

Article

Towards a Meaningful Unfolding Universe (Part II)

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ABSTRACT

We explore the diversity of mental states, and examine to what extent these are both a product of specific known brain processes and yet may access a complementary aspect of existence to the cosmology of the physical universe and its natural biosystems, potentially giving mental states an existential cosmological status. The case is made that the cosmology of mental states reflect a deeper physical principle connecting quantum entanglement with the brain wave processing evolved in higher organisms to solve the computational intractability of open environmental dilemmas, which go beyond Bayesian statistics and causal prediction, into multiple nested Schrödinger cat paradoxes, hinting at a meta-evolutionary paradigm of conscious cosmological integration.

Part II of this two-part article contains: Can Consciousness Anticipate Physical Reality? Cultural Visions of the Cosmic Subjective; Towards a Meaningful Unfolding Universe; & References.

Key Words: cosmology, conscious, mental state, brain process, existence, physical universe, biosystem, quantum entanglement, brain wave processing, computational intractability, Bayesian statistics, causal prediction, Schrodinger's Cat.

Can Consciousness Anticipate Physical Reality?

Many aspects of brain function display dynamic features, which show the brain is focused on attempting to anticipate ongoing events. When a cat is dropped into unfamiliar territory the pyramidal cells in its hippocampus become desynchronized and hunt chaotically, in what is called the orienting reaction, until the animal discovers where it is or gains familiarity with its environment, when phase synchronization ensues. In a similar manner the EEG will show a desynchronized pattern when a subject is listening for a sound which is irregularly spaced, but will fall into a synchronized pattern if the stimuli are regularly placed in such a manner that the subject can confidently anticipate when the next sound is going to occur.

This kind of processing is consistent with a computational process involving transitions from chaos to order. The chaotic regime acts both to provide sensitive dependence on any changes in boundary conditions such as sensory or cognitive inputs at the same time as preventing the dynamical system getting caught in a suboptimal state, by providing sufficient energy to cause the process to fully explore the space of dynamical solutions. Artificial neural net annealing and quantum annealing both follow similar paradigms using random fluctuations and uncertainty to achieve a similar global optimization. Such a dynamic also allows for ordered deductive computation, but enables the system to evolve chaotically when the ordered process fails to arrive at a computational solution.

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Closed quantum systems display various forms of suppression of classical chaos, essentially because spreading wave packets, unlike point particles are extended in space and can overlap one another to form periodic solutions even when their trajectories are divergently unstable, ultimately leading to regular periodic outcomes. However open quantum systems are not subject to this kind of suppression to the same degree. An indication of how quantum chaos might lead to complex forms of quantum entanglement can be gleaned from an ingenious experiment forming a quantum analogue of a chaotic kicked top, using an ultra-cold cesium atom kicked by both a laser pulse and held in a magnetic field. In configurations where the classical dynamic is ordered, entropy of the system is reduced and there is no quantum entanglement between the orbital and nuclear spin of the atom, however in the chaotic region, orbital and nuclear spins have become entangled (Chaudry et al, Steck). Thus to the extent that phase coherence in brain processing is modeled on quantum wave functions, transitions into chaos correspond to the formation of more complex interactive forms of entanglement and transitions out of chaos into order correspond to the collapse of more complex entangled systems into a simpler coherent system. But does any of this mean that such entanglement could be used in any form of direct space-time anticipation?

Contrary to this idea, a critical historical experiment suggested that, far from anticipating reality in real time, conscious awareness of a decision may actually lag behind unconscious brain processing which is already leading to the decision, although being placed by subjective experience at the time the conscious decision was made. In 1983, neuroscientist Benjamin Libet asked volunteers wearing scalp electrodes to flex a finger or wrist. When they did, the movements were preceded by a dip in the signals being recorded, called the "readiness potential". Libet interpreted this RP as the brain preparing for movement. Crucially, the RP came a few tenths of a second before the volunteers said they had decided to move. 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 – a conclusion that was always controversial, particularly as there is no proof the RP represents a decision to move.

With contemporary brain scanning technology, Soon et al in 2008 were able to predict with 60% accuracy whether subjects would press a button with their left or right hand up to 10 seconds before the subject became aware of having made that choice. This doesn't of itself negate conscious willing because these prefrontal and parietal patterns of activation merely indicate a process is in play, which may become consciously invoked at the time of the decision, and clearly many subjects (40% of trials) were in fact making a contrary decision. Neuroscientist John-Dylan Haynes, who led the study, agrees: "I wouldn't interpret these early signals as an 'unconscious decision'," he says. "I would think of it more like an unconscious bias of a later decision" (Williams).

The assumption that Libet's RP is in fact a subconscious decision has been undermined by subsequent studies. Instead of letting volunteers decide when to move, Miller and Trevena 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 have elucidated an 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. A decision is triggered when the evidence favouring one particular outcome becomes strong enough to tip its associated assembly of neurons across a threshold. The team hypothesized that a similar process happens in the brain during the Libet experiment. They reasoned that movement is triggered when this neural noise generated by random or chaotic activity accumulates and crosses a threshold. 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."

Both these newer studies thus cast serious doubt on Libet's claim that a conscious decision is made after the brain has already put the decision in motion, leaving open the possibility that conscious decisions are actually made in real time.

Some 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). 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). If the brain were predicting the spinning arrow's trajectory, people would see the lag even if the arrow stopped at the exact moment it was pointing at the spot. But in this case the lag does not occur. What's more, if the arrow starts stationary and moves in either direction immediately after the flash, the movement is perceived before the flash. How can the brain predict the direction of movement if it doesn't start until after the flash? The perception of what is happening at the moment of the flash is determined by what happens to the disc after it. This seems paradoxical, but other tests have confirmed that what is perceived to have occurred at a certain time can be influenced by what happens later.

This again does not show that the brain is unable to anticipate reality because it applies only to

very short time interval spatial reconstructions by the brain, which would naturally be more accurate by retrospective interpolation.

To fathom situations where real time anticipation may have occurred without any prevailing causal implication leading up to it, we need to turn to rare instances of prescience with no reasonable prior cause. These kinds of events tend to be rare and often apocryphal and lack independent corroboration, like stories of telepathic connection or the sense of foreboding that a relative has died, which later receives confirmation. Paradoxically some of the most outstanding examples can come from alleged precognitive dreaming rather than the waking state, which tends to be more circumscribed by commonsense everyday affairs.

As a student, I picked up and read “An Experiment with Time” by J W Dunne, which outlined some double blind experiments in which the author claimed that dream diaries led to as many accounts linking to future events in the people’s lives as they did to past experiences. Finding this less than convincing given my scientific outlook, a few weeks later I had a horrific double nightmare that I was being agonizingly stung. In the dream it was a spider which I couldn’t remove because it would leave poison fangs inside me and in the second dream it had returned to sting me again when I was distracted as one often does in dreams. At eight in the morning my wife awoke to breastfeed our infant daughter and I recounted the nightmares in detail to her complaining about their painful intensity before falling asleep again. About an hour later I was stung wide awake by a wasp which had flown in the window my wife had opened after getting up and crawled into the bed. Suddenly the dream I had not only experienced but had emphatically recorded to my wife had become an unbearable reality. Now I know that a skeptic would interpret this as a mere coincidence, whatever that means in the quantum universe, merely an application of Bayes theorem of conditional probabilities, but the power and pain of it drove home to me irreversibly that dreaming, and by implication waking experiences too, have implications violating Laplacian causality in just the way that reduction of the wave packet does for quantum mechanics. The fact that it closely followed on reading the book gave this prescience an added dimension, capped by the fact that the scientist providing an introduction to the work was none other than Arthur Eddington who had suggested quantum uncertainty of the synaptic vesicle as a basis for free will.

This again raises a series of questions about coincidence generally and Carl Jung’s notion of synchronicity, the idea that seemingly unrelated events and experiences may be caught up in a deeper correspondence as reminiscent of quantum entanglement as phase coherence brain processing appears to be. Again, just as quantum entanglement, although making space-time correlations violating local Einsteinian causality, does not allow us to make classical predictions about future states, so this kind of event cannot be classically proved to be prescient nor can one expect or hope to demonstrate it on a replicable basis, nevertheless many people’s accounts attest to a currency of such prescience.



A month before the twin towers fell in New York I wrote a song and fortuitously posted the lyrics online. They contained several prescient lines, including “We’ll fly so high well pass right to the other side and never fall in flames again” then I watched live in prescient horror as one of the two planes struck the tower and passed right through, coming out in a burst of flames on the other side. My mother always used to say when I called her, “I was just thinking of you” and the phone rang!” Again a skeptic would say: “Your mother is always thinking of her son”. But this fails to address the critical question all shamanic practitioners have to answer. When curing a sick

person, it is not to explain why the person has contracted tuberculosis or leprosy i.e. that the respective bacteria are infectious, but why did this person catch it at this particular time. This is the kind of universal entanglement that may have resulted in the evolution of brain entanglement and subjective consciousness to deal with it.

The idea we are discussing is that, to model quantum entanglement in the physical universe and the critical effects it could have on survival, in a red-queen race with other sentient organisms, including predators, parasites and prey, the brain evolved to use entangled internal states in its own processing when deductive processes were at a tipping point, resulting in a quantum 'convergence' where the brain began to use the very entangled states it was modeling in such a way as to manifest the entangled space-time properties it had become sensitive to.

The notion of the brain using entanglement processing provides a useful paradigm for resolving many of the contradictory situations that arise when temporal causality is applied to anticipatory events. We can envisage the conscious brain as an entanglement anticipator in the following way. Memory is to model the past and subjective consciousness is to anticipate the future. Memory systems are used to form a model of the quantum collapsed history already experienced, which is first sequentially stored in the hippocampus but is then semantically re-encoded into the cortical feature envelope so that it can be interrogated from any semantic perspective. The conscious cerebral cortex contains a dynamical system of entangled states which together extend over a space-time region extending a limited distance into both the past and future - the quantum-delocalized present. Memory and the current situation set the context and the cortical dynamic seeks to anticipate the next move. The cortical envelope thus maintains a state of context-modulated sensitively-dependent dynamic excitation which generates our conscious sense of the present moment by encoding the immediate past and future together in a wave function representation. This would correspond to the entangled life-time of the coherent excitations taking place in the brain state and would mean that the brain is incorporating quantum-encrypted information about the immediate past and future of the organism into the current state of subjective experience. The quantum present provides the loophole in classical causality that permits intentional will to alter brain states as an effect of the entanglement. An external observer will simply see a brain process sensitively dependent on quantum uncertainty.

Let us look at how this treatment might shed new light on some of the time violating experiences we have noted. Precognitively dreaming about being stung can be described in the following way. While dreaming my brain becomes sensitively dependent on a population of entangled states reverberating in my cortex. These entangled states extend in space-time from the earliest experience of being stung to the future point in time I am stung wide awake. This is not so hard to understand because the brain was fixated on this experience during the dreaming night and I was stung wide awake from a further period of REM-rich morning sleep. In effect the quantum present of my brain state extended from the dream to the event, in terms of some ongoing wave coherence mode. Nevertheless some prescient experiences seem to occur over quite long time intervals, suggesting the brain can encode entangled states in a more permanent form which can still be referenced later.

Prescient experience leads to a series of paradoxes and contradictions for classical causality, based on the arrow of time. Turning to the lyrics example before 9-11, the first skeptical response would be that it was just a coincidence that I wrote a prescient line. The application of Bayes theorem of conditional probabilities to this requires a reasonable probability that someone on Earth will write a line anticipating the plane flying through the tower because we are claiming that if I wrote a lyric there is a reasonable probability by chance that it will seem to anticipate 9-11. It is far from clear that there are any, let alone many, such cases, so we have technically only one event. To try to trace any connection causally leads to contradiction. One causal explanation is that I wrote the line because some information from the future made me sense the impending event. This is a contradiction because it involves classically time-reversed causality. A second causal explanation is that, because I wrote the line, an event showing similarities to it was more likely to happen. It is true that in sensitively dependent systems small differences can lead to much larger fluctuations, but the idea of small events in history driving unrelated major future events, even on a probability basis is causally unstable.

But there is more to this. I originally wrote the line thinking about the destruction of biodiversity, of burning forests and then inverting myth of Icarus, turning the foolhardy challenger melted by the sun into the valiant act against all odds of conflagration that leads to new life, in a manner uncannily similar to the terrorists thinking they would see al-Llah in paradise through their act. Hence it has taken a highly unlikely lateral metaphor to bring about this correspondence. Also the song had other hidden elements. It accused the USA under George Bush of being “the one true rogue nation - the great American shaitan”. Shaitan is a reference to the Muslim Satan, as in the eyes of the 9-11 terrorists. It said “Will we ever be the same again? It thus presciently echoed the official’s words on TV “We’ll never be the same again”. So how does Bayes theorem handle these nuances? That the song and event are just two obvious manifestations of an incendiary world in an apocalyptic age? This is very far from being a plausible counter-argument.

There is another type of solution possible. Suppose we incorporate all these elements into a quantum superposition of states involving space-time entanglement. The entanglement then contains all of these elements without contradiction, because within the entanglement, time is symmetric, and forward and reverse causalities are consistently encoded by the transactional space-time hand-shaking. There are many experiential threads semantically correlated between past and future, with no contradiction. The disquieting issue is not that prescience might have occurred, but that, if consciousness is here to protect us from the incipient future, maybe with a

little more foresight, this tragedy could have been avoided - except that too many major players were acting too ignorantly and the ephemeral connection never got made until the event happened.

One can discern not just one, but three manifestations of the arrow of time bearing on the nature of consciousness and memory. The first is the one we have been considering in the brain - that the future is uncollapsed quantum states still in wave superposition and the past has been collapsed by conscious experience. This leads to some counter-intuitive conclusions, because it implies that the consciousness itself is resulting in the historicity that is causing my brain to have memory. The second arrow is the thermodynamic arrow of time - that entropy, or disorder is increasing overall, despite the negentropic nature of increasing biological complexity as an open thermodynamic system. However the second law of thermodynamics is a statistical consequence of the time direction in which real events are happening. All the massive positive mass-energy real particles in the universe are retarded particles that flow in the usual direction forwards in time. The time-reversed electron is an anti-electron flowing forwards in time, as shown in the Feynman quantum field theory diagrams in fig 6. One explanation of this real quantum arrow of time is that the origin of the universe is a phase reflecting transactional mirror, bringing the question back to quantum entanglement again.

Cultural Visions of the Cosmic Subjective

Cultures throughout history have been representing the world of their subjective experience in myth, fable, folklore and religious accounts. Creation myths are commonly fabulous tales of heroes and supernatural entities, even when they reflect historical realities and gender conflict in the subtleties of their accounts, as the Eden story does of the Fall from nature in a sexual dysphoria between women and men.

Even our major current religions, while claiming to describe how God created the universe are primarily dealing with the stream of subjective experience rather than physical reality. Supernatural realms, from heaven and hell, to the apocalyptic end of days and the imagined rapture all gain their intensity and meaning as fantasized conscious experiences rather than realizable physical realities.

When we think of the eternal hell fires of damnation, we do not seriously believe that it is our molecular flesh, with its DNA and proteins that will froth and bubble in Satan's fiery pits, but rather a conscious torment in the realm of dreams and visions. Likewise when we deal with the afterlife and the angels of heaven in the clouds, we do not seriously think we are going to be gasping in the upper atmosphere or freezing in outer space, but are invoking a subjectively conscious realm of partially disembodied beings of light whose rules of engagement are akin to NDEs and visionary hallucinations of mystics and shamans.

The notion of a god in the sky purveying a realm of the afterlife is extremely ancient in diverse human culture. The Bushmen refer to the great God in the Eastern sky who has a village containing the spirits of the dead where he sits under a great tree. Again this idea of the sky is the mind-sky - a purely conscious realm, as in a dream.



Fig 7: A traditional spectrum of human cultural, spiritual and religious experiences of existence, all of which, including heaven and hell, exist on the plane of subjective conscious experience, although some lay claim to defining the creation of the physical universe. These include the Judeo-Christian notion of the sabbatical creation by the Elohim male and female in their likeness, despite creating the sun and moon after the plants, the Eden origin, and the final apocalypse invoking heaven and hell, the highly sexual Muslim paradise, Vishnu dreaming the word as Brahman in a lotus coming out of his navel, Kali standing over lifeless Shiva (Varanasi shrine), the cosmic Tao of yin and yang, each generating the other to engender the diversity of nature, the Tantric origin in deep coital fusion between Shiva as consciousness and Shakti as substance spawning the phenomena existence - Maya or illusion, its meditative expression in the Kundalini-charged experience of Yab-Yum enlightenment, the Buddhist wheel of life, including the worlds of the worlds of devas, titans, humans, animals and hungry ghosts, with flaming hell illustrated below, the Aboriginal dreamtime (Colleen Wallace), the Bushman trance dancing experience, visions of Lascaux and the Venus of Laussel, the Nierika cosmic peyote portal of the Huichols, the ayahuasca spirits of the plants (Pablo Amaringo) and the Chenrizig mandala.

Traditional cultures, from the Bushmen to the Huichols, approach spiritual realms using the very techniques used to induce non-ordinary mental states, such as trance dancing and consumption of the psychedelic peyote. Many of the key prophets and founders of great religions, from Elijah to Jesus and Muhammad were admitted visionaries who were often rejected by the people of their day. Muhammad for example received his inspiration from visions of the angel Gabriel, which according to founding Islamic historians he at least once confused with Satan over whether female deities could be intermediaries of al-Llah, in the so-called satanic verses alleged to have

been subsequently removed from the Quran.

Both polytheistic and monotheistic religions are founded on a god, or deities, as third-party agents. These agents are either in superhuman form, appearing as male and female humanlike figures complete with human personalities, or they are more abstract deities, as Yahweh and Allah are, but still possessing many features of emotional personality. Moral deities are envisaged as functioning to reinforce punishment and provide forgiveness to their compliant believers through the same attributes of personality human beings express. We hear of God's anger, jealousy, compassion and mercy - all emotional attributes we naturally associate with a mammalian emotional limbic system, but critically the emotional experiences of a conscious person fearing another conscious agent. God is above all conscious of His actions even as he is construed to be omniscient and omnipotent even as we are subjectively conscious of Him - "to know even also as I am known". No one would dream of worshipping a deity who was not even conscious of their existence.

To accurately judge religions as theories of mental states, and particularly as instruction manuals for human choices and actions under threat of dire social or spiritual punishment, we need to be honest enough to have caveats when their doctrines and dogmas fly in frank violation of nature and of physics itself. There is no evidence for an external agent with an all too human moral personality in any phenomena of natural or physical cosmology. Nature has no moral law which curses the predators or even the diseases. The notion of God creating the universe is a false metaphor humans are projecting on to nature from their own experience of being a dominant species shaping the world around them, often to their own folly and the detriment of nature, creating the world in crude analogy with human tool-making and manufacture. We will never develop a good idea of the cosmological basis of subjective experience if we simply project a human-like personality for which there is no evidence onto the entire universe as an external agent and give that agent naïve power to breathe life into clay or surgically remove a rib to create a sexual partner.

To deny all the evidence of evolution, in the genetic age, which attests to an almost divine power of generative capacity of life to become ever more complex, sentient and elegant and even explains how it can come about, and instead insist that a clock-maker deity with a bad temper made a static fallible world in a naïve order in six days four thousand years ago is to doom any potential of this theory of consciousness to be anything more than a dangerous and socially destructive delusion. Neither can we afford to say nature is bestial, sinful, or beneath spirituality, or that the Lion should lie down with the Lamb, for the living diversity of plants and animals and of herbivores and carnivores is central to the diversity of life, just as sexuality is not debased over spirituality, but is the cosmological principle from which all complex conscious life emerges in the immortal passage of the generations.

Eastern religious philosophy is founded on the notion that the physical world is a gross illusion of consciousness, or maya, in which Shiva has lost sight of in his own cosmic conscious transcendence, in his dance with Shakti-Kali. Likewise Vishnu the sustainer is seen as dreaming the universe, in Brahman emerging from a lotus in his navel in deep contemplation, implying the entire physical universe is just a thought in the mind of God.

Nevertheless two deep and powerful Eastern currents found their existential cosmology on a complementarity reminiscent of the wave-particle complementarity of quantum physics and of sexual complementarity. The Tantric cosmic origin begins in deep sexual coitus between Shiva and Shakti as mind and matter complete and replete. It is only when this intimate loving embrace of the complementary principles begins to come apart that we descend by degrees into the deluded realm of individual egos witnessing the gross accumulations of the physical world, ultimately ending in the Kali Yuga today. This notion is powerful in several ways. It attests to the fundamental complementarity between the objective phenomena of the physical universe and the subjective conscious experience we all witness throughout life as sentient beings. It is also a cosmology founded on biology and sexuality as primal generating principles. Likewise the Tao is a cosmology of nature and conscious life founded on the complementarity of yang and yin as creative and receptive principles, again founding existence on sexual complementation and the fertilization of the receptive by the creative.

In the Eastern mysticism of the Upanishads, the great journey to spiritual realization is a journey of subjective consciousness backwards into the atman, or cosmic 'self' at the core of each person's subjective mind. The atman is thus the mental state beyond all the conditioned mental states of the ego, very much in the paradigm of the NDE. Buddhism took this description one step further and denied the existence of the self as an objectification, claiming there is no self, there is no god, but the round of birth and death of the suffering ego, which can achieve enlightenment by escaping this cycle into the peaceful void of the Buddha no-mind.

Hence Buddhism stands out as a cosmology not requiring an external agent to create the universe, as in the charming but naïve seven day creation, where the Earth is flat, surrounded above and below by dome-like firmaments in which the stars are fixed, while the plants are created before the sun and moon, clearly a fundamental violation of the generative sequence of the physical universe we have come to know in the scientific era. Buddhism also has vehicles of description based on the fractal geometries of Mandalas, coming a little closer to our descriptions of the laws of nature based on symmetries and broken symmetries. However in a striking parallel we find the Buddhist wheel of life containing fantastic realms similar to Christian heavens and hells, the worlds of devas, titans, humans, animals, hungry ghosts, and flaming hell with people simmering in fiery pots.

Notably Australian aboriginals speak of the dreamtime as if their real world has itself emerged from dreaming reality and the Huichols speak of the Nierika or cosmic portal peyote reveals, connecting them to the world of spirits and the foundations of existence, as if cosmology itself emerges from the visionary state. Animistic and shamanistic cultures likewise imbue all of nature with subjectively conscious dimensions, invoking spirits of wind, water, fire and the rain, animals and plants as active conscious entities, turning the whole of nature into one big subjective conscious experience.

In many belief systems there is believed to be a direct psychic connection between conscious experiences and attitudes in which thoughts can affect the physical world around us in terms of karma, spirit influence, and natural calamity, again implying the whole universe is in a kind of conscious causal reverberation, which we must be very careful of for our own survival.

In the case of the Bushmen and many shamanic cultures, this is simply an intuitive sense of not bringing about negative circumstances through negative thinking, but in the Buddhist karmic cosmology it becomes a huge moral causality, not only linking to affairs of the world around us in this life, but a reincarnation cycle spanning multiple lives. This is in frank violation of nature, claiming that a human killer might be reborn as a cockroach as a setback on the path towards enlightenment. This is a double violation of nature, both because a cockroach has as valid an ecological niche as a human and because predation and killing is intrinsic to the animal world, as species from the lion to the praying mantis demonstrate. To assert a moral causality over nature based on human egos is a tragic fallacy, just as the notion of a personal soul entering a chain of incarnations, rather than dissolving back into the totality, is as self-serving psychically as parthenogenesis is biologically in relation to sexuality.

We thus find that pretty much all of human cosmological descriptions up to the scientific revolution were not primarily about the physical universe, but of our subjective conscious experience of it - theories of consciousness even when they profess interest in astronomy, the creation of the world or the fertility of the seasons. We can thus to a certain extent forgive spiritual traditions for their deluded violation of natural principles we have come to discover about the physical and natural world only recently through the skeptical inquiry of the scientific method.

The lesson, as in Tao and Tantra, lies in the complementation of the natural and experiential - that each is sacred and an essential complement to the other. We thus need to take onboard all the lessons nature can provide to examine what actually or at least plausibly might be going on in the unfolding universe and what it suggests about the meaning of conscious life, the universe and everything.

Towards a Meaningful Unfolding Universe

This leads to several ultimate questions:

1. Is there any intrinsic meaning to life, or is it we ourselves, as living beings, who express the meaning by unfolding it in our creative lives as conscious participants?
2. Is the world heading for an apocalyptic falling out and a triage of nature caused by a failure to protect our generations' own futures, or is the entire universe evolving towards a state of ever-deepening realization and enlightenment?
3. Is the fulfillment of life in the universe found in some future ultimate state of enlightenment, or is it expressed eternally across space-time in the consciousness of all sentient beings who will come to witness or have witnessed the ongoing existential condition, who together bring about the historical evolution of the conscious universe?

The first is an important lesson about life, particularly for people coming closer to the end of life, or facing a terminal condition. If we are conscious participants in the universe, meaning is not something we should necessarily seek to extract from life but meaning is what we give to it, both in our compassionate actions towards it and in the meaning we give to it in sharing with our family and friends and in the creativity we bring to it in our love, music and works from

literature through science to the simple random acts of kindness, all of which make the world a better and more bearable place. By sharing our existence together across the generations, we find a sense of presence and meaning, which goes deeper than the individual ego doomed to the mortal coil. This is something more vital and creative than simply denying the suffering of the ego that Buddhism conveys, because life is a creative force which gives rise to sentient beings and to all of living diversity on which our biological existence and that of those who will experience life after we are gone depends.

We need to remember this is not just a dilemma for our own incarnation. Life emerged on our planet from a hot young Earth and may again be annihilated when the sun grows into a red giant, but this does not mean all the sentient life between is made meaningless. Indeed life is victorious in that, on another planet in this or another galaxy, life can spring forth anew.

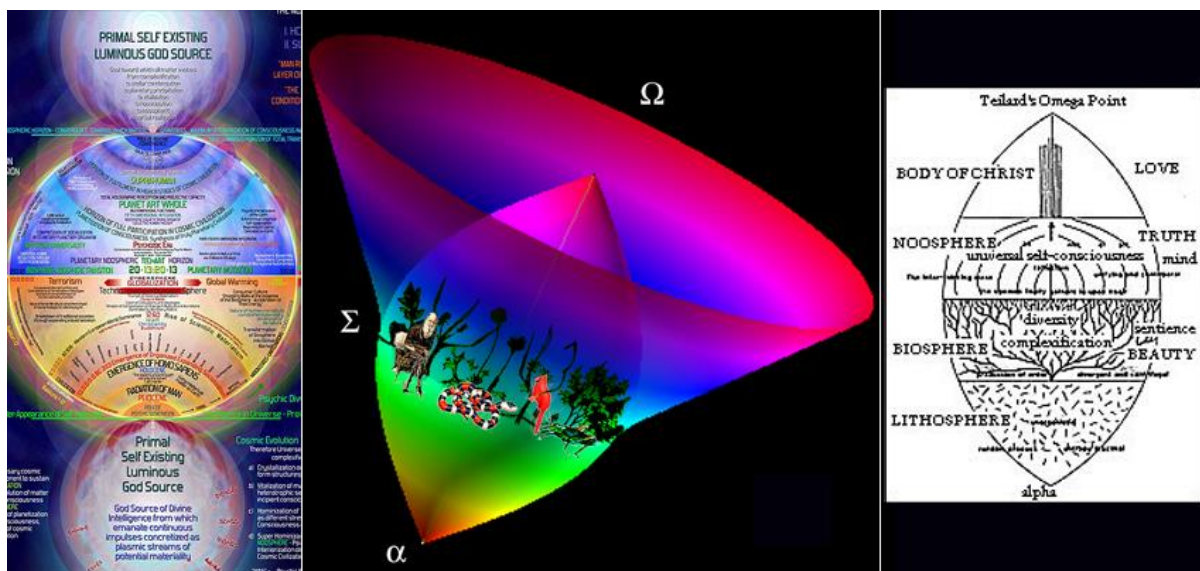


Fig 8: Centre: Darwin, the hoopoe and the serpent in paradise on the cosmic equator. Conscious life is a cosmological consequence of the symmetry-breaking of the forces of nature resulting in fractal molecular interactions which ultimately give rise to tissues. Thus conscious life represents a sigma consummation on the cosmic equator of space-time mid-life in the universe's history, just as the alpha and omega represent cosmic poles. Right: Chardin's view of cosmogenesis and evolution arriving at the noosphere and the reemergence of the transcendent. Left: A modern variant centered on the reintegration of human consciousness into the divine (<http://www.noosphereforum.org/>).

As to the second question, the notion of apocalypse may well come from a sense of prescience in our collective consciousness that over the last few millennia we have fallen out of gatherer-hunter innocence in paradise, in a falling out between woman and man, into an accelerating state of culture shock, as nation has warred upon nation, leading ultimately to the present state of cultural crisis amid nuclear overkill, clash of the cultures, a mass extinction of biodiversity and the threat of climate tipping point deleterious to the future of humanity. Ultimately apocalypse means 'unveiling', the covers being thrown off reality, so we can come to see it face-to-face, no longer through a glass darkly, just as the scientific revolution is doing for the objective world. The crux of the matter is that this is not a diabolical end of days ordained by God, but a consequence of our own cultural becoming and population explosion, which we need urgently to find a compassionate remedy for, in protecting the living planet from the ravages of human

impact, so that future generations can survive and prosper. It doesn't take supernatural intervention to see and understand this, it is simple commonsense.

Hence we turn to the other side of the coin. Is there some way in which the universe is coming to fruition through an accumulating sense of our own immanent conscious integration? The Noosphere, according to the thought of Vladimir Vernadsky, Édouard Le Roy and Teilhard de Chardin, denotes the "sphere of human thought" in a succession of phases of development of the Earth, after the geosphere and the biosphere. Just as the emergence of life fundamentally transformed the geosphere, the emergence of human cognition fundamentally transforms the biosphere. Originally thought to ensue from the nuclear revolution, it is now conceived more commonly in terms of the integration of human consciousness through the internet and formation of a global village. Teilhard argued the noosphere is growing towards an even greater integration and unification, culminating in the Omega Point, which he saw as the goal of history in an apex of thought/consciousness.

Some pictures of the noosphere conceive the future almost in the manner of an ordained destiny, effectively committing the same mistake of religious apocalyptists looking to the parousia. If such a convergence phenomenon is happening, it is subtle and cannot violate any natural law or process. For example the laws of nature surrounding evolution, mutation and natural and sexual selection reach toward climax diversity at the edge of chaos and are as inconsistent with a directed divine destiny as they are with the sabbatical creation. The same goes for the probability interpretation of quantum mechanics. Any tendency toward an unfolding of cosmic consciousness is something that can happen only in the quantum entanglement in the form of coincidence and synchronicity, without perturbing any statistical measure of natural function. This means it is a notion that it may be impossible to prove, so that we have to content ourselves with being conscious participants in this unfolding process without making any claims as to its verifiable existence, or certainty. The nature of free-will, after all is to collectively participate in the unfolding history of the universe by this very participatory process of living existence. That said, it is clear that decisions we make which seek to protect the long-term diversity of life and to cherish and replenish it for the future generations lay the groundwork for such an unfolding, as do the creative expressions we make of our engagement together in music, art literature and science and social and natural justice, realizing the compassionate existence together and celebrating it.

Neither is it a limitation on ourselves that this potential future is something we can merely glimpse but not fully understand, for already as conscious beings we stand male and female in the archetype of cosmic consciousness to witness the totality in our visions and contemplations, and despite the tragedy of life in the mortal coil, and the implicit violence of nature and entropy, we have the wonder of a free lunch in this magical world to love and beget offspring through the sexual mystery which spawned us and to appreciate the sheer magic of coexistence. Neuroscientist Chris Koch (2012) echoes this view "Throughout my quest to understand consciousness, I never lost my sense of living in a magical universe. I do believe some deep and elemental organising principle created the universe and set it in motion for a purpose I cannot comprehend. ... But I do believe the laws of physics overwhelmingly favoured the emergence of consciousness, and that those laws will lead us to a more or less complete knowledge of it."

Finally, in relation to the third question, we need to realize it is the journey, not the destination that is the key. Conscious life is an ongoing process, immortal in the passage of the generations, despite our individual mortality as sexual beings. In the completion of the universe as a conscious entity, it may not be in its final apex that the reality is consummated, but eternally throughout space-time, as a single thing already conceived already known from alpha to omega. This is not an ordained destiny speaking, but our collective participatory consciousness, throughout time and space together, bringing it about in the uncertainty of the entanglement. In this sense it is our entire life experience and what we leave behind for others to follow that is of account, not any final meaning we think may come about in our imagined peak fulfillment, or in our last moments of realization on our death bed. We need to appreciate every moment and every act, good and bad, for its unique preciousness, for life is all too short and transient and yet our consciousness stands inscrutable in the eternal moment and there are so many of these moments in a lifetime, they literally are enough to fill the entire history of the universe.

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