The Ultimate Question of Meaning

The central question plaguing us all is why are we here? Is there any meaning to life? What will happen to our conscious existence when we die? And what if anything is the purpose of it all, if all life can all end up becoming snuffed out, as the sun turns into a red giant and fries the Earth to a crisp, or even if we escaped the solar system, when the whole universe eventually blows apart into empty space in the heat death? Underlying this are questions closer to home. What is conscious existence, and can conscious experiences have any effect on the physical world?

And we are told two very different kinds of story about this predicament, the scientific story and religious ones. The religious stories tell us that the universe was created as a moral test of sentient beings. In the Western tradition, this is claimed to have taken place in six day-long epochs by command of God, that we were created to have dominion over all the forms of life, with a living soul that will outlast us when we die, and that we should fear the god that created us and obey him, so that we will go to a heaven in the clouds and not be damned in hell fire. The scientific story tells us that the universe emerged from a hot, dense singularity 12 billion years ago, spawning the forces of nature in a symmetry-broken mathematical mandala, that it has since become full of galaxies supporting billions of stars, many of which have planets. That life emerged on Earth shortly after the seas condensed and has evolved over three billion years into the complex living organisms we see today, so that we are biological organisms, evolved from primates, whose conscious existence depends on our sappy electro-chemical brains.

No matter how people try to paper over the cracks, by claiming science and religion can coexist together, these two descriptions fundamentally clash and lead to utterly different conclusions. This leaves human culture in a schizophrenic state of divided consciousness, with no clear direction as to what issues are paramount, when we try to deal with the stark critical decisions we all have to address about the fate of the planet and of life upon it, in a situation where human impact on the biosphere is destabilizing Earth’s climate and habitats, threatening to cause a mass extinction of life, entirely detrimental to our own future viability as a species, compounded by risks caused by misuse of weapons of nuclear, chemical and biological mass destruction.

We need to examine both stories carefully to see what the fallacies, or missing pieces may be in each, and find a way through to a new world-view, which really does capture the essence of the reality that lies before us all and gives us a unified understanding of what this is all about. We are going to discover a radically different, highly challenging point of view about conscious existence in the universe that can transform our lives and the future of humanity and of all life in the process.

Existential reality presents a complementary paradox. While we understand our subjective consciousness is somehow a product of our biological brain, which is a fragile product of physical forces on a cosmological scale, all our experiences of reality, including perceptions of the physical world, as well as dreams, memories and reflections, arise exclusively from our subjective consciousness. This suggests that existential cosmology is a complementarity between subjective consciousness and the physical universe, both being fundamental.

Subjective Consciousness and the Objective Universe

The central nub of the problem of existence is that our experience of the world comes through two apparently inconsistent yet complementary processes, each of which appears to be incomplete without the other – subjective consciousness and objective physical reality.

From birth to death, our knowledge of the world comes exclusively through our first-hand subjective conscious experiences, which include both the waking states we associate with the world at large and other states, such as dreaming, which we can also experience intensely at first hand in much the same way, but do not associate with actual physical phenomena. This tells us that, despite believing the waking state is real, both are actually a product of an internal model of reality constructed by the brain.
In turn we understand the physical world through comparing our conscious experiences with others around us who act and behave so much like the conscious beings we know ourselves to be that we intuitively have faith in their conscious awareness too. There is a biological basis for this. The brain has mirror neurons, which sense in others around us the same sensations we experience consciously ourselves, for example when they experience a graze or painful cut, we also wince.

Through our everyday experiences and by comparing our experiences with others, we develop a consensual view of the physical properties of the world around us. The objective physical world thus arises as a consensual aspect of our subjective experiences as a whole. It is thus only through our consensus experiences of the physical world that we indirectly come to understand that we are biological organisms made of complex molecules dependent on these physical properties to exist and that we may lose consciousness if concussed by a blow to the head and may bleed to death if seriously injured. Over time we build up a conscious model of the physical world and realize that, although our access to it is subjective, the objective description is also fundamental to our continued existence and that our objective life is founded on atomic and molecular processes which drive our biological metabolism and define the genetic makeup and neurodynamics that makes it possible for us to coexist in the physical world as sentient beings.

In turn, many of us become so used to dealing with the practicalities and predominance of the physical world that we drift into assuming this is all there is to it. Although we imagine we are making personal choices and feel we are autonomous beings determining our personal destiny, it becomes easy to conclude we may be just chemical machines with no free will, living out the consequences of the cause and effect of our chemical brain states.

But is this really what science says, or is there much more to it? The core of the difficulty is that, from the objective point of view, subjective consciousness has no objective features at all. It is a will of the wisp, a ghost in the machine of the brain. We can objectively detect it in only two ways, by observing the behaviour of conscious beings, or by exploring their brain states, but neither of these are exploring consciousness itself.

Unraveling the Religious Account of Reality

In religious accounts, the universe exists or is created by God or gods as a moral test. This means that the meaning and significance of conscious existence is bound up with compliance with the moral paradigm and our purpose in life is to adhere to this moral causality. Broadly speaking, these fall into two kinds of cosmology. Eastern and Western.

(a) Western Monotheism

The Western tradition is centrally expressed by Judeo-Christian and Islamic views of a universe created and commanded by God in a linear cosmology running from a paradisiacal past to a judgmental future. God creates the physical world out of *tohu va vohu* - formless chaos - by verbal command: “Let here be light and there was light”, in six days as a flat Earth, with waters and firmaments, or great domes, above and below into which the Sun, Moon and stars are set as great lamps. The forms of life with plants paradoxically created before the sun and moon, and animals of the land sea and air are created as they now are de novo,
with humanity having dominion over them. Humanity is created male and female to go forth and multiply in the likeness of the divine, implying the 'Elohim is a divine couple, just as the proverbs say Hochmah the feminine personification of Wisdom was set up from everlasting, from the beginning, or ever the earth was.

In this cosmology, the meaning of life and consciousness is to obey God's laws and commandments, and for this to be possible, it is necessary to have the capacity for free-will, to be able to choose to err into sin and fail to heed God's word. This is immediately verified, when in the second account in Eden, Eve heeds the serpent, and seduces Adam into eating the forbidden fruit of knowledge of good and evil and they are cursed by God and expunged from paradise by a flaming sword, lest they also eat of the tree of life and become as the gods. The male set to rule over the female, as God rules over them, for her to suffer the pain of childbirth and both to have to eke a life out of the thorns and thistles of the wilderness, thus casting a gender curse over the curse of all human kind, at the same time invoking reproductive mortality, after Adam and Eve covered themselves with fig leaves because they had lost their sexual innocence.

These allegorical creation myths have more primeval precedents. The San Bushmen, one of our oldest founding cultures, tell a very similar story, again clearly allegorical in nature:

≠ Gao!na, the !Kung Great God, using one of his seven divine names, created himself. Then he 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.

But allegorical conviction is the last reason to take such creation myths literally as the word of God, however beautifully and meaningfully expressed. To do so becomes bibliolatry, a degeneracy of the process, just as idolatry - worshipping an object as divine - was deemed degenerate in the Hebrew tradition.

Much of the rest of Old Testament history becomes an account of God, as a manifestly totem deity of a single people, the Hebrews, cursing the Bride Israel for whoring with the gods of Canaan and Egypt. However, much later, after the Babylonian exile and the ascendance of the Persians, Zoroastrian ideas of a cosmic renovation at the end of days became the apocalyptic tradition. Instead of an underworld sheol, as in the older Hebrew accounts, we now have the day of judgment, or resurrection, in which God will judge between the quick and the dead, allowing the former into Heaven and consigning the rest to burn in the fires of Hell for eternity. This eternal hell is a corruption of the scenario originally conceived by Zoroastrian thinking, where Ahura Mazda (mighty intelligence, or wisdom) invokes a very fearsome hell, but rather than a terminal punishment, this had the redemptive purpose of purification from the ignorance of the destructive spirit Angra Mainyu.

This monotheistic cosmology has become a linear moral trial, in which the meaning and purpose of conscious life is to realize that the only option giving us immortal life in Heaven is to forgo the luxury of autonomous will, and comply with God's commandments. The natural world has become a debased realm of lust and bestiality, subject to triage in the day of judgment.

The description in Revelation consists of an unmitigated triage of all natural life and of the universe itself:

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 sea became blood; 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 third angel sounded, and there fell a great star from heaven, burning as it were a lamp, and it fell upon the third part of the rivers, and upon the fountains of waters; 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 (Rev 8).
Ultimately the dead throughout history are all resurrected to be judged and those found wanting are thrown into the lake of fire, whereupon the first heaven and the first earth passed away and we see a new heaven and a new earth, strangely still with at least one plant, for we find the tree of life with its twelve monthly fruit for the healing of the nations. The end result is that the entire physical universe is destroyed and recreated by God, simply to judge the sins of one species in the third rock from the Sun - humankind.

The Quran describes this in more parochial terms as an eclipse:

*When will this Day of Resurrection be?* Well, it will come when the sight shall be dazed, the moon becomes dark, and the sun and the moon are brought together (75:6).

We also witness the splitting of the Moon, although this has little enough effect on the Earth for the unbelievers to think it a mere trick:

*The hour drew nigh and the moon did rend asunder.*
*And if they see a miracle they turn aside and say: Transient magic.*
*And they call (it) a lie, and follow their low desires;* (54:1).

In the monotheist cosmology, conscious existence has thus become a cosmological passion play, in which our ultimate destinies do not occur in this world, but in the life hereafter, in eternal heaven, endlessly praising God and the angels, or in Hell, cringing in the agonies of fire and torment. Consciousness and the physical universe have, together become one feature of an unreal magical realm, whose actual meaning and purpose has become frozen in eternal time.

Christian Muslim, Hindu and Buddhist views of heaven all present conscious fantasy worlds.

Christian and Muslim views each turn into their respective fantasies, with the Christian view full of sexless angels with large bird-like wings to fly in the rarefied upper atmosphere:

*For when they shall rise from the dead, they neither marry, nor are given in marriage; but are as the angels which are in heaven* (Mark 12.23).

By contrast, the Muslim view is a hyper-sexual paradise where men drink from fountains and up to 72 black-eyed virgins are recreated anew every day for every man in an undefiled state, for unrelenting male erotic pleasure:

*They will be reclining on thrones lined up, and We will marry them to fair women with beautiful eyes* (Quran 52.20).

*And for him who fears to stand before his Lord are two gardens. Having in them various kinds. In both of them are two fountains flowing. In both of them are two pairs of every fruit. Reclining on beds, the inner coverings of which are of silk brocade; and the fruits of the two gardens shall be within reach. In them shall be those who restrained their eyes [bashful virgins], whom neither any man nor jinn has touched before. Which then of the bounties of your Lord will you deny?* (55:46)

Houris are described as full-breasted pure virgin companions of paradise, with the most beautiful eyes. Sunni scholars claim they would not urinate, defecate or menstruate, are transparent to the marrow of their bones, eternally young, hairless except the head, pure and beautiful, and come with libidinous vaginas!

The Hindu Bhagavata Purana, speaks of Vaikuntha, adorable to all the worlds, as the highest realm where Vishnu resides with Lakshmi and other liberated souls that have gained moksha, falling somewhere in between the Christian and Muslim views in terms of sex, and a biodiverse paradise:
The parks there shine like liberation and contain wish-fulfilling trees, which blossom all the year round. There are fragrant winds, and creepers dripping with honey near bodies of water. Cries of exotic birds mingle with the humming of bees, and magnificent flowers bloom everywhere. Devotees of Visnu along with their beautiful wives travel in aerial vehicles made of jewels, emeralds and gold, but the beautiful smiling residents of this realm cannot distract the minds of the opposite sex, since everyone is absorbed in Krishna.

The Buddhist Tavatimsa heaven is a more prosaic mind-space where, in the image above, Buddha preaches the higher doctrine, or Abidammapa, to his (former) mother Queen Maya, who is now, along with the others assembling in the clouds, a deva, rather than a human:

In Buddhism, the highest heaven is Arūpaloka the "Formless realm" which has no place in a physical cosmology, as none of the beings inhabiting it has shape or location and the realm has no location either. This realm belongs to those devas who attained and remained in the Four Formless Absorptions in a previous lifetime. Tavatimsa is the highest of the heavens that maintains a physical connection with the rest of the world, located on the peak of the central world mount Sumeru, with similarities to Mount Olympus of the Greeks. The inhabitants are each about 500m tall and live for 3.6 million years. Since it is physically connected to the world, the devas are unable to avoid being entangled in worldly egotistical affairs and still marry, for example with the asuras in the next realm below.

The only kind of redemption of the natural world we find in the Bible impossibly violates nature in a moral imperative, by requiring all the animals to become herbivores:

The wolf also shall dwell with the lamb, and the leopard shall lie down with the kid; and the calf and the young lion and the fatling together; and a little child shall lead them. And the cow and the bear shall feed; their young ones shall lie down together: and the lion shall eat straw like the ox. And the sucking child shall play on the hole of the asp, and the weaned child shall put his hand on the cockatrice' den. They shall not hurt nor destroy in all my holy mountain: for the earth shall be full of the knowledge of the Lord, as the waters cover the sea (Isaiah 11.6).

Conflicting Eastern cosmologies of creation and of the role of sexuality. Left: The tantric origin begins with coital union of Shakti and Shiva and their retreat from union (inset) results in the fragmented phenomena of existence and illusion, however, although Yab-Yum is a sexual rite in Tibetan Buddhism, in Buddhist cosmology sexuality arises as part of the cycle of degeneration into attachment. Right: Reality as a thought in the mind of God. Brahma, the phenomena of the universe, is a dream in the mind of Vishnu, overlooked by Lakshmi.

(b) Eastern Traditions

By contrast, in the Eastern traditions, encompassing Hindu, Jain and Buddhist beliefs, the cosmology has become cyclic and pivotally consciousness-based, in which time, space and the material world exist as manifestations of conscious awareness. The universe is caught in endless cycles of yugas, or ages, from creation, through duration to dissolution, punctuated by formlessness and then rebirth.

Underlying this cosmology is the notion of a reincarnating immortal soul, or self, submerged in an ocean of distracting sensory and physical phenomena. Death destroys everything in the objective world when its time comes, but the soul remains intact and escapes from the body to take birth again. In the body, the soul is the subjective consciousness, enveloped by the impurities of the mind and body. The soul's reflection in the physical qualities is the ego, which assumes the soul's identity and acts according to its predominant desires, becoming attached to the objects of the world, experiencing attraction and aversion and ultimately mortal suffering, in turn causing bad karma. The cumulative karma of potentially endless past lives, at the same
time shapes our circumstances as it ripens, also leading to the world we find ourselves reborn into. This is a cosmology where the karma of sentient consciousness is shaping and determining the physical events around us and even our rebirth:

*Those whose conduct was pleasant will attain pleasant wombs; and those whose behavior was evil, will attain the wombs of the evil and the impure ones (Chandogya Upanishad 5.10.5-7).*

Hindu mythology is replete with allegorical creation accounts, taking a variety of perspectives. The story of Vishnu, the sustainer, attended by Lakshmi, dreaming Brahman - the manifold phenomena of existence - out of a lotus extending from Vishnu’s navel, portrays the entire universe and all conscious beings in it, as simply “a thought in the mind of god”. The Tantric creation casts the perspective more as a complementarity, in the form of the deep sexual union of Shakti, as natural world, and Shiva as observing consciousness, subsequently retreating into a fragmentation - all the phenomena of conscious existence in the material world interacting with the separate egotistical conscious experiences of every sentient being.

Buddhism, which gives a more structured view of this cosmology, has no creator god to explain the origin of the universe. Instead everything depends on everything else, in an overarching law of moral karma:

"What is this world? It is the receptacles of matter, feelings, thoughts, actions, and consciousness. The world is formed when we fastened to these receptacles because of our desire. (Agama sutra).

Here the physical universe is clearly stated to be nothing more, or less, than a set of receptacles for our sentient attachments. The Agama sutra sees all sentient beings as primary, with the universe only forming as a result of our fall from grace into attachment. It describes the process of creation on a grand scale, as not just individuals, but whole worlds becoming reincarnated as its inhabitants are reborn in a new system:

*To begin with they are spirits, levitating happily in space, luminescent and without form, name or sex. The world in these early stages is without light or land, only water. Eventually earth appears and the spirits come to taste and enjoy it. Their greed causes their ethereal bodies to become solid and coarse and differentiate into male and female, good-looking and ugly. As they lose their luminescence the sun and moon come into being. Gradually the beings fall into further wicked habits, causing themselves - and the Earth itself - to become less pleasant.*

Muslim, Christian, Hindu and Buddhist hells show all four religions are morally punitive cosmologies and demonstrate the unreal fantasy nature of these realms. Muhammad is seen both on his night flight to Jerusalem upper left and lying prostrate on a rock upper right. Naraka, an underworld hell realm, appears in the Vedas (lower left), Buddhism (lower right), Jainism and Malaysian Islam.

The physical world as we know it, with all its imperfections and suffering, is described as the product of dependent origination. Ignorance leads to willed action, conditioned consciousness, form and existence (in a body), with sense organs, whose sense impressions blind us to reality, causing craving, attachment, becoming, birth and ultimately death and rebirth.

*Over time, they acquire a taste for physical nutriment, and as they consume it, their bodies become heavier and more like human bodies; they lose their ability to shine, and begin to acquire differences in their appearance, and their length of life decreases. They differentiate into two sexes and begin to become sexually active. Then greed, theft and violence arise among them, and they establish social distinctions and government.*
The Buddhist cosmology is thus cyclic and also layered, with many world planes, from the highest heavenly realms of formlessness, through demi-gods and Titans, to humans, animals, hungry ghosts lurking in the deserts, and the lower hell realms of suffering. These worlds may be repeated spatially, coexisting in their thousands, millions, or billions.

Each world corresponds to a mental state, or a state of being, rather than being an actual physical realm:

A world is nothing more than the sentient beings within it. It is sustained by their karma and if the beings in a world all die or disappear, the world disappears too. Likewise, a world comes into existence when the first being is born into it.

Humans and animals, though they partially share the same physical environments, still belong to different worlds because their minds perceive and react to those environments differently. Thus humans who have bad attitudes and bad karma may be reborn as an animal. This viewpoint again violates nature, by casting all animal organisms as degenerate reincarnations of humans and higher beings through bad karma.

We thus have a cosmology in which subjective consciousness is primary and the physical universe is a tragic entrapping illusion of sentient beings. Just how far this overarching notion of consciously generated karma becomes, is illustrated when we come to one of the lower worlds in the slide to dissolution:

Lifespans will continue to decrease, and all the evil tendencies of the past will reach their ultimate in destructiveness. People will live no longer than ten years, and will marry at five; foods will be poor and tasteless; no form of morality will be acknowledged. The most contemptuous and hateful people will become the rulers. Incest will be rampant.

Even the advent of the Maitreya provides only temporary respite:

After Maitreya’s time, the world will again worsen, and the lifespan will gradually decrease from 80,000 years to 10 years again, each antarakalpa being separated from the next by devastating war, with peaks of high civilization and morality in the middle.

The ultimate end of the cycle comes when beings cease being born, firstly in the lowest layers, proceeding upward – hungry ghosts cease to be born, then animals, then humans, and so on up to the realms of the deities. Ultimately a great fire consumes the entire physical world, leading to a formless interval, after which the primordial wind begins to blow and build the structure of the worlds up again.

Only by retreating from all sensual attachment and seeking the inner pose of formless detachment from all conscious sensation can one escape the wheel of birth and death. But what is this state of utter detachment? What possible beneficial qualities does it have, apart from becoming the still point of the turning world? Is it even a conscious condition, devoid of all sensory experience and physical existence?

Far left: Maria Sabina performing a sacred mushroom velada. Left: An example of a Mayan sacred mushroom stone with deity (1000 BC-600 AD). Centre: The Huichol Niérika, or cosmic portal to the spirit world, opened by peyote. Right: Chavin vase with San Pedro and a Jaguar (1200-600 BC) indicating ritual psychedelic use. Far right: Don José Matsuwa during a peyote meeting.

(c) Shamanic World Views

Many ethnic traditions involve shamanic beliefs, which have no fixed doctrine but loosely follow an animistic, or pantheistic world-view. The shaman’s universe is three tiered, composed of an upper, a middle, and lower world. The upper spirit-world and lower under-worlds exist experientially, outside of time and space, while the middle world corresponds to everyday reality. Shamans claim to traverse these worlds as a direct first-
person mystical experience, rather than a cosmological concept, or religious belief. The central axis takes the form of the cosmic mountain at the center of the Earth, the world pillar holding up the sky or the world tree, symbol of life, fertility, and sacred regeneration, that the shaman climbs to other worlds.

These levels are more than interconnected - every part affects every other part. Shamans believe that these interactions can be perceived and affected and that the shaman can feel and influence distant realms. All parts of this interconnected universe are alive and conscious to some degree - imbued with life and invested with a mind or soul. Shamanic views, coming from cultures in a more intimate relationship with the natural elements, also incorporate more respect for the power of nature as the nurturing ‘mother’ of all existence, whose forces and priorities need to be respected. Species containing psychedelic entheogens have been respected as sacred portals by all cultures that have stumbled upon them.

**The Fallout from Moral Cosmologies**

The common factor uniting these three word-views, despite their stark differences, is that they are each subjective descriptions seeking to explain and give meaning to the conscious existential condition. They thus have a direct appeal to sentient individuals who are conscious of their mortality and vulnerable to the affairs of the world around them.

The Western and Eastern traditions also share two very problematic features. Firstly they are manifestly inconsistent with everything we now know about nature and the physical universe. Secondly they each assert an overarching moral causality dominating the life and future of all conscious beings and the universe as a whole. These two moralities are both inconsistent with one another and manifestly violate everything we know about how nature actually works.

Because monotheism is a revealed religion that in all its forms claims the scripture is the actual word of God, supposedly rational human beings are psychologically bound to accept its tenets and reject evidence from the world around us, even when it has become blindingly obvious, as evolution has now become, as the very foundation of our emergence as complex conscious organisms.

The Sabbatical Creation is a captivating and beautiful allegory, still as fresh as when it was first conceived as an archetype of the Hebrew week and Shabbat the day of rest. It is conceived in a flat-Earth cosmology, in which the heavens are firmaments or domes into which the stars are set with the sun and moon as great lights or lamps. The plants are created a full day before the sun and moon. Night and day happen before the sun is placed in the heavens. The fishes and whales and the birds are created a day before the land animals and long after the plants. Humanity is created male and female in “their” likeness to have dominion over all life. This was never conceived of, or intended to be an accurate description of nature, but lies in the paradigm of creation myth making common to many societies and cultures.

The second story in Eden entirely conflicts with the first. God is now a lone figure, not creating the universe but just dwelling in a garden to the East. There are two trees, one of life and the other of binary knowledge. Adam is created first by breath, rather than a verbal command, and Eve is manufactured later out of Adam’s rib. The story then becomes one of cursing woman to be ruled over by her husband and suffer the pain of childbirth for heeding the serpent, and banishing them both from paradise, for disobedience and the guilt of carnal knowledge. Again this is a warning tale told as an allegory setting out primal concerns about moral obedience and asserting patriarchal dominion.

We know several things about our current situation in the world. We know we are utterly dependent on the other life forms. We cannot eat without them and the breathable atmosphere wouldn’t have come about without plants to make it. So for the practical purposes of our own survival we cannot afford to engage a creation story that ends with the Earth and heavens destroyed and life along with it.

We also now know beyond a doubt that the Earth was not formed 4000 years ago, but at least 4 billion and that long before 4000 years ago there were people wandering this planet thinking very similar thoughts. The San Bushmen whose culture and genetic heritage goes back 150,000 years, have very similar creation myths and stories of a creator deity and afterlife, as we have noted, so there is nothing exclusive about the Biblical account.
Left: Our understanding of evolution began with examples of recent diversification of species such as Darwin’s finches on isolated islands in the Galapagos, where we can observe direct examples of phenotypic evolution to adapt to unique island habitats. This was complemented by fossil evidence such as the Cambrian Burgess Shale fossils showing extinct species with clear relatedness as precursors to existing branches of life. Centre: With the advent of genetic sequencing we have gained incontrovertible evidence from the sequence relationships of DNA in the genes of diverse species, such as the tree of life right spanning all branches of life, based on 31 families of core genes. Right: Evolution is a glorious creative process, shaped not just by natural selection but by aesthetic sexual selection through mutual mate choice in which living conscious organisms shape the evolution of one another in beautiful and surprising ways.

Moreover the evidence that life has evolved and that evolution is the foundation of complex life is now staring us in the face in ways no fully rational intelligent being can validly pretend to deny. Not only is there copious geological evidence and evidence from the phenotypic distribution of existing life forms, but the genetic evidence is incontrovertible. Since the Human Genome and related projects on other species, we now know exactly how humans are related to Neanderthals to Chimps and we know that all life bears the genetic fingerprints of the evolutionary process, not a de novo creation, so the picture is as clear as a bell. To claim evolution is just an unproven theory and that the creation story is true is premeditated deceit. Evolution is a cosmological process of the universe coming to a consummation of its awareness, beauty and complexity and as such it is sacred and the most sacred process we can come to witness as conscious beings. It is thus our duty to protect the sanctity and continuity of life throughout the generations of conscious existence.

But the real core of the religious fallacy is that the universe is not in any way a moral cosmology. Morality is an emergent evolutionary property of human and animal societies, in which individuals forsake individual advantages within their society to enable the society to become stronger and more dominant over its competitors – inhibiting intra-social strife to promote inter-social competition. Thou shalt not kill, for example, clearly did not apply to the people of Hazor or Jericho whom God said to commit genocide upon.

A fundamental feature of evolution is that it fills up the available niches. Thus some organisms evolve to be plants while others evolve to be animals that eat plants but may also fertilize their dispersal. The animals diversify into herbivores, carnivores and others, and the carnivores are predators that eat the herbivores, but also serve to avoid the herbivores eating all the plants, and everyone dying out. Likewise some bacteria, viruses and protists become parasites, causing epidemic and other diseases. But neither parasites nor predators are a manifestation of moral evil. They are an integral part of the relationship.

So for Isaiah to say that spiritual concord will involve the lion lying down with the lamb, and the lion eating straw like the ox, while endearing, is an expression of an absolutely false belief, that, under God’s rule, the diverse species of animals would all become moral to one another and predation would cease.

In the natural world, the ecological balance is struck in a way that is inconsistent with an overarching morality, but completely consistent with the climax diversity of life, through natural selection. Morality is an emergent feature of evolution within animal societies. Morality will and does occur as a form of social selection, heavily reinforced in our case by cultural traditions and imperatives. To assert morality alone as a cosmological imperative, rather than respecting natural selection, is inconsistent with the very principles maintaining life on the planet, so to allow any form of moral imperative in our cultural world-view is a long-term risk to human survival. Humans have now become a global society, so our survival as a people, a culture, and a species is now bound up in one another, so we need to be really clear about this and respect and preserve the natural scheme of evolutionary life, while developing a truly compassionate society founded on social justice, to alleviate the vagaries of life in the natural world.
Of course Christian thinkers will try to cobble together all manner of rationalizations to claim proper stewardship of the Earth in God’s name means caring for the biosphere, and that there may be some truth in the creation account because God may be lurking beyond the universe, invoking the “big bang”, but these are attempts to try to rationalize a comforting but inconsistent world view. There is simply no evidence in any natural, or cosmological phenomenon that a third-party conscious actor is either necessary, or sufficient, to explain the origin, or fate of the universe and life within it.

When we turn to the Eastern traditions, we find an equally glaring mismatch with reality. Yes the meditative condition is conducive to gaining insights about our existential predicament, but there is no evidence that we are inevitably drawn from luminous spirits to become grasping egos and if this were true, the entire edifice of meditative insight about our existential condition and the higher calling that Buddhism and the Eastern traditions aspire to would be null and void. The ego is not an enemy to be crushed, but the emotional dynamic that ensures our survival as vulnerable organisms in a world of tooth and claw. We need to nurture our instincts for survival and treat our egos with the same compassion we show for any mortal being. Nor is life a condition to be withdrawn from into formless repose, but our one sole opportunity to contribute creatively to the good of the whole, in the flowering of life and conscious existence.

Living organisms, including plants, animals, fungi and single celled organisms, are shaped by their genes their environment, and their free choices as autonomous beings, not just their grasping egos. Animals are not simply sentient beings, who in a past life were selfish in some way, but organisms adapted to fill the niches of life to climax. A cat hunts to catch mice because its genes have become those for a carnivore through evolutionary diversification, not because they were previously a homicidal human, or titan from an imaginary realm. The natural world is not simply a backdrop for psychological punishment of sentient beings. It is thus a violation of and insult to nature to demote the status of natural organisms to that of a decadent past life of some higher consciousness.

As mortal organisms, we can be selfish and grasping, but the psychological antidote is simple. The lesson of mortal life and death is more immediate and meaningful than the doctrine of Buddhism or any religion. We can’t take our selfish baggage when we pass on, so the only things we can do are ultimately to seek the benefit of all sentient beings and the living world as a whole. We can write poetry, make scientific discoveries, play music, engage marital and family life and care for our offspring and others in the world at large, all of which contribute to the ongoing fabric of life. There is no way we can naturally perpetuate our individual identity, because sexual reproduction endlessly mixes and dilutes the genes of the parents to make new life forms as an essential part of the robustness and creativity of the evolutionary process. Moreover, even if we did clone ourselves, identical twins are still separate individuals. Hence no selfish grasping action will, in the end, do us any good. The round of birth and death is the lifeline of all life processes and life is immortal, so long as the Earth continues to support it. It is this we need to nurture. To renounce the living condition and withdraw into formlessness, except to better understand our inner self, as a temporary undertaking, is a self-indulgent abandonment of our calling.

Finally we have the problem of the cosmology itself. There is absolutely no basis for a cosmology that is endlessly doomed to run down, from a creative state into moral degeneration and dissolution. Why would luminous beings free of the bondages of material incarnation seek to ground themselves in enslavement to their attachments as mortal beings? Yes we know the physical realm includes the second law of thermodynamics, which means that closed systems tend to a state of disorder, but this is not caused by moral decay, and through incoming solar energy, life on the planet has gone in the other direction of increasing complexity through endosymbiosis to form multicellular organisms, the interdependence of photosynthetic and respiring organisms, and the emergence of conscious animals and humans. Above all we need to participate in this creative process while we are alive, not condemn the whole universe to a degenerate fate.

The Trouble with Classical Science

Science takes its basis in the practical exploration of the world around us. Since the dawn of human culture some 150,000 years ago, humans have been both telling one another mythical stories of their origin to explain their existence in the world and also discovering and devising practical ways of survival through better understanding of nature and the physical world. Thus men have learned to use all manner of extremely toxic poisons to tip their arrows and improve their success in hunting while women have classified and explored the diverse species of food and medicinal plants that made up 85% of the gatherer-hunter diet.
In waves, we also learned how to cook, to forge metals, and to make diverse machines from simple digging tools and axes to catapults, wheeled vehicles, sailing boats and instruments of war, from gunpowder and cannons, ultimately to nuclear missiles.

Newtonian mechanics came to be regarded as the ultimate explanatory science: phenomena of any kind, it was believed, could and should be explained in terms of mechanical conceptions. Newtonian physics was used to support the deistic view that God had created the world as a perfect machine that then required no further interference from Him, the Newtonian world machine or Clockwork Universe.

Dealing with the natural and physical world is a lot less forgiving than devising creation myths. Miscalculations based on false assumptions in real life can be lethal, so the scientific method has evolved to check out whether our assumptions fit the test of actual verification. This is called the skeptical principle, which proceeds in the opposite direction to religious affirmative belief. The skeptical principle means we only consider a proposition to be valid if every reasonable test we make that could invalidate it fails in a way that tends to support its truth.

Religious beliefs tend to do the opposite – we are told that unless we believe in the path of the saviour, we will have no faith and be lost. Religious beliefs do this because they are social movements designed to bind large populations of believers together into dominant and successful units, which is precisely why they are also based on moral imperatives which have the same effect, namely to reduce intra-social strife to increase inter-social dominance, and why many religions also assert forms of female reproductive control designed to enlarge the community of believers, none of which are any less than worldly expedience.

However, dealing with the physical world is by definition a material quest. We need to be able to compare processes and see which ones actually work and which are useless, or even dangerous. Scientific thinking has as long a history as religions, as evidenced by human flint tool use predating our earliest religious artifacts, such as the Venus of Willendorf. The advent of ancient Greek philosophy became a catalyst for scientific thought. Atomic theory was invented by Democritus around 430 BC, and scientific medicine was extensively documented and medical ethics established by Hippocrates around 460 BC.

Nevertheless religious cosmologies continued to hold sway until Copernicus and later Galileo turned the flat-earth-centric Christian cosmology upside down, under threat of excommunication. The Inquisition tried Galileo in 1633 and found him “vehemently suspect of heresy”, sentencing him to indefinite imprisonment. He was forced to recant and kept under house arrest until his death in 1642. It took the Catholic Church until 1992 to admit Galileo was right, although still claiming that the Inquisition acted in good faith, taking 13 years to do so after Pope John Paul set up a committee of the academy to look into it in 1979.

But the real turning point for predictive science came with the genius of Isaac Newton in 1687, laying the foundations of classical mechanics by defining the laws of motion and universal gravity, clinching in one step the motions of all the astronomical bodies. Until then people had observed that objects in motion always slowed down, but Newton’s first law states simply and succinctly that every object will remain at rest or in uniform motion in a straight line unless compelled to change its state by the action of an external force. This totally clears away the confusion and gives us the clear basis for all energetic interactions.

By co-inventing the mathematical area of calculus, Newton also provided the theoretical basis for scientific analysis of all continuously varying interactive processes. This opened up a new predictive perspective, in which, if we know the initial conditions and the laws of motion, the future states of a classical system become deterministic and in principle, predictable. This becomes the basis of the classical Newtonian universe, of
which Laplace in 1814 noted that an intellect knowing the defining parameters in sufficient detail could predict the future state of the entire universe. This approach to physical, rather than moral, causality, has become the basis of all classical science, from physics, through to molecular biology.

Because science is founded on careful analysis and comparison of natural phenomena in the physical world, where we can agree on the results of an experiment and determine the credibility of a hypothesis, it is dealing with objective phenomena that others can replicate and confirm. Science is thus objective in its basis. But it is misguided to accuse science of being materialistic, by comparison with religious beliefs. Science is a method for gaining accurate knowledge of the material world, not political, or religious propaganda. Newton, for one, was a highly religious person who subscribed to the Arian heresy and spent long nights trying to predict the likely time of the second coming.

We are dependent for our survival on accurate investigation of the natural and physical worlds and they are the material world in which we exist. We have to understand the forces at work and the risks and benefits they bring, particularly in a technological age, where our impacts on the planet have become profound enough to create significant risks to our own survival, by misadventure through war, accident, or our sheer impacts on the environment and biosphere.

When we can deal with a physical process in these terms, science becomes an incredibly powerful tool. For example, molecular biology has been able to decode, in immense detail, how biological organisms work. With the discovery of DNA and the capacity to sequence whole genomes, this has reached levels we could barely have imagined, laying bare the evolutionary relationships of all the branches of the evolutionary tree of life. Likewise the capacity to fashion microcircuits on silicon chips has led to the explosion of computing technology, the internet and world-wide web. This is possible because these areas, at least to a reasonable approximation, behave like classical mechanisms.

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

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

Neuroscience has begun to try to explore this problem in the form of "consciousness research". It isn't so hard to perform careful brain scans of people and to learn what kinds of brain activity correspond to different forms of conscious awareness, leading to ideas, such as oscillations in certain key frequencies corresponding to the information processing accompanying conscious experience and thought and the involvement of whole brain states in the process. But a brain state is not a conscious experience.

Digital computers also perform complex calculations, and machine learning artificial intelligence algorithms now outperform humans at games of strategy, from chess to go, but the idea that a computer process will become consciously aware just by virtue of its mechanical complexity, is the stuff of science fiction. However it does lead towards a materialistic point of view held by some people that we are nothing more than chemical machines governed by our genes, although modified by our environment, who do not possess free-will, but perhaps can make learned moral decision in the social interest.

The philosopher David Chalmers calls problems like mapping active conscious brain states or defining oscillations corresponding to conscious thoughts the easy problem, while the so called "hard problem in consciousness research" remains – how to compare a purely subjective conscious experience with a purely
objective brain state and thus make a meaningful step in understanding exactly what consciousness is and how it comes about.

But the era of classical deterministic science strictly came to an end with the advent of quantum physics a century ago, despite its assumptions lingering on in many fields from molecular biology and genetics to artificial intelligence.

(a) Two-slit interference showing individual trajectories (left) are uncertain, but a statistical distribution over many particles (centre) begins to conform to the summed wave amplitudes (right). (b) In the Schrödinger cat paradox, the quantum reality says the cat is both alive and dead. (c) The delayed choice experiment appears to retrospectively alter the path the photon previously took depending on whether we sample interference or detect individual particles. (d) Quantum entanglement experiment samples photon pairs. When the two photons are sampled at differing angles, the correlations between their polarizations (blue) violate limits on classical information transfer at the speed of light (red). If you detect the polarization with respect to a given orientation, the other photon immediately has complementary polarization. If we design a further experiment to rapidly oscillate the choices faster than light can cross the apparatus, the effect remains. (e) Quantum field theories discovered by Richard Feynman (inset) successfully describe fields, such as electromagnetism, by the exchange of every possible network of virtual wave-particles. Einstein (inset), who discovered both the quantum law $E=nh$ and relativity, found the idea of entanglement ‘spooky’.

Enter Spooky Quantum Reality

To appreciate how the scientific revolution to quantum reality came about, we turn to Einstein and the photoelectric effect. When you shine light on the negative plate in a vacuum chamber, thus kicking off a negatively-charged electron, and vary the voltage required to stop a resulting current flow between the negative and positive plates, you find the more light, the more current, but the voltage turns out to depend only on the frequency of the light, as in red lower frequency longer wavelength and blue higher frequency shorter wavelength. This means that light, rather than being a continuous wave, consists of a bunch of discrete corpuscles – particles, just like electrons are – whose energy is proportional to their frequency, by Einstein’s law $E=nh$. So both light and matter quanta come with both wave and particle properties, depending on how we are measuring them and their energy is defined precisely by the frequency of their wave. Conversely electrons, which we think of as particles, also have a wavelength and frequency and can also behave as waves.

This means that quanta can’t be tied down in a precise predictable deterministic way. If you try to determine the exact time and energy of a photon together, you find it is impossible. To estimate the energy, e.g. by wave beats against another quantum, you would effectively have to count some wave peaks to determine the frequency, but that takes a certain amount of time to do to a given accuracy. This is the quantum uncertainty of energy and time $\Delta E \Delta t > h/2\pi$. And within the time-energy window of uncertainty, anything can happen and does. Particles and anti-particles can and do appear out of the vacuum, as long as they disappear again within the time limits defined by their energy. These ‘virtual’ particles are the basis of the electromagnetic and other force fields, including gravity, that power all manner of phenomena, from electric motors, through radio waves to chemistry.
Each fundamental unit is both a particle and a wave, but it can manifest only as one, or the other, in a given situation. For example, a photon in a light bulb is emitted discretely as a particle from an individual atom, then travels through space as a wave, until it is absorbed as a particle again. You can see both properties if you pass it through a set of two slits, when it travels through both slits as a wave, setting up patterns of the wave interference bands on the other side as they are absorbed as particles on the photographic plate. This shows another feature of quantum reality, which is that the particle could appear anywhere the wave function reaches, with a probability defined by the wave amplitude, which means that where it will end up is unpredictable and determinism fails.

This leads to another paradox of quantum predictability in the form of the Schrödinger cat paradox. The quantum description says that when an event with two possible outcomes occurs, both outcomes exist as probabilities determined by the intervening wave function, which coexist within it. But our conscious experience of these situations is that one outcome occurs and the other does not. If we put a cat in a box to be poisoned with cyanide from a smashed flask if a Geiger counter registers a scintillation, when we open the box, we find the cat is either alive or dead but not both, but quantum mechanics says it is alive and dead in a superposition of outcomes. Quantum computing attempts to use this superposition of outcomes to process all the possible states in parallel thus solving intractable problems, such as decoding encrypted messages in real time, just as a conscious organism does, dealing with open environment problems to escape a predator in real time.

The cat paradox has led to a continuing debate whether consciousness plays a critical role in “collapsing” the wave function into one of its possible discrete outcomes, just as the particle appears randomly out of the wave function’s amplitude. While some physicists claim hidden variables may determine where the particle is, or that decoherence with other quantum interactions reduces the quantum description to the classical, the complementary wave-particle description appears to be fundamental to nature. For example quantum electrodynamics, which describes electromagnetic fields as an exchange of virtual particles appearing and disappearing within the energy-time constraints of uncertainty, is the most accurate physical theory ever devised, correctly predicting the magnetic moment of the electron to six decimal places, but the theory still implicitly uses the wave aspect in the propagator defining particle transmission.

In addition, we come to the phenomenon of quantum entanglement, demurred against by Einstein as “spooky action at a distance”. If we have two particles in the same wave function, in the same way laser light consists of many coherent photons in a single wave function, they become “in synch” in a way that means that each seems to instantaneously detect any changes in the other. We are told by relativity that no information can be conveyed faster than the speed of light, but the wave function appears to be able to keep track of the particles it contains even over intervals where light has no time to cross. For example, we can produce two photons of complementary polarization and send them far apart. We don’t know the polarization of either, but if we measure one of them, the other is found to be complementary, even when information had no time to pass at the speed of light between them.

This doesn’t mean we can use entanglement to send classical information faster than the speed of light because, once one of the particles is measured, their entanglement is destroyed, but it does mean that quantum properties such as entanglement may enter into all sorts of situations which we would have thought they wouldn’t. Many processes in the world at large may be entangled in subtle ways we don’t fully appreciate because all phenomena ultimately emerged from the wave function of the nascent universe.

Many biological processes involve quantum phenomena. Protein folding into the active three-dimensional shape is a result of quantum computation among its molecular wave orbitals. Enzymes catalyze reactions partly by quantum tunneling, to bridge the energy gap between the reactants and products. Photosynthesis is a form of spatial quantum computing which enables the energy to travel the most efficient route from the photo-absorption center to the chemical reaction site.

Such processes may also underlie how the conscious brain integrates its point of view in real time. The brain appears to use the same principles of phase coherence that we see in the quantum world to distinguish meaningful signals from the ground-swell of noise and unconscious pre-processing and this may be more than a mere analogy. Thus signals that rise and fall together are selected out of the randomly oscillating milieu to be focused on by attention and consciously perceived.
This gives us one key to how the brain generates consciousness. There is no particular centre in the brain responsible for consciousness, but rather it is a global manifestation of the most coherent wave excitations of the whole brain, focused by attention into the stream of consciousness we experience.

Finally, the quantum wave function also extends throughout space-time, so that it connects earlier and later points in a kind of future-past handshaking transaction. We can see this in experiments where we alter the way we detect particles at the end of their path and this appears to alter what they must have done beforehand. For example we can choose to detect a photon from the other side of the universe that traveled past a lensing galaxy, using either a interference film or a directional particle detector. Making the change determines whether the photon went around both sides of the galaxy or just one, long before we made the decision. This shows us that the future absorbing states of a particle are just as important as the past emitting states, and that all quantum phenomena in some sense detect their potential futures.

Left: (Above) The butterfly effect. Sensitive dependence on arbitrarily small changes such as the eddies of a butterlies wing can grow into a hurricane. (Below): Wavelet transform of the auditory cortex perceiving an out of tune note shows broad spectrum excitation between 25 and 60 Hz consistent with chaotic dynamics, rather than the precise resonant frequencies of an ordered dynamical system. Centre: Chaotic strange attractor model of olfactory perception with sample attractors. Inhalation results in high-energy chaos which makes a transition to enter either an existing attractor if the smell is recognized, or if not, to modify the energy landscape with learning to form a new attractor. Patterns are dynamically chaotic but spatially stored as ‘holographic’ representations across the olfactory cortex. Right: Evidence for amplification of excitation at the neuronal level amplified to whole neurosystems in a critically poised situation.

The Brain’s Ancient Butterfly-Hurricane

A second feature of brain dynamics arises from the fact that its processing appears to be closer to that of a dynamical system than the purely digital process that computer technology involves. Although neurons sending signals any distance, such as the pyramidal neurons connecting different parts of the brain use pulse-coded discrete ‘action-potential’ spikes, other neurons have continuously graded potential changes, and the overall excitations of the brain appear as broad-spectrum waveforms generated by dynamic feedback between excitatory and inhibitory neurons, resulting in continuous oscillations globally, as measured by an electroencephalogram.

The discovery of dynamical chaos in the mid-twentieth century led to the notion of sensitive dependence on initial conditions – the butterfly catastrophe – where the tiny eddies from the flapping of a butterfly’s wings could become amplified into a hurricane, if the underlying weather pattern displayed this chaotic sensitivity. This is why even medium term weather prediction can be impossible and it spelt another fundamental change of perspective in physics.

Above all, the brain has to be arbitrarily sensitive as a dynamical system to subtle changes in its external conditions to survive. Phases of brain excitation in perception and cognition appear to involve transitions in and out of chaos, enabling the brain to use sensitive dependence in its functioning. The chaotic phase avoids the dynamic getting stuck in a rut and shakes it loose to explore all the possibilities, while the transition out of chaos represents the ordered outcome. This raises the spectre that, when the brain is critically poised, arbitrarily small changes, e.g. at a neuronal, synaptic or even molecular level, can tip the balance during a critical decision, resulting in a change in the global brain dynamic and an immediate reaction from the subject, leading to a process linking quantum and global processes.

A central role of subjective consciousness is not computation per se, but being able to react very quickly in real time to subtle clues that our survival is about to be threatened – a tiger is about to pounce, or a snake is about to strike. The open environment problems of survival tend to be computationally intractable like the
travelling salesman problem, because they super-exponentiate in complexity, as the number of contributing factors increases. A living organism needs to be able to make real-time decisions almost at reflex speed and this seems to be precisely why the brain evolved this way. The central arena of conscious attention appears to be a global dynamical system maintained by the brain to ensure such sensitivity is maintained through ongoing attention. Critical here is the idea that consciousness is an anticipatory organ for threats to survival and strategic opportunities, which is maintaining an internal space-time model of the environment at large.

This type of activity is very ancient. Membrane excitability is a property of all live cells. Single celled amoeba-flagellates display all the features of excitability, based on ion channels, and possess the same receptor proteins and use the same neurotransmitters we find in our own brains, utilized in single celled species as cell-to-cell social signaling molecules. Chaotic cellular excitation constitutes a sense organ due to its sensitive dependence on external conditions. It is clear that the founding characteristics permitting edge of chaos excitation in the conscious brain arose first as a means of single celled organisms sensing and anticipating environmental changes around them. This both explains why the brain uses dynamic chaos in its processing and how it became a basis for the emergence of consciousness as an anticipatory sensory organ detecting threats to survival in multi-celled animals.

(a,b) Dreaming REM sleep shows a reduction in frontal activity and an increase in activity in visual areas. (c) The EEG of REM sleep unlike the other sleep stages is very similar to the awake EEG. (d) The default circuit shows depression during a task (above), but enhancement at rest (below). (e) Brain activity under LSD (below) is highly enhanced over that of a placebo (above). (f) Persistence homological scaffolds for placebo (above) and psilocybin (below), giving an intriguing portrait of the experiential richness of the psychedelic state. Meditation and contemplation also display changes, with a high degree of volitional control enhancing specific regions in Carmelite nuns experiencing oneness with God, suppression of the default network in Buddhist meditators during emptiness meditation, and enhancement of emotional areas during compassion meditation.

Exploring Exotic Mind-Brain States

If we are going to come to a full understanding of the nature of conscious existence, and solve the problem of complementing science's basis in objective phenomena with a complementary investigation of the subjective realm, we need to investigate the full repertoire of conscious mental states, including those that do not simply correspond to real world experiences.

The founders of major religions all laid claim to forms of visionary experience. Gautama Buddha was renowned for his deep meditation and the insights he received, Jesus made a reputation as a miracle worker whose mental states seemed to influence the world and Muhammad claimed to have visions of the angel Gabriel in a cave leading to many of his Quranic pronouncements. Likewise gurus, shamans and mystics throughout history have laid claim to extraordinary prescient or visionary powers. In a fundamental way, our religious notions of the universe are all derived from visionary imagination, although traditional religions tend to repress mystical insights, leaving the prophets lamenting in sack cloth and ashes, or killed for their convictions, for fear they will result in heresies that depart from the doctrinal party line.

We can summarize the dimensions of conscious experience in several outstanding conscious states, extending beyond our experiences of the real world. The first is the recently discovered activity of the “default circuit” which becomes active, as a preparation for future crises, as soon as we disengage from an active mental task, and is responsible for relaxed recollection, day-dreaming and worried repetitive thought. We
also have states of shamanic trance, meditation and religious contemplation as focused alert conscious states. Associated with sleep we have deep and dreaming sleep, as well as hypnagogic and OBE, or out-of-body experiences associated with semi-consciousness and sleep paralysis, and transient episodes of lucid dreaming on the cusp between sleep and wakefulness. There are also a variety of naturally or pharmacologically induced states, which result in profound changes to subjective consciousness, including the states induced by psychedelics, such as LSD and magic mushrooms, dissociative agents such as ketamine and salvinorin and deliriants, such as the scopolamine in datura. Finally we have states of psychosis and the NDEs, or near death experiences that many people claim to have during a medical crisis, or accident affecting consciousness.

In exploring these states we have two options. The first is the to study the brains of people in these various conscious states. The second is the first-hand route – that is for each of us to experience the mental state through engaging meditation, consuming psychedelics, recounting our dreaming experiences, or recounting those during an accident, or medical emergency. We will explore these as complementary approaches.

The "default circuit", so called because it was activated during experiments when the subject was inactive, has become famous as the signature of the resting brain state and involves a specific set of neuronal pathways that are deactivated when we have to attend to a task at hand, but become active as soon as our brain has nothing pressing to do, leading to our internal dialogue of past recollection and rehearsal for future situations. We can study this activity and know that it corresponds to those wild thoughts that fly around when we are worried and gradually descend into dream-like sequences as we go deeper into a relaxed trance.

Likewise there have been a number of studies performed on meditative and contemplative states, from transcendental meditation and formless and compassionate Buddhist meditation, through to religious contemplation of Carmelite nuns. States of meditation tend to show highly synchronous one-pointed focus of mind, in which the default circuit is held in check, and there is high coherence in the active EEG's gamma band associated with active mental states. Other states such as ‘speaking in tongues' tend to be more disordered.

We also know that sleep has two phases (a) of deep slow-wave sleep and (b) the REM, or rapid eye movement, phases that are associated with episodes of active dreaming. Paradoxically for a sleep state, the brain waves of REM sleep show up on an EEG, or electroencephalogram, as very similar to an active waking state. This is consistent with the mental activities of dreaming, which are complex and vivid experientially and appear to take place over the same time intervals as the dreamer perceives them. I have had many profound experiences of paradoxical realities in the dreaming condition, especially on the cusp of becoming lucid in the dreaming state, and through dreams whose content uncannily becomes manifest later and consider the dreamtime to be a key route to fathoming the conscious condition.

We also have a detailed knowledge of the neuronal circuits involved in the cycles of sleep and dreaming, from the flip-flop of orexin neurons to the ascending serotonin and nor-epinephrine pathways that rise from the brain stem and fan out across the entire cortex in specific layers, effectively enabling the entire dynamic mode of the brain to be activated and deactivated. We can further make whole brain scans of the activity of the dreaming brain and confirm that the perceptual areas of the brain are highly activated, while the frontal areas associated with decision-making are less active, again consistent with the lack of control dreamers tend to experience over the flight of changing perspectives in an active dream. The difficulty here is that dreams are very real experiences to the subject, which can be terrifying, or sublime, and which can have all the detailed sensory features of a waking state, albeit with testable differences if we can summon enough lateral awareness to make an actual test of our dream state. So the brain scan tells us absolutely nothing about how a brain state like dreaming appears to the subject as a complete experiential universe, or what the actual nature of this universe is.

What it does tell us is that waking experience is likewise an internal model of reality somehow constructed by active brain states and that these states can become generated without any actual sensory input from the objective physical world.

The same problem arises in studying the changes of consciousness induced by psychedelics such as psilocybin and LSD. Scientific studies of the effects of psychedelics have only recently been again undertaken after a period of almost total repression dating back to the 1970s when these agents were given
skeptical people will find laughable and pretentious. Claims abound for being clairvoyant and mediums whose accounts remain anecdotal and liable to extraordinary claims that cannot be objectively verified and which we do not trust our judgment and belief to religious or scientific assumptions about their potential significance. Way. Fully exploring this area requires each of us being able to make the conscious journey ourselves and then come back together to take notes of our experiences and the salient features along the way. Exclusively subjective realm, is for as many of us as possible to take each of these journeys in the first person, and then come back together to take notes of our experiences and the salient features along the way. Fully exploring this area requires each of us being able to make the conscious journey ourselves and not trust our judgment and belief to religious or scientific assumptions about their potential significance.

However this avenue is also fraught with pitfalls. Individual experiences vary a great deal and subjective accounts remain anecdotal and liable to extraordinary claims that cannot be objectively verified and which skeptical people will find laughable and pretentious. Claims abound for being clairvoyant and mediums who

The brain is a sappy organ that depends for its electrical activity on a vast array of diverse chemical neurotransmitters carrying modalities of information across the synapses between neurons. Some of these directly excite target neurons via ion channel receptors, but others modulate overall activity over longer periods via G-protein linked receptors. Psychedelics affect the 5HT2a serotonin receptor. Serotonin plays a role in mood, appetite and other functions, such as social hierarchy. SSRI antidepressants boost serotonin levels by reducing its reuptake via transporters. Ecstasy, or MDMA, acutely boosts serotonin by causing the transporters to dump excess back into the synapse. But neither of these result in the full fledged psychedelic state, which seems to result from super-agonists which bind to the 5HT2a receptor and also cause it to initiate a second chain of events involving an associated activating glutamate receptor, leading to an overall change in activity, with additional excitations spreading across the cortex, in a conscious representation of the brain processing itself, leading to kaleidoscopic visual patterns, mixed sensory synesthesia, and heightened internal perceptions of scenes, which can develop into complex visionary experiences. Like dreaming studies, brain scans of subjects under psychedelics show differences of activation, some increased and others diminished, consistent with heightened perception with somewhat diminished prefrontal control and in particular, greater interactive connections between diverse regions.

I have travelled to the sources of the world’s natural psychedelic sacraments and partaken sacred mushrooms, peyote and the Amazonian potion yage, or ayahuasca, with traditional practitioners. I have also explored a variety of synthetic agents, spanning LSD, Ketamine, salvinorin, cannabinoids and MDMA. I class the natural psychedelic sacraments, particularly sacred mushrooms, as key to the first person exploration of the mystical condition, and a sine qua non, far more trustworthy than the second and third-hand accounts of religious founders and others claiming the authority of higher consciousness. I have had all manner of peak experiences of meditative samadhi on entheogenic vigils and have navigated my life in terms of their insights. They continue to be classed as the safest of recreational psychotropic agents, despite their profound affects on consciousness. I see them as key to a democratic exploration of the foundations of conscious experience, shrouded in mystification by religious traditions. It is an ironic tragedy of 20th century Western culture that, right in the middle of the scientific revolution, when we came upon natural sacraments inducing the very conscious states that lie at the centre of the cyclone of the whole question of what consciousness is in the scientific era, that despite a record of sacred use for millennia, these agents have been condemned to a draconian criminal taboo, more reflective of the dark days of the Catholic Inquisition and the witch hunts than a so-called age of enlightenment.

Studies have also been undertaken on their effects on mature subjects who are not drug takers, resulting in experiences judged by the subjects to have genuine spiritual significance, of lasting benefit in follow-up studies up to two years later. Patients in terminal illnesses also report improvements in their state of mind and better reconciliation with their mortal condition, indicating these experiences are of fundamental value in coming to terms with the very existential questions of life meaning, religions seek to resolve. Psychedelic sacraments have been used ceremonially in this way for thousands of years by every human culture that has stumbled upon them. They are central to shamanic practices and clearly constitute a first-person route to forms of mystical experience that remain to be investigated.

We can likewise explore more extreme states, such as near death experience both anecdotally and through animal studies, which show for example that brain activity with accentuated gamma power and coherence that could be associated with the near death experiences of a heart attack, could be experimentally detected in the brains of rats up to half a minute after induced cardiac arrest.

Scientific investigation can thus tell us a lot about the very subjective conscious states we associate with heightened consciousness, and with the mystical and visionary states we might associate with transcendental experiences. But the only way to make any sort of evidential discovery of what is an exclusively subjective realm, is for as many of us as possible to take each of these journeys in the first person, and then come back together to take notes of our experiences and the salient features along the way. Fully exploring this area requires each of us being able to make the conscious journey ourselves and not trust our judgment and belief to religious or scientific assumptions about their potential significance.

However this avenue is also fraught with pitfalls. Individual experiences vary a great deal and subjective accounts remain anecdotal and liable to extraordinary claims that cannot be objectively verified and which skeptical people will find laughable and pretentious. Claims abound for being clairvoyant and mediums who

Schedule 1 prohibited status after they became wildly popular and caused a revolution against the material norms of Western consumer culture. We are still thus only beginning to understand how they work.
have contact with the dead, claim powers of telepathy, or telekinesis, reaching into the paranormal. The only real affirmation we can trust is whether such a claim can be verified in our own subjective conscious experience. The criticism of such sporadic claims is that we pay selective attention to the odd confirming events while ignoring the vast majority of situations where nothing happened, biasing the statistics towards significance. Indeed, any such statistically repeated test may converge to chance, just as repeated quantum events converge to the probability interpretation.

However sometimes these events do get recorded. Having read a book on precognitive dreaming, I had a double nightmare that I was being stung, woke to tell my wife when she got up early and an hour later was stung wide awake after she had subsequently opened the bedroom window. A couple of months before the 9-11 catastrophe, I wrote a song and published the lyrics, including a number of prescient lines "can we fly so high we'll pass right to the other side and never fall in flames". Then I watched in horror as the events unfolded. I have had many sporadic precognitive experiences like this especially dreaming, but the key of making the subjective empirical quest is to fully accept only those accounts we can actually verify in our own personal experiences.

Western society has made huge advances in objective science, transforming our technological culture, but partly due to the taboo on research and alternative mental states, has made little headway on the exploration of the cosmology of subjective consciousness, leading to the schizophrenic culture of the religious-science divide. The Eastern tradition has always held this avenue to be absolutely central to discovering the cosmic self through the meditative tradition, whose central pillar is confirming first hand, through meditative insight, the nature of reality, rather than blind faith in religious doctrines and leaders.

Several studies have also shown that religious belief has an evolutionary basis, which complements the reinforcement of moral imperatives, enabling religious societies to become dominant, with religiosity having up to a 40% genetic component. The neuroscientist Ramachandran proposed the idea of the "God spot" a nexus of adjacent regions in the cortex linking extreme semantic significance with heightened emotional fulfillment. More recently, researchers have found that the brain is inherently sensitive to believing in a proposition if there are grounds for doing so, but when there is a mystery about something, the same neural machinery is co-opted in the formulation of religious belief. This means that we can all in principle have genuine spiritual insights, rather than depending on third-hand religious doctrine, but it also means we need to be wary of believing anything unless we actually find some kind of real affirmation, either physically or experientially.

Right in the centre of this question is the internal cosmic self, or soul. The scientific description tells us that, while subjective consciousness is a complementary phenomenon, lying outside the framework of objective reality, it is generated in all of us by the same integrated, focused processing of the electrochemical brain. In this sense, it is a universal property of human and possibly all animal brains and has an underlying basis in the quantum physics of the universe itself. Thus when we descend into deep inner mental states, we are entering an archetypal world, in which it becomes possible to witness the unfettered nature of subjective consciousness untethered to our individual egotistical context. In this process we are entering the realm of the conscious soul, or cosmic self, that underlies the very process that makes consciousness possible in biological organisms. In this sense, when we let the boundaries go, we are potentially experiencing consciousness disembodied from outside the inside out, as universal consciousness, extant in the universe as a whole, not subdivided into our individual existential dilemmas. In a fundamental sense, this aspect of consciousness is an endlessly 'reincarnating' process, arising whenever a biological brain becomes resonant to the processes generating individual subjective consciousness, which has been occurring and will continue to occur, throughout the history of conscious beings, from alpha to omega in the universe at large. So the scientific perspective remains entirely consistent with the transcendent view.

But critical to this exploration is that, whatever conclusions we come to experientially, these need to be given constructive expression in the physical world to shape for the better, the future of the world around us and the generations of life within it. It is not enough to simply slide into a deep meditative Samadhi, renounce worldly desires and retreat from our involvement with the living process that gave us life in the first place. We need to give back to the ongoing passage of life our insights and commitment to safeguarding the conscious life process as a whole.
Solving the Consciousness - Free-Will Paradox

Virtually all sane people act with an implicit belief that our conscious experiences and decision-making can and do have objective consequences in the physical world. This is central to our sense of autonomy as individuals, and to the accountability of the legal and criminal process. Of course, we also know that genetic and environmental factors, from incarceration to ill health, can limit our ability to make choices. But very few people seriously believe that we are simply chemical automations of our brain function, thus believing that our subjective consciousness is conveniently deceiving us because in fact our decisions are simply a product of our genetics, our brain state and a set of circumstances leading up to the decision we pretend we are consciously making. A number of scientifically educated people nevertheless take this position, based on a Newtonian view of the universe as a deterministic mechanism.

Free-will is a harder proposition to prove than subjective consciousness, which we know we possess from second to second as the portal through which we perceive the world. But the evolutionary emergence of consciousness would never have occurred unless it had a strong adaptive advantage. Our conscious brain is very costly on our energy supply coopting around 40% of our glucose metabolism, so if a purely computational brain without consciousness could do the job just as well the conscious brain would have never have evolved, or would have simply been discarded.

We have already seen the way dynamical chaos can amplify arbitrarily small differences due to the butterfly effect, and the fact that critical decision-making tends to correspond to a transition out of a chaotic dynamic representing the configuration space of the problem entering leading to the more ordered brain state representing a resolution. When this decision-making is critically poised, such a dynamical system also becomes capable of amplifying molecular perturbations driven by quantum uncertainty. Thus a chaotically dynamical brain opens a quantum loophole, in which brain dynamics can enter states, which are neither predictable, nor deterministic.

We know that quantum transactions are a form of handshaking between past and future, so this leaves open the possibility of the quantum aspect being critical to a form of space time anticipation complementary to computational deduction. Organisms also face a chain of such uncertainty points whose circumstances lead to new outcomes in a way that would never converge to the quantum probability interpretation, so our decision-making lives become a chain reaction of uncertainties never to be exactly repeated. Moreover many of these take the form of implicit cat paradoxes, because chaotic instability and quantum uncertainty acting together form the source of many of the accidental crises that plague our decision-making on the fly, so there is a sense in which free-will is also playing a role of determining the course of history, by collapsing the wave superposition of the shadowy quantum probability outcomes.

This is not to claim that genetic, environmental and other circumstances and logical reasoning do not play a critical part in many of our decisions, but it does affirm the principle that when we believe, we are making a critically-poised uncertain decision, it is possible and likely that the brain state reflects precisely this.

Various neuroscience experiments have attempted to disprove this, by establishing a ‘readiness potential’ that might indicate that the brain had already made a watershed decision before we became consciously aware of making a subjective choice, but further studies have shown that these kind of studies are either simply sampling a readiness to act but not which action, or they are only giving a marginal probability weighting. The actual situation appears to involve a brain activation that becomes unstable and fluctuates in a way that reflects the transitions in and out of chaos already described.

Facing Life in the Physical Cosmos

This brings us full circle back to life in the natural world we have discovered through science. The physical universe presents us with a far more exciting and intriguing challenge that the quaint creation stories of the Bible and San Bushmen. If taken without the inclusion of consciousness and in a Newtonian paradigm, this can appear to have become an unremitting nightmare, as starkly expressed by Bertrand Russell in the early 20th century:

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 …

But once we put consciousness and free-will back into the equation and take into account quantum reality and the relativistic view of space-time, and with it the manifold discoveries we have also made about life in the universe and the natural and evolutionary process, the scientific cosmology becomes a far more exciting participatory story than any of the religious creation myths and one in which we have a critical role to play and an ethical responsibility to do right by the opportunity we have been given as incarnate living beings.

We know the universe is vastly older than religious conceptions and contains forces and phenomena completely outside the preconceived notions of religious creation. We now have very good theories describing both how the universe came into being on a cosmological footing and how the forces of nature, gravity, electromagnetism, the weak radioactive force and the strong, or colour force binding atomic nuclei together all fit into a mandala-like mathematical broken symmetry. Although there are still some missing pieces in this description, as the energy tends to infinity and time tends to zero, the theories we do have are very successful and can very accurately describe phenomena to a very high accuracy in terms of wave-particle exchange and the principle of cosmic symmetry-breaking. Although new more general theories will no doubt be added to this over time, the existing theories hold good in their own domains. There is absolutely nothing in this description that gives any positive evidence for an ad hoc creation by a third-party intelligent being.

We also now know that our galaxy is littered with planetary systems and that these assume a great variety just as the planets in our solar system do, because many-particle gravity is a chaotic process that tends to fully explore its space of possible configurations. This means that planets pose a broad spectrum of environments, some of which will be in the Goldilocks zone for life as we know it. Moreover, the chemical elements produced by supernovae enter interactively into fractal chain reactions prone to increasing complexity, which result in the detection in comets and meteorites of organic molecules and components of living systems such as the amino acids making up proteins and the nucleosides making nucleic acids on which our genes depend. These have also been found being continuously generated in the ‘Lost City’ chemical garden vents under the sea, which have been active since Earth’s oceans first condensed.

Evidence of cellular life exists from only a few hundred million years after the liquid oceans condensed some 3.7 billion years ago. Since then we now have incontrovertible evidence of genetic evolution from decoding the genomes of diverse species and the remains of DNA in fossils, so evolution has become a fact of life, rather than a dubious theory contested by creationism and intelligent design. We know the diversity of life has risen slowly over the last 500 million years to climaxes of diversity, punctuated by mass extinctions caused by a combination of asteroid, supernova and volcanic effects and that just such a mass extinction of life is now occurring due to human impact of the habitats and climate of our biosphere.

Within this evolutionary process we have documented the rise of animals with complex brains, leading to the brains of vertebrates and mammals, with which we share an evolutionary origin. Because the brains of all
complex animals appear to work based on the same principles of chaotic excitation, it is reasonable to conclude that subjective consciousness has been evolving into higher integrated manifestations, since the first single-celled amoeba-flagellate ancestors of higher animals.

These developments are ultimately made possible by the fractal nature of molecular interaction to form supramolecular complexes, cell organelles and tissues as an interactive consequence of the primal diversification of the fundamental forces of nature. In this sense, life and the sentient brain is the most complete interactive product of all the four forces acting together in a hierarchy, making the biota, and with it, conscious life, the cosmological pinnacle of fundamental force interaction – the sigma on the cosmic equator mid-way through the universe’s lifetime, as significant as the alpha of its origin and the omega of its eventual demise.

We thus need to come to terms with the fact that life is a cosmological process in the physical universe and that we as inheritors of a 13 billion year history of the universe and a 4.5 billion year history of Earth need to learn to take responsibility for our cosmological place in the universe and act with responsibility to ensure the continuity of life on the planet and its diversity over evolutionary time.

We need to realize this is not just a passive process of preserving life for future generations to solve the ultimate problems, but a participatory process of the cumulative generations of life reaching towards greater wisdom and enlightenment. This is not the end of the road, provided we act decisively to make the planet safe and resilient over evolutionary time. If we are intelligent in our reproductive choices, humanity will continue to evolve and reach new peaks of insight and understanding, but we already know we have been gifted with a paradisiacal world and have already reached a point of inscrutable knowledge sufficient to justify using our wisdom to preserve the generations of life as our primary calling.

Natural life is a paradise of tooth and claw because the evolutionary diversity of life fans out to fill all the niches, including plants animals and fungi, predators and prey, parasites and hosts, amid the vagaries of fate living in the physical universe.

A Paradise of Tooth and Claw

The Earth is a paradise more verdant and abundant by far than the mythical Garden of Eden, that has facilitated the evolution of intelligent life and enabled humans to enjoy a lifespan throughout our emergence of up to 45 years in which the gatherer-hunter lifestyle provided sufficient food for the people to live without serious stress or hunger, based on only a few hours of gathering or hunting a day, with plenty of time for social recreation and enjoyment. The diet was diverse and epidemic diseases, infrequent due to the low overall population density.

But a real paradise contains within it natural perils that are inevitable in any real world context of biological organisms living in the vagaries of an entropic universe full of accident and misfortune and in which there are predators and parasites and genetic and malignant diseases, as an inevitable statistical consequence of the very processes by which life’s complexity must needs arise.
We are also mortal sexual individuals and again this is an inevitable consequence of the fact that sexual recombination has been a pivotal process in enabling the elaborate genetic regulation of complex organisms to evolve. Sexual mortality is not a punishment by God for the deceit of the first woman, but an inescapable part of the cosmological transaction. Neither is our current lifespan of a little over 70 years a consequence of grasping selfishness as the Buddhist doctrines would have us believe, and could extend significantly by enlightened medical and scientific discovery.

We thus have to have a sanguine attitude to the biological reality of paradise. We know there is natural injustice and that all people are not born with equal endowments and opportunities. This does not mean the natural world is tragically flawed, because this is the only way we can come to witness this extraordinary universe as sentient beings. Indeed, although individual organisms are mortal, the generations of life are immortal, so long as the Earth remains hospitable to life as a whole.

Our primary objective is to protect the biosphere for the future generations of life, not to enrich and indulge ourselves at others expense. This requires a compensating attitude of social justice to generate a compassionate society in which individual misfortune is alleviated as best we can achieve. This in turn creates a climate of togetherness in which life gains true meaning for us all.

We urgently need to restore the habitats of other living creatures, and correct the runaway climate change and set half the Earth aside for the preservation of life as a whole. At the same time, in closing the circle of coexistence, we need to eradicate military confrontation and remove all the weapons of mass destruction that overshadow our viability as a species. Missiles have one legitimate role and that is avoiding an asteroid impact that could wipe us out. Once we have mastered a global society that can protect the evolutionary future of life on Earth, we can then turn our eyes to the wider universe beyond our solar system and the ultimate discoveries of the nature of consciousness and the universe as a whole.

The cosmic background radiation (a) confirms the universe had a sudden hot expansionary beginning some 13 billion years ago. Whether it expands forever or rebounds in a big crunch (b), life in the universe is a paradise on the cosmic equator in eternal space-time, the cumulative Sigma of the natural forces of nature, between alpha and Omega.

The Relativistic Reality

So what of the question the Bertrand Russell posed about the ultimate fate of the universe? Is there any point to life if the solar system will eventually be wiped out and much later, all life in the universe extinguished in the big crunch, big rip, or heat death as the universe flies apart?

The answer to this is twofold. Life is an abundant lunch on the grass, which has incarnated us all as a freebie. Even if the solar system expires, or we destroy ourselves in a holocaust, the processes that generated life on Earth are capable of spawning life widely across the universe. As to the ultimate annihilation, we can find the answer hidden in the space-time view of relativity. From one point of view our existence is temporal. Time elapses. Today I am writing. Tomorrow, or further down the track I fear death and decay, and my early life of youthful vigor is now just a long fading memory. We thus all strive to take the next breath and ultimately this is the source of the malaise the Buddhists describe of the grasping ego.
But there is another perspective, and that is the cumulative process of life as a whole. We have described life in the universe as paradise on the cosmic equator in space-time. But the beginning and end of the universe may be more like the latitude and longitude lines coming together at the north and south poles, where space and time come together and time stands still. In this sense the whole envelope of space-time exists in the eternal extent of this space-time envelope. When we begin to invest in the passage of the generations rather than our own mortal desires, as well as investing in the immortality of life, we are investing in this eternal space-time view. Our cultural record of creative expression and our cumulative discoveries and insights transmitted from generation to generation also attest to this perspective.

From this point of view, consciousness is a complementary cosmological principle to the entire physical universe and in it, the universe as a whole comes to know and understand itself in space-time. The only way it can do this is to pull itself up by its bootstraps, interactively generating the molecules of life in the great gas clouds around newly forming solar systems, leading to biogenesis and eventually the emergence of conscious organisms who, given a modicum of wisdom, come to successful enough terms of engagement with their existential condition to safeguard the planetary habitats in which they exist. Like the presence of diseases and accidents in the natural world, this is the only way such a superlative cosmological happening can come about. Written into this equation are laws of nature, which break symmetry from the primal singularity, which we call the “big bang”, and proceed to an ultimate fate destined by these same laws. So the universe can have its conscious cake but has to ultimately eat it too, because consciousness is inevitably a transient ongoing property of complex organisms on the cosmic equator in space-time, albeit reincarnated endlessly in the universe so long as life lasts. The way the universe becomes transcendent is through the transcendent consciousness of the biota, during the paradisiacal epoch of life on the cosmic equator. That's the curse and this is the cosmic blessing that makes and has made this all possible.

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