that if the goodman of the house had known what hour the thief would come,
he would have watched, and not have suffered his house to be broken through.

Be ye therefore ready also: for the Son of man cometh at an hour when ye think not."

Matthew’s statement is implausible and incredible in every conceivable way. For Yeshua’s claimed statement to be true, not only would nation have to rise against nation, which did eventuate in the siege of Jerusalem 30 years later, but the stars would have to fall from the sky amid the greatest tribulation since the beginning of the world, yet this is all claimed to take place while the living standing before him are still alive. No one reading this can have any honest reaction but to realise that either it is a retrospective contrivance on the author’s part, or that Yeshua’s claims in the light of ensuing events are those of a false messiah, in both cases a historical fallacy.

Given the date of writing of the synoptics, Elaine Pagels (2012) points out that these passages and those of Revelation occurred after the siege of Jerusalem in CE 66, in a time when Christian faith of the minority of followers who still believed in Yeshua had their faith restored by these events as signs of preliminary “pangs of the messiah” before the Lord’s return in power.

Nevertheless, these statements claimed in the gospels to be direct from Yeshua, taken anywhere near face value, explicitly confirm the intention of his mission to be to bring about by his crucifixion the Kingdom of God through tumultuously violent events. This led to an urgent anticipation by early Christians that the kingdom was at hand, encouraging many to become martyrs rather than denounce their beliefs to the Romans.

I can sympathise and even empathise with Yeshua’s position. The visionary experience is all consuming, as it is a singular relationship between the individual and what is the Godhead by any other name. Hence the references to the Father as an intimate parental relationship. This means that the visionary is and has to be
prepared to do whatever it takes to fulfil the visionary responsibility that has been thrust upon them by circumstances. At the time the world was beset not by environmental apocalypse, but nation against nation. The religious mindset led straight into an apocalypse and if our history serves us well John the Baptist laid this sense of immediate responsibility onto Yeshua in his baptism.

If I were in Yeshua’s time and place, I could easily have taken the same position. In a sense his apprehension was fulfilled, because in 66 CE Armageddon ensued in the holocaust of the siege of Jerusalem, in which Josephus recounts over a million lives were lost, resulting in a Jewish diaspora that still exists to this day. The idea that one should trade one’s mortal life for a renewal of the entire world condition of everyone alive is a transaction no compassionate being thrust into the visionary vortex can fairly abandon. Indeed today if I thought that my own death could secure the ongoing diversity of immortal life on the planet from risk of extinction, I would be psychologically obliged to do it, because not doing so will not save me from mortality, but condemn the fates of endless others throughout the future. But this is not the way of true redemption.

By the end of the first century it had become obvious that Yeshua’s messianic expectation had failed to arrive and the Christian forefathers, in the wake of the Pauline heresy of Hellenistic-Judaism – a form of Judaism in classical antiquity that combined Jewish religious tradition with elements of Greek culture, recrafted Yeshua’s mission in their own image of reality. Hence the infusion of pagan Greek elements into the early Christian accounts pervading both Paul’s writings and those of Luke, who unashamedly wrote his gospel in high Greek. Paul was born Saul in Tarsus, which had been among the most influential cities in Asia Minor since the time of Alexander the Great, who died in 323 BC. Although it is known (from his biography and from Acts) that Paul could and did speak Hebrew, modern scholarship suggests that Koine Greek was his first language. All of Mark, Luke, Matthew and John wrote in Greek, not Hebrew or Aramaic. Luke’s Greek is the highest quality in style of anything in the new testament. This constitutes a frank reconstruction of history to forge a new implicitly fraudulent pagan gentile religion on the assumed basis of Yeshua’s mission and teachings powered by such single-minded conviction that countless martyrs intentionally suffered horrific deaths for no good cause.

The Gospel of Thomas also appears to have been originally written in Greek. After the Coptic version of the complete text was discovered in 1945 at Nag Hammadi, scholars realised that three different Greek text fragments previously found at Oxyrhynchus (the Oxyrhynchus Papyri), also in Egypt, were part of the Gospel of Thomas. These three papyrus fragments of Thomas date to between 130 and 250 AD. The manuscript of the Coptic text (CG II), found in 1945 at Nag Hammadi, Egypt, is dated at around 340 AD.

This virtual universality of Greek occurs despite the suggestion that some documents, such as the Quelle source, may have originally been written in Aramaic. The transition to Greek happened very early:

“[M]issionaries, above all ‘Hellenists’ driven out of Jerusalem, soon preached their message in the Greek language. We find them in Damascus as early as AD 32 or 33. A certain percentage of Jesus’ earliest followers were presumably bilingual and could therefore report, at least in simple Greek, what had been heard and seen. This probably applies to Cephas/Peter, Andrew, Philip or John. Mark, too, who was better educated in Jerusalem than the Galilean fishermen, belonged to this milieu. The great number of phonetically correct Aramaisms and his knowledge of the conditions in Jewish Palestine compel us to assume a Palestinian Jewish-Christian author. Also, the author’s Aramaic native language is still discernible in the Marcan style” (Hengel 2005).

The earliest Christian writing is 1 Thessalonians, dated circa CE 50. In it Paul’s message is to wait and not slumber, for the son of man shall come at any time hence, in the Rapture in the air:

“And to wait for his Son from heaven, whom he raised from the dead, even Jesus, which delivered us from the wrath to come. For the Lord himself shall descend from heaven with a shout, with the voice of the archangel, and with the trump of God: and the dead in Christ shall rise first: Then we which are alive and remain shall be caught up together with them in the clouds, to meet the Lord in the air: and so shall we ever be with the Lord. Wherefore comfort one another with these words. But of the times and the seasons, brethren, ye have no need that I write unto you. For yourselves know perfectly that the day of the Lord so cometh as a thief in the night. For when they shall say, Peace and safety; then sudden destruction cometh

65 Koine Greek ‘Common Greek’, also known as Alexandrian dialect, common Attic, Hellenistic or Biblical Greek, was the common supra-regional form of Greek spoken and written during the Hellenistic period, the Roman Empire and the early Byzantine Empire.
In the light of our burgeoning knowledge of cosmology, the Rapture in the clouds is a dangerous contrivance. What is both alarming and appalling is that it is now over 2000 years since the Crucifixion and the Christian religion, despite failing to convincingly prove the acid test of veracity by the Fall of Jerusalem in CE 66, which committed virtually the entire generation in Yeshua’s presence to oblivion, has locked itself into a perpetual delay of the Kingdom, claiming a false remit of authority, refusing to honestly admit to humanity the entire edifice of belief is a pagan contrivance, holding imperatively to the claimed status of being the ordained stewards of the Lord’s return in the End of Days, the Day of Judgment, as diabolically described in Revelation’s multiple genocides. This position is inconsistent with the paradoxical visionary immanence of Yeshua’s own teachings, particularly those in the Gospel of Thomas, and strategically fixes the persona of Yeshua as pagan the Christ Son of God into the portal of reality, in a cosmological lie, preventing any evolution of the tradition through the insight of living people to address the actual needs of humanity and the living planet.

Paul’s ‘rapture’, is both completely unnatural, and profoundly dangerous, because it leads to many Christians today imagining the second coming of Jesus as the heavenly rapture in which the ‘late planet Earth’ is carelessly discarded for an eternal life in mid-air. This completely frustrates being able to address the apocalyptically urgent questions of avoiding a planetary Armageddon from human misadventure disrupting the climate depleting Earth’s resources and causing a mass extinction of the diversity of life, turning the planet from an immortal paradise into a potentially lethal man-made hell.

12. Transcending the Bacchae: Revelation and Cosmic Annihilation

The Bacchae, written by Euripides around 405 BCE, is considered to be not only one of Euripides’s greatest tragedies, but also one of the greatest dramatic works ever written, modern or ancient. A clear exception has to be Yeshua’s mission and Crucifixion which has clearly reverberated unparalleled throughout two millennia of blood spilled in the name of Christianity in martyrdom, Crusade, inquisition, and witch hunt.

The Bacchae recounts in violent detail the slaying of Pentheus by the maenads and the reformation of religious practice in Thebes for not recognising the true divinity of the Son of God. To many Christians it may seem an antithesis of all that is good in Yeshua’s compassionate sayings, but the consequences of the Kingdom coming with power invoked slaughter on a genocidal scale which leaves the single murder in the Bacchae paling to insignificance.

Semele, was a princess in the royal Theban house of Cadmus. She had an affair with Zeus, the King of the Gods, and became pregnant. As revenge, Zeus’s jealous wife Hera tricked Semele into asking Zeus to appear in his divine form. Zeus, too powerful for a mortal to behold, emerged from the sky as a bolt of lightning and burnt Semele to a cinder. He managed, however, to rescue his unborn son Dionysus and stitched the baby into his thigh. This means that the historical journey of the concept of the Son of God by a mortal woman runs from Dionysus to Yeshua 500 years later.

Semele’s family claimed that she had been struck by lightning for lying about Zeus and that her child, the product of an illicit human affair, had died with her, maligning her name and rejecting the young god Dionysus. Dionysus arrives in Thebes disguised as the stranger. During Dionysus’s absence, Semele’s father, Cadmus, had handed the kingdom over to his grandson Pentheus, who decided to forbid the worship of Dionysus. Dionysus tells the audience that when he arrived in Thebes he drove Semele’s sisters mad, and they fled to Mt. Cithaeron to worship him and perform his rites on the mountainside. Unconvinced of their divinely-caused insanity, Pentheus sees their drunken cavoring as an illicit attempt to escape the mores and legal codes regulating Theban society. He orders his soldiers to arrest the Lydian stranger and his maenads. He orders Dionysus to be chained, bound and tortured, but Dionysus escapes his bands. Similar stories are told in the Pauline letters. When he tries to tie Dionysus he ties only a bull, and when he plunges a knife into Dionysus. the blade passes only through shadow. Suddenly an earthquake shakes the palace, a fire starts.

Dionysus tries to persuade Pentheus to abandon his destructive path, but Pentheus refuses. A cowherd arrives and describes sightings the maddened women of Cadmus seen resting blissfully in the forest, feasting on milk, honey and wine that sprang from the ground. They played music, suckled wild animals and sang and danced with joy. But when they saw the cowherd, they flew into a murderous rage. The cowherd barely escaped, but the herd of cattle was captured and torn apart by hand.
Dionysus offers Pentheus a chance to see the maenads for himself, undetected. He agrees to do all Dionysus suggests, dressing himself in a wig and long skirts. Once in the woods, Pentheus cannot see the bacchants from the ground, and wants to mount a tree for a better vantage. Dionysus miraculously bends a tall fir tree, puts Pentheus on top, and gently straightens the tree. At once the maenads see him, and with rolling eyes and frenzied cries the women attack, bringing Pentheus down and dragging him to the ground. His mother Agaue, driven mad by Dionysus, proceeds to rip her son to death and returns home with Pentheus’s head in her hands.

Cadmus, who knows what has happened, sadly approaches his daughter and Agaue begins to weep. Cadmus remarks that the god has punished the family rightly but excessively. In the end, Dionysus finally appears in his true form to the city. He banishes Agaue from Thebes and ordains that Cadmus and his wife will turn into snakes, destined to invade Greek lands with a horde of barbarians.

Christianity, cast in the apocalyptic traditions of John the Baptist and the desert Essenes, adopted a fully fledged End of Days, with Jesus claiming in the synoptic gospels and John to challenge the devil in a final confrontation, through which he would come to return in power at the right hand of God. The siege of Jerusalem, the Jewish diaspora and the depravities of the Roman emperors subsequently sublimed this picture in Revelation into a view of world history in which Christ would return as the Lord and conqueror of evil in the Millennium and the effective Day of Judgment. Despite the failure of this entire concept over two millennia in the absence of the Lord’s return, the spectre of apocalyptic victory in tumult and conflict remains integral to Christian eschatology.

Also implicating the Hebrew tradition, there are there are forerunners of this, for example in post-exilic Zechariah (520-518 BCE), looking to the restoration of the Temple, which does have an apocalyptic climax, which however ends in pastoral tranquility, despite the destruction of the enemies:

“And it shall come to pass, that in all the land, saith the Lord, two parts therein shall be cut off and die; but the third shall be left therein. And I will bring the third part through the fire, and will refine them as silver is refined, and will try them as gold is tried: they shall call on my name, and I will hear them: I will say, It is my people: and they shall say, The Lord is my God. ... And his feet shall stand in that day upon the mount of Olives, which is before Jerusalem on the east, and the mount of Olives shall cleave in the midst thereof toward the east and toward the west, and there shall be a very great valley; and half of the mountain shall remove toward the north, and half of it toward the south ... And ye shall flee to the valley of the mountains; ... And it shall come to pass in that day, that the light shall not be clear, nor dark: But it shall be one day which shall be known to the LORD, not day, nor night: but it shall come to pass, that at evening time it shall be light. And it shall be in that day, that living waters shall go out from Jerusalem; half of them toward the former sea, and half of them toward the hinder sea: in summer and in winter shall it be. And the LORD shall be king over all the earth: in that day shall there be one LORD, and his name one. All the land shall be turned as a plain from Geba to Rimmon south of Jerusalem: ... And men shall dwell in it, and there shall be no more utter destruction; but Jerusalem shall be safely inhabited. And this shall be the plague wherewith the LORD will smite all the people that have fought against Jerusalem; Their flesh shall consume away while they stand upon their feet, and their eyes shall consume away in their holes, and their tongue shall consume away in their mouth. ... And it shall come to pass, that every one that is left of all the nations which came against
Jerusalem shall even go up from year to year to worship the King, the LORD of hosts, and to keep the feast of tabernacles. ... and in that day there shall be no more the Canaanite in the house of the LORD of hosts.” (Zech 13:14).

In Daniel, which is believed to have originated as a collection of folktales among the Jewish community in the late 4th to early 3rd centuries BCE, the apocalypse is political in nature, with the "abomination of desolation" identified with Antiochus IV, the king of the Greek Seleucid dynasty, who in 167 BCE, put an end to the practice of a lamb being sacrificed morning and evening, on the altar of the Jewish temple in Jerusalem. The visionary chapters of Daniel, chapters 7-12, are said to have been added to reassure Jews that they would survive in the face of this threat.

In 66 the Jews rose in revolt against the Romans as their ancestors had once done against Antiochus. The resulting First Jewish-Roman War ended in 70 CE when the legions of the Roman general Titus surrounded and eventually captured Jerusalem. The city and the temple were razed to the ground, and the only habitation on the site until the first third of the next century was a Roman military camp. According to Josephus this resulted in over 1.1 million deaths. It was against this background that the gospels were written, Mark around 70 CE and Matthew and Luke around 80–85. Mark harks specifically back to Daniel to validate the Kingdom as a prophecy:

"But when ye shall see the abomination of desolation, spoken of by Daniel the prophet, standing where it ought not, (let him that readeth understand,) then let them that be in Judaea flee to the mountains: ... But in those days, after that tribulation, the sun shall be darkened, and the moon shall not give her light, And the stars of heaven shall fall, and the powers that are in heaven shall be shaken. And then shall they see the Son of man coming in the clouds with great power and glory" (Mark 13:14).

In Revelation, ἀποκάλυψις (apokalypsis) this world view is taken to its annihilating cosmological extreme in culminating the Christian bible, although it is still not recognised as such by the Orthodox Church. Ironically it is not the latest work. Traditional sources date it to the reign of Domitian (CE 81–96), in the wake of the siege of Jerusalem.

Elaine Pagels (2012) has a detailed insightful analysis, both in terms of a revitalisation of early Christian apocalyptic belief as a result of the tumultuous events of the fall of Jerusalem also highlighting its position in terms of the more Judaic elements of John’s vision whom she describes as a “provincial Jewish prophet”, which brought him into open conflict with Paul over issues of ‘kosher’ purity of food, sexual purity noted in Revelation as ‘virginity’ and sexual relationships with pagan gentiles, in which popularity among the gentiles resulted in a “new religion” emanating from the born-again Paul’s influence overtaking the traditions of the Jewish Christians. This gives an insight into how the formative early movements arose from diverse, conflicting positions, generating their own world views, which have later become ‘canonised’ into scripture now believed to be cosmological fact by believers, but which started out as intense poetic allegories intended to inspire the followers of visionary leaders, each following their own conception.

However, dangerously for the current era of planetary crisis, Revelation becomes a fully-fledged apocalyptic fantasy of the triage of all life, amid conflict of nations, in which there are cataclysmic life-devastating cosmological phenomena - a great earthquake where the sun becomes black as sackcloth of hair, and the moon like blood, mixing an eclipse of the sun, an eclipse of the moon and an earthquake. The stars of heaven fall to the Earth, the sky recedes like a scroll being rolled up, and every mountain and island is moved out of place.

This takes us straight back to the flat-Earth cosmology of the sabbatical creation. There is no way that the islands and mountains would just move and shake when the stars fall and the sky rolls up. It is a cosmology in frank conflict with the 13 billion year evolution of the universe full of galaxies and the 3 billion year evolution of the diversity of life. This only makes sense as a conscious nightmare vision, and political hyperbole, not a genuine cosmological event. It is the most extraordinary book of eschatological religious vision ever written, bursting with tumultuous battles and cataclysms, from the beasts of belial, to the avenging Lord, amid tumult and destruction, resulting in the triage of all life and impossibly a triage of the Sun, Moon and stars:

“The first angel sounded, and there followed hail and fire mingled with blood, and they were cast upon the earth: and the third part of trees was burnt up, and all green grass was burnt up. And the second angel sounded, and as it were a great mountain burning with fire was cast into the sea: And the third part of the creatures which were in the sea, and had life, died; and the third part of the ships were destroyed. ... And the fourth angel sounded, and the third part of the sun was smitten, and the third part of the moon, and the third part of the stars; so as the third part of them was darkened, and the day shone not for a third part of it, and the night likewise. (Rev 8). And the four angels were loosed, which were prepared for an hour, and a day, and a month, and a year, for to slay the third part of men. By these three was the third part of men killed, by the fire, and by the smoke, and by the brimstone, which issued out of their mouths” (Rev 9).
Later we see the pregnant woman clothed with the Sun standing on the Moon, who is an apotheosis of the Queen of Heaven, Inanna-Ishtar but also identified by Christians with Mary. Her boy-child, the warlord-to-come, is attacked by a dragon, and taken up to God, precipitating the war in heaven:

"And there appeared a great wonder in heaven; a woman clothed with the sun, and the moon under her feet, and upon her head a crown of twelve stars: And she being with child cried, travelling in birth, and pained to be delivered. And there appeared another wonder in heaven; and behold a great red dragon, having seven heads and ten horns, and seven crowns upon his heads. And his tail drew the third part of the stars of heaven, and did cast them to the earth: and the dragon stood before the woman which was ready to be delivered, for to devour her child as soon as it was born. And she brought forth a man child, who was to rule all nations with a rod of iron: and her child was caught up unto God, and to his throne" (Rev 12).

Fig 136: The woman clothed with the sun and the dragon (William Blake).

On the other side of the cosmic battle we find the great whore of Babylon, the dark manifestation of the same Inanna-Ishtar Goddess figure:

"I saw a woman sit upon a scarlet coloured beast, full of names of blasphemy, having seven heads and ten horns. And the woman was arrayed in purple and scarlet colour, and decked with gold and precious stones and pearls, having a golden cup in her hand full of abominations and filthiness of her fornication: And upon her forehead was a name written, "mystery, Babylon the great, the mother of harlots and abominations of the Earth". And I saw the woman drunken with the blood of the saints, and with the blood of the martyrs of Jesus: and when I saw her, I wondered with great admiration" (Rev 17).

Pagels (2012) notes the extraordinary time-suspending notion of eternity: “Then the angel raised his right hand to heaven, and swore by him who lives forever and ever ... There shall be no more time”. What use time standing still for eternity is to those in Heaven remains obscure.

Elaine Pagels further notes that many of the motifs, such as the Leviathan have echoes in some of the oldest Biblical passages that predate Genesis:

“And I saw a beast rising out of the sea, having ten horns and seven heads; and on its horns were ten crowns, and on its heads were blasphemous names. And the beast that I saw was like a leopard, its feet were like a bear’s, and its mouth was like a lion’s mouth. And the dragon gave it his power and his throne and great authority”

Thus the author of Psalm 74 praises God for having vanquished Leviathan:

“God, my king, is from old, working salvation in the earth. You divided the sea by your might; you broke the heads of the dragons in the waters; you crushed the heads of Leviathan; you gave him as food for the creatures of the wilderness”.

Pagels notes that “Israel’s storytellers, perhaps to reassure their hearers that God’s power is uncontested, morphed the sea monster Tiamat into tehom, the Hebrew term for ‘the depths’, the primordial sea over which they say that ‘wind from God’ moved in the beginning”.

The cosmic Christ appears as a feudal dictator-Lord of mass destruction treading the Dionysian winepress of revenge:

“And I saw heaven opened, and behold a white horse; and he that sat upon him was called Faithful and True, and in righteousness he doth judge and make war. His eyes were as a flame of fire, and on his head were many crowns; and he had a name written, that no man knew, but he himself. And he was clothed with a vesture dipped in blood: and his name is called The Word of God. And the armies which were in heaven followed him upon white horses, clothed in fine linen, white and clean. And out of his mouth goeth a sharp sword, that with it he should smite the nations: and he shall rule them with a rod of iron: and he treadeth the winepress of the fierceness and wrath of Almighty God” (Rev 19).

Unmitigated death and destruction is cast on the unbelievers:

“And I saw an angel standing in the sun; and he cried with a loud voice, saying to all the fowls that fly in the midst of heaven, Come and gather yourselves together unto the supper of the great God; That ye may eat the flesh of kings, and the flesh of captains, and the flesh of mighty men, and the flesh of horses, and of them that sit on them, and the flesh of all men, both free and bond, both small and great. ... And the beast was taken, and with him the false prophet that wrought miracles before him, with which he
deceived them that had received the mark of the beast, and them that worshipped his image. These both were cast alive into a lake of fire burning with brimstone. ... And the remnant were slain with the sword of him that sat upon the horse, which sword proceeded out of his mouth: and all the fowls were filled with their flesh” (Rev 19).

As gratuitous violence, Revelation reigns supreme as a vision of destructive planetary apocalypse, that is profoundly dangerous, deceptive and misleading – an unmitigated planetary and cosmological disaster. Religious historians cast this in the light of prophetic beliefs in a time of wars of conquest, and particularly the fall of Jerusalem in 66 CE, by heathens over the true followers of God (Pagels 2012).

However, as long term prophecy to this day and age, it tells of the diabolical violent rule of order of the Lord Son of the God of Creation, over the fecundity of nature, in the complete destruction of Earthly life, cast in the personae of the Great Whore and all the beasts, in which Christianity would move from the wantonly spilled blood of martyrdom, to its adoption as the authoritarian state religion of Rome, and thereby became the religion of dominant empire, leading to the Crusades against another totalitarian religion, albeit in the more compassionate person of Saladin, then the Gnostic Cathars and Albigenses, beliefs spilling out of the Crusades to the Holy Land, through Inquisition and Witch Hunts to the current planetary crises of human exploitation of nature in dominion over it, in climate crisis, the mass extinction of the diversity of life and nuclear mutually assured annihilation, currently being severely tested in the war of Russia on Ukraine, two Orthodox Christian countries. Thus we see a religion of assumed divine order at war with the chaotic fecundity of nature committing a genocide of life amid cosmological conflagration, to achieve the investiture of the avenging Lord of ultimate legislative command, the ultimate Darth Vader of Cosmology, leading to a sandbox replica of the Heavens in a sterile “Holy City” in the sky fashioned through the compete annihilation of the living, in which even the fearful are condemned alongside the murderers:

“But the fearful, and unbelieving, and the abominable, and murderers, and whoremongers, and sorcerers, and idolaters, and all liars, shall have their part in the lake which burneth with fire and brimstone: which is the second death.”

This is a huge tale of human misadventure in pursuing a false destructive ideology of oppressive order. Yet it contains two pivotal elements – the Tree of Life entwined around the throne of the Lamb, giving its Twelve monthly fruit for the healing of the nations – and the notion of the sacred marriage, or hieros gamos. However the sacred marriage is here not that of the true fertility between woman and man as sexual beings that generates the passage of the living generations, but in the corrupted form of the Lamb and the Heavenly Jerusalem, Christ and his Church, falling in the shadow of the dysfunctional marital relationship of Jehovah and the whoring bride Israel, whose ultimate Holy of Holies is sequestered in the metaphor of unrequited love in the Song of Songs:

Let us be glad and rejoice, and give honour to him: for the marriage of the Lamb is come, and his wife hath made herself ready (Rev 19). And I John saw the holy city, new Jerusalem, coming down from God out of heaven, prepared as a bride adorned for her husband. ... And there came unto me one of the seven angels ... and talked with me, saying, Come hither, I will shew thee the bride, the Lamb’s wife (Rev 21).

Finally we come to the Tree of Life itself, hidden since the foundation of the world in Eden, still beckoning to our living futures:

And he shewed me a pure river of water of life, clear as crystal, proceeding out of the throne of God and of the Lamb. In the midst of the street of it, and on either side of the river, was there the tree of life, which bare twelve manner of fruits, and yielded her fruit every month: and the leaves of the tree were for the healing of the nations (Rev 21).

Resurrection Revelation A Song after a brush with death, out of which the idea of planetary resplendence arose.

Fig 137: The Tree of Life in the new Jerusalem with the twelve gates, the throne of the lamb, and the twelve monthly fruit for the healing of the nations conflating the transcendent and the physical into a contradictory fantasy (Heavenly Jerusalem from Apocalypse 13th cent).
13. The Human Messianic Tradition

The concept of the Christ, Mashiach or ‘anointed one’ in the Jewish tradition is someone who brings about an epoch or paradigm of long-term future goodness, as I learned from a local Rabbi. Before Yeshua’s time there were a progression of messianic anointed, principally kings, in contrast both to the prophetic figures of Old Testament history, who were anointers, or protesters in sack cloth and ashes. Each of Saul, David and Solomon were anointed by a priest and and Cyrus the Mede was acclaimed as anointed in the scriptures (Isaiah 45). All of these were clearly and unambiguously human men. Both ‘messiah’ and ‘christ’ mean ‘anointed’ in their respective languages, so the key to being a messiah is being anointed either by a priest, by a woman, or by God ‘himself’ as in the quotation of Isaiah 61 which Yeshua read in Nazareth “the Lord hath anointed me” and which Jane and I read together as woman and man in the name of God and Gaia on the night of millennium Eve on the Mount of Olives.

Out of the Old Testament anointed, Solomon shines forth in his kingly splendour, in his religious heroism in establishing the first temple, and in his reputation as having a deep knowledge of the natural and supernatural, from the hyssop that grows out of the wall to the key and seal of the magical arts. He was also above all the consort of the feminine, in the Song of Songs, in the Wisdom of Solomon, in the Wisdom of the Proverbs, in giving the Queen of Sheba all she desired, in his many wives and concubines, and his permissiveness, criticised by the Yahwist prophets for letting his many wives worship the strange deities of their own predilection. He is thus a messiah of fertility and abundance, as well as anointed by a high priest in the religious tradition.

In the lead up to Yeshua’s mission, there was a growing tradition of Jewish apocalypticism in the shadow of the Zoroastrian renovation cosmology, that led to increasing eschatological expectations of a final end of days confrontation, as articulated in the accounts of prophets such as Zechariah, and in contemporary works such as Enoch and Jubilees. We can also compare Yeshua with contemporaries such as the Essene Teacher of Righteousness, all of whom are regarded by all as human beings. We can compare the cosmic scale of the conflict portrayed between God and Satan surrounding Yeshua’s mission with the invectives in the Dead Sea scrolls casting the same kinds of apocalyptic conflict in a more regional and humanly political light in terms of known adversaries. John the Baptist likewise, for all his scorched-Earth apocalyptic rhetoric, is accepted as a human forerunner.

Fig 138: Bar Kochba Knesset Menorah detail

Since Yeshua, in the Jewish tradition there have been a succession of human messiahs, most or all of which have been a source of lamentation to Jewish people. A century after Yeshua, Bar Kochba was anointed by Rabbi Akiva who brought about the final diaspora of the Jewish people in the last futile resistance to the Romans. For his pains, Akiva, was tortured and executed along with nine other prominent Rabbis by the Romans, after revolt of bar Kochba, whose name means "son of a star" following Numbers ‘prophecy’ 14:7 that "a star shall shoot out of Jacob" died, apparently strangled by a snake after the final battle of Betar. Thus we can see Jesus is not the only one, by any means, anointed, or anointer, to give his life for the cause.

Both Yeshua’s and bar Kochba’s missions can be seen in the Jewish two-messiah model of a Josephic messiah who dies followed by a prophesied Davidic messiah who is victorious. Jesus is Yeshua ben Joseph and died claiming to return in an eschatological parousia disconnecting from the limitations of Jewish descent of traditional law. Great effort nevertheless went into demonstrating his Davidic connection, e.g. with Bethlehem. Later Maimonides expanded this concept into a set of almost impossible criteria, including bearing the long lost lineage of David, rebuilding the temple and regathering the diaspora.

The 15th and 16th centuries account several Jewish messiahs, including David Re’uveni and Shlomo Molkho who was burned at the stake. The latter influenced two messiahs from Tsvat in Galilee, Isaac Luria and his successor Hayim Vital.

Akiva (50-135 CE) was instrumental in drawing up the canon of the Tanakh. He stoutly defended the canonicity of the Song of Songs, (as the Holy of Holies) and of Esther, despite it being an allegory of Ishtar. He was executed by the Romans after the Bar Kokhba revolt. Akiva said of Bar Kochbah ‘This is the King Messiah’. Johanan ben Torta retorted: “Akiva, Grass shall grow from your cheeks and yet the son of David shall not appear”.

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Luria’s new phrasing of the Kabbalistic myth of the Zohar provided for a
cosmic rescue mission to be carried out by the messiah and newly
endowed the messiah with the ability to determine the nature of the
individual soul and human deeds in the effort.

By far the largest messianic event influencing those to follow and causing
continuing ferment and interest internationally was the messiahship of
Shabbati Zevi who led a Jewish expedition eastward from Europe but was
imprisoned in Turkey and apostatised to Islam. This began a tradition of
duplicitous conversion in which successive messiahs extended the
antinomian theme, culminating in Isaac Frank who espoused mysticism
and sexual liberation opposed rabbinical teachings and whose daughter
become the only female Jewish messiah in his stead. Following this, a line
of Hassidic messiahs, begins with Israel ben Eliezer and continues in the
messianic following of Menachem Mendel Schneersohn today. The uneven
fates and fortunes and angst induced by messianic personalities has in turn led to much pain and a loss of confidence
in the messianic persona on the part of Jewish people, faced with both the holocaust and flux and change both in the
New World and in the fortunes of secular Zionism in the ‘Holy Land’.

What this parade of messiahs show is that the messianic tradition is one of human innovators and that the elevation of
Yeshua to a man-God status is a disconnection from the messianic tradition into pagan beliefs in a super-human hero,
characterised more closely by the fertility deities who bridge the realm between the sacred king and the personified
god in roles such as Adonis, Tammuz and Dionysus, all of which are human heroes grown into deities associated with
death and regeneration, and their projection onto the end of days revelation of the day of judgment, in the son of
humanity coming in power, and the personae of Quranic Isa (Jesus/Esau reflecting Nabatean connections) and the
mahdi in Shi’ite Islam.

There is a central problem with the idea that God the Father should choose the time and place of Yeshua to pronounce
his only begotten son should be sacrificed in a final struggle with Satan to end the dysphoria that began with the
mythical Fall in Eden. Why then, over one of many rumblings of civilisation and empire, albeit that of Jerusalem, and
not now, since it is now that we have discovered the means of total nuclear annihilation and are laying waste to the
planet in a mass extinction on a scale likely to reverberate over evolutionary time scales of millions of years?

The answer lies in the social history and the evolution of religious ideas of a God acting in history and the confluence
of the Zoroastrian concept of a final renovation with an increasingly apocalyptic Yahwistic following coming out of the
Exile, and its subsequent overthrow by Cyrus and his favour for the Jews. This confluence came about neither from a
cosmic God of the universe with a psychopathic jealousy and a tunnel vision for Zion, nor from a local God of history
alone, but the collision, ferment and fertilisation of human religious imagination through cultural interaction.
14. **Ecocrisis, Sexual Reunion and the Tree of Life**

The Tree of Life, connecting all forms of creation, and the Tree of Knowledge, connecting to heaven and the underworld, and are both forms of the world tree or cosmic tree, portrayed in diverse religions as the same tree. Uniquely, the Eden origin sets these two trees in opposition withholding the Tree of Life which conferred immortality from Adam and Eve because they had become aware of their sexuality. This is little more than a device of the patriarchy to blame woman for sexual fertility. The seven branched fruiting Tree of Life, as depicted in Fig 125 at 2200 BC is far more ancient than Biblical Eden. The life tree has been revered throughout the ancient cultures of the Near East as a symbol of perennial survival, as also noted in fig 141, but underlying this faith is an even more ancient truth going back to our gatherer-hunter origins in the genetic Tree of Life – the immortal Tree of Evolution of living diversity, upon which *Homo sapiens* is utterly dependent as a species, for our food, many of our medicines, for the air we breathe and the balance of the climate and the entire verdant paradise that Earth is capable of being in perpetuity if we don’t critically injure it or allow an ill fate to befall it.

But the shoots and whole branches of the Tree are being cast into the fire of mass extinction by human misadventure. This is the most climactic crisis to face humanity in evolutionary time and it is one the traditional religions, despite attempts by some church leaders to address, are tragically ill-equipped to deal with, because the founding presumption of patriarchal monotheism is that nature is a flawed creation of God, doomed by moral sinfulness, that will be discarded in favour of eternal life in Heaven if we believe in Him, but if we do not the fires of Hell await us.
patriarchal religious and moral imperatives, amid scorched-Earth desert eschatologies, is precipitating a mass extinction of the diversity of life which could also result in perpetual human attrition, or our actual extinction, while our only true redemption is to regain the immortal condition life and with it humanity has enjoyed for 3.5 billion years of Earthly Paradise. This is a far more ancient crisis that is foreshadowed in the Fall from Eden, and has emerged with humanity in evolutionary time in the transition from gatherer-hunter existence within nature into urban civilisation and empire in dominion over it, with resulting habitat destruction and potentially irreversible climatic disruption and it can be resolved only by restoring the immortal paradigm of life as a whole.

Christianity is pivotally at fault because it has contrived an eschatology of history to make the planetary future subject to the return of a miraculous man-God whose powers are so extreme over the entire universe as to make it difficult or impossible to correct the fallacy and for any true enlightenment about our actual cosmological condition to prevail.

The status of nature in Christianity has been hotly debated, especially since historian Lynn White published the now classic "The historical roots of present-day ecologic crisis" (1967) in which Christianity is blamed for the modern environmental crisis, which he concludes is largely due to the dominance of Christian world-view in the west which is exploitative of nature in an unsustainable manner. White asserts that Judeo-Christians are anti-ecological, hostile towards nature, imposed a break between human and nature with attitude to exploit the nature in unsustainable way where people stopped thinking of themselves as part of the nature. This exploitative attitude combined with the new technology and industrial revolution wrecked havoc on the ecology. Colonial forestry is a prime example of this destruction of ecology and native faiths.

Although we are each mortal sexual beings, unfolding life is immortal. As a biological species, we are utterly dependent on the genetic and species diversity of life, for our food, for our climate and environment, for our health and medicines and for a sustainable economic future. This is the principle of cosmological symbiosis that the Judeo-Christian notion of dominion over nature stemming from Genesis has instead made a tragedy of the commons (Hardin 1968). But this is not the teachings of Yeshua we find in the Gospel of Thomas (3):

"If those who lead you say to you, 'See, the kingdom is in the sky,' then the birds of the sky will precede you.
If they say to you, 'It is in the sea,' then the fish will precede you. Rather, the kingdom is inside of you, and it is outside of you."

Biocrisis and the Patriarchal Imperative

The Fall from Eden echoes in metaphor a descent from Paradisiacal gatherer-hunter existence into the tortured labours of tribal agrarian and shepherdng societies. It signals two occluded founding features of our conscious heritage:

(1) Cultural Biocrisis: It declares the conversion of Paradise into human conflict with nature, tilling the thorns by the sweat of the brow, dominating nature rather than coexisting with it, and the Tree of Life imprisoned by God to retain his power over mortal knowledge.

(2) Patriarchal Oppression: It confesses in stark terms, a deep sexual falling out between woman and man in which the cultural patriarchy (Lerner 1996) has blamed Eve “the mother of all living” (Gen 3.20) for the Fall, by for heeding the serpent’s claim that the tree of knowledge would make one wise, so woman was cursed and made subservient to her husband, under pain of childbirth and both are doomed to mortal sexual existence.
Unto the woman he said, “I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire shall be to thy husband, and he shall rule over thee”.

And unto Adam he said, “Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree, of which I commanded thee, saying, Thou shalt not eat of it: cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; Thorns also and thistles shalt it bring forth to thee; and thou shalt eat the herb of the field; In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return”.

And the LORD God said, “Behold, the man is become as one of us, to know good and evil: and now, lest he put forth this hand, and take also of the tree of life, and eat, and live forever: Therefore the LORD God sent him forth from the garden of Eden, to till the ground from whence he was taken. So he drove out the man; and he placed at the east of the garden of Eden Cherubims, and a flaming sword which turned every way, to keep the way of the tree of life”.

This is also reflected in Jacob imposing patriarchy against the older matrilocal tradition of Laban (Sanday 1981), who notes his kinship with Jacob (29:15). The seven years Jacob spent with Laban for each wife, living with the family of his wives indicates the line of Laban gave “matrilineal” power to the son of the mother over his daughters’ endogamous partners (Gen 30:26), and to his sons (Gen 31:1).

Nancy Jay (1992) notes that moving to the family of the wife is consistent with the injunction in Genesis to “leave your father and mother and cleave unto your wife” and with Jewish marriage practice to go into the wife’s tent, resulting in paradoxes of descent in early patriarchal traditions of the tribes of Israel:

“Israelite tradition did not deny descent from women and consequently faced the dilemma: How is a pure and eternal patriline to be maintained if descent from women is not denied? Endogamy appears to be a solution; marriage to a woman of the same patrilineage ensures the offsprings’ patrilineage membership even if it is figured through the mother. Close agnatic endogamy (marriage within the patriline) is extremely rare except in Semitic traditions. In a way reminiscent of the Patriarchs, throughout the Arab world families have preferred men to marry their father’s brother’s daughters. The descent line of the Patriarchs continued only through endogamy: Isaac and Jacob (but not Ishmael) married endogamously, Joseph married exogamously but his sons were adopted by Jacob, correcting this, and other, irregularities of their descent”. ... “for Jacob entangled in the local “matrilineal” scene a sister’s son working for his mother’s brother married uxorilocally and avunculocally to his mother’s brother’s daughter could not escape for twenty years” ... “What is determined by bequeathal of the gods is not title to an inheritance share but, rather, who is to carry on as paterfamilias ... Hence Rachel’s desire to possess the gods of Laban, if it meant anything in this connection, could mean only that she wished Jacob to be recognized as paterfamilias after Laban’s death”.

“Is there any portion or inheritance left to us? Are we not counted of him strangers? for he hath sold us, and hath quite devoured also our money.” (Gen 31:14)
Jung described archetypes as imprints of momentous or frequently recurring situations in the lengthy human past:

Conflating paternal and maternal conceptions can also be made out in the patriarchal blessing of the firstborn, (1) a socio-legal one, which assigned exceptional status to the first male in the paternal line – “the first fruit of vigor” (Gen. 49:3, Deut. 21:17), and (2) a religious one, which assigned special status to the first male issue of the maternal line – “the first issue of the womb” (Ex. 13:2-15, Num. 8:16).

More ancient influences than the biblical can also be seen in the spiritual and religious beliefs of our oldest surviving culture of the San Bushmen, a founding human culture, in genetic, evolutionary and archaeological terms, whose historical presence goes back over 100,000 years and whose ancestor, the mitochondrial Eve is literally the “mother of all living” (Fielder & King 2017). Although over the course of the last two millennia, the San may have had contact with other religious influences, their cosmology and deities have a fresh founding quality, just as engaging as Genesis 1. In addition to their trickster heroes and first person experience of the numinous in the trance dance, the Bushmen believe in the existence of two gods: a greater god manifesting the creative force and a lesser god invoking the malevolent forces of uncertainty and misfortune, each with a shadowy consort, but having little of the moral imperative seen in more recent religious traditions including monotheism.

In “Nisa” (1981) Marjorie Shostak provides an engaging detailed portrait of a !Kung San woman, her sexual relationships with men and her trials of familial life. What emerges from this account is the life of a spirited woman who throughout struggles to maintain her autonomy of choice over her life in a nominally patriarchal society in which the headmen would like to assert a patriarchal imperative, but in which the society has remained remarkably free of the oppressive influences of civilisation succeeding the agricultural revolution which itself was discovered by female gatherers, thus having remarkable similarities to features of sexual relations Western society is only recently re-engaging. We cannot thus assume that history dictates the dominance of patriarchy.

**The Origins and Redemption of Religion in the Weltanshauung**

Underlying religious history is a deeper evolving substratum of implicit beliefs at a subconscious level that deeply influences and cross-fertilises religious movements. This casts religion, and before religion animism, in a much older setting as a stream of consciousness mind set evoking images of human origins, creation of the universe and the relationship between humanity and the deities we invoke to explain existence.

We can see this in the creation myths across diverse cultures, in the Fall from Eden and in the progression from older belief in Sheol and nature deities into the stark division of Heaven and Hell and traumatic notions of eschatological renovation in the end of days.

Carl Jung has drawn attention to these deeper undercurrents in his concept of the collective unconsciousness:

> “In addition to our immediate consciousness, which is of a thoroughly personal nature and which we believe to be the only empirical psyche (even if we tack on the personal unconscious as an appendix), there exists a second psychic system of a collective, universal, and impersonal nature which is identical in all individuals. This collective unconscious does not develop individually but is inherited. It consists of pre-existent forms, the archetypes, which can only become conscious secondarily and which give definite form to certain psychic contents”.

Jung’s view of the collective unconscious comprises in itself the psychic life of our ancestors right back to the earliest beginnings. It is the matrix of all conscious psychic occurrences, which exerts an influence that affects the freedom of consciousness, since it is continually striving to lead all conscious processes back into ancient motifs and experiences. Jung described archetypes as imprints of momentous or frequently recurring situations in the lengthy human past:
"Archetypes are typical modes of apprehension, and wherever we meet with uniform and regularly recurring modes of apprehension we are dealing with an archetype, no matter whether its mythological character is recognized or not."

Joseph Campbell in turn presented a mythopoetic account of spiritual and religious traditions across cultures in which aspects of Yeshua’s mission, rather than being confined to the Jewish influences, has a wider backdrop in the persona of dying and resurrecting heroes from Adonis, through Tammuz, to Dionysus, sometimes arising as deified leaders. While I don’t personally hold to this view, it appears to have influenced the writers of the canonical gospels and the founding accounts of Yahwistic Genesis.

The entire religious quest is underpinned by the Weltanschauung (James 1868) the deeper world view, that originates from the unique world experience of a people, ensuing over several millennia, also expressed in their language and more ancienly in the diverse forms of animism that preceded formal religions. I have underscored the Weltanschauung of Immortality as the founding conscious world view of humans during our emergence, that has now become an urgent quest to redeem humanity from the immanent mass extinction of living diversity. This now becomes the light of resplendence for life as a whole that redeems the apocalyptic tragedy of the religious imperative and enables humanity to find redemption in reflowering the Tree of Life of the evolving biosphere.

Given a planetary condition of environmental apocalypse that is a threat to our own survival and that of the diversity of life as a whole, it becomes essential to look deeply into the collective unconscious for the driving forces. Clearly both religion and business as usual exploitation are driving this, but our knowledge of the natural world remains powerless to address a situation that we all feel disquieted by because it is unable to fathom that nature of consciousness that is central to religious belief. A combination of human tribal motivations that evolved to ensure human dominance accentuated by archaic religious conceptions whose doctrines have the same intent of ensuring perpetual dominance of religious belief, both by moral imperative and dire penalties, such as death for apostasy means everyone knows the situation is insane but no one knows how, or what to actually do about it.

The one and only way of addressing this is to induce a foundational change in the religious zeitgeist that addresses the root cause hidden behind the religious facade. Symbiotic Existential Cosmology and the Weltanschauung of Immortality provide that hope of a paradigm transformation just like the one that happened at the beginning of Christianity but coupled to the Sacred reunion of woman and man and repositioning the eternal Heaven-Hell divide with the immortal generations of life in Earthly Paradise in the epoch of the Tree of Life. This is the only way a long-term epoch of future goodness can ensue in the religious tradition.
A Millennial World Vigil for the Tree of Life

During a sacred mushroom velada in the 1980s, I had a sudden epiphany that, if the world hadn’t resolved the world’s biodiversity and climate crises by the millennium in 2000, I should make a sabbatical vigil to the Amazon as Earth’s natural Eden of tooth and claw and to Yerushalayim as our historical religious nexus point, to pronounce the Sacred Reunion of woman and man under the immortal banner of the Tree of Life, that other tree hidden since the foundation of the world by a flaming sword in Genesis 67.

With the world in a state of unmitigated short-term thinking amid bouts of genocidal conflict and no sign of a cohesive agreement to preserve biological diversity, let alone avoid a hard landing caused by human impact and climate change, I managed to secure another academic sabbatical to do a biodiversity field study of human impact in the Amazon in 1999 and to attend a millennial celebration in Jerusalem at the end of the year (King 2017).

The aim was not to evoke an apocalyptic climax, but to make a careful discrete mark in history in a rite of passage declaring that after 2000 years of unfulfilled waiting, the time had come for a true unveiling of the reunion of the female and male sexes of humanity under the immortally perennial banner of the Tree of Life. So we enacted a simple root set of ritual transformations. This is not to fulfil the Christian world view in a second coming, but to make a paradigm shift to an immortally sustainable human future. Scientific discovery has occurred because science has remained open to new theories and ideas which overturn existing assumptions. Key to scientific veracity is the sceptical principle that nothing is proven true until verifiable, in diametrical opposition to religion which is socially addicted to affirmative belief as the pillar of true faith. Archaic religions are urgently in need of a root paradigm shift but place formidable obstacles in the way. Christianity has invested in a miraculous saviour whom no one can unravel because the miraculous construction of the saviour prevents progress under threat of eternal torment or inquisition as a heretic. Islam likewise pronounces death both for apostasy and for any new prophet arising as the Bahai faith shows.

A key feature of the apocalyptic epoch is the fact that, while the Judeo-Christian idea of apocalypse is the expectation of an imminent cosmic cataclysm, in which God destroys the ruling powers of evil and raises the righteous to life in a messianic kingdom, a prophetic revelation, or a great disaster, the true meaning is “unveiling” Gk apo- “un” + kaluptein “cover”, that is a sacred marriage. The entire period has been one of patriarchal domination, in which woman was cursed and social patterns involving the matriarchy and female reproductive choice were violently repressed. We can thus see that refowering apocalypse is centrally about the sacred reunion – the ancient hieros gamos celebrated since the dawn of time in the fertility of woman and man personified in Goddess and God, leading to fertile offspring.

This is where the balance of human visions of the future come together in a species where sex wars have always been a reality of the asymmetric prisoners’ dilemma of our sexes, because of the huge investment of the female in a pregnancy which leaves her vulnerable and travail for months, the potential risks to life of delivering a large head, and years of lactation and early child-rearing. Humans are at an effective extreme of mammals, only 3% of whom are socially (but not in general genetically) monogamous for the same reasons.

I noticed in writing this that this expression comes from Matt 13:35 claiming Yeshua is revealing his deepest insights, right after Yeshua pronounces the parable of the mustard seed, which is also quoted in Thomas 20. The parable says the Kingdom of Heaven (not the Christian religion) is effectively the seed of the greatest herb, the Tree of Life in whose branches the birds lodge.

Hieros gamos or Hierogamy (Greek ιερὸς γάμος, ιερογαμία “holy marriage”) is a sacred marriage that plays out between a god and a goddess, especially when enacted in a symbolic ritual where human participants represent the deities.
Jane King who partnered with me for the major phase of my sabbatical to the Amazon and to Jerusalem and I were hosted by Yitzhak Hayutman at the Academy of Jerusalem for a twelve day workshop in the Millennium on the Sacred Reunion and the Tree of Life, in which we discussed the Shekhinah, the feminine face of Deity manifest on Earth prominent in the Zohar and I gave an evening lecture on biocosmology, the evolutionary tree of life and the need to avoid a hard landing for the biosphere to avoid precipitating a mass extinction of biodiversity, as a fulfilment of the unveiling of reality. The then Director of the School of Mathematics granted my application on the understanding that I would not claim to be walking on water.

On Millennium Eve we hosted an all-night celebration on Mt. Scopus, in a little park overlooking the Dome of the Rock. We had been offered a grove next to Gethsemane on the Mount of Olives by a member of the family who originally kept the keys to the Haram-al-Sharif, but we were driven out by a court injunction and police prohibition. The vigil was dedicated to the Sacred Reunion in reflowering the Tree of Life in preserving the biosphere and its biological and genetic diversity throughout our future generations. It is the spirit of Gaia and that of God that hath anointed us - the conjoint spiritual insight to perform the act of redemption – not God and Gaia as literal deities. I sang The Hymn to the Epoch, video followed by a round of dedications from all.

Jane and I pronounced together our Anointing Reading for the new epoch of reflowering of the Tree of Life, reciting our Gaian variant of the Messiah’s Jubilee passage in Isaiah 61, which Jesus pronounced in the synagogue at Nazareth, pronounced this time as woman and man together as Bride and Bridegroom in the name of God and Gaia:

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69 The grandson of one of the founders of Tel Aviv.

70 shekhinah שכינה “dwelling” or “settling” and denotes the indwelling of the divine presence of God manifest in the tent of Sarah, also linked to ruach ha-kodesh רווח כוהן, the divine influence of God over the universe or living creatures i.e. Holy Spirit.
The spirit of God is upon us, the spirit of Gaia is within us because they hath anointed us, to sing good tidings unto the meek they hath sent us to bind up the broken-hearted, to proclaim liberty to the captives and the opening of prison to them that are bound to proclaim the acceptable year, to comfort all that mourn to appoint unto them that mourn in Zion in Palestine, in Sidon, in Syria, Arabia and the world to give unto them beauty for ashes, the oil of joy for mourning the garments of love for the spirit of heaviness that they might be called trees of compassion the planting of the divine, that all might be glorified in the abundance of wisdom and we shall renew the old wastes and we shall restore the former desolations and we shall repair the waste cities, the desolations of many generations they hath clothed us with the garments of salvation and I as a bridegroom decketh myself with ornaments, and I as a bride adorneth myself with jewels for as the Earth bringeth forth her bud, and as the garden causeth the things that are sewn in it to spring forth so shall harmony and fulfilment spring forth among all the nations this day is this scripture fulfilled in your ears.

This rite of passage served two key purposes to address foundation issues in the collective unconscious manifest in the Weltanschauung, the archaic formative world view driving patriarchal monotheism expressed in the Yahwistic Genesis firstly in Eve being cursed for heeding the serpent, to be obedient to her husband, under pain of childbirth, appeasing male patriarchy uncertainty, confessing an archaic conflict with the matriliney and female reproductive integrity and secondly with dominion over nature in the Tree of Life in Paradise hidden from humanity behind a flaming sword, dooming us to conflict with the thorns of the wilderness in the sweat of human dominance.

cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; Thorns also and thistles shall it bring forth to thee;

This transmission is not a matter of belief but of human realisation in action. This wasn’t intended to be a magical pronouncement that would change the world overnight simply by saying it, but a series of rites of passage to dedicate a unique unparalleled event in its time and place, revealing the foresight to take responsibility to speak the words that are key to redeem the apocalyptic tradition in the sustainable epoch of the Tree of Life. The evening was accompanied by folk and harp music, chants to the Shekhinah and recitations from all present to bring in the new epoch, pronounced together “as one is to one” as Devorah Brous, who had coordinated the event stated. Eliyahu MacLean blew the shofar and pronounced the blessing of the collective Mashiah:

We are here together the collective Mashiah and our vision here tonight will spread peace in our hearts and peace on the City of Peace below Yeru-shalom Jerusalem, and biserata shem in Jah Allah we’ll be as a light and a source for peace in the whole world and in the whole universe.

On the Epiphany, we led a small messianic march, of a spontaneous thirteen participants, from the Ascension site on the Mount of Olives, by Gethsemane, the Gates of Mercy on the Eastern wall, the Vale of Kidron where the Asherah was removed from the temple and burned in the time of Josiah, to the Western Wall.

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71 Weltanschauung – a particular philosophy or view of life; the world view of an individual or group: welt "world" (see world) + anschauung "perception" (related to English show). William James (1868)
At the gates of Gethsemane we pronounced the Dialogue of the Saviour and Thunder Perfect Mind. At the Golden Gates of Mercy in the Eastern wall (باب النهфиّة) barricaded by the Muslims in the Ottoman period and thought to be the gate through which people would pass in the Day of Judgment), we pronounced them open from Isaiah 60:

And your gates shall be open continually, they shall not be closed day or night.
The glory of Lebanon shall come to you, the juniper the box tree and the cypress together.

According to Jewish tradition, the Shekinah (שכינה) (Divine Presence – the feminine face of God manifest on Earth) used to appear through the eastern Gate, and will appear again when the Anointed One (Messiah) comes (Ezekiel 44:1–3). I pronounced this passage alone at night in the portico of the gate, as appears in the full length movie Apocalypsia:

“it is for the prince; the prince, he shall sit in it to eat bread before the LORD; he shall enter by the way of the porch of that gate, and shall go out by the way of the same.”

Finally we arrived at the Western (Wailing) Wall, where we pronounced the Sacred Reunion of woman and man, not just God and the bride Israel, but woman and man in the flesh, as the Song of Songs actually declares:

Fig 149: Pronouncing the reunion of woman and man in the Song of Songs which Rabbi Akiva extolled as the Holy of Holies.

I sleep but my heart waketh: it is the voice of my beloved that knocketh, saying open to me my sister, my love, my dove, my undefiled: for my head is filled with dew, and my locks with the drops of the night. I have put off my coat; how shall I put it on? I have washed my feet; how shall I defile them? My beloved put his hand in the hole of the door, and my bowels were moved for him. I rose up to open to my beloved and my hands dropped with myrrh, and my fingers with sweet-smelling myrrh, upon the handles of the lock.

Set me as a seal upon thine heart, as a seal upon thine arm: for love is strong as death; jealousy is cruel as the grave: the coals thereof are coals of fire, which hath a most vehement flame. Many waters cannot quench love, neither can the floods drown it.

92 I have always defended the Song of Songs as the most fertile expression of the Sacred Reunion but for this, a Zionist woman from Tsvat threatened to report me to Mossad as a Gentile “thief in the night”. Our dialogue is recounted in my song Black Rose – video.
If you imagine for one moment that I was suffering from messianic delusions in the Holy City, here’s what happened next! Jane and I had to separate immediately after we pronounced the Sacred Reunion at the Western Wall. Jane flew to the US and I ended up for three days, stranded in Frankfurt airport because my adult son, who I had been flying with earlier on, changed all his bookings, and mine also got cancelled, including my next flight to Delhi to pay my respects to Kali on the Ganga to complete the appointment with fate. Jane and I had parked our little sleeping van in the Frankfurt airport car park and fled to Jerusalem. It was still there with flat tyres and “hundreds” of parking tickets, so I had a place to sleep. After pleading with Lufthansa for three days for a connection to India, they eventually came up with a plan to fly me into Nepal. I had found from the Indian embassy that I could get a 72 hour transit visa at one day’s notice in Kathmandu. When I arrived in the evening, the Kathmandu border control seized my passport because I had only a credit card and they wanted $US cash for the entry visa and then chucked me out of the airport, where there was a huge crowd trying to get in and the doors were locked tight. That meant that, with no passport I couldn’t get money, so I had to go to an emergency agency to get a postal visa advance, then next day paid to get my passport back and then finally my treasured 72 hour transit visa, meanwhile visiting yet again the erotic Lakshmi and Durga temples of Kathmandu and the burning ghats of Pashupatinath in the valley opposite Boudhanath. Then down the Himalayan foothills by bus and to the plains of India.

Fig 150: Chris pays his respects to Kali in Varanasi Jan 2000.

I have had a long affair with Varanasi, that timeless sacred city – a kind of love affair amid the purgatory of existence, as deep as Jerusalem. The first time I was there in 1976, I struck up a personal relationship with a rickshaw driver who made the most desperate genuine pitch. He in turn took me to a wrestler who cared for a traditional Indian house on Kedar Ghat just beside the Golden Temple. I took a medieval room for 2 rupees a night, and had a designated two-foot square cooking area in the galley and a site on the roof where one could sleep in the cool with my padlock key on a string round my neck. The wrestler knew a boatman so I could also go down and sleep on the roof the boats with the boat builders and listen to the eternal refrains echoing out from the temples and watch the panorama of the bathing ghats at sunrise. I could eat a beautiful vegetable platter at the boatman’s house for a few rupees and share the life with his huge family. The wrestler would do regular pujas in the foyer and we would all go up on the roof and smoke opium ghoories together. There was also ganja at the government ganja shop a little out of town. Each morning there was lemon curd, which you had to get to before the dust and manure and flies took over, served in small bisque-fired clay cups which you smashed ritually to avoid disease.
So above is a photo record of my hard won vigil of devotion to Kali as the supremely dangerous Goddess that puts mankind on notice, more extreme that the hapless knight in Chaucer’s ‘Wyfe of Bath who had to solve the riddle of “what women want” under pain of death, namely sovereignty. Kali is the archetype of the ancient planter Goddess. You can find her in sacrificial mode in Mohenjo Daro in the Indus valley at 2500 BC alongside Pashupatinath the Shivaic Lord of the Animals complete with his Sadhu trident. I gathered the kali images from the little alleys I knew by heart that ran behind the bathing ghats to the burning ghats, paying my respects as Shiva is to Shakti, Durga and Kali in her various forms and for light relief, as Krishna is to the cowgirls, to pay my utmost respects to the founding meditative religious traditions of human culture.

This was deadly serious – as serious as our mutual anointing with olive oil from Jericho at Lazarus’s tomb in Bethany. IT completed a journey that had taken us through the burning season in Bolivia and all the way from Maccu Pichu, following the Urumbamba through the high Andes, then down through the jungle in dugout motor canoes, racing the rapids down to the Pongo de Mainique, the “manic gorge” where the Urumbamba cuts through the last of the Andes. The lowland rainforests and mid-montane cloud forests within a radius of five miles of the Pongo possibly comprise the single most biologically-diverse site on the face of the Earth. Then more burning season and down the Ucayali in a banana boat, from Atalaya to Pucallpa, where we took Ayahuasca, with the leprous shaman Sr. Trinico, then the Amazon in river boats in cheap hammocks, with a sojourn in a jungle nature reserve, to Iquitos, then Manaus and south up the Rio Madiera to the Crocodiles and giant storks of the Pantanaal.

This was a world vigil that started with the immolation of the tropical forest, our true Garden of Eden in the Amazon, then Reflowered the Tree of Life in Jerusalem and ended up with the immolation of humanity by Kali on the burning ghats of Varanasi. I hope you all understand this devotion to Kali and to the jungle of tooth and claw illuminates the Mount of Olives gathering in a whole new light. And this entire spiritual vigil on an academic sabbatical, for which I was never forgiven by the Dean of Science!
This brings us finally back to the motif of the Tree of Life in the Fall from Eden. The role of religion and of spirituality, ethics and our sense of human conscience is to ensure we collectively cherish and replenish the Earth throughout our generations forever, so that its biological and genetic diversity flourish, its climate remains optimally habitable and all the generations of conscious beings have a full opportunity to experience the mysteries of life and existence. The epoch of the Tree of Life is thus the epoch of sustainability, in which life is able to continue and evolve so long as the Earth shall live. This is the cosmic destiny that human consciousness faces as the guardians of the living planet.

Although in this celebration effectively everyone was the collective Mashiach, as far as I know, I am the only person in the last 2000 years to correctly identify the culmination of the messianic epoch in the Tree of Life in perennial immortality of planetary Paradise. This is the only epoch of long term future goodness that is relevant or achievable in the universe at large, and which is urgently critical in a planetary crisis of climate and habitat amid an apocalyptic mass extinction of living diversity, likely to harm Paradise for thousands, or millions of years, unless we act decisively. It depends on the the reunion of woman and man, ending the epoch of patriarchal dominion over woman and nature.

The responsibility of any mashiach in the era of scientific and natural discovery is and has to be to provide verifiable scientific information, veridical collective wisdom and visionary spiritual impetus to enable such a transition to perpetual abundance to become a reality, thus fulfilling the messianic expectation transparently, not as a religious leader, or a miraculous faith healer, but as a research scientist disclosing a cosmology of immortal coexistence.

This transmission is thus also to inform and convey this reality and release responsibility for it freely back to the world, twenty years later, by transparently declaring that the underlying inspiration for the vigil arose from a velada on sacred mushrooms, some twenty years before the millennial event. This becomes a visionary process in which we all can participate and seek our own reunion with the cosmos, without relying on a religious leader, or doctrine, or moral imperative, to bind us to the faith, except to have guides and helpers to ensure safe passage in our visionary trips. Thus the epoch of religion (religio “to bind together”) becomes the epoch of resplendence (resplendere “to shine brightly”).

Subsequently, when I returned to Aotearoa, in 2003 my partner Christine and I co-authored "Sexual Paradox: Complementarity, Reproductive Conflict and Human Emergence" (Fielder & King 2004) to affirm the reunion of woman and man and of courtship and female reproductive choice, alongside mutual partner choice as a key component of the prisoners’ dilemma of our asymmetric sexes, running a Red Queen race of evolution, while standing still, catalysing the emergence of human intelligence and culture. The natural condition is sexual paradox in a game-theoretic edge-of-chaos. This is a climax example of asymmetric symbiosis, which the patriarchy has sought to appropriate in sexual dominion over the female, to our evolutionary disadvantage in future, just as dominion over nature is damaging.

This is an acutely damaging part of history since the neolithic, that has led to the sequestering, enforced veiling and chaperoning of women, stoning for adultery applied principally to the female “because she didn’t cry out”, to menstruation becoming regarded as unclean and to diabolical practices of female genital mutilation on behalf of the patriarchy to avoid women enjoying sex and hence being able to make natural reproductive choices. This has in turn led to unremitting expectations by major world religions to increase their following and world domination by reproductive ascendency.

But if this thing be true, and the tokens of virginity be not found for the damsel: Then she shall bring out the damsel to the door of her father’s house, and the men of her city shall stone her with stones that she die: because she hath wrought folly in Israel, to play the whore in her father’s house: so shalt thou put evil away from among you (Deut 22:20).

If a damsel that is a virgin be betrothed unto an husband, and a man find her in the city, and lie with her; Then ye shall bring them both out unto the gate of that city, and ye shall stone them with stones that they die; the damsel, because she cried not, being in the city; and the man, because he hath humbled his neighbour’s wife: so thou shalt put away evil from among you (Deut 22:23).

Recapitulation

The cosmological situation as we have now discovered it to be is that the conscious sentience of the universe arises from the living biota and so far as we know, only the conscious biota. As the mediators of conscious intent, we each inherit a personal responsibility to care for the universe we inhabit and to ensure life within it continues to flower and does not suffer risk to its future viability through human exploitation. This is the prima facie responsibility, we each inherit as incarnate sentient beings.
It is abundantly clear that humanity is risk ing a planetary extinction of the diversity of life due to human misadventure, driven by business as usual’s, non-renewable energy consumption and habitat destruction and by the scorched earth moral delusions of world religions which are founded on moral imperatives that deny the sacredness of cosmological nature in what is an immortal Paradise, in favour of fantasies of heavenly and diabolical realms.

Fig 152: “Paradise Found” David Miller

We can thus no longer continue to see through a glass darkly in the distorted prism of Christianity’s eschatological expectation and the false belief in a man-God who still hangs mortified on the cross two thousand years later in every church, whose flesh and blood we must consume, while endlessly awaiting the return of the Lord in power to have forgiveness of sins and achieve immortal life. It is now time for us to put away childish things (Ranke-Heinmann 1992), to see face to face and know also as we are known.

”When I was a child, I spake as a child, I understood as a child, I thought as a child:
   but when I became a man, I put away childish things.
For now we see through a glass, darkly; but then face to face:
now I know in part; but then shall I know even as also I am known” (1 Corinth 13:11).

It is we who are the portal of cosmic awareness and the buck stops with us to take responsibility as stewards and guardians of the tree of evolutionary life, to ensure it survives and flowers in perpetuity. To allow this to fail is to anoint us all for our burial, with no hope of salvation.

The remedy the psychic species provides is to give us a direct route to experience reunion with the awakening of the conscious universe, so that we can learn to protect the planet as guardians of life in evolutionary and cosmological time scales. This both alleviates our mortal fear and gives us the ability to make our lives a meaningful part of unfolding life rather than a curse upon it.

The meaning and significance in the spiritual quest of humanity lies not in false fantasies of Heaven and Hell or the Rapture in the sky, but in developing the spiritual insight and practical motivation to care for the planet as guardians of the diversity of life in evolutionary time, so that life can truly flower as a cosmological phenomenon of conscious illumination over cosmological time scales. This is profoundly urgent and it can be achieved if we recognise the wisdom and inevitable necessity of this together.

15. Redemption of Soma and Sangre in the Sap and the Dew

Despite its history of spilled blood, violent Crusade and eschatological apocalypse, redemption is at hand. Christianity stands uniquely positioned as the founding religious tradition underlying Western culture. Christianity is also uniquely positioned as the prime vehicle of a worldwide sacramental religion, founded on ‘holy communion’ - a flesh and blood sacrament - the sangre and soma – albeit symbolic of a sacrificial death – “cannibalistically” eating the flesh and blood of the saviour. This aspect of Christianity is a disjunct with the Hebrew tradition and has closer connections with the Greek epoptea, the maenads and their belladonna, and Dionysus as the god of wine and altered states, echoing Yeshua’s miraculous dread. It is thus, by an accidental fusion of cultural histories, the natural forerunner of a sacramental tradition of true integration with life immortal. These simple wafers of bread and sips of diluted wine carry no effect in themselves, but claim to infer a reality so powerful that merely to partake of the ‘eucharist’ is deemed to be the innermost mystery of communion with the godhead. If such a sacrament is going to be of functional effect, one should as the “acid test” of validity, expect it also to be a potent psychoactive substance in biological terms.
The notion of “sacrament” as something natural that is consumed to make ‘holy’ or whole poses a central question of symbiotic paradox in consciousness. How is such completion achieved in the universe? Is it arrived at through an outer journey of scientific or empirical discovery in the material world? Is it to be found through philosophical analysis and discourse? Is it to be found in a covenant of submission to the will of God? Is it to be pursued through an arduous meditative journey into the innermost reaches of the mind and soul to the cosmic self? Or is it to be found in symbiotic reunion in the interactive mysteries of the ‘living sacraments’ of the biosphere and the nierika portal to the cosmological mind at large?

Each of the three entheogenic living sacraments discussed in Section 1 have been adopted within nominally Christian traditions, seamlessly integrating the biospheric sacraments with Christian sentiments, attesting to Christianity’s redemption as a sacramental tradition to reflower the Earth as a living paradise throughout the generations of humanity and life as a whole. Some researchers have also associated Christian roots with entheogens (Allegro 1970, Hoffman et al. 2001, Brown & Brown 2016).

The experiences of these participants are consistent with each of those who ascend its spiritual peaks identifying with being first person transformative visionaries forming a spiritual consensus deeper than religious doctrine. Maria Sabina, despite being in the Catholic sisterhood, expressed in her chants these visionary positions: “I am the Lord eagle woman. Woman of a sacred, enchanted place am I, says, Woman of the shooting stars am I … I am Jesus Christ, says … I’m the heart of the virgin Mary.” Likewise with peyote: “Jesus came afterwards on this earth, after peyote”. “The white man goes into a church and talks about Jesus, but the Indian goes into a teepee and talks to Jesus”.

Maria Sabina’s Holy Table and Gordon Wasson’s Pentecost

Maria Sabina (see section 1) was both a Mazatec curandero of the “little things that spring forth” – teonanactli – flesh of the gods and at the same time a life long member of the Catholic sisterhood. The sacred mushroom is ‘known to the ancient Meso-Americans as the Flesh of God, echoing the soma and sangre of the Christian Eucharist (Harner R229 90). The mushrooms were consumed before a small altar. The curandera kept one corner free so that the Holy Ghost could descend in the form of the sacred words that came to her, the words of her little book: “I see the word fall, coming down from above as though they were little luminous object falling from heaven. The word falls on the Holy Table, on my body, with my hand I catch them word for word.” (Halifax 134).

Fig 153: Upper row: Maria Sabina, Gordon Wasson, Psilocybe cubensis (di-shi-tjo-le-ra-ja (“divine mushroom of manure”), Mayan mushroom stone with metate for grinding (1000 BC) Quetzalcoatal teaching nine deities the use of sacred mushrooms. Lower row: Maria Sabina performing a mushroom velada. Blessing the mushrooms before the altar, the altar, consuming the mushrooms.

73 In Christianity, the Holy Ghost, or Spirit, is the ultimate reality not to blaspheme against: “Jesus said: He who blasphemeth against the Father will be forgiven, and he who blasphemeth against the Son will be forgiven; but he who blasphemeth against the Holy Spirit will not be forgiven, either on earth or in heaven.” (Thom 44, as in Mark 3.28, Luke 12.31, Matt 3.28 with the exception of the Father). The grammatical gender of the word for “spirit” is feminine in Hebrew (נְפִיל, rūaḥ), neuter in Greek (πνεῦμα, pneûma) and masculine in Latin (spiritus). The neuter Greek πνεῦμα is used in the Septuagint to translate the Hebrew נְפִיל. Holy Spirit was equated with the feminine Wisdom of God by two early Church fathers.
‘On both nights Wasson stood up for a long time in Cayetano’s room at the foot of the stairway, holding on to the rail transfixed in ecstasy by the visions that he was seeing in the darkness with his open eyes. For the first time that word ‘ecstasy’ took on a subjective meaning for him. ... There came one moment when it seemed as though the visions themselves were about to be transcended, and dark gates reaching upward beyond sight were about to part, and we were to find ourselves in the presence of the Ultimate. We seemed to be flying at the dark gates as a swallow at a dazzling lighthouse, and the gates were to part and admit us’ ... ‘In sum, concluded Wasson, the mushrooms “transport one for the nonce to heaven, where all the senses unite in a joyous symphony shot through with an overwhelming feeling of caritas, of peace and affection for the fellow communicants. The effect is a transcendence of the barriers existing between people, including the language barrier.’ (Riedlinger 31).

The mushrooms were consumed before a small altar. The curandera kept one corner free so that the Holy Ghost could descend in the form of the sacred words that came to her, the words of her little book: “I see the word fall, coming down from above as though they were little luminous object falling from heaven. The word falls on the Holy Table, on my body, with my hand I catch them word for word.” (Halifax 134).

Illumination of life, illumination from on high, says Illumination of the sap, Illumination of the dew (Maria Sabina)

Acts notes the advent of the Holy Spirit in the “upper room”: “These all continued with one accord in prayer and supplication, with the women, and Mary the mother of Jesus, and with his brethren. ... And when the day of Pentecost was fully come, they were all with one accord in one place. And suddenly there came a sound from heaven as of a rushing mighty wind, and it filled all the house where they were sitting. And there appeared unto them cloven tongues like as of fire, and it sat upon each of them. And they were all filled with the Holy Ghost, and began to speak with other tongues, as the Spirit gave them utterance” (Acts 2.1).

Riedlinger (1992) notes: ‘He also knew that, many centuries ago, the Mazatec Indians had combined what was to them a new religion, Christianity, with their ancient pagan practices, producing a syncretic hybrid focused on physical healing. In that sense, it is true, as Wasson noted, that the “Old Order does not mix with the New. The wisdom of the Sabin [Wise Ones], genuine though it was, has nothing to give to the world of tomorrow.” In other words, such practices cannot be appropriated whole; they cannot be transplanted from one culture to another without changing their content and forms to address the particular needs of the host culture’.

“In light of Gordon Wasson’s numerous referrals to the original Pentecostal experience, I believe he thought it feasible for modern Christianity to likewise adopt certain elements of this indigenous hybrid, [of pre-Colombian and Catholic notions] producing an experiential form of Christian worship in the Pentecostal mode which uses hallucinogens as sacraments for calling down the Spirit. Wasson’s opinion of what this portends for Christian worship is unequivocal”: ‘... God’s flesh! How those words echo down the centuries of religious experience! The Christian doctrine of Transubstantiation is a hard saying, calling for great faith .... The Mexican Indian with his teonanactli has no need for Transubstantiation because his mushroom speaks for itself. By comparison with the mushroom, the Element in the Christian agape seems pallid. The mushroom holds the key to a mystical union with God, whereas only rare souls can attain similar ecstasy and divine communion by intensive contemplation of the miracle of the Mass’.”

The Man in the Buckskin Suit

While the Huichol sacred use of peyote (see section 1) has continued ever since the arrival of Columbus, the Native American Church, also known as Peyotism and Peyote Religion, teaches a combination of traditional Native American beliefs and Christianity, with sacramental use of the entheogen peyote. The religion originated in the Oklahoma Territory (1890–1907) in the late nineteenth century, after peyote was introduced to the southern Great Plains from Mexico. Today it is the most widespread indigenous religion among Native Americans in the United States (except Alaska Natives and Native Hawaiians), Canada (specifically First Nations people in Saskatchewan and Alberta), and Mexico, with an estimated 250,000 adherents as of the late twentieth century.

Jesus came to the white man as flesh and blood, but to the Native American as peyote. John Wilson, who many claim as the ‘founder’ of the peyote religion in the United States claimed that he was continually translated in spirit to the ‘sky realm’ by peyote and it was there that he learned the events of Christ’s life and the relative position of several of the spirit forces such as sun, moon and fire.
He reported that he had seen Christ’s grave, now empty and that peyote had instructed him about the ‘Peyote Road’ which led from Christ’s grave to the moon (this had been the Road in the sky which Christ had travelled in his ascension. Most peyotists strongly affirm the Christian elements as an important part of their religion (Anderson 36, 51):

“God told the Delawares to do good even before He sent Christ to the whites who killed him …
God made Peyote It is His power. It is the power of Jesus. Jesus came afterwards on this earth, after peyote.”

“You white people needed a man to show you the way,
but we Indians have always been friends with the plants and understood them …
The white man goes into a church and talks about Jesus ,
but the Indian goes into a teepee and talks to Jesus.”

Fig 154: My roadman Tellus Goodmorning. The Nierika or cosmic portal of Kauyumari or Elder Brother Deer, linking the underworld with Mother Earth, through which the gods came (Nierika Arts). Through it all life came into being. It unifies the spirit of all things and all worlds. (Schultes & Hofmann 1979). Don Jose Matsuwa, peyote in flower, deer holding peyote in its mouth (Monte Alban 500 BC). Lower: A peyote meeting involves alternate rounds of chanting around the fire and personal healing, overseen by a road man and mother waters. La visión de “Tatutsi Xuweri Timaiweme” – a Huichol world view.

However, it is Christ in his second-self who came to give the peyote ritual to the Menomini:

“This old man was a chief of a whole tribe, and he have his son to be a chief. He said, ‘I’m going to go, and you take my place. Take care of this [tribe].’ And the boy, he went out hunting; He was lost for about four days. He began to get dry and hungry, tired out; so he gave up. … So he went, lay himself down on his back; he stretched out his arms like this [extending his arms horizontally], and lay like that. Pretty soon he felt something kind of damp [in] each hand. So he took them, and after he took them, then he passed away. Just as soon as he - I suppose his soul - came to, he see somebody coming on clouds. There’s a cloud; something coming. That’s a man coming this way, with a buckskin suit on; he got long hair. He come right straight for him; it’s Jesus himself. So he told this boy, ‘Well, one time you was crying, and your prayers were answered that time. So I come here. I’m not supposed to come; I said I wasn’t going to come before two thousand years,’ he said. ‘But I come for you, to come tell you why that’s you [are] lost. But we’re going to bring you something, so you can take care of your people.’ … So they went up a hill there. There’s a tipi there, all ready. So Christ, before he went in it, offered a prayer. …’Take this medicine along, over there. Whoever takes this medicine, he will do it in my name.’ So that’s how it represents almost the first beginning.” (Anderson 23-4).

**Santo Daime and the Union Vegetale**

The indigenous use of Amazonian ayahuasca (see 1, 2), has been reformed into modern religious movements. There are three main churches: Santo Daime, Barquinha and União do Vegetal (UDV). The Union Vegetale or UDV is a nominally Christian movement devoted to experiencing inner harmony through partaking of ayahuasca tea, to “remember past lives and to understand the true meaning of reincarnation as well as to become familiar with the
origin and the real destiny of nature and of man”. The UDV seeks to promote peace and to “work for the evolution of the human being in the sense of his or her spiritual development”. It has over 18,000 members, distributed among more than 200 local chapters in all the states of Brazil, as well as in Peru, Australia, several countries in Europe, and the United States. The translation of União do Vegetal is Union of the Plants referring to the sacrament of the UDV, hoasca, or ayahuasca tea.

Likewise in Santo Daime, a Christian core is combined with other elements, such as an emphasis on personal gnosis and responsibility, an animist appreciation of nature, such as the Sun, Moon and Stars, as well as the totemic symbol of the beija-flor (hummingbird). They do not track members, but estimates suggest tens to hundreds of thousands attend the Santo Daime church each week. Spiritual beings from indigenous Amazonian shamanism and deities from the African pantheon are also incorporated into the doctrine. The nature of the work is sometimes personified and addressed as Juramidam, “God (jura) and his soldiers (midam)”, disclosed to Irineu in his visionary experience.

Ayahuasca, consumed by Daimistas in ceremonies, has many different traditional names, but is known within the Santo Daime as Santo Daime, meaning Holy Daime, or simply, Daima, as originally named by Irineu. Dai-me (with a hyphen) means “give me” in Portuguese. A phrase, Dai-me força, dai-me amor (“give me strength, give me love”), recurs in the doctrine’s hymns. Participants in the ritual come to submit themselves to a process through which they may learn. This may include various wonders — ayahuasca is known for the visions it generates, and the sense of communion with nature and spiritual reality — as well as more mundane, less pleasant lessons about the self. The Daima is thought to reveal both positive and various negative or unresolved aspects of the individual, resulting in difficult “passages” involving the integration of this dissociated psychological content.

These movements clearly show how Christianity can make a transition to a sustainable tradition reparadising the planet. However, what is at stake here goes far beyond Christian horizons. It is the discovery that the mystical visionary state is unlocked, not by doctrine or conscious control, but the incipient visionary cyclone surrounding the portal to ultimate reality that comes from the symbiosis with the ‘Other’ — the cosmological consciousness of the mind at large.

**The Society of Friends and Non-sacramental Mystical Experience**

This doesn’t mean that everyone needs to take the sacrament, as in the Eucharist in ‘Holy Communion’. Indeed Pentecost was alleged to have taken place ‘in the upper room’ in the manner of a mystery cult, but the change in sacralising the entheogenic sacraments can induce a root change in the zeitgeist, by those partaking becoming a similar source of conscious ‘spiritual knowledge’ informing the wider population of the inner nature of reality as it is experienced in the first person.

In this respect, the Society of Friends (Quakers) form an almost ideal counterpoint to the sacramental visionary path. Quakers embrace mysticism, as the personal experience of the divine (Atchley 2017, Brown 2012, Meyer E):
Rufus Jones (1863–1948) was arguably the foremost Quaker scholar, writer, and advocate of opening to mystical experience as a central practice among Friends. He built on foundations laid by Meister Eckhart, the anonymous author of The Cloud of Unknowing, William James, and many other Christian mystics—people who had had direct experiences of God and tried to describe them. Jones concluded that the founders of most great religions of the world got their spiritual understanding through mystical experience. The Hebrew Bible and the New Testament are filled with reports of direct experiences of God. Mystical experience “makes God sure to the person who has had the experience,” wrote Jones (Atchley 2017).

However they refrain from using the term mysticism as as too confining. This leads to an all-inclusive acceptance of divinity experienced directly in person transcending conventional notions of God and extending to “the Divine ground of all being”:

Jones cautioned against using the term “mysticism.” Each seeker of “God within” is confronted by a unique personal and cultural labyrinth that he or she must negotiate to directly experience God. Because each path is different, it is impossible “to make an ism out of” the journey to experience God. But perhaps we can agree that we seek direct experience of “the Divine Ground of All Being” – the term Christian theologian Paul Tillich used for the transcendent Holy Spirit. Perhaps we can agree that we are all dancing around a divine Light that eludes naming. Jones also pointed out that we are seeking our own direct experiences of God, not “second-hand descriptions” of mystical experiences in books and scriptures. However beautiful and uplifting Eckhart’s descriptions of his direct experiences of God might be, we cannot have his experience. We can only have our own (ibid).

Quakers specifically forgo the eucharist as a ritual distraction from the experience of Divinity and even more importantly are founded on an utterly egalitarian principle of complete equality of spiritual experience, shared between periods of contemplative silence and sharing personal accounts of their experiences (Wilde 2016):

The Quakers have never celebrated the Eucharist or any sacraments. This is partly because they are a tradition which is historically teetotal, like Methodists. More importantly, it is because Quakers find that all ritual distracts and takes focus away from God. Also, Quakers believe that ministry is not only equal between men and women, but that it belongs to all people, not just a few ministers.

This brings their tradition very close to the principle of subjective empiricism by mutual affirmation.

- Quakers do not have a written creed. Instead, they hold to personal testimonies professing peace, integrity, humility, and community.
- Quakers believe that God’s kingdom is now, and consider heaven and hell issues for individual interpretation.
- Unlike other Christian denominations, Quakers believe that humans are inherently good. Sin exists, but even the fallen are children of God, Who works to kindle the Light within them.

The Society of Friends thus forms a perfect counterpoint to the sacramental tradition for those who wish to pursue the discovery of true spirituality not contaminated by prescriptive doctrine and ritual that also lies in the purest traditions of the Christian origins that led to Pentecost.
The disciples said to Yeshua, "Tell us how our end will be." Yeshua said, "Have you discovered, then, the beginning, that you look for the end? For where the beginning is, there will the end be" (Gospel of Thomas 18).

Niño Song Cycle

‘Elohim: Living on the Open Road
To Shakti a Devotion
The Hymn to the Epoch video
The Song of the Biosphere video
Black Rose video
Dialogues of the Saviour
Kitten’s Cradle
Resurrection Revelation

Video Talks
Resplendence: A Revolutionary World-view
My name is Chris King (b Epiphany 1945).

Communique on Preserving the Diversity of Life on Earth for our Survival as a Species
Declared Jan 6 2022 on the Anniversary of Completing our Millennial Vigil to Jerusalem
to Reflower the Tree of Life, in Sacred Reunion between Woman and Man

I came into this world, in a time of planetary crisis to bear witness to an incontestable, urgent and neglected truth:

That for our own survival, we must act decisively, now without procrastination, to save the immortal tree of living diversity on our planet, before the immanent mass extinction of life fully ensues at human hands, severely compromising our immediate prospects and dooming our long-term future as a living species. From this umbilical truth, the very meaning of conscious existence and all its unfolding depths and wonders spring forth.

My defence of this claim, transcending both the materialistic and theistic world views is set out in Symbiotic Existential Cosmology – the veridical cosmology of the universe in which we consciously exist. This is demonstrably the most provocative creative commons work of 2022, because it fulfils our existential quest for the true meaning of existence, by augmenting quantum cosmology with conscious volitional agency, opening up the full dimensions of the subjective realm underpinning all religious traditions. This means that the Cosmology is not just a work of scientific empiricism, but is the veridical Logos of religious paradigm innovation, assigning to me a rightful duty of care to articulate the Weltanshauung of Immortality, thus fully transforming the zeitgeist, because, in saving the diversity of life, it fulfils our existential hope, in our relationship with existence once again becoming everlasting, as it has for the last 3.5 billion years.

The Weltanshauung of Immortality is the world view in which life and conscious existence are recognised as perennially immortal processes key to the cosmology of the universe and that the meaning and reason for conscious existence is the sacred process of fulfilment of the flowering of life, so that the universe as a whole can become fully aware of and truly know itself through the living biota it has generated as a climax phenomenon.

Covenant: In the spirit of consilience, I humbly ask all of us worldwide to join with me in this critical venture of planetary redemption, as autonomous human beings, in mutual affirmation:

That we agree:
- to dedicate a full half of each of planet Earth’s land and ocean habitats to the preservation and future evolution of life;
- to sustain the diversity of life with our lives;
- to turn the tables on exploitation and expediency;
- to support the next generation’s strike, not just for climate, but for the diversity of life itself;
- to act where necessary in living rebellion against the genocidal extinction of life at human hands.

On receipt of this communication, we each inherit a responsibility to act upon it and to share the discovery process!

Please publish this message widely and forward it to everyone in your domain – because all future lives urgently depend on understanding the need and taking action now!

Most urgently we need a small group of inspired people to diversify the communication process!
Please reply to foxfire@resplendence.org
Type "YES" if you approve the covenant.
Type "I am in" if you would like to be active.
Type a short bio if you have skills to contribute.

The Indictment:

(1) We are assimilating the living wilderness habitats of the planet, and the diversity of life is simply taking the expedient back burner.

(2) The biomass of humans + livestock is over 22.5 times that of all remaining wild mammals, creating an immanently lethal double population crisis.

(3) We have no clear confidence of holding the line on climate crisis, with COP26 failing to phase out coal use and 1.5°C on life support.

(4) We are still overflowing with nuclear overkill. The superpowers are in brinksmanship on the border as I write.

(5) We are completely losing the distinction between conscious life and artificial intelligence, and with it human conscious volitional agency.

(6) We remain addicted to an unsustainable exponentiating GNP economic paradigm of exploitation over shorter and shorter triple witching hour instabilities.

(7) Last but not least, a clear majority of people on the planet adhere to religious views invoking dominion over nature, and directly embracing destructive apocalypse.

These are our seven deadly 'sins' and all are abundantly clear paths to inevitable Fermi paradox catastrophe.

If you pause and reflect on this message, you will realise that everything I am saying here is veridically true, as is the cosmology. I have come in the time of acute need, to light the beacon of life’s resplendence and guard it till it shines brightly! No one else on the planet has expressed any real hope of bringing both the religious and materialistic paradigms into full alignment with human and biospheric survival in time to save life as a whole. Someone had to discover their true incarnate calling and make that tortuous journey into the unknown. But I am just the catalyst, bearing a sacramental biospheric ally. With the full unveiling of this knowledge, this gnosis, the baton of conscious agency over the future of the living universe around us now passes to all of us.

The Huichol have said, that we are "perdido" – lost, done for. But in this sacred undertaking we shall find our true redemption. Through our collective affirmation, we shall begin at last to truly keep the immortal way of the Tree of Life throughout our generations forever. Through this awakening, humanity can be confident of inheriting perpetual life, as a species, through our true love for one another, just as Genesis envisaged before the Fall.

In this very act, we become liberated. We shall know it in our heart of hearts and can feel it in our bones – this is our one true calling, to have chosen that good part that shall not be taken away from us, in the time of true need, as one people, as a living species and as a symbiotic biosphere: To save the life tree of the living universe in the cusp of our planetary crisis, so that conscious existence can continue to fully flower and unfold in the universe unabated. This is our raison d’etre, our true meaning in life, and shall become our ultimate fruition in resplendent Paradise on the cosmic equator in space-time.

What we have within us will save us if we bring it forth from ourselves.
We CAN DO this! What other viable option can there be?

CK
Affirmations: How to Reflower the Diversity of Life for our own Survival
Elucidated in a conversation between Chris King and Suzy McFarland

Ron Horgan: I agree Chris, the long term future of Homo sapiens on Earth requires us to live within our means as part of the biosphere. Can you enlarge on the rules and laws we need to live symbiotically with nature? Your 206 page monograph is a very detailed study but confuses me. My strength is rapidly reading and extracting the key points from a wide range of discoveries. What do you recommend we do?

Chris King: The solution is twofold: (A) The meaning and purpose and (B) The action required. Both are essential because without A, B won’t happen in time to do what’s really needed.

Both theistic and mechanistic cosmologies leave us with annihilation. The first sacrifices nature to human dominion, then apocalyptic triage and destruction. The second is a lifeless machine, in which conscious life is an informational accident that has no cosmological meaning or significance. Symbiotic existential cosmology puts the ghost of consciousness back into the machine of the universe, by minimally augmenting quantum cosmology to include subjective experience. The meaning and purpose is for conscious existence to fully flower to fruition as an immortal process of the universe becoming fully aware.

A: Symbiotic Existential Cosmology, in its simplest irrefutable form, comes in three short statements:

1. **Biogenic**: Life exists cosmologically as a fractal consequence of the symmetry-breaking of the quantum forces of nature, ensuing from the the cosmic origin, eventually reaching interactive climax in biological evolution.
2. **Panpsychic**: Subjectively conscious volitional will has efficacy over the physical universe. *This imbues at least some matter (brains) with physically efficacious subjective consciousness. Thus primitive subjectivity, is a property of normal matter.*
3. **Symbiotic**: The planetary biosphere survives and evolves through ecosystemic symbiosis, upon which human survival is dependent. *Biospheric symbiosis is thus essential for human survival.*

This is, in its simplest form, the true veridical account of the universe in which we consciously exist.

The first is obvious – just look around you! The diversity of life exists physically as a climax phenomenon – a quantum complexity catastrophe. The second is subjectively conscious existence being able to affect the physical universe, as we know from every act we take and every decision we make. This implies some matter e.g. brains have an occluded subjective complement, but because the brain obeys the core quantum forces, like other matter, it’s a fundamental aspect of cosmology, invoking panpsychism, animism and the spiritual/religious impulse, although it’s counterintuitive that the most obvious solid fact of reality opens the entire spectre. The third and most important is that the universe rises to consummating complexity through symbiosis between life forms, not dominance, as in dominion over nature by Homo sapiens.

B: Reflowering Paradise on the Cosmic Equator in Space-time 13 billion years out from the big bang:

1. **Give half Earth back to re-wilding the wilderness**, so there is enough species diversity for the biosphere to evolve. (2) Transition to renewable energy immediately. (3) Decentralise food supply chains to protect humanity. (4) Ensure the genetic diversity of our food and medicinal species. (5) Eliminate nukes and consider how best to avoid a massive asteroid Earth strike (Lubin & Cohen 2022) and protect from nearby supernovae. (6) Teach people how to live in symbiotic urban culture. (7) Use technology for the benefit of life as a whole not for personal gain, humanity alone, or an artificial intelligence takeover. (8) Celebrate the perennial wonder of existence throughout our generations forever Amen.

Hillel stated the silver rule, claiming he had recited the Torah standing on one foot. This herein is the cosmological silver bullet for the immortal Tree of Life standing on one toe! This is it. This discovery can happen only once. We aren’t going to get another. This is who we really are and what the universe is really here for!

Ron: Chris this is superb. “This is who we really are and what the universe is really here for”. We sure aren’t going to get another chance. How to get this message onto every television and computer screen? You have made my last 10 years. Thank you.

Suzy McFarland: And, what do you expect the rest of us to do?

Chris: I ask you simply to assess two things and make up your own mind up, about this:

1. Do you consider that I’m telling you the veridical truth here, as a subjectively conscious human being?
2. Do you affirm that you also have subjective conscious volition over the physical universe?

Suzy: (1) Yes, I believe you are telling me the veridical truth. (2) Yes, I do believe this.

Jane King: Yes indeed. I do. Yes to all!!

Ultimately everything that ensues in Symbiotic Existential Cosmology to reflower and reprepare the Earth flows from this mutual veridical affirmation and the preparedness of people to communicate it to others in this way.

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74 efficacy – the ability to produce a desired or intended result.
10 Biocrisis and Resplendence: Planetary Reflowering

For the mind at large to awaken even for a moment and become acutely aware of the carnage wrought upon the planet through the relentless exploitative impact of a single species Homo sapiens, it is obvious that, by its very compassion for the mortal coil it will impart to the beholder urgent tenacity to protect the living planet. This is precisely what I experienced in being galvanised to write these articles after a quantum change experience on sacred mushrooms after a seven year break because of closed angle galucoma. It is critical for our own survival and that of the living diversity of life as a whole. The rape of Gaia – “Mother Earth” by the patriarchal imperatives of dominion over nature and business-as-usual exploitation is a suicidal insanity running through our cultural mind set, which humanity currently lacks the collective will to alleviate. Intervention for the common good is urgently necessary.

The Full Scope: Climate Crisis, Mass Extinction. Population and Nuclear Holocaust

Fig 158: (1) World population is predicted to continue to rise through to 2100 (Gerland et al. 2014), with the majority of the increase in sub-Saharan Africa (inset). This will increase the world population to 10 billion, with immense pressure on the African continent’s carrying capacity and pressure of migration on all continents. (2) Predicted long term effects of climate change (Burke et al. 2018) could lead to a catastrophic cumulative heating over millennia, taking the planet back to the previous hot period 50 million years ago, placing many of the plant and animal species on which we depend well out of their evolved climate zone, potentially leading to human extinction because of our continuing dependence on highly evolved plant and animal species (Burke et al. 2018). (3) Human intrusion into all available habitats causing wholesale natural habitat destruction means that the biomass of livestock is over 14 times that of all wild animals and the biomass of humans is over 8.5 times that of all wild animals (Bar-On et al. 2018). (4) This situation is unsustainable and leads directly to mass extinctions of biodiversity, which would take up to 50 million years to be addressed by subsequent evolution, as exemplified by previous mass extinctions. (5) Species losses of a variety of animal and plant phyla. The incipient sixth mass extinction that started in the Late Pleistocene has already put over a quarter of mammal species under acute risk of extinction (Leakey & Lewin 1995, Kolbert 2014, 2021, Davis et al. 2018, Dawson 2016). Detailed calculations of mammalian species indicate a time frame of millions of years to recover from the current mass extinctions, by evolving new life forms, but those lost will never be recovered. Insects are also suffering catastrophic population decline due to habitat destruction. (7) Protected areas are manifestly insufficient to protect biological and genetic diversity. International agreement is urgently needed to extend these areas. (8) Scorched-earth clear felling for palm oil plantations has felled a third of Borneo’s forest almost overnight. Such wholesale habitat destruction is even worse than burning the rainforest because all living diversity is eradicated in favour of one monoclonal species. (8) Coral bleaching shows how climate change can lead to wholesale mass extinction of species in some of the most intense oceanic biodiversity hotspots, leading to a barren ocean.
The universe as we know it has been in existence for some 13 billion years, but for over around a quarter of this cosmic lifetime, around 3.6 billion years, life and its diversity and complexity has continued to evolve to the point of human emergence amid climax diversity, which has taken around 66 million years to recover from the mass extinction caused by the Chicxulub asteroid that extinguished the dinosaurs. Our impact is rapidly becoming worse and setting us for a warming taking us back 50 million and yet we remain unable to give the priority to correct it due to our own folly.

Fig 159: Evolutionary tree of life (King 2021c), with entheogenic molecules. Preserving the diversity of life and of conscious life in evolutionary time scales is the prime responsibility of our sentient incarnation. Background: Amazon burning.
Fig 160: Scenario maps Half Earth Project show (1) protected areas, (2) protected+community, (3) human pressures (4) biodiversity priority, (5) biodiversity richness and (6) biodiversity rarity. These show the difficulty of planning for a half-Earth scenario because some countries have high value habitats which urgently need conserving while others lack any significant protected areas. Furthermore protected areas are not identical with the biodiversity priorities. Habitats involving priority species and rare species are quite distinct from areas with the greatest richness (Rinnan & Jetz 2020). This means that protecting half Earth is going to require massive funding of some developing countries and wide scale consent and economic motivation on the part of developed countries to resolve these questions. The science is critical to make the process as effective as possible but this is also going to take a huge change in the human world view to upgrade its urgency sufficiently.
If you look at the Amazon Basin it looks as though there is little overlap between biodiversity richness and human pressure, but we know that’s not true because the Amazon is being ravaged by fire, mining and agriculture. Moreover, the priorities for biodiversity also lie, prominently lie along the Andes, with high overlap with human impact. Turn now to Africa and you will see a big conflict between human pressure and biodiversity priorities in the North East Congo and south to the Cape of Good Hope. This means that stopping a serious mass extinction is going to have to involve a new kind of global planning and financing to compensate affected parties and to ensure consistent standards of protection and mitigation. Predictions of biodiversity at 2100 remain contradictory depending on how the driving factors interact (Sala et al. 2000). Wilderness areas halve the extinction risk of terrestrial biodiversity (Di Marco 2019).

Fig 161: Top left: Predicted loss of mitochondrial cytochrome c oxidase subunit I haplotypes for nine montane aquatic insect species in Europe under business as usual IPCC 2080 CO2 emission scenario (Bálint et al. 2011). Top right: Comparison of recent and distant past extinction rates with rates at which species are “committed to extinction” during the 21st century (Pereira et al. 2010). Bottom left: Map of expected change in biodiversity for the year 2100 under antagonistic interaction between drivers such as climate and habitat loss when the total biodiversity change equals the change resulting from the driver that is expected to have the largest effect and is calculated as the maximum of the effects of all the drivers (Sala et al. 2000). All of the key tropical rainforest would be seriously affected. Bottom right: Estimated recent and future global biodiversity trends resulting from land-use change, with and without coordinated efforts to reverse trends (Leclère et al. 2020). Habitat effects on their own contribute up to 20% loss in diversity (grey) unless adequate measures are taken (ochre). Mean extinction probability across studies making predictions of the future effects of climate change suggest a mean extinction probability of 10% across taxa and regions, whereas empirical evidence gave a mean probability of 14% (MacLean et al. 2011).

Davis et al. (2018) note that the incipient sixth mass extinction that started in the Late Pleistocene has already erased over 300 mammal species and, with them, more than 2.5 billion years of unique evolutionary history. At the global scale, this lost phylogenetic diversity (PD) can only be restored with time as lineages evolve and create new evolutionary history. Given the increasing rate of extinctions however, can mammals evolve fast enough to recover their lost PD on a human time scale? We use a birth–death tree framework to show that even if extinction rates slow to pre-anthropogenic background levels, recovery of lost PD will likely take millions of years.

This is going to take a paradigm shift in world views to get anywhere in time. It needs to convey an urgency and a sense of cosmological meaning to support the undertaking both scientifically and religiously to actually get there. There has to be some sheer inspiration and conviction to do this.

Human impact is causing a mass extinction of biodiversity on a time scale that is almost as acute in terms of the adaption of life as the Dinosaur extinction and is rapidly approaching a series of tipping points that could throw the entire planet into a far less hospitable state, not just for the diversity of life but for our own survival. As the Earth heats
due to CO₂ and methane emissions, the albedo ⁷⁵ of the white, light-reflecting poles shrinks, so that it absorbs more light increasing the heating. Destabilising the methane hydrates on the ocean floor can lead to a world-wide eruption of CH₄ which is 20 times more active in solar heating than CO₂. At the same time the entire forested areas of the planet that fix carbon are being replaced by pasture and agriculture, compounded by massive fires both lit intentionally to clear forest and arising naturally from lightning strikes due to increased heat and the drying out of forest areas.

As I was completing this work on on Boxing Day 2021, E O Wilson regarded as Darwin's heir passed away. Here are three statements he made about Biodiversity in interview about his book “The Meaning of Human Existence”:

We are by instinct related closely to the survival of our distant ancestors by a driving need to strike nature as hard as we could, and to draw as much as we could from it. And we haven’t lost that at all. And now we come to a higher-level recognition that we struck too hard, and too far, and we are threatening the world that we first entered so aggressively and successfully in Africa. And we somehow have got to pull back our instincts to exploit and subordinate and convert to our immediate welfare—because if we take too much more of the Earth’s biodiversity we render the biosphere unstable. And we could, in the worst of circumstances, reach a tipping point in which the whole thing collapses—and we with it.

The living world the biosphere is a razor thin layer of organisms that have evolved over billions of years to create close to exactly the right combination of species and their interactions to maintain the conditions that they live in. Our minds and our bodies are particularly well designed by natural selection to live in those exact conditions and if we change it in any significant way, we die quickly, and so we should keep in mind that, when we destroy the living world by allowing species to go extinct, you’re weakening the biosphere and eventually, you may reach a tipping point in which the whole thing starts to unravel, and when that happens it will be the end of everything.

Part of our problem is that we’re a species that is narcissistic. We’re intensely social and intensely interested in other people and that’s how we keep our groups united and well coordinated. The result is that we’re geniuses at social intelligence and really stupid when it comes to understanding how to manage the environment. We are a badly adapted species right now. We have created civilisations in which we lead and live on parts of the planet on our own. And we haven’t gotten over our emphasis on forming groups and having groups compete with each other. It’s easy for us to think that the world was made for us and we don’t really need to know about the 8 million or so species on this planet, even when we’re told that keeping them intact and making sure they continue to live is probably necessary for our long-term existence.

The Covid-19 pandemic has shown us a world which cannot realistically modify business as usual exploitation to address the human impact on the biosphere that precipitated the pandemic through trafficking and exploitation of wild animals. This inability risks a potentially irreversible planetary tipping point. The fact that we can even temporarily be stopped in our tracks by a mere virus underscores the vulnerability of the human population to

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⁷⁵ Albedo is a quantity that indicates how well a surface reflects solar energy. ... the “whiteness” of a surface, with 0 meaning black and 1 meaning white. A value of 0 means the surface is a “perfect absorber” that absorbs all incoming energy.
misadventure and the fragility of technological civilisation. By comparison with dealing with a pandemic, the cumulative problems of human impact are far more deleterious to both future quality of life and to the world’s economic viability, and could result in the mortality of billions of people. The problems are made all the more intractable because action requires international cooperation to transform our energy and consumption economies, but this is mired by national and political interests and resolute will can be unravelling all too easily by a single populist defector in a position of power, disrupting the capacity of the world to act cogently and scientifically.

Underlying the climate crisis is a much more serious and potentially devastating one for humanity’s future quality of life, economic future and survival as a species, and that is the mass extinction (Leakey & Lewin 1996) of biodiversity, driven both by whiplash change and wholesale habitat destruction further exacerbated by deforestation and the burning of both the tropical rainforests and temperate forests of Earth, as well as the conversion of vast wilderness areas to monoculture. Whole geographical regions of the planet, both at cooler poles where temperatures changes are magnified and in the hotter drier tropics are likely to devastate their plant and animal diversity. The issues of biocrisis (King 2006-2020) and mass extinction are more serious than climate change or human induced pandemics and require a combined strategy of mitigation of habitat destruction, replanting of wilderness areas, conversion of food production and consumption to less polluting and carbon-intensive practices and collecting as much genetic diversity as possible in gene banks to conserve plant, bacterial, and fungal diversity. The fate of insects and other small multi-celled animals is also highly important for overall planetary fertility, as exemplified from honey bees to humming birds.

(a) **Half Earth** The biosphere needs immediate protection from human impact over a full half its surface and restoration by a clear dedicated program (Wilson 2016, Le Page 2018, Baillie & Zhang 2018, Dinerstein et al. 2019, Lambert 2020, Convention on Biological Diversity), and assisting diversity to replenish in the wilderness is essential for the long-term robustness of the biosphere’s diversity and of human species over evolutionary time scales. Although we are stripping the biosphere, we are very small on the face of the planet and dependent on stable food supplies. Planetary changes crossing tipping points, would have a much more serious long term impact on the viability of human species, let alone the economy, than by adopting the precautionary principle. Climate change remains a serious long term risk to biodiversity and the human population. Changes in the ocean level, once initiated will continue for up to 1000 years due to changes in the planetary albedo as the white polar caps melt. They could render vast land areas uninhabitable to humans and for food production reducing the economic carrying capacity of the planet for human life for millennia to come, with increasing desertification in some areas and flooding in others all impacting on biodiversity. Pollution, from estrogenic chemicals to ocean plastics, also needs urgent containment.

(b) **Nuclear Holocaust** We remain in a situation of mutually-assured destruction due to a massive overkill of nuclear destructive power, which could also lead to a human and biodiversity genocide. This remains a key challenge and a dark comment on the patriarchal male-combat winner-take-all death-risking reproductive strategy, extrapolated to utopian proportions, which urgently needs to be addressed for the safety of the human species and the biosphere. This is human maleficence being appropriated to create a hair-trigger potential for mass destruction, rather than using this technology to avoid astronomical threats to biospheric survival.

The Federation of American Scientists notes: “Despite progress in reducing Cold War nuclear arsenals, the world’s combined inventory of nuclear warheads remains at a very high level: roughly 13,100 warheads as of early-2021. Of these, nearly 9,600 are in the military stockpiles (the rest are awaiting dismantlement), of which some 3,800 warheads are deployed with operational forces, of which up to 2,000 US, Russian, British and French warheads are on high alert, ready for...
use on short notice. ... All the nuclear weapon states continue to modernise their remaining nuclear forces, adding new types, increasing the role they serve, and appear committed to retaining nuclear weapons for the indefinite future”.

(c) Population and Patriarchy Population also remains a critical issue. This article presents a perspective in which consciousness is not just a human faculty but is shared widely by the biota, conveying at its heart, a reverence for the continuity and sacredness of conscious life. Patriarchal religions and cultures claim to represent the sanctity of life, but have abused it, both by suppressing female reproductive choice to ensure male paternity certainty and by encouraging unrestrained reproduction of their adherents as a means to social and world dominance, accompanied by dire penalties, from stoning for adultery, through enforced female veiling, chaperoning by male relatives, female genital mutilation, limitations on female education, careers and freedom of the female race to associate, and choose their/our own futures and sexual partners.

Fig 164: Recent and future population growth of world religions (Pew Research 2017, Wikipedia).

As noted in Sexual Paradox: Complementarity, Reproductive Conflict and Human Emergence (Fielder & King 2017) this frustrates the evolutionary process towards higher intelligence we have experienced in our XY-chromosomal evolutionary emergence.

Christianity and Islam together comprise a majority of the world population with religious believers constituting 84.5% of people. Heaven and Hell cosmology, discarding the living planet and natural diversity, in favour of a reliance on the after life, is in frank contradiction to, and conflict with, ensuring a sustainable and immortal Paradise on Earth. This is not just a crime against nature, it is a crime against humanity and reality itself. Therefore the main thrust of Symbiotic Existential Cosmology is to change the religious weltanshauung, to that of the living immortality of life as a whole because transforming the religious paradigm is precisely the point of highest remedial capacity.

As can be seen from fig 158(3) the combined biomass of humanity and livestock is already 22.5 times that of all wild mammals an unsustainable ratio in evolutionary terms. From fig 158(1) although population growth rates have begun to ease, the world population will still rise to 2100 putting severe pressure on sub-Saharan Africa and unsustainable pressure on biodiversity worldwide.

Both contraception and abortion have been opposed as violating God’s invocation to go forth and multiply, playing a central role in driving the population explosion and hence planetary destabilisation. Muslim and secondly Christian birth rates are the highest on the planet. Abortion is opposed as a heinous sin, but the sanctity of life is not just for a single offspring but the viability of our species in a finite enclosed biosphere. Therefore upholding the sanctity of life depends on respecting the ability of the females of the species, who bear responsibility for the ongoing immortal continuity of human life, to make reproductive choices and choices whether to sustain a pregnancy in terms of their bodies, and their future responsibilities, as mothers of children they need to support. At the same time, beginnings of a severe downturn in reproduction rates insufficient to maintain the population are in some developed countries turning into a flood that is also going to cause a population bust and seriously ageing populations, so both rampant opposition to abortion and the employment and career pressures on women in developed countries need to be removed, so that human population dynamics can become culturally and biologically sustainable.

A revolutionary female-inspired economic antidote to the paradigm of the GDP and exponentiating growth imperatives, comes from Kate Raworth (2012), in her discussion paper “A safe and just space for humanity”, forming an interactive template for regenerating a fair, sustainable social dynamics in the closing circle of the natural planetary
ecosystem and environment, originally prepared under the auspices of Oxfam in the run-up to Rio+20. This is built on “A safe operating space for humanity” in which Johan Rockström et al. (2009) propose numerical boundaries for seven parameters: climate change, ozone depletion, ocean acidification, biodiversity, freshwater use, the global nitrogen and phosphorus cycles, and change in land use. The authors argue that we must stay within all of these boundaries in order to avoid catastrophic environmental change.

In Kate Raworth’s words 76:

The goal of the doughnut is to meet the needs of all people within the means of the planet. Sometimes when I present the idea of Doughnut Economics, people say, “Is this capitalism? Or is it communism? Or is it socialism?” And you think ‘Really Are these the only choices we have?’ The -isms of the last century? Can we not come up with some ideas of our own and create new names for them and see new patterns?

Governments in every country are almost addicted to citing GDP figures as if this was proof of success and yet it’s so clearly not. Because we have climate breakdown and Covid lockdown and financial meltdown, we have to pursue something far richer to move from this pursuit of endless growth, which we can now see is hitting us with crisis after crisis, moving too a goal of thriving. And the doughnut is possible to turn not into a single number, but into a dashboard. We can hold policy makers to account and say every year you need to talk about how you are making progress on these different dimensions of the Doughnut.

The outside of the doughnut is created by leading Earth system scientists just a decade ago. These are the nine life-supporting systems of planet Earth. To have a stable climate, healthy oceans, recharging fresh water. And they drew these and called them the planetary boundaries. But I thought if we go to the centre of the circle where we use hardly any of the Earth’s resources, that’s not thriving, that is actually death and destruction for billions of people. We need to convert Earth’s lands for food, for water, for housing for energy. So I drew this inner circle and so just as there is an outer limit of humanity’s pressure on the planet so too there must be an inner limit. o the hold in the middle is a place where people are left falling short on the essentials of life. It’s where people don’t have the food, water, energy, healthcare, housing, education, political voice that every person has a claim to meeting. We want to leave nobody in this hole. Get everybody into the green ring of the Doughnut itself.

And I think smart policy makers realised that they don’t need a solution to financial crisis and a different one to climate crisis and a different one to health emergencies. They need a paradigm that no longer pushes for endless growth, but instead focuses on thriving, on resilience and on well-being within communities.

We began with downscaling in rich cities, in high-income nations because they are the ones that have the greatest obligation to transform, to come back within the planetary boundaries. But I believe the framework that we’ve created can absolutely be adapted and used in low income countries and cities.

Since 2012, there have been initiatives to downscale the Doughnut Economy, so it can apply to individual countries and cities, starting with developed economies where there is an impending need to face these realities, with projects

76 https://www.bbc.co.uk/reel/video/p08hppxt/how-the-dutch-are-reshaping-their-post-pandemic-utopia
in Amsterdam and “Regenerate Costa Rica” and the spinoff DASH project where researchers have applied the Doughnut to the needs of 150 countries.

In short: (1) Give half the Earth back to re-wilding the wilderness, so there is enough species diversity for the biosphere to evolve. (2) Transition immediately to renewable energy. (3) Decentralise the food supply chains to protect humanity. (4) Ensure the genetic diversity of our food and medicinal species. (5) Eliminate nukes and consider how best to avoid a massive asteroid Earth strike and protection from a nearby supernova. (6) Teach people how to live in symbiotic urban culture. (7) Use technology for the benefit of life as a whole, not for humanity alone, or an artificial intelligence takeover (Werthner 2022). (8) Celebrate the perennial wonder of existence throughout our generations forever Amen.

“A human being is a part of the whole, called by us the ‘Universe,’ a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest — a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty” (Einstein)

Crisis and Resplendence

In 2015, while riding my pushbike at dusk without a helmet, in the interests of being as free as the wind, as one of the wild and feral generation that came before safety belts and cycle helmets, a car suddenly emerged from a driveway and, in jamming on the brakes I flipped over the handlebars and tumbled head-first onto the concrete. The next thing I knew an unspecified time later was that I walked into our house with blood streaming across my face, an eye like a pomegranate and my front teeth knocked out, saying what “happened to me”? “Was I mugged”? When I went out to check the bike I found it twisted and unrideable and the garage doors covered in blood.

Hours later, in accident and emergency, cloudy images of my panic as I saw the car and began to tumble reconnected, as I waited in observation. It later transpired from other people’s accounts that I had been knocked unconscious, was found staggering around the accident site and the ambulance was called, but by then I had wandered off and dragged myself and the bike across town in a concussed state with no memory of how I made it home. I refused an X-ray although the doctors pleaded with me that I could succumb from a haemorrhage and survived with no permanent sequelae.

As soon as I had recovered, I realised that what I had done was dangerously foolish. Not because of risk to my own life and sanity, but because it could have deprived me of revealing to the world an answer to the conscious existential dilemma of life, the universe and everything, pivotal to saving the diversity of life and our planetary future.
Thus emerged the concept of planetary resplendence (*resplendere* “to shine brightly”, transcending religion – *religio* “to bind together”) as a cultural paradigm. *Resurrection Revelation* a hymn to the event.

This project then remained quiescent and unfulfilled for the next six years, until my quantum change experience on sacred mushrooms in early June 2021 gave me a root jolt of realisation that I need to act now, re-galvanising the renewed urgency of this quest. I am in a world where there is a real and significant risk that humanity will cause a hard planetary landing, precipitating a mass extinction of up to half the planet’s biodiversity amid a climate crisis that could take us back 50 million years to the early Eocene climatic heating peak shortly after the dinosaur extinction. If I don’t speak out and do something decisive while I am alive, the ability to avoid this evolutionary and frankly cosmological calamity, which could prejudice human survival will evaporate.

This is again what the *moksha epiphany* on sacred mushrooms told me in the most compassionate possible terms. The message is real and glaringly urgent. It is not a religious or spiritual fantasy. It is hard reality speaking a warning that all the science tells us is serious and immanently needs to be addressed. Humanity must act and must act now and a key, however strange it may appear, lies in the biospheric sacraments, which is the purpose of this spore communication.

**Entheogenic Conclusion**

The key to this article is not just that psychedelics can induce a type of conscious awareness of the “mind at large”, but that they have a potentially pivotal role in alleviating the climate, habitat and natural resource crises that are precipitating a human-induced mass extinction of biodiversity, through the symbiotic relationship with nature these experiences invoke in the shamanic context where human relationships with nature and its spirit world are paramount.

Traditional religions, sourced in patriarchal moral imperatives and an hierarchical top down business structure to enhance social dominion, based on a scorched-Earth desert philosophy, in which natural life is just a prelude to a Day of Judgment to be consigned to eternal Heaven or the fires of Hell, are tragically ill-positioned to be able to address this existential crisis of humanity and the planet. What is required is a paradigm of autonomous direct personal responsibility to care for the universe and the sentient life within it in immortal perpetuity over cosmological time scales. This is the epoch of living Paradise all spiritual paths hunger for.

“So what we’re seeing now is a rejection of religion across the world as a hierarchical business model to connect to spirit and they’re going straight for spirit” – Rak Razam (Stewart 2013).

**Fig 167:** Pulsations. A group of vegetalistas has taken ayahuasca and through an icaro, Queen Pulsarium Coya they seek to diagnose patients by interpreting the pulse with hands connected to the brain. In the Amazon traditions, such a session may also seek to counteract sorcery by shamans of other tribes. In all cases, there is an intimate coupling between nature and the shamanic experience achieved through the entheogens (Luna & Amaringo 1991).

So the question is not transcendence in its own right, which is superlative, but the responsibility this imbues to cherish and protect the living universe. This is not a moral responsibility, but arises from purposeful symbiosis with the cosmic mind.

This is the overwhelming message the psychedelics have communicated to me through countless sessions over 55 years and particularly through the natural entheogens and the symbiotic relationship they invoke. It is not something that proceeds automatically out of the psychedelic experience, which, like love, is a many-splendoured and sometimes
very challenging thing, but nevertheless its biodiverse aspect is widely shared, in the sense of connection with nature reported in the psychedelic studies and manifest in the shamanic tradition of entheogenic use, where spiritual realisation is accompanied by a sense of integration with nature and interdependence within it. The threat to biodiversity of a mass extinction lasts over evolutionary time scales, so while climate might be addressed and mitigated due to human pressures, the unrelenting pressure on biodiversity could become exacerbated. Hence entheogens come to provide a critical short and long-term remedy to domination over nature by increasing awareness of our symbiotic relationship with life as a whole.

The reason I have concentrated on natural psychedelics is fivefold:
(1) Entheogenic species are an integral part of the planetary evolutionary endowment of biodiversity, as are our food and medicinal species.
(2) Natural psychedelics are potentially symbiotic cohabitants with Homo sapiens, which already exist in a symbiotic relationship with the cultures and utilising them entheogenically.
(3) Natural psychedelics have been used for millennia and are proven to be both safe for the individual and safe for society when used in a guided and protected spiritual, or therapeutic context.
(4) The entheogenic experience of natural psychedelics is powerful and capable of evoking a full psychedelic state, so that, although synthetics present additional features, natural psychedelics are “sufficient unto the day”.
(5) As long as psychedelics remain illegal, natural psychedelics are verified by their genomes to be pure of synthesis contaminants and are easily cultivated, enabling autonomous use without contact with the illegal drugs market.
(6) They are not addictive because the effects wane rapidly on repeated use, requiring a refractory period.

There are also a variety of other natural and synthetic agents which can also have profound consciousness-altering effects, including cannabis species (THC), Salvia divinorum (salvinorin-a) and the synthetic drug ketamine, each of which have properties distinct from and potentially complementary to those of psychedelic entheogens. Some may also induce forms of Bardo Thodol experience, but classic psychedelics take the centre stage (King 2021b).

Sacred mushrooms contain other related psychoactive molecules, fig 169, which also contribute to the overall effect. Psilocybe cubensis caps have been found to have 0.01% by wt of aeruginasin, 0.07% of baeocystin, 0.88% of psilocybin, 0.01 % of norb ninecystin, 0.06% of psilocin, with stypes having about half these levels (Gotvaldová et al. 2021). Previously the rare Inocybe aeruginascens was found to have high levels of aeruginasin (Gartz 1989), relatively by weight around 25% aeruginasin 35% psilocybin 28% baeocystin. Gartz compared reports from 24 cases people who accidentally ingested I. aeruginascens to those who accidentally consumed psilocybe species with high levels of psilocybin and psilocin. Those ingesting the inocybe reported only euphoric experiences, while the others had an “often slight and in some cases deep dysphoric mood”.

I have focussed my case on sacred mushrooms because peyote and ayahuasca are hard roads, due to nausea, while mushrooms are capable of being perfectly potent, have no such effects, particularly if ground dried in a mortar and pestle, soaked for 20 min in lemon juice to convert the psilocybin to active psilocin and drunk as a tea, resulting in a shorter, but intense experience that is easily contained in a busy life without fatigue or derangement. They are readily cultivated symbiotically (Stamets & Chilton 1984) and exist worldwide (Stamets 1996).

As Terrence and Denis McKenna stated to the reader in their mushroom growers guide (Oss & Oeric 1976):
“You as an individual and Homo sapiens as a species are on the brink of a symbiotic relationship that will eventually carry humanity and Earth into the galactic mainstream of higher civilizations”.

“Flickering before us is a dimension so huge that its outlines can barely be brought into focus in the human frame of reference. Our animal existence, our planetary existence is ending. In geological time that ending is now only moments away. A great dying, a great extinction of many species has been occurring since at least the partnership society in prehistoric Africa. Our future lies in the mind; our weary planet’s only hope of survival is that we find ourselves in the mind and make a friend that can reunite us with the earth, while carrying us to the stars. Change more radical by magnitudes than anything that has gone before, looms immediately ahead. Shamans have kept the gnosis of the accessibility of the Other for millennia. Now it is global knowledge. The consequences of this situation have only begun to unfold” (McKenna 1992 263).

11 A Moksha Epiphany

My entire life has been shaped by psychedelic experience. When I first took LSD in the heady times of 1968, I immediately realised that the universe was the generator of sentient life as a climax manifestation. This became a life
long quest, as a biocosmologist, to establish how and why life exists in the universe. I realised that traditional religions defining life as a preparation for Judgment in Heaven or Hell were corrupt cosmologies in conflict with nature, and while Eastern paths invoked meditative approaches to enlightenment, the fact that, by the traditions’ own admission this could take lifetimes in view of reincarnation, also appeared to contradict realisable illumination.

But the reductionist scientific view also lacked any basis for conscious existence, as expressed by Bertrand Russel who has himself espoused Russelian monism – a form of panpsychism:

“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 ...” (Bertrand Russell)

Francis Crick in “The Astonishing Hypothesis” put it this way:

“The astonishing hypothesis is that ‘You’, your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behaviour of a vast assembly of nerve cells and their associated molecules. As Lewis Carroll’s Alice might have phrased it: ‘You’re nothing but a pack of neurons!’ ”

This is reinforced by Sam Harris (2012) in a radio discussion in which he puts the case against free-will:

“You feel like you are a thinker of thoughts - the author of intentions - you feel like you are a subject and commensurate with that feeling is the sense that you are in a position to do what it is you do, to decide to lift my left or right hand and deliberate between the two and I can have reasons for one or the other and I’m in the driver’s seat - I really am - and that’s where everyone is starting. The problem with that is that objectively we know that everything you are consciously aware of - all your thoughts and your intentions and your impulses and your intentions to resist those impulses - whatever’s coming up for you - but we know that’s all preceded by events in your nervous system of which you’re not aware and which you didn’t create and the state of your brain in this moment in every sense is the product of variables that you are not responsible for - you didn’t pick your parents, you didn’t pick your genes, you didn’t pick the environment in which your genome was going to be expressed, you didn’t pick the way your interaction with other people and the world sculpted the microstructure of your brain so as to give you the brain you have - you didn’t pick the number of receptors you have of every type at each synapse, you didn’t pick all the charges that are currently in place in your brain at this moment - you haven’t created your neuronal physiology and yet your neuronal physiology is going to give rise to every next thought and intention that shows up for you”.

What makes this invalid is that, as we have seen the uncertainty of the quantum universe renders the classical notion of Laplacian determinism defunct, and is precisely the loop hole of quantum uncertainty and entanglement coupled with edge of chaos self organised criticality that makes the subjective experience of volitional will possible in the physical universe.

Towards the end of my first academic sabbatical, having also experienced being a sadhu in India and Tibetan Buddhist initiations, I took peyote with the Native American Church and also sacred mushrooms and later made two trips to the Peruvian Amazon to take ayahuasca. During this entire time, my entheogenic experiences were telling me that I needed to act on this knowledge received to protect the planet from a human-induced mass extinction of life.

As a child I had had a dream that I was standing in a parched jungle and all the animals were looking at me with heavy sorrow and disapproving recognition that I was a human that had reduced the earthly paradise to a scorched semi-desert. I had to run from this disapproval and found myself beside an endless queue of people waiting to find work in a dark factory surrounded by smoking chimneys. The dream left a permanent impression on me, long before the climate crisis became recognised. I have also had other formative precognitive dreams evidently verified before the event.
In the 1970s I published a monograph on the cosmological foundations for the origin of life explaining life as a climax manifestation (King 1978). I persuaded the university to let me build a small origins of life lab and succeeded in making primal microcells. The research overview has continued (King 2020a).

Having travelled widely and risked my life many times in far-flung corners of the Earth, I am now in my late seventies. I hadn’t partaken of the sacraments for seven years, because of the fact that acute closed angle glaucoma was liable to make me go blind overnight, due to psychedelics causing my pupils to dilate. Finally, having had the lenses of both eyes replaced with cataract surgery, I resigned myself to break the fast of the mushroom sacrament to return to the source of my life-long inspiration, before I left it so late that I might end up in a terminal condition before circumstances forced me into a last desperate encounter. I took only 1.5 g dried weight, prepared as in the -previous section, with some cannabis butter beforehand, to test a level that an elderly person who had not had the experience before could sustain without undue discomfort, given some caring support.

This is consistent with research fig 169, which shows a non-linear saturation curve of the SHT2a receptor with increasing plasma psilocin levels, consistent with a moderate dose of psilocin being able to induce significant effects, with little of the collateral fallout I have sometimes experienced on an heroic dose.

The resulting quantum change experience is detailed in fig 170, from what I wrote down on my descent the same evening, reawakening my sense of life direction, creative insight and transformative urgency, just as my life has been spent on an unending expedition into the unknown, sailing down a great fjord, with the tacking and gybing, often taken at veladas, to re-envisage the pointers on my journey of incarnation.

It has many of the key peak hallmarks often described in near death experiences, except here with more emphasis on the letting-go of ego-death and meditative sensory withdrawal, as noted by Chris Koch (2020):

“Similar mystical experiences [to NDEs] are commonly reported when ingesting psychoactive substances from a class of hallucinogens linked to the neurotransmitter serotonin, including psilocybin (the active ingredient in magic mushrooms), LSD, DMT (aka the Spirit Molecule), and 5-MeO-DMT (aka the God Molecule), consumed as part of religious, spiritual or recreational practices”.

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Fig 168: Left and centre: Microcellular formations generated in my little lab from HCN and NH₃ over H₂O, sometimes with HCHO. Right: Spores of a psilocybe species at the same magnification used for size comparison (King 2020a).

Fig 169: Dose-response curve for SHT2a occupancy vs psilocin plasma concentration (Madsen et al. 2019). Psilocybin intake resulted in dose-related S-HT2AR occupancies up to 72%. Plasma psilocin levels and S-HT2AR occupancy conformed to a single-site binding model established by positron emission tomography (PET).
Rather than representing an hallucinatory drug-induced delusion such states represent conscious experience taken closer to the edge of chaos than normally occurs in the more controlled meditative and contemplative traditions of religious spirituality and mysticism. By contrast with the mind-sky visions of the meditative traditions, deep entheogenic experience brings out a more symbiotic cosmic consciousness integrated with life as a whole rather than simply seeking divine grace. This is critical for human survival because the failure to incorporate the sacred transcendence and immanence of nature severely limits the capacity of the traditions to protect human survival and the diversity of life itself. Likewise, by comparison with life-transforming NDEs, the entheogenic brain is in an augmented, rather than diminished function and condition, facilitating a vast and sometimes overloading experience of ultimate reality in fully fledged form.

Dissolving the distinction between self and other is pivotal to this process. The internal model of reality supported by the conscious mind has an envelope of characteristics, ranging from our sensory experiences of the external world, to internal somatosensory, emotional and other representations of self and our ongoing thought processes. Thus subjective consciousness in the ego state is dynamically polarised between representations of subjective self and objective world. When these distinctions are released, the distinction between individual and universal consciousness can also become dissolved, leading to transcendence. Entheogens provide a visionary realisation of this deeper, primary consciousness, giving it experiential reality, by opening the doors of perception to the mind at large.

What is truly extraordinary about this process is that releasing the ego state, even transiently over several hours, can result in long-term integrative changes in the psyche, consistent with adaptive long-term neural potentiation, showing that the underlying processes of universal consciousness are not extinguished, but merely suppressed by the evolutionary shaping of the ego, thus attesting to the reality of the entire phenomenon.

Fig 170: “A moksha epiphany”. Written during the evening, after the experience had receded. “I am not your master. Because you have drunk, you have become intoxicated from the bubbling spring which I have measured out.” (Gospel of Thomas 13).

Three weeks after this quantum change experience, having feverishly worked day and night to achieve it, in completing the first full draft of this article, and the co-conceived complementary one Natty Dread and Planetary Resplendence on transforming the Christian apocalyptic tradition based on the dying Saviour, into the immortal paradigm of the evolutionary Tree of Life of the living planet.
Two months after the event, with this monograph approaching full shape, I repeated the undertaking, with 1.75 gms, again converted to psilocin under lemon juice as a tea, 40 mins after home made cannabis butter, to allow the latter to absorb in advance in the small bowel as an oily substance. Then another two months later I took 1.92 gms, reaching a full-on intense psychedelic peak. These were more enveloping as labyrinthine visionary voyages, skirting the edges of the iconic centre-of-the-cyclone transcendence of the first one but presenting other features of the extended conscious state, as is always the case with the diversity of psychedelic experiences.

What they have demonstrated to me as a breakthrough is the ability of the psilocin acid-treatment method to produce a pure, clean visionary source consciousness unparalleled in everyday experience, dream states and any form of controlled meditation, without which humanity’s understanding of the full dimensions of the psyche would be weak, pitiful and presumptuous. Taken in the late afternoon, these more powerful experiences, that had me reeling at the peak, were sharper and shorter than ingesting mushrooms predominantly containing the pro-drug psilocybin. The tea is pure dissolved entheogen and induces in the body a pure clean state, in which food is sumptuous and the inner quality of experience is abundantly overflowing for the astute participant to enter and explore the depths of immanent and transcendent consciousness. By midnight these left me able to sleep easily and wake fully refreshed, invigorated and whole, at the age of 76, confirming their fertile symbiotic relationship with my essential being, in the long, tortuous journey of incarnate existence. I have, in opening this confessional account and completing this cosmological description, traversed the long journey that began with the shock of my first experiences with LSD in London in 1968.

Please understand where I am positioned. I have a vast scientific research web site updated in real time with a comprehensive description of scientific reality from quantum cosmology through the evolution of the tree of life from biogenesis to humanity and neuroscience.

Quantum Reality and Cosmology
Biocosmology
The Tree of Life: Tangled Roots and Sexy Shoots: Tracing the genetic pathway from LUCA to Homo sapiens
Humanity’s Evolutionary Heritage
Culture Out of Africa
Entheogens, the Conscious Brain and Existential Reality

On the shadow side I have descended for decades into psychedelic states and spent whole seasons submerged in spiritual reality with fresh first person visionary eyes to see right into the events that invoked the human spiritual consciousness and the weird karmic twists therein all the way back to 150,000 years ago. That is the shadow side that is generally occulted.

I would be wasting my existence if I didn’t use this qualification when it is most needed to transform both the scientific and religious paradigms. Like all good shamans that’s what I was born to do. So I am trying to make the religious paradigm shift from the centre of the cyclone, because that is where the beginning and end of time lies and where the uncertainties go wide open right at the source that evoked it all. All the beings that have gone before us are complexes of life-long non-IID quantum interventions, each life history constituting a unique quantum instance from creation to annihilation. I am trying to use mine fully aligned to good effect to transform our understanding to regain planetary immortality. Because it is to put our attention on the highest possible Self in the Now, where all the possibilities for transformation lie.

If you would like to hear this weird quantum reality sung in a beautiful accounting here it is:
Kitten’s Cradle lyrics
The onus on us is to bring forth what we have within us:

"That which you have will save you if you bring it forth from yourselves.
That which you do not have within you [will] kill you if you do not have it within you."
(Gospel of Thomas 70)

If we do, these words come true and the whole epoch is realised.

Epilogue

The Weltanschauung of Immortality

The Weltanschauung of Immortality is the world view in which life and conscious existence are recognised as perennially immortal processes key to the cosmology of the universe and that the meaning and reason for conscious existence is the sacred process of fulfilment of the flowering of life, so that the universe as a whole can become fully aware of and truly know itself through the living biota it has generated as a climax phenomenon. This point of view is both intuitively natural to human emergence in animism and transcends both the materialistic and theistic world views, each of which is degenerate, incomplete, confining and corrupt. It fulfils our existential hope in a way which neither theism nor materialism can do and places us as active, pivotal and responsible cosmological agents in the flowering and unfolding of conscious existence.

The paradox of the existential condition, amid an entropic universe is fundamental to cosmology. A symmetry-breaking has to occur, in which positive energy real particles inherit the arrow of time, amid a time-symmetric underlying milieu of quantum potentialities. From this symmetry-breaking, the second law of thermodynamics follows, in which closed systems tend to a ‘randomised’ state of increasing entropy by mutual interaction, as the ultimate doom of annihilation of structure and meaning.

Molecular biogenesis and the ensuing evolution of life is a negentropic process of increasing complexity, that runs upstream against the entropic current of ‘despair’, because it is an open thermodynamic system on a planetary surface basking in gentle incident solar radiation of a wavelength spectrum that can be absorbed by the molecular systems of living cells without so degrading them that life is wiped out. We thus arrive at planetary biospheres where life beats the entropic odds and rises to a climax of species complexity and diversity and becomes conscious of itself.

Life in the universe rises to conscious climax through perennial species immortality, but it occurs inevitably coupled to organismic mortal sexuality. This is the dilemma of the mortal coil and is precisely the way it has to be, because the molecular genetic basis of life is always subject to mutational degradation by Muller’s ratchet, the entropic randomisation of any structured genome bit by bit in the absence of active processes of genetic recombination to add vital new genetic combinations to restore life’s genetic vitality.

Bacteria and archaea solve this problem by co-existing symbiotically with transposable elements and viruses that promiscuously exchange genetic sequences, even between differing species, in horizontal gene transfer. Complex

77 Weltanschauung is used as an English word, from the German because the English worldview is too vague and not comprehensive enough. (For anschauen = to look at, rather with the meaning "to take a good look at", for schau = to show, display, as opposed to blicken = to look, or aussehen from sehen = to see). Primarily it means a way a person looks at the phenomenon of life as a whole. Some people (particularly those who have not lived very long) have not formed any broad (inclusive, even "sophisticated") view of life. Others consider a large number of factors before forming their overall view — maybe in their seventies — of the phenomenon of human existence. Typically a person’s Weltanschauung would include a person’s philosophic, moral, and religious conclusions — including e.g. the duality of spirit and matter — and perhaps their conclusions about the origins of the universe and of the development of life.
organisms evolved through the endo-symbiosis between the archaea and bacteria giving rise to our respiring mitochondria giving rise to the first eucaryotes. Without this symbiosis complex life could not have arisen. The energy provided by this cooperative fusion provided the basis for a tremendously expanded genetic and phenotypic complexity and the large genomes of nucleated eucaryote cells, but with this complexity came crippling attrition from mutational degradation, despite the evolution of the error-correcting enzymes that ensure human longevity.

Fig 19: Meiotic crossing over (top left) in eucaryote haploid-diploid sexuality has sustained the diversity and evolution of eucaryote life forms from mutational degradation for the last 2 billion years resulting in unique mortal individuals of each sex while species as a whole are perennially immortal. A number of species, from lizards to aphids, can generate young by parthenogenesis, but all species resort to occasional cryptic sexual recombination to refresh their genomes, except for the bdelloid rotifers whose genomes, unlike those of sexual rotifers (top right) are densely packed with allele differences, indicating their diploid chromosomes are no longer able to cross over and have diverged asexually for up to 40 million years. However, bdelloid rotifers have been found to have another primitive form of genetic recombination like prokaryotes by scavenging the genes of sexual rotifers or other organisms to regenerate their vitality including horizontal transfer of genes from bacteria (lower right).

The modern materialistic ambition in the pursuit of ultimate longevity, by seekers of a technologically-utopian ‘final solution’, amid human cloning and genetic modification, is a process of trying to turn elite humans into effectively parthenogenetic organisms, whose life span is indeterminate. These utopian aims are futile and ultimate selfishness. No parthenogenetic species can survive long term without sexual recombination and the biosphere to support them. Bacteria and archaea exchange genes promiscuously, even between species, via viruses and plasmids. An extreme is found in some bdelloid rotifer species, which appear to have been parthenogenetic for 40 million years, because their alleles are highly discordant, but they have been found to cryptically scavenge genes form other sexual rotifers or even fungi and bacteria. So the quest for technological immortality amounts to becoming mutant ninja turtles keeping their genomes viable by endless genetic engineering.

Eucaryote sexuality is a deeply embedded form of genetic symbiosis. Men and women share almost all their genes, but form genetic complements. Neither sex can continue to survive without the other. This is the most altruistic act of the evolutionary flowering because it means that, rather than trying to be individually immortal through parthenogenesis, we contribute a mere half of our genes to the next generation to create new life forms unique unto themselves yet in the parents collective image just as in the allegory of the Sabbatical Creation. Hence as humans, we hunger for one another sexually because, in our very fertility the immortal web of conscious life is spun anew.

However, this also leads to our existential dilemma of sexual mortality as individual organisms. Because we are each unique and have an ego, to emotionally seek and secure our personal survival, we come to lament our mortal
condition because, however exciting life is and however much we hunger for it to continue, we are doomed to senescence and mortal demise.

Fig 20: Comparison of the evolution of the universe from the big bang and the evolution of life shows that life on Earth has existed for a full third of the universe's lifetime and can thus be considered a long-term stable feature of cosmic evolution. However the advent of global human impact on the biosphere is threatening in the next century to cause a mass extinction more serious than the extinction event that wiped out the dinosaurs. For a single species to cause an irreversible mass extinction of life's diversity, possibly lasting 50 million years with no possibility of genetic remedy in one or two centuries is thus terminal folly (King 1997).

But we are just beads on an immortal web of life. Humanity exists as a species with a history running back down the tree of life for three and a half billion years. Individual organisms are mortal, but species and biospheres are perennially immortal, so long as Earth shall live, in a fertile and habitable condition. All animals, humans included, have arisen through the immortal fabric of natural selection and because of this are finely attuned to strive for life, to care for their young and their kin, even at risk to their own existence.

Despite paying lip service to the selfish gene (Dawkins 1974), Matt Ridley (1996) in “The Origins of Virtue” has sought to elucidate the intrinsic goodness of human nature in evolutionary terms, based on long term judgment of character, verifiable trust and mutual cooperation to survive, contradicting the Augustinian doctrine of “original sin” stemming from Eden:

Our minds ... have been built to be social, trustworthy and supportive. ... Human beings have social instincts. They come into the world equipped with predispositions to learn how to cooperate to discriminate the trustworthy from the treacherous, to commit themselves to be trustworthy, to earn good reputations, to exchange goods and information, and to divide labour. In this we are on our own. No other species has been so far down this evolutionary path before us, for no species has built a truly integrated society ... we owe our success as a species to our social instincts; they have enabled us to reap undreamt benefits from the division of labour .... They are responsible for the rapid expansion of our brains in the past two million years and thence for our inventiveness. Our societies and our minds evolved together, each reinforcing trends in the other. Far from being a universal feature of animal life, ... this instinctive cooperativeness is the very hallmark of humanity.

Founding human cultures tended to be animists – that is they viewed both living organisms and the natural phenomena around them as conscious agents, perceiving themselves as embedded in the web of life, even though it was in many ways also threatening, as a world of tooth and claw amid accident and misfortune. Viewing of the universe as conscious agents leads to a greater embedding in the matrix of life, in which the generations are treated as sacred, so both offspring and ancestors were revered, both as real biological organisms and as conscious spirit beings spanning space and time in the immortal passage of the generations. This is our founding Weltanshaung of Immortality, our deeply perceived world view of the intrinsic perennial perpetuity of life amid the mortal coil.

As we shall see in the animism section, this hasn’t meant that all animists are good or responsible ecologists, because migrating ethnic peoples from the Americas, through Australia, and Madagascar to New Zealand have caused serious species extinctions on their arrival, but the record of our founding cultures such as the San Bushmen and Mbili and Biaka Pygmies do show such sustainable reverence for protecting the ongoing continuity of life in their practices.

With the rise of urban societies, the spiritual web of nature receded into the background and new human cultural inventions distorted and degenerated this immortal view of consciousness embedded in the matrix of nature. The spirits of natural phenomena such as storms droughts and thunder and lightning evolved into supernatural deities that became ever more abstract and powerful, despite clearly displaying the projected aspects of human agency in God’s jealousy, anger and sometimes compassion as cosmic super agents in an allegorical universe of extrapolated myth.
In the East, another current emerged, in which the shamanic states of the vision quest became elaborated into a religious philosophy of renunciation of the worldly ego in a mind-sky devotion to mental transcendence, no longer explicitly linked to the physical immortality of nature as its embodiment, leading to attempts to escape the round of birth and death in a moksha which proved attainable by very few in this lifetime. This in turn led to notions of reincarnation to achieve realisation in a future lifetime, karma and the inexorable decline of spiritual unity into varying forms of the Kali Yuga in both Hindu and Buddhist traditions.

The notion of evil in our founding cultures is not associated with the divine negativity of a satanic force, but just the notion of bad rather than good:

*When a missionary inquired into a Bushman’s ideas of good and evil he was told it was ’good’ to sleep with another man’s wife, but ‘bad’ if he slept with yours. Still lamenting the Bushman’s ignorance of absolute morality, he later asked the man, whom meanwhile he had discovered ‘was in the habit of smoking wild hemp’, what he thought was the most wonderful thing he had seen. The reply he was given, that no one thing was more wonderful than any other and that all the animals were the same.*

This shows the San as retaining an egalitarian animist view rather than disproportionate awe in the religious hierarchy.

Morality is not a divine, cosmological fact of existence, but is rather a sociobiological feature of intelligent human and animal societies, where Machiavellian strategic bluffing is common, and social disapproval or punishment becomes an influence to reduce internal strife to enhance inter-social dominance of the group (Alexander 1987). But it became enshrined in urban societies in codes of law such as those of Hammurabi and has taken centre stage in theistic doctrines of good and evil forces and divine moral punishment.

*Fig 21: The Fall; expelled from Eden, Adam and Eve raise a family and set to work. Scotin, c. 1765. The Fall specifically links, carnal knowledge, mortality and sexual reproduction.*

The Edenic Fall constitutes a metaphor of this transition. Among the arboreal splendour and abundance of the primal Paradise stand two trees, the Tree of Life common to many Near Eastern cultures as an archetype of immoral fertility and a new wholly unnatural tree – the Tree of the Knowledge of Good and Evil. Yahweh says Adam and Eve, the Mother of All Living can eat of the fruit of any tree except this one. In the event, the Serpent persuades Eve to eat the “apple” and she bids Adam too and they become aware of their sexual privacy and cover their genitals with fig leaves.

This allegory then leads to the Fall of the Weltanschauung of Immortality, because becoming aware of their sexuality is also the awareness of their sexual mortality, disconnecting them as the primal couple from the very passage of the generations that sustains the sacred fabric of existence. This occurs in a context where immortal reproduction has been flatly denied. As the first human beings, neither have sexually reproduced, so exist like the asexual angels of Christian heaven, unaware they are able to procreate by themselves. God then curses the ground, driving them from the garden with the woman consigned to be obedient to her husband and travail in childbirth:

\[
\text{i will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire shall be to thy husband, and he shall rule over thee.}
\]

And the man to have to live by the sweat of his brow amid the thistles and thorns in dominion over the natural world:

\[
\text{cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field; In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return.}
\]

The Tree of Life is hidden since the foundation by a flaming sword lest they also eat of it and live forever:

\[
\text{Behold, the man is become as one of us, to know good and evil: and now, lest he put forth his hand, and take also of the tree of life,}
\]
Thus the Tree of Life that provided the immortal link was withheld, and humanity was doomed to mortal sexuality in ignorance of the ancient knowledge of the immortal web of existence that partaking of the fruit of the Tree of Life would have revealed anew.

One needs to understand at this point that Genesis is by no means the oldest, nor the cosmologically founding text in the Bible. Its putative date of authorship dates from the time of Solomon at the very earliest with scholarly opinions dating to the exile and one theory linking it to being as late as the 3rd century BCE. One theory for its inclusion is “Persian imperial authorisation” – that the Persians of the Achaemenid Empire, after their conquest of Babylon in 539 BC agreed to grant Jerusalem a large measure of local autonomy within the empire but required the local authorities to produce a single law code accepted by the entire community.

Also we need to recognise that to live forever is precisely what the evolutionary tree of life’s diversity actually does. To live forever doesn’t imply eternal, just unending, everlasting, that is, perennially immortal. This is both a biological and a spiritual reality of conscious existence. Eternality is rather a frozen static image of space-time as a whole.

The only references to the word eternal (Hebrew: נִצחִי – unending, everlasting, perpetual) in the Old Testament are one in Deuteronomy referring to God and one in Isaiah referring to the Redeemer:

The eternal God is thy refuge, and underneath are the everlasting arms:
and he shall thrust out the enemy from before thee; and shall say, Destroy them (Deut 33:27).

Whereas thou has been forsaken and hated, so that no man went through thee,
I will make thee an eternal excellency, a joy of many generations (Isa 60:15).

The original Hebrew beliefs had referred only to Sheol, the underworld of the dead. But in the wake of the Zoroastrian eschatological renovation, the natural embedding in the fabric of the immortal life flow became seconded to a novel and alien apocalyptic notion of eternal life, either in Heaven or eternal torment in Hell. Thus we see the emergence of the word “eternal” applied to human kind only in the New Testament. Even the Gospel of Thomas does not refer to eternal life, although the preface cryptically says:

“Whoever finds the interpretation of these sayings will not experience death”.

Neither do we simply experience death in the Weltanshauung, because life itself is immortal and we give our incarnate lives in our actions in the world to immortal life as a whole.

Thus the eschatology spawned initially by the Fall and finally by the apocalyptic Renovation shattered the Weltanshauung of Immortality, which was both naturally valid and evident and spiritually fulfilling in the perpetual regeneration of life, both in life as a whole and in the passage of the generations of humanity, replacing it with an destructive eschatology of the late planet Earth to be discarded as God’s creation in the Day of Judgment in favour of a completely implausible, contrived and fundamentally evil war between light and dark principles, expanded from mere natural “badness” or personal selfishness into satanic eternal cosmological evil, to which all human beings are claimed to be fatally drawn leading either to eternal Heaven or unrelenting torment in Hell.

This is replacing the real life we have where we are conscious agents having real volitional efficacy over the physical world and cosmological responsibilities to the continuity of life to uphold, with the false hope of an afterlife which does not and cannot exist in the universe as we know it, cannot contain all the living creatures since Earth began in any biospheric meaning and wastes our very agency on a fantasy where Heaven has no autonomous agency and no further meaning or purpose in life. If we want to experience such realities, we can so so through the biospheric sacraments, which do convey the experience of union with the living spirits of the universe throughout space and time, just as we can experience moksha escaping the Eastern round of birth and death in this life in the same way.
Fig 22: While Heaven above and Hell below are fictitious realms of the conscious imagination which have no basis in cosmological reality, the evolutionary process centre, which many Christians abhor is actually the immortal passage of the generations in which humanity has flowered into cultural emergence. But note the warning of descent into AI in the last image! What are we now evolving towards? In living immortality lie all our future hopes of survival, not a Heaven or Hell frozen eternally in time where Hell is one long scream of no fruitful meaning and we have no idea what we would creatively do in Heaven except sing hymns of praise. No sex, no children no creativity no real life, no redemption through our own agency as conscious sentient beings protecting life in the universe. To preserve our species immortality in the face of a mass extinction of the entire diversity of life caused by humanity ourselves it is absolutely essential that we return to our conscious spiritual roots in the Weltanschauung of Immortality.

To see how deleterious, incorrect and deceitful this destructive eschatology of nature is, one simply needs to compare its claims with the natural realities of the universe as we have discovered it. While perennial immortality is an incontestable fact of existence going back 3.5 billion years almost to the time the Earth’s oceans first condensed, the notion of eternal life is neither natural nor is it any kind of spiritual fulfilment.

Since the discovery of relativity, we know that time is not a supernatural parameter independent of space but that the two are conjoint dimensions in space-time as a whole and space-time is eternal but fixed as everything there has ever been and will be. You can see this looking at the universe sideways on in fig 15 above in the right-hand image of Paradise on the cosmic equator. Once we view space-time from outside all the way from $\alpha$ to $\Omega$, it is simply the entire history of the universe – everything that happened, sitting eternally in space-time. All our lives, from birth to death are in there somewhere, static and stranded, as everything there has been and everything there shall be. You can’t do anything creative in eternal life, it is just static like the snowflake in the figure below. Believers have a notion of angels singing heavenly praise of God and Muslims have a sexy heaven with 72 black eyed virginal houris made anew every day for the pleasures of men, but its just a static vision, where the houris are not real people and can’t really share your love, or concerns because they are born anew like Alexa rebooted again and again. It’s all a ground hog day denying us the very creative agency of conscious existence the real world provides us here and now, which also provides us with cosmic responsibilities to ensure life continues to flower in abundance so that the universe can come to understand and know its own becoming.

Fig 23: Snowflakes have astoundingly varied individual forms that are created dynamically at the atmospheric ice-vapour interface by incoming moist air condensing individual water molecules, which “walk” over the surface quantum mechanically to preserve the ramifying symmetry. Yet the end result is “death” – a frozen life history of its becoming, “eternally” static in time once the dynamic process ceases.

We thus come full circle back to the elephant in the room. Both the materialist universe, as the ultimate machine, mindless of life in the computational paradigm, and the theistic view of supplicant will, dominion over nature and destructive eschatology, both lead to a human-induced mass extinction of life, when the cosmology of the living universe is founded on symbiosis, not capitalistic dominance and
competition, which are actually subcomponents of a predatory ecological strategy. These views are thus inconsistent with long term survival of our species in the closing circle of the living biosphere.

Thus we have a two-fold urgent, yet realisable task for humanity to achieve as fast as we possibly can: (1) To restore the living diversity of evolutionary tree of life in the biosphere, before a human-induced mass extinction destroys our 3.5 billion year genetic and living heritage and (2) to restore the paradigm of the Weltanshauung of Immortality in the full resplendence of life in the universe, shining brightly forth again, because this is the spiritual realisation of our cosmic ‘destiny’ as transformative conscious agents, having volitional agency over the living world around us, to restore the sanctity of life, so that existence can unfold unabated in the universe.

Paradoxical Asymmetric Complementarity

\[ \text{Supersymmetry, or SUSY as it is called, is the idea that each boson is paired with a fermion one half-integer of spin apart. This idea arises because the vacuum contribution of the fermions appears to cancel the opposite contribution of the bosons, for example solving the hierarchy problem the huge energy gap between the scales of the standard model forces and the Planck scale of gravitation. The trouble is that the standard model has a very different set of bosons from the set of its fermions. This doesn’t mean that the underlying symmetry is not true but that it must be broken, as indeed the weak-electromagnetic symmetry is. The fact that so far no supersymmetric particles have been discovered reinforces the idea that saying a correspondence might not be the natural Occam’s razor solution. Garret Lisi had a classification in his Exceptionally Simple TOE and his prediction that the LHC wouldn’t find SUSY held.} \]
So the symmetry-breaking basis implies that asymmetric complementarities arise as a secondary consequence of the symmetry-breaking process itself and should be universal. I.e. symmetry-breaking does not lead to symmetric complementarity. But wait a minute! The standard model is symmetry broken, so how can supersymmetry be feasible at all? Why isn’t supersymmetry also manifestly broken? What we find is hypothetical soft supersymmetry breaking in which it is envisaged that a symmetry breaking of supersymmetry occurs which is unlinked to the symmetry breaking that causes the standard model.

Fig 24: The natural universe contains many potentially overlapping forms of asymmetric complementarity, wave-particle as revealed in an interference experiment, fermion-boson matter-radiation complementarity, chaos and order as demonstrated in both conservative (above ordered closed cycles chaotic dappled orbits) and dissipative systems (below grey/yellow ordered black chaotic), in cellular automata, where the edge of chaos invokes universal computability in the elementary two state 1D automaton 110 and in biology in sexual complementarity (human fertilisation) and in the characterised differences in cortical lateralisation.

As briefly summarised in wikipedia: “Soft SUSY breaking decouples the origin of supersymmetry breaking from its phenomenological consequences. In effect, soft SUSY breaking adds explicit symmetry breaking to the supersymmetric Standard Model Lagrangian. The source of SUSY breaking results from a different sector where supersymmetry is broken spontaneously. Divorcing the spontaneous supersymmetry breaking from the supersymmetric Standard Model leads to the notion of mediated supersymmetry breaking.” Of course supersymmetry hasn’t been realised, so physics has failed to give us a clear answer.

But this is just the beginning of the picture. Chaos and order are abstract complementarities in dynamics, which have asymmetric relationships, for example the quadratic Julia set is chaotic and its complement, the ordered Fatou set, are asymmetrically complementary. Likewise in conservative dynamics such as asteroid orbits and the double pendulum regions of ordered orbits are permeated by dappled chaotic trajectories.

It also pervades biology. Sexuality has a similar basis in symmetry breaking because symmetric gametes in eucaryotes result in very costly mitochondrial warfare upon fertilisation, so that there are a vast number of quasi-particulate sperm and one oceanic ovum waiting to engulf just one of them. In higher plants the chloroplasts are also at war. Hence eucaryotes evolved sperm-ovum sex, where the female has the mother cytosol with the mitochondria while the male just has a motile sperm whose mitochondria, essential for swimming to the egg are largely destroyed on entry. This means female parenting investment is disproportionately greater than male and the sex wars ensue. Hence only 3% of mammals are socially monogamous and even those aren’t genetically monogamous.

The same symmetry-breaking argument applies strongly to the left and right cortices of the brain, where the efficiency of lateralisation is that symmetrically duplicated cortical functions are a tragically inefficient use of resources. Language is predominantly on the left side in Broca’s and Wernike’s areas although this is less so in females (Shaywitz et al. 1995) and in music and language perception (Albouy et al.2020) where frequency space is in the right hemisphere while the understanding fo the lyrics is in the left, and in the notion of the left side being more analytic and the right more holistically synthetic.

A little more prosaic, we have time and space, past and future, and in the prisoner’s dilemma of defection and cooperation which also have an asymmetric relationship. This is what Tao and Tantra as an asymmetric cosmological principle of creative and receptive, or male and female are all about, so let’s go right into the centre of the cyclone,
subjective consciousness and the physical universe, where Eastern philosophy notes that mind is indivisible while matter is not. Asymmetric complementarities do not all arise from the same source but do have common predisposing features of overall efficiency through symmetry-breaking.

Now we run into the hard problem of consciousness. Given that we are subjectively conscious beings possessing volitional will over a universe we know only through our conscious experience of it and the universe in turn becomes manifest only through its conscious sentient beings, the meaning of existence is created through our journey of discovery as conscious agents transforming the universe by our insights and actions. Thus, while the universe is necessary, consciousness is primary.

This raises a serious problem about attempts to mount abstract descriptions of the ultimate generating theory underlying the subjective and objective reality of consciousness and the universe. If consciousness violates physical causal closure, how can we describe any functional or causal TOEx (theory of existence)? If the universe can only manifest through our conscious experience of it, what hope is there for any single stand-alone TOEx as a pure abstraction? How can it actually manifest subjectively, except as a piece of mathematical reasoning? But this is not manifestation of the subjective, it is just a mathematical thought in the mind of the beholder.

That said, objective reality and our descriptions of it do show natural convergence to the subjective complement. Many aspects of physical brain function look like the same sort of phase coherence sampling we see in the uncertainty principle and edge-of-chaos phenomena and self-organised criticality provide the ability of the quantum reality of the physical universe to develop a convergent interface with the conscious mind. The same is possible even for information and computational descriptions, such as Stephen Wolfram’s (2021) account "What is consciousness?".

The trouble is that forms of rational and logical thought and well tried models of causal deduction, which everyone is very familiar with, tend to be the main instrument people tend to apply. Attempts to structure the subjective realm in approaches such as Pan-protopsychism, have deep analogies with reductionism and the same pitfall occurs with all abstract logical attempts to form a mind-universe monad TOE underlying cosmological complementarity.

As we have noted, when we start with subjective conscious volition over the physical world as a mutual affirmation between conscious agents. Instead of the hard problem, this leads to accepting at least some matter (brains) have a hidden subjective aspect which can affect their outcomes, possibly through uncertain instability. This means that the hypothesis of physical causal closure of the brain is eliminated by Occam’s razor. But then subjectivity is a natural material property and brains obey the same four core quantum forces, even if they have quasi-particle states etc. So the occluded subjective aspect becomes complementary to the physical universe as a whole (where -> represents an asymmetric complementarity):

Cosmos = (Quantum universe (particle --> wave) --> Mind at Large)

Our individual conscious experiences are encapsulations of this complementary aspect, modulated by the very brain dynamics we are looking at in the EEG and action potentials, as a biological neural net – except that it is a fractal neural net operating in a scale-traversing handshaking manner all the way from the quantum to the organism.

This is one of the one-mind forms of quantum reality and coincides with Erwin Schrödinger’s comment:

“There is obviously only one alternative, namely the unification of minds or consciousnesses. Their multiplicity is only apparent, in truth there is only one mind. ... I should say: The overall number of minds is just one”

This leads to the most asymmetric complementarity of all. And it carries with it fundamental challenges to any form of logical description, because the subjective aspect has a series of adventitious characteristics: It is volitional, intentional, idiosyncratic, exploratory, imaginative, innovative, creative, and visionary.

How are we supposed to logically, or causally, or functionally, elucidate something that is the key central part of creative intentionality in the cosmic becoming? This is an awfully steep mind-boggling challenge! The reality is that, as conscious volitional agents, we are the creative process of the universe in sentient motion. We can talk about it round the camp fire and make up myths and stories about it, as we do in science, with profoundly informative effect that we are all in awe of. But when we paint ourselves into the corner of consciousness itself we come to the elephant in the room. Consciousness is the causality-violating creative principle in action expressed through self-organised criticality in
the brain and quantum uncertainty itself. We cannot elucidate it causally, because our very intent will override it, but we are realising it spontaneously as we enact history in the multiverse and that is our cosmological role.

We are thus the collective ‘Elohim of the living universe incarnate entities of transformation. We are personally responsible for the fate of the living planet. The ultimate buck cannot be passed. The least of our priorities is analysing logically who or what we are. We are bound in a covenant with the universe to protect the diversity of the Tree of Life, in our becoming and in the becoming of planet Earth as a living survivor of the Fermi paradox. All we have is a small window of opportunity to unite in our diversity to achieve the one central necessary condition for our continued survival and existence, through which the universe itself is manifest – protect the diversity of life on Earth from its immanent mass extinction in a destructive human-induced anthropocene catastrophe.

### Necessary and Sufficient Cosmological Meaning

**Necessary meaning** is the kind of meaning that, if we understand the universe sufficiently, as we must needs, we apply to unfold the realisation of the cosmological condition.

**The core necessary meaning** is to protect the survival of the conscious biota over evolutionary time scales, to unfold an emergent cosmological climax and hence also facilitate our own survival.

**Sufficient meaning** is the meaning we apply through conscious volition in our own realisation of our discovery process to creatively adorn reality.

**The entire sufficient meaning** is a free creative process, weaving the music of consilient history, celebrating our immortal genealogy and plumbing the cosmologically conscious abyss.

### Symbiotic Existential Cosmology is Pandora’s Pithos Reopened

Fig 171: Elpis the spirit, or goddess of Hope, who remained caught under the lip of Pandora’s jar according to the will of Zeus, depicted as an adolescent girl, wearing adult dress for the first time, hitching her skirt to keep it from dragging, holding a flower, or sometimes a bird to emphasise the fresh hope of spring and new growth. (Roman coin to Spes or Elpis). The reverse of a potin tetradrachm of Carinus 285 AD showing Elpis).

Causing a paradigm shift is literally opening Pandora’s Box with potentially devastating consequences if it takes off. We are, whether we like it or not, living in an age of information. This means that the mere fact that Symbiotic Existential Cosmology now exists as a work on multiple platforms means that Pandora’s Pithos has again been opened. Troubled by the death curse of the Box, I discovered today as I write, another charming karmic echo from history, dating from around 750 BC caught in our entanglement. This time opening the Pithos reveals Elpis – literally the youthful female spirit of Hope or Expectation – the one remaining spirit kept in the jar has now escaped into the world and the consequences are ensuing, however gradually. The arrow of time means this information flows out into the world and irreversibly changes the situation for the good, whatever we do next.

The only way this could fail is if there were a critical flaw, which would mean that scientists and clerics could breathe a sigh of satisfaction, that yet another hopeful monster has turned into a mutant ninja turtle and that the interlocutor is just a pretentious deluded upstart at the age of 77. But that is unlikely, as Symbiotic Existential Cosmology agrees with quantum cosmology and empirical neuroscience. For the first months I aimed high, seeking such criticism with hopes that astute people, particularly research scientists in psychedelics and related fields of consciousness and philosophy would find this discovery as utterly exciting as I did, but I was faced with a deafening silence.

Not one reply from anyone! My friends shunned me, academics whose opinion I valued refused to reply at all. Only two people fully responded. A math colleague, who read the first vestigial manuscripts and another friend who did likewise, both of whom gave commonsense encouragement, particularly on the basis that the world is in existential crisis. This led to ongoing angst. Some of the psychedelic scientists claimed the hard problem of consciousness was not even a scientific question and that psychedelics could only solve the easy problems. When I tried to point out that a

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78 According to Hesiod, when Prometheus (fore-sight) stole fire from heaven, Zeus, the king of the gods, took vengeance by presenting Pandora to Prometheus’ brother Epimetheus (hind-sight). Either Pandora or Epimetheus opened the jar left in her care containing sickness, death and many other unspecified evils which were then released into the world, or the lost blessings of the Gods as the other story goes. Though she hastened to close the container, only one thing was left behind – usually translated as Hope.
magic mushroom experience had solved it in a pan-psychic cosmology, I got nowhere with either scientists or philosophers, and simply ended up in a stand-off, when I critiqued their position in an open letter.

Over the ensuing months, I continued feverish writing, and Symbiotic Existential Cosmology blossomed into an impenetrable verdant thicket, spanning ethnic animism, religious exegesis, consciousness research, molecular biogenesis, psychedelic neuroscience, quantum cosmology, panspsychist philosophy, an evolutionary analysis of how consciousness as we know it emerged, and how neurotransmitters, such as serotonin play a central role in evolving brain development going back to social amoebae. The final denouement was that our empirically experienced subjective conscious volition over the physical universe alone reverses the implications of materialism, to invoke a complementary description of mental and physical reality. It is no longer just a psychedelic vision, subject to the Achilles heel of prejudice, but the irrefutable truth of volition itself, as accepted in intent and responsibility in law and in every intentional act we perform, that now underpins this revelation.

So for me, Symbiotic Existential Cosmology is the Rosetta stone of reality that is already here in the world. It is a difficult, inscrutable work in scripture intended to be complete and definitive enough to last a billion years, provided humanity continues to survive and evolve, that also tells the first-person account of how an individual, facing the planetary apocalypse that had been created both by ancient religions and materialistic ennui, found himself caught in an uncanny quantum instance that made it possible to traverse the same unlikely portal defining history that had happened 2000 years before, to reveal the weltanshauung of immortality, unravelling the human zeitgeist towards a new symbiotic paradigm of organic and technological coexistence with nature and life as a whole.

It is not just a hypothetical theory that can be taken at face value or discarded at will, but four things: (1) Objective quantum cosmology invoking biogenesis and climax biodiversity, augmented by (2) Darwinian panspsychism and (3) cosmological symbiosis. Point (2) then invokes a subjective veridical transaction of mutual trust between conscious agents that we have subjective volitional will over the physical universe, inheriting the responsibility to protect conscious life as a whole, in the symbiotic climax invoked by (3). Finally it is (4) a complete confession of everything of significance I have said, been or done to this end, naked and unashamed in my singular quest to wreak salvation on a troubled world, my vigils to far flung corners of the Earth and the antipodean outlandishness of declaring the end of the Apocalyptic Epoch in the Holy City, so that we can now keep the way of the Tree of Life throughout our generations forever, as it was in the very beginning, as has likewise, from the outset, been stated on the closing page:

"Have you discovered, then, the beginning, that you look for the end?
For where the beginning is, there will the end be"
(Gospel of Thomas 18).

The cosmology is already out there! It can't be undone! It's not a grand, or petite delusion, but the redemption of life in complete transparency. So while I seek your support to help convey this crazy message that no one wants to hear or accept, I know underneath that root paradigm shifts have a long latency, and that SEC is cosmologically valid and empirically sound. Simply by convening the group, I made you all aware of this, so you are all now fully cognisant and complicit. My work is fulfilled and it is over to all of us, because we are all in possession of this fatal carnal knowledge, which can never be undone! The diversity of life still needs us and needs us now. So as the Talmudic statement said, "we are not obligated to complete the work, but neither are we free to abandon it."

Our involvement is now a question of taking advantage of what is already revealed, from which the lioness on the cover has already sprung anew, to accelerate the process of protecting the diversity of life. In return, I vouchsafe to protect you all and support your own inspirations of renewal.

If you look carefully at the last few lines of the text in figure 170, which gives my veridical account of the initial experience, written the same evening, you will see that I had already abdicated my responsibilities on the first night, passing all the onus onto the sacrament itself to escape the messianic tradition, in an affirmation from scriptural history!

"I am not your master. Because you have drunk, you have become intoxicated from the bubbling spring which I have measured out." (Gospel of Thomas 13)

My role now, as a chaotic dynamicist is oddly enough, to make sure this process doesn't become unhinged, although I'm not forsaking the lionesses claws on the Symbiotic Existential Cosmology cover until I see some signs of cooperative
progress for biodiversity, so will turn the tables and create dissension if need be – to guard the beacon light of resplendence, so it can shine brightly, rather than "cast fire on the world", as Yeshua did, which would just lead to apocalyptic climate crisis and deforestation, as we know.

Recall this whole phenomenon arose from my long-sightedness, causing acute glaucoma, which first delayed and then precipitated this entire phenomenon. So Symbiotic Existential Cosmology was clearly Promethean foresight and not the unfortunate Epimethean hindsight that opened Pandora’s jar in the first place.

Empiricism, the Scientific Method, Spirituality and the Subjective Pursuit of Knowledge

Firstly: What is empiricism and what is an experiment?

**empirical**: based on, concerned with, or verifiable – by observation or experience – rather than theory or pure logic. From Greek *empeirikos* "experienced," from *empeiria* "experience;"

**experiment**: An action or operation undertaken in order to discover something unknown, to test a hypothesis, or establish or illustrate some known truth. From Latin *experimentum* "a trial, test, proof, experiment," from *experiri* "to try, test," from ex ”out of” + peritus ”experienced, tested”

The two notions – observation or experience – came from Greek physicians making diagnoses by observation or experience rather than theory, sometimes with the disapproval of theoretically oriented physicians, who treated them like the medieval barber surgeons. But empiricism's role has become pivotal in experimental science, without which modern medicine would not exist.

When we come to the mind-brain / consciousness-universe complex, the pursuit of knowledge inherited from Greek medicine gives us two asymmetrically complementary approaches to the pursuit of knowledge.

**(A) Objective verification by empirical observation**: this is the standard basis of good experimental science and is based on replication – two or more experiments producing consistent results.

**(B) Subjective affirmation by empirical experience**: The word affirmation is used rather than verification because, to replicate a subjective experience requires two or more subjects mutually affirming they have experienced consistent phenomena. This discovery process is by definition experientially experimental.

The status of (A) is the gold standard of objective scientific inquiry and is also critical for experimentally verifying theories like quantum physics and relativity, but the status of (B) remains unrecognised, as the other half of the pursuit of knowledge of the cosmos as a whole, along with its experimental protocols.

Both approaches can achieve statistical significance. For example subjective reports collected in a scientific context become consistent observation of reported conscious experiences by an experimental group. But experiential validity can also be established by direct mutual affirmation.

Secondly: The role of conscious volition.

I have posed the question: "Do you agree that you have subjective conscious efficacy of volition over the physical universe?" I asked you this because it’s the most obvious property that we all possess in common, even to eat or secrete, let alone have a conversation, which we all do, or to do something creative. Yet it poses a unique existential threat to materialists, who try every conceivable way to plead that correlation is not causation, or that there is always a hidden brain mechanism doing it, although that directly contradicts our own veridical perception of our intentional acts as having been intended by ourselves.

However, once we mutually affirm the root empirical experience that we ARE physical beings, intentionally shaping the world around us, and perceive ourselves to be doing so, just as other mammals we observe do, we have an emerging subjective consensus that becomes a root experiential scientific discovery.
Many people look at this and say it’s too easy, as a solution to the hard problem, to simply declare we agree we have volition, that it’s facile, or maybe just expressing our fallacious impressions, but its actually the very foundation of establishing the subjective pursuit of inquiry into the knowledge of the cosmos as a whole and the conscious dimension many of us call, for want of a better word, spirituality.

The reason this is criticism is wrong is that volition states the obvious easily, while consciousness became sequestered as a hard problem, because of epiphenomenalism, which a priori contradicted the efficacy of volition without evidence, while paradoxically admitting we were conscious of the world around us and even of dreams and and hallucinations, as a brain-derived internal model of reality. The casualty of this cancellation culture was volition. Hence volition – now stating the obvious – IS solving the hard problem and it is observable. It’s how we know one another are conscious, through our vivacious volition, and it’s how we understand other animals are conscious too. This is the reverse Copernican principle as an axiom of affirmation.

**Thirdly: What IS the foundation of the subjective pursuit of knowledge? Experience itself!**

Techniques of subjective empiricism and experiment are as different from observational empiricism as the physical universe is different from consciousness itself, yet complementary to it. They need to be approached as a whole because we engage consciousness as a whole not in its pieces. The subjective aspect is not adequately explored by trying to analyse it or decompose it observationally, or abstractly, because it is everything we experience. We are in it, and transforming it, not just observing it. So the techniques of simple introspection are inadequately general and also flawed because the mind can’t be fully observed, since observation changes it. But it CAN be fully experienced and that’s the core principle of the inquiry process.

We can only begin to form an understanding of the subjective by embracing deep conscious and mystical states, untethered from the physical world, not by attempting to analyse them, or qualia, or the thought process, but by going right into deep conscious states on a vision quest into the ‘other’ side of being and returning with an epiphany, or a satori, or a moksha whose nature we can meaningfully share with others as a discovery process. Talking about subjective experiences remains anecdotal unless and until two or more of us are able to affirm deeply common qualities of such experiences together.

*Symbiotic Existential Cosmology* (new web page) as a product of entheogenic quantum change, reinforced by recent psychedelic research, and Chris Field’s research insights provoked by meditation, are examples of such experiences giving rise to new testable hypotheses, playing a key part in this process.

**Fourthly: Caveats.** Central to the problem of subjective discovery is that:

1. The subjective domain is dominated from above by the *confining processes of rational thought and verbal argument*, which places a filter unless a proposition can be successfully argued, rather than two subjects agreeing on a consistency of experience. This is not only unnecessary but leads to the entire description being only that of cognitive thought. This is a real problem for philosophy of mind to address and come up with a paradigm shift about. “The way that can be told is not the countless way” as Lao Tsu pointed out.

2. The subjective domain is dominated by *real world consciousness*, when this is subjective consciousness locked in perceptual and volitional relationship with real world events, again acting as a severe filter on what consciousness actually is. It needs to be compensated by realising the full depth of untethered conscious experience going to whatever measures are required, including last but not least, sacramental exploration, which forms a subjective complement to the LHC.

3. Deeper levels of ‘pure’ consciousness uncoupled to the rational and real world filters are broadly: (a) *dream or hypnagogic experience*, (b) *meditative and contemplative practices*, (c) *entheogenic sacramental experience*, (d) *religious ecstasy* (e) *near death experiences* and (f) *paranormal phenomena*. The deeper of these can be very difficult for individuals to fully experience, leading to mystical states having a quasi mythical status, in which moksha and samadhi cannot necessarily be achieved in a lifetime. Entheogenic states are critical information to the subjective discovery process, without which no valid conclusion can be drawn, and so these urgently need to be more fully explored and accepted as central to the discovery process. Each of the mystical states need likewise to be explored
fully by mutual affirmation at the root level before their status can be considered to reach the level of evidential support.

(4) A priori beliefs are by definition inconsistent with the free pursuit of empirical subjective knowledge of cosmic reality. The empiric method’s foundation eschews theoretical assumptions that are not prior-evidential, so that reality itself can be explored and understood as it is. For example relativity wasn’t prior-evidential until Eddington’s unbiased experimental verification using a solar eclipse. Religious beliefs fall into this category of not being prior-evidential, as open questions, so the conditions of religious ecstasy have to be carefully negotiated to separate belief from transformative experience and recognise that genuine quantum change signifiers are the gold standard of any mystical experience, not the conviction of belief.

Fifthly: Freeing the Core Quest

The pursuit of knowledge of the subjective realm doesn’t have to solve analytical questions about phenomenology, such as the binding problem which is an easy problem of consciousness to be elucidated in the prospectively quantum dynamics of the brain. Likewise the nature of qualia, such as the difference between visual and auditory experiences and the synaesthesia between are also likely candidates for understanding through extended brain dynamics such as work on quantum neural networks (Fields et al. arXiv:2201.00921) and the different kinds of encoding required for developing a coherently co-bound internal model of physical sense modes. This is simply acknowledging that, while we do have conscious physical volition which we fully experience, we do so acting as transformative agents in possession of an exceedingly awesome experiential constructive filter called the biological brain, whose key role is to provide a physical realisation of our volitional conscious existence. It also means panpsychic theories don’t need to solve the qualia problem or the combinations problem for the subjective pursuit of cosmic knowledge (see Fields 2021 JCS).

"What we have within us will save us if we bring it forth from ourselves"

Our quest and the cosmological quest is to accept the deep experiential abyss we have within us as consciously experiencing volitional agents and bring it forth from ourselves in the discovery process we engage together, because what we do will save us and humanity.
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Appendix: Varieties of Panpsychist Philosophy

Panpsychism is the view that mentality is fundamental and ubiquitous in the natural world:

“The view has a long and venerable history in philosophical traditions of both East and West, and has recently enjoyed a revival in analytic philosophy. For its proponents panpsychism offers an attractive middle way between physicalism on the one hand and dualism on the other. The worry with dualism—the view that mind and matter are fundamentally different kinds of thing—is that it leaves us with a radically disunified picture of nature, and the deep difficulty of understanding how mind and brain interact. And whilst physicalism offers a simple and unified vision of the world, this is arguably at the cost of being unable to give a satisfactory account of the emergence of human and animal consciousness. Panpsychism, strange as it may sound on first hearing, promises a satisfying account of the human mind within a unified conception of nature” (Goff 2001).

Galen Strawson (2006), who advocates a form of physicalist panpsychism, sees panpsychism as the only way to deal with the hard problem, has an insightful and provocative philosophical defence of his philosophy of consciousness in which he states forcefully. I will not depend on his physicalist panpsychist perspective, as the symbiotic cosmology is a complementary description of the existential condition, but it serves to reinforce the primacy of conscious experience against reductionistic materialism:

“What does physicalism involve? What is it, really, to be a physicalist? What is it to be a realistic physicalist, or, more simply, a real physicalist? Well, one thing is absolutely clear. You’re certainly not a realistic physicalist, you’re not a real physicalist, if you deny the existence of the phenomenon whose existence is more certain than the existence of anything else: experience, ‘consciousness’, conscious experience, ‘phenomenology’, experiential ‘what-it’s-likeness’, feeling, sensation, explicit conscious thought as we have it and know it at almost every waking moment.”

Strawson’s view of realistic monism, as a form of panpsychism, is subtly different from eliminative materialism in a way which Strawson insists is huge, but remains unclear as to the exact nature of, especially when he says human consciousness is ‘really just neurons firing’:

Realistic physicalists, then, grant that experiential phenomena are real concrete phenomena — for nothing in life is more certain — and that experiential phenomena are therefore physical phenomena. It can sound odd at first to use ‘physical’ to characterize mental phenomena like experiential phenomena, and many philosophers who call themselves materialists or physicalists continue to use the terms of ordinary everyday language, that treat the mental and the physical as opposed categories. It is, however, precisely physicalists (real physicalists) who cannot talk in this way, for it is, on their own view, exactly like talking about cows and animals as if they were opposed categories. Why? Because every concrete phenomenon is physical, according to them. So all mental (experiential) phenomena are physical phenomena, according to them; just as all cows are animals. So when physicalists — real ones — talk as if the mental (experiential) and the physical were entirely different all they can really mean to be doing is to distinguish, within the realm of the physical, which is the only realm there is, according to them, between mental (experiential) features of the physical, and non-mental (non-experiential) features of the physical.

As a real physicalist, then, I hold that the mental/experiential is physical, and I am happy to say, along with many other physicalists, that experience is ‘really just neurons firing’, at least in the case of biological organisms like ourselves. But when I say these words I mean something completely different from what many physicalists have apparently meant by them. I certainly don’t mean that all characteristics of what is going on, in the case of experience, can be described by physics and neurophysiology or any non-revolutionary extensions of them. That idea is crazy. It amounts to radical ‘eliminativism’ with respect to experience, and it is not a form of real physicalism at all. My claim is different. It is that experiential phenomena ‘just are’ physical, so that there is a lot more to neurons than physics and neurophysiology record (or can record). No one who disagrees with this is a real physicalist, in my terms.

The difficulty here is that his description of the subjective aspect is unclear and looks a little like a finesse of promissory materialism.

We can distinguish various forms of panpsychism in terms of which aspect of mentality is taken to be fundamental and ubiquitous. Two important characteristics of human minds are thought and consciousness. In terms of these characteristics we can distinguish the following two possible forms of panpsychism:

**Panexperientialism**—the view that conscious experience is fundamental and ubiquitous

**Pancognitivism**—the view that thought is fundamental and ubiquitous.

Thought is obviously a much more structured and structurally complex notion than experience, and there may be entities from a single quantum at one extreme, to a eucaryote cell at the other, which may readily possess a subjective
aspect identifiable with experience, but not be capable of structured thought, so the symbiotic cosmology is really about panexperientialism.

A second division is that between panpsychism and panprotopsychism, which asserts that some form of proto-consciousness rather than consciousness per se is fundamental and ubiquitous. Just as the properties that characterise conscious experience are commonly referred to as “phenomenal” proto-conscious properties are “protophenomenal” – properties that in certain combinations transparently account for the existence of consciousness, in the sense that one could in principle move a priori from knowing the relevant facts about protophenomenal properties to knowing the relevant facts about phenomenal properties (Chalmers 2015; Goff 2015, 2017).

A third division as originally defined by Chalmers (2015) is:
Constitutive panpsychism—Forms of panpsychism according to which facts about human and animal consciousness are not fundamental, but are constituted of facts about more fundamental kinds of consciousness, e.g., facts about micro-level consciousness.

Non-Constitutive panpsychism—Forms of panpsychism according to which facts about human and animal consciousness are among the fundamental facts.

The symbiotic cosmology is non-constitutive as it considers the relation between biological and quantum forms of panpsychism to be differing subjective manifestations complementary to differing degrees of coherence in the physical aspects these subjective aspects correspond to, for example eucaryote excitability is a coherent quantum-sensitive form of edge of chaos excitation giving rise to new forms of “quasi-particle” excitations, so its subjective aspect is qualitatively distinct from quantum panpsychism and is not conceived from semi-objective structural interactions of its quantum parts.

The work of Schaffer (2010) has advanced an alternative picture of reality, from the view that micro e.g. quantum events determine events at large. According to “priority monism”, facts about little things are grounded in facts about big things – all things ultimately exist and are the way they are because of certain facts about the universe as a whole. If we combine priority monism with constitutive panpsychism we get:

Constitutive cosmopsychism — The view that all facts are constituted of consciousness-involving facts at the cosmic-level. Just as the micropsychist holds that electrons have experience but not thought, so the cosmopsychist holds that the universe has some kind of experience, but may refrain from attributing thought or agency to the universe.

Bertrand Russell (1927) proposed a novel approach to the mind-body problem. Arthur Eddington (1928), in his Gifford lectures of the same year, independently expressed very similar thoughts. Russellian monists are motivated by the need to characterise the intrinsic nature of matter:

A Negative: The information we get from the physical sciences is in some significant sense limited. There are subtle variations on how exactly this is put, but the idea is that the physical sciences only tell us about the extrinsic, relational, mathematical, or dispositional nature of matter, and leave us in the dark about its intrinsic, concrete and categorical nature. Physics tells us how an electron behaves, but it doesn’t tell us how it is in and of itself.

B Positive: The intrinsic/concrete/categorical features of matter which physical science remains silent on account for the existence of consciousness. The problem of consciousness, the difficulty seeing how consciousness fits into the physical word, is the result of our not taking into account these “hidden” features of the physical world.

Constitutive cosmopsychism is thus a form of Russellian monism according to which (i) all facts are grounded in facts about the universe as a whole, (ii) the universe instantiates consciousness-involving categorical properties.

David Chalmers (1995, 1996) first delineated the hard problem of consciousness – why it is that a person has subjective experience. Philip Goff (2001) writing in The Stanford Encyclopaedia of Philosophy (Zalta 2012) notes: “Some think the alleged problem involves a confusion, although anyone who thinks this is obliged to diagnose the exact root of the confusion. Others think that there is a problem, but one that further scientific investigation will solve. Perhaps we just need to wait for the arrival of the “Darwin of consciousness” to make progress”. However, there is no reason to suppose that “further scientific investigation” has to be pursued under the methodological assumption that consciousness is to be accounted for in terms of processes which don’t involve consciousness, e.g., in terms of facts
about non-conscious neurons. The panpsychist proposes an alternative approach: explain human and animal consciousness in terms of more basic forms of consciousness. These more basic forms of consciousness are then postulated as properties of the fundamental constituents of the material world, quanta.

Ironically in debate on panpsychism, Darwin’s name has come up three times. Seth (2021), in critiquing panpsychism, advances the case that the success of materialistic science is based on explanation, prediction, and control (EPC), the criteria by which many scientific enterprises are assessed, thus reducing biological ‘vitalism’ in a demystifying dissolution into molecular biology. Goff (2019) has countered that some scientific advances such as Darwin’s theory of evolution “emerged from a dramatic insight, rather than incremental dissolution”. But the objection to EPC is fundamental, because, at the very climax of biology, neuroscience has currently no idea of how to solve the hard problem or how the easy problems might be combined to evoke consciousness either, as noted in the Darwin comment above.

Seth returns to Goff’s view of Darwin “Finally, many successful scientific explanations operate with qualitative rather than, or as well as, quantitative concepts. Darwin’s theory – highlighted by Goff as a paragon of materialist science – provides one striking example of such an explanation.”

I have entitled the form of panpsychism advanced the the symbiotic cosmology Darwinian panpsychism for four specific reasons:

(a) It advances a careful objectively empirical interpretation of which physical systems possess forms of panpsychism or sentient consciousness based on seven essentially evolutionary criteria, namely: (a) individual quanta, (b) critically unstable multi-quantum dynamical systems including (c) living cells, (d) in sentient form in eucaryotes (e) in organismic form in multi-celled organisms (f) in the evolving biosphere and (g) collectively in the universe.

(b) It applies objective physical criteria to which coherently unstable systems in the natural universe possess psyche or consciousness based on their physical and biological properties, avoiding an attempt at decomposing the subjective aspect leading to the combinations and related problems.

(c) It broadly coincides with Darwin’s own speculations on consciousness extending down to founding biota, extending it only into dynamically unstable physical and quantum phenomena which also possess attributes consistent with the evolutionary view.

(d) Like Goff’s comment, it was devised as a result of a startling insight on psychedelic mushrooms, not EPC and it depends on qualitative, not quantitative criteria.

“To see a puppy playing [one] cannot doubt that they have free-will”
and if “all animals, then an oyster has and a polype.” (Darwin ex Smith 1978)

Ironically the symbiotic cosmology solves this paradox by using an evolutionary view of panpsychist cosmology in which the transition from quantum panpsychism to organismic consciousness is matched to evolutionary quantum leaps such as the formation of cellular life and the eucaryote endosymbiosis. So on all three counts the Darwinian “insight” of the mushroom-evoked cosmology, the qualitative nature of the evolutionary investigation and the actual bringing of the hard problem to a solution it is a Darwinian model of conscious evolution.

The intrinsic difficulty with Seth’s so-called “real” problem of consciousness – how to distinguish different types of qualia e.g. red and blue sneakers, is that it completely fails to address the root question of subjectivity, which is by nature entirely different from the localisable, analysable, distinguishable and separable properties of objective reality and arises in both quantum observation in physics and the hard problem in neuroscience in complementary ways.

Thomas Nagel (1979) influentially argued that adopting a view like panpsychism is the only way to avoid radical emergence (Strawson 2006). For Nagel, “emergent” properties of a complex system are ones that cannot be intelligibly derived from the properties of its parts. In contrast, for the “emergentist panpsychists” discussed above, “emergent” properties of a complex system are simply fundamental macro-level properties, which may or may not be intelligibly derived from the properties of its parts. Following Galen Strawson (2006a) we can use the word “radical emergence” to express Nagel’s notion of emergence.

Thomas Nagel (1979) influentially argued that adopting a view like panpsychism is the only way to avoid radical emergence (Strawson 2006) – properties of a complex system that cannot be intelligibly derived from the properties of
its parts, in contrast to “emergentist panpsychists” where they may not be intelligibly so derived. Nagel’s argument involves four premises:

**Material Composition** – Living organisms are complex material systems with no immaterial parts. The matter composing us is not special; the matter composing any material entity, if broken down far enough and rearranged, could in principle be incorporated into a living organism.

**Realism** – Mental states are genuine properties of living organisms.

**No Radical Emergence** – All properties of a complex organism are intelligibly derived from the properties of its parts.

**Non-Reductionism** – The mental states of an organism are not intelligibly derived from its physical properties alone.

Strawson (2006) has defended a similar argument from the untenability of radical emergence. Whereas Nagel’s aim is merely to establish the disjunction of panpsychism and panprotopsychism, Strawson’s argument concerns the truth of panpsychism. Strawson begins by arguing that radical emergence is upon reflection unintelligible:

*Emergence can’t be brute. It is built into the heart of the notion of emergence that emergence cannot be brute in the sense of there being absolutely no reason in the nature of things why the emerging thing is as it is (so that it is unintelligible even to God). For any feature Y of anything that is correctly considered to be emergent from X, there must be something about X and X alone in virtue of which Y emerges, and which is sufficient for Y (Strawson 2006 18).*

Thus, the crucial feature of intelligible emergence, is that the relationship between the product of emergence and its producer can be adequately characterised using a single set of conceptually homogeneous concepts. But it’s very hard to see how any set of such concepts could capture both the experiential (i.e., consciousness-involving) and the non-experiential (non-conscious-involving), and hence how the thesis that consciousness emerges from non-consciousness could be rendered intelligible. It is only by supposing that human and animal consciousness emerges from more basic forms of consciousness, that we have hope of avoiding the emergence of animal consciousness being a brute and inexplicable miracle.

There is a second prominent argument for panpsychism, which has nothing to do with the need to explain human consciousness, but begins from a gap in the picture of the world in the physical sciences. This argument has its roots in Leibniz, Schopenhauer, Russell (1927) and Whitehead (1933 [1967]), and is defended by many panpsychists, including Sprigge (1999), Strawson (2003) and Goff (2017).

In the public mind, physics is on its way to giving us a complete account of the fundamental nature of the material world. It seems almost tautological that “physics” is the true theory of “the physical”, and hence that it is to physics we should turn for an understanding of the complete nature of space, time and matter. However, this commonplace opinion comes under pressure when we reflect on the austere, mathematical vocabulary in terms of which physical theories are framed. It is not clear that such an austere vocabulary can even in principle capture the complete nature of concrete reality. A mathematical description of a situation abstracts from concrete reality and statements having the general force of natural law can only express information about how physical entities are disposed to behave. This is fine if we want to do is predict, say, how electrons will behave (except that we can’t individually). But intuitively there must also be an intrinsic nature to an electron; there must be an answer to the question “How is the electron in and of itself?” And this question doesn’t seem to be answered by describing how electrons are disposed to behave.

Some philosophers, known as “dispositional essentialists”, hold that all fundamental properties are pure dispositions. On this view, once we have fully described how for example and electron is disposed to behave and have thereby said everything there is to be said about the nature of the electron. However, there are powerful arguments against the intelligibility of this position. Most discussed is the charge that it leads to vicious regress. For any given disposition X, we understand the nature of X only when we know the nature of its manifestation, that is, the property it gives rise to when manifested. If this argument is sound, then physical theory will never provide us with a complete and adequate account of the nature of the material world.

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79 According to Arthur Schopenhauer, it is the laws of nature that arise from a transpersonal will, not the will from the laws of nature. Felt volitional states are the irreducible foundation of both mind and world. For Schopenhauer the inner essence of everything is conscious volition – that is, will. Nature is dynamic because its underlying volitional states provide the impetus required for events to unfold. Even in the absence of all self-perception mediated by the sense organs, we would still experience our own endogenous, felt volition. Will is indeed free because it is all there ultimately is.
The panpsychist has a proposal: the intrinsic nature of matter is, at least in part, consciousness. What is to be said in favour of this proposal? The first thing is that it is not obvious that we have an alternative proposal, at least at present.

Another argument turns on the assumption that evolution is a continuous process that molds pre-existing properties into more complex forms, but that cannot produce “entirely novel” properties:

“we cannot suppose that so enormous a jump from one creature to another should have occurred at any point in the process of evolution as the introduction of a fact entirely different and absolutely separate from the physical fact. It is impossible for anybody to point out the particular place in the line of descent where that event can be supposed to have taken place. The only thing that we can come to, if we accept the doctrine of evolution at all, is that even in the very lowest organism, even in the Amoeba which swims about in our own blood, there is something or other, inconceivably simple to us, which is of the same nature with our own consciousness” (Clifford 1886:266)

“We ought ... to try every possible mode of conceiving of consciousness so that it may not appear equivalent to the irruption into the universe of a new nature non-existent to then”. (James [1890] 1950: 148)

More recently, Goff (2013) has argued that consciousness is not vague – if consciousness does not admit of borderline cases, then we will have to suppose that some utterly precise micro-level change – down to an exact arrangement of particles – marked the first appearance of consciousness (or the change from non-conscious to conscious embryo/foetus), and it is going to seem arbitrary that it was that utterly precise change that was responsible for this significant change in nature.

A final motivation for panpsychism comes from the need to account for mental causation in a way that is consistent with alleged causal closure of the physical: the thesis that every physical event has a sufficient physical cause (Chalmers 2015; Goff 2017: ch. 6). If, as the dualist believes, consciousness exists outside the physical world, it is hard to see how it could impact on a causally closed physical system. But if, as the panpsychist believes, consciousness infuses the intrinsic nature of the material world, then consciousness and its effects are part of the system.

It is generally agreed, both by its proponents and by its opponents, that the hardest problem facing panpsychism is what has become known as the “combination problem”. The inspiration for the problem is the following passage:

“Take a hundred of them [feelings], shuffle them and pack them as close together as you can (whatever that may mean); still each remains the same feeling it always was, shut in its own skin, windowless, ignorant of what the other feelings are and mean. There would be a hundred-and-first feeling there, if, when a group or series of such feelings where set up, a consciousness belonging to the group as such should emerge. And this 101st feeling would be a totally new fact; the 100 feelings might, by a curious physical law, be a signal for its creation, when they came together; but they would have no substantial identity with it, nor it with them, and one could never deduce the one from the others, nor (in any intelligible sense) say that they evolved it.” (James [1890] 1981: 160)

The general consensus among panpsychists is that there is currently no wholly adequate solution to the combination problem, however the symbiotic cosmology derives the subjective aspect from each physical as a complementary manifestation of it, so does not attempt a quasi-reductionistic view of the subjective.

In David Chalmers’ (2016) taxonomy of the combination problem, there are three dimensions of difficulty:

**Difficulties relating to subject combination:** the core difficulty being the subject-summing problem
**Difficulties relating to quality combination:** the core difficulty being the palette problem
**Difficulties relating to combination of structure:** the core difficulties being the structural mismatch problem and the grain problem.

The symbiotic cosmology largely avoids the combination problem because it is not seeking a panpsychic analysis of the subjective aspect, but rather looks at physicalist, biological and neurophysiological descriptions to delineate differences between qualia such as vision and sound both in terms of the differing quantum modes they access and the types of CMS processing involved because these are features that can be interrogated objectively as boundary conditions on the kind of subjective experience involved. This is because the focus is not on a reductionistic description of the subjective aspect of brain processes but establishing the cosmological complementarity as a whole that is necessary to solve the hard problem and the problem of volitional will in a coherent cosmological account.
Many panpsychists believe that the conscious mind is identical with, or bears a very intimate relationship with, the brain. Most Russellian monists, for example, believe that the conscious mind is the intrinsic nature of the brain. And all constitutive micropsychists think that human experience is grounded in the properties of micro-level entities. Thus, these forms of panpsychism face the challenge of explaining how the rich structure of consciousness results from, or at least co-exists with, the seemingly very different structure of the brain. Perhaps the most discussed form of the structural mismatch problem is the grain problem the worry that experiences seem to be smooth and continuous in a way that is at odds with the discrete, particularised structure of brain properties.

Again there are numerous proposals for addressing the worry. Lockwood (1993) for example suggests that the worry only arises when we are implicitly thinking of the brain in terms of classical physics, and that it evaporates when we explicitly adopt more recent scientific paradigms. The symbiotic cosmology likewise sees the brain properties arising from edge of chaos sensitivity to quantum processes at unstable tipping points in the conscious brain dynamics, so invokes both wave properties of brain states and wave-particle complementarity so that these is no actual discordance of mental continuity and the quantum nature of reality, which is manifested in a complementarity between objective universe and subjective mind at large.

For a diverse current account of the interplay between proponents and opponents of panpsychism, Philip Goff's webpage Conscience and Consciousness contains links to scientists, philosophers, and theologians with a variety of views debating Goff (2019). In this series of articles, The author Annaka Harris points out that the combinations problem ceases to exist if consciousness in her words akin to a pervasive field analogous to space-time in my words to the universe as a whole:

"Rather than an obstacle to theories that place consciousness in a fundamental role, the combination problem may be a reason to favor the proposition that consciousness is a fundamental feature of the universe in the form of a continuous, pervasive field, analogous to spacetime. Just as spacetime and gravity have an interactive relationship, consciousness might be thought of as a fundamental “field” that interacts with, and is integral to, matter. We typically don’t think of spacetime as bits and pieces that build on one another (it’s simply everywhere), and I don’t think we should be tempted to think of consciousness, if it is indeed a pervasive field, as divisible into building blocks either."

This is confluent with the defence of symbiotic cosmology using panpsychism in a way which utilises a physicalist position to characterise the subjective in its complementary objective evolutionary terms from cell to eucaryote to organism, including edge-of-chaos systems with quantum phenomena due to the butterfly effect, so characterising, in each case, consciousness as a whole. Really the combinations problem proto-psychism etc. is an attempt to think reductively about the subjective, the very thing we are trying not to think reductively about.

Lee Smolin et al. also highlight exactly the symbiotic cosmology’s point of intervention in the causal closure:

"There will be a mixed functionalist and reductive explanation for why humans and other animals experience qualia (or just experience). It is then very natural to suppose that if the existence of consciousness is to be explicable for a physicalist, it must perform some function that increases the fitness of the creature that is endowed with it. But this requires that consciousness can intervene in the network of causes in the physical universe."

"Most of the approaches to quantum foundations do split the laws into two parts, the first being described by unitary Schrödinger evolution in a fixed Hilbert space, which we identify with Mode I. In most formulations, quantum mechanics is more than this. Collapse of the wavefunction, whether spontaneous or based on a law of some kind, is strictly Mode II.”

This parallels the symbiotic cosmology accepting mode I as causal and allowing the subjective aspect to intervene in mode II, thus completing the incomplete causal closure of the quantum universe without disrupting causality.

Chris Koch’s position which I had to get out of another article (Koch 1) classes himself as a panpsychist but really he is an information network panpsychist as expressed in Tononi and Koch’s (2015) integrated information theory. But nevertheless sees consciousness potentially on multiple scales:

"The only dominant theory we have of consciousness says that it is associated with complexity — with a system’s ability to act upon its own state and determine its own fate. Theory states that it could go down to very simple systems. In principle, some purely physical systems that are not biological or organic may also be conscious" (Koch 2).
In this article, Koch is worried about humanity self-destructing and cites the Fermi Paradox as evidence intelligent societies self-destruct, which is why I’m introducing cosmological symbiosis as a climax remedy for avoiding a human induced mass extinction of the diversity of life which could do just that.

Galileo’s error as expressed by Smolin et al., talking about Goff is this:

“The core of Galileo’s new science was the idea that all motion could be represented mathematically while all change could be rendered as motion. To make this credible not only was part of the world discarded but memory of it erased. Sensations, colors and thoughts were not part of the mathematical universe and that came to be thought of as the only universe there was. Galileo’s error in removing qualities, sensations and awareness from the world, leaving only a universe of quantities and of quantifiable relationships, led to an equally profound error about the nature of time. The success of the science of motion led to the hypothesis that the motions and forces of the world - from atoms up to stars - were a system that was causally closed, as all explanations of motion pointed to more motion.”

Where have I heard this before? Evolutionary psychology and sociobiology. This is the old gatherer-hunter divide between categorisation in woman gatherers identifying plant species and male hunters stalking their prey silently. Men are or claim to be “ace” at mental rotation and describe a route as hunters in terms of a set of vectors to the destination and women say “go past the gas station to the child care centre”.

So materialism or physicalism is another hideous manifestation of patriarchal dominion over nature and woman alike. In Goff’s view Galileo has taken the feminine qualia out of the description and Newton has sealed the deal and we are still stuck in the classical description of the causally closed Laplacian universe, despite staring quantum reality in the face. This is another manifestation of complementarity that shows up materialism for just what it is.

Goff (2019b) poses the question “Did the universe design itself?” by invoking a form of constitutive cosmopsychism. In his words this might not provide and intelligent form of psyche:

“The claim that the universe is conscious does not imply that it has any of the sophisticated mental features enjoyed by human beings, such as thought, intelligence and agency. In our case, these mental phenomena are the result of millions of years of evolution; one might doubt that they could also be properties of things, such as the universe, which have not evolved through natural selection. Indeed, in previous work (Goff 2017), I suggested that the cosmopsychist conceive of the consciousness of the universe as being a ‘mess’ entirely lacking in elements of thought and rationality”.

Goff then amends this “primitive” cosmopsychism to address the fine tuning problem, the fact that the current description of the physical universe, comprising the standard model plus gravity has about 25 free parameters which the theories themselves don’t explain. The fine tuning problem was first drawn attention to by Dicke (1961) and has been elaborated by Barrow and Tipler (1988) using the anthropic cosmological principle and Martin Rees (Lemley 2000). The fine tuned universe has reached quasi-religious dimensions in the minds of its proponents.

A key cited example is that ε, a measure of the nuclear efficiency of fusion from hydrogen to helium, is 0.007: when four nucleons fuse into helium, 0.007 (0.7%) of their mass is converted to energy. The value of ε is in part determined by the strength of the strong nuclear force. If ε were 0.006, only hydrogen could exist, and complex chemistry would be impossible. According to Rees, if it were above 0.008, no hydrogen would exist, as all the hydrogen would have been fused shortly after the Big Bang. Other physicists disagree, calculating that substantial hydrogen remains as long as the strong force coupling constant increases by less than about 50%, but these parameters are critical to the cosmic distribution of the elements, especially the elements of life, as outlined in fig 17.

Dicke cited $G \frac{m_p^2}{hc} \sim 5 \times 10^{-39}$, as a near-vanishing constant involving the mass of the proton, the gravitational coupling constant, Planck’s constant and the speed of light, but these parameters may be defined by a deeper theory of everything (TOE) determining the symmetry-breaking parameters in the cosmic origin. Dicke noted that most physicists seem to believe that such a dimensionless constant, such as (1), is provided by Nature, cannot be calculated, and is not in any way related to other numbers, although Dirac has suggested a deeper law connecting these on powers of $10^{40}$, for example $\frac{T \cdot m_p}{h} \sim 10^{42}$, where $T$ is the Hubble age of the universe.

But some of these problems arise from the way quantum field theories and relativity have been constructed. For example, the fine structure constant determining the convergence of the Feynman diagrams of quantum
electrodynamics $\text{fig 1: } \alpha = \frac{1}{4\pi\varepsilon_0} \frac{e^2}{\hbar c} \sim \frac{1}{137}$. Quantum electrodynamics is the most accurate theory ever devised calculating the magnetic moment of the electron correctly to six decimal places. It forms an archetype of all the quantum field theories in the standard model. This means that all in all the way these theories have been built upon empirical variables these types of theory don’t determine the empirical parameters out of which they are constructed. However a deep TOE might do precisely this because the overall structure of these theories is elegant involving symmetries that are then broken by symmetry breaking potentials like the Mexican hat precipitating the weak-electromagnetic symmetry-breaking. So deeper TOEs which unify all the four forces might do so.

Goff instead invokes features of a primitive cosmopsychism that might do this from the subjective aspect instead, by invoking two modifications to the messy primitive universal consciousness (1) agency and (2) a form of future awareness:

“The first modification I will be proposing is that the universe, although physical, acts, and only acts, through a basic capacity to recognise and respond to reasons.”

This has all sorts of problems because “reasons” and “facts” are optimally sophisticated concepts and Goff admits they could sweepingly overrule and define physical laws:

“How do the laws of physics fit into this picture? If the universe acts through a basic capacity to recognise and respond to reasons, and all facts are grounded in facts about the universe, the laws of physics seem to be irrelevant to the causal evolution of the universe.”

He then addresses the central question of fine tuning having to anticipate its own cosmological outcomes:

“If, during the Plank epoch, the early universe fine-tuned the laws to bring about life billions of years in the future, then it must have in some sense known, or been aware, of the future consequences of its actions. In other words, to make sense of the idea that the early universe fine-tuned the laws and initial conditions in order to bring about life, we need to make sense of the idea that the universe has mental states that represent the future”.

“I propose that the agentive cosmopsychist should suppose that the universe has a basic disposition to form spontaneous mental representations of the complete future consequences of all of the choices available to it.”

This is something that is already implicit in special relativity in the usual physical interpretation, where both retarded (causal) influences and advanced (retrocausal) come out as positive and negative square root solutions of the defining Lorentz transformations giving us results defining the velocity of light as a maximum and $E = mc^2$.

My real concern here is that agentive cosmopsychism, by virtue of possessing willing agency inherits the idiosyncrasy of will without which it would be impotent, so this leaves us with a regress why such an agent should decide to act in a way to bring life about. So in my view, although proposing Darwinian panpsychism, as a cosmological solution to the hard problem is that we need to wait a little longer to see if an underlying TOE will emerge that explains fine tuning in terms of symmetry-breaking, before relying on either a multiverse, anthropic, or a cosmopsychic solution to the fine-tuning problem.

References


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