Physicalism and the Soul

Douglas M. Stokes

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Summary

Physicalism, the doctrine that the world consists of particles of matter-energy obeying the laws of physics (or some suitable modifications thereof) has become the ascendant metaphysical *weltanschauung* of modern Western science. Most people take it for granted that there is no room in this worldview for the notions of souls, gods or afterlives Rather the universe consists of material particles careening around in blind obedience to the laws of physics.

This article explores the nature of souls, afterlives, and possible gods that would be compatible with modern physicalistic science. It is argued that the world consists of a nested hierarchy of centers of pure consciousness that likely predate the material universe as we know it and likely to survive the death of the assemblages of material particles that we call our bodies.

This article does not provide a comprehensive review of traditional religious teachings on these subjects. Rather it explores conceptions of the soul, the afterlife and possible deities that would be compatible with modern mainstream science and philosophy. The model to be developed does not rely on the existence of paranormal phenomena , such as messages from the departed received through mediums, the recollection of past lives, out-of-body experiences, apparitions and ghosts, electronic voice phenomena and so forth, although these topics are discussed where appropriate.

Neuroscientists have amassed a mountain of experimental evidence demonstrating the intimate dependence of mental states on brain activity. Much of this evidence is presented in the compendium *The Myth of An Afterlife,* edited by Martin and Augustine (2015). In view of this evidence, it is unlikely that personality traits or memories survive the death and dissolution of the brain.

Resurgence of the Soul

There appears to be a renewed interest in the soul "concept" in mainstream philosophy and science, as witnessed by the many recent books bearing the word "soul" as parts of their titles, such as Baker and Goetz's *The Soul Hypothesis* (Baker and Goetz, 2011; Goetz and Taliaferro's *A Brief History of the Soul* (Goetz and Taliaferro, 2011), and Humphrey's, *Soul Dust: The Magic of Consciousness* (Humphrey, 2011). Modern scientists and philosophers appear to be finally abandoning the untenable position of radical, eliminative materialism like proverbial rats leaving a sinking ship. This trend is further exemplified in the recent anthologies *The Waning of Materialism* (Koons and Bealer, 2010), *After Physicalism* (Göcke, 2012), and *Beyond Physicalism* (Kelly, Crabtree, and Marshall, 2015). At the same time, the mountain of evidence amassed by neuroscientists over the past few decades demonstrates the fundamental and intricate dependence of memories and personality traits on the state of the physical brain. See the recent anthology *The Myth of an Afterlife*[1] for a detailed review of these findings. In view of this evidence, it seems unlikely that the mind would be able to survive death with its memories and personality intact, as in the depictions of the afterlife in many religious traditions as well as in parapsychological investigations of mediums, ostensible cases of reincarnation, electronic voice phenomena etc. It is more plausible that the mind survives death as a center of pure consciousness.

There is increasing evidence that the mind or consciousness does not play a subordinate role to physical matter in the universe. The well-verified theory of quantum mechanics suggests that observation by a conscious mind may be required in order for quantum-mechanical processes to take on definite outcomes. Some empirical evidence and several philosophical arguments suggest that conscious states have a direct influence on physical matter.

Modern Physicalism

Consciousness Denial. For over a century, the mainstream philosophical and scientific position has been that the only true reality is that of the material world as described by modern scientific theories. This view of the world appears to allow no room for consciousness, souls, or spirits to influence the behavior of matter, including human bodies, which are merely collections of material particles whose behavior is completely governed by the laws of physics. In the words of the philosopher Gilbert Ryle (1949), there is simply no place for a 'ghost in the machine.'

Subscribers to the materialist view of the mind have gone so far as to deny the very existence of consciousness itself. In the first half of the twentieth century, the entire field of experimental psychology was held in thrall to the doctrine of behaviorism as articulated by John Watson and B. F. Skinner, which in its extreme forms denied the existence of mental events altogether (see Watson, 1924/1970 and Skinner, 1953).

Skinner and Watson, incidentally, are by no means the last modern thinkers to deny the very existence of private conscious experience, or "qualia" in the terminology of philosophers. The prominent materialist philosopher Daniel Dennett has asserted that 'contrary to what seems obvious at first blush, there simply are no qualia at all' (Dennett, 1988, p. 74).

Some modern philosophers and scientists, such as Daniel Dennett (1991), Susan Blackmore (2002), and Thomas Metzinger (2009) deny the very existence of a continuing self, or "Cartesian theater," to use Dennett's derogatory term. This point of view is called eliminative materialism.

Modern Panpsychism. Perhaps contra Ryle, the ghost may in fact be the machine or part of the machine. There appears to be a growing acceptance of the doctrine of panpsychism among philosophers and scientists, which posits that all matter and energy possesses consciousness or awareness. One recent example of such a convert is the prominent neuroscientist Christof Koch (2012). Koch is well known for the reductionist (materialist) theories of consciousness he developed in concert with the Nobelist Francis Crick, co-discoverer of the structure of DNA (see Crick and Koch, 1990, for instance).

The increasing popular philosophical doctrine of panpsychism finesses the problem of how consciousness could arise from insensate matter, a vexing question to which modern science can provide no answer. Under the panpsychist view, consciousness did not arise or evolve from matter. It was there right from the start. It is in each material particle of Ryle's machine.

Under the panpsychist view, each proton or electron in your body possesses some form of awareness. In fact, under the well-established theory of quantum mechanics, these particles are each entangled with a large number of particles spread out over a wide region of space, and their behavior is governed by a complex wave function that takes these entanglements into account. In other words, these particles respond to (and thus may be said to be aware of) other events occurring over a relatively wide region of spacetime. Many of these particles, such as protons, are essentially immortal.

We experience our selves as simple, indivisible centers of consciousness. Could you in fact be something like a proton? If so, it is likely that you entered your body well after your birth, as the material particles in our bodies are continually being recycled, and it is estimated that they are almost completely replaced after seven years or so. Some estimates suggest that the matter in one's brain is completely replaced in one month or so (Plantinga, 2012). The fact that you remember events that occurred more than seven years ago may be due to the fact that these memories are stored in patterns of brain activity and neural connections that serve as "notebook" reminders of events in the remote past.

Thus, if you are, say, a proton or something like a proton, it is likely that you will exit from your body long before its death. In this case, the afterlife would be whatever system of material particles you become "stuck in" after you escape your present body, whether it be an animal, a plant, or part of a circling cloud in the atmosphere of Saturn's moon Titan.

The Death of Determinism. The Newtonian clockwork universe that still underpins the world view of the majority of today's reductive materialists was actually overthrown a century ago with the development of quantum mechanics. In quantum mechanics, the future state of the universe is not completely determined by the present state. Rather, the present state may give rise to many possible futures with macroscopic differences among them, such as the fate of Schrodinger' hapless cat, whose life or death depends on a single quantum event. Under this widely-accepted and highly-verified model, a nonmaterial mind might conceivably be able to select which of these possible futures will actually occur. Thus, there may indeed be some room for a ghost in Ryle's machine.

Gods, Afterlives and Souls. Various concepts of the afterlife will be examined. A mountain of evidence amassed by neuroscientists over the past few decades demonstrates the fundamental dependence of memories and personality traits on the state of the physical brain. Some modern panpsychists (e.g., Edwards, 2005, 2006) assert that elements as small as a single neuron or a single elementary particle may house centers of consciousness that are entangled with (aware of) wide regions of brain activity as well as external events.

There may be a hierarchy of such centers of consciousness, each contained within the next (e.g., an electron, an atom, a molecule, an organelle, a cell, an organ, an organism, a country, and beyond). Such entities were called "holons" by Arthur Koestler (1967, 1978). Several scientists (e,g., Hölldobler and Wilson 2008), have proposed the existence of collective minds or consciousnesses, such as that of an ant colony or that of the Internet combined with all its users. Research with split-brain, cortically-blind and hypnotized subjects suggests that each human body may be associated with multiple centers of consciousness. Many of these centers likely fall under the delusion that they are the sole center of consciousness "in charge" of the body.

Evidence for the "anthropic principle" in cosmology suggests that conscious agents or "creative intelligences" may even have played a role in designing the fundamental laws and initial conditions of the universe to enable the evolution of consciousness beings. Thus, the Hindu doctrine of Atman-Brahman (person-God) identity and the view of process theologians that God is immanent in the universe and that human consciousnesses may be aspects of a greater divine mind, receive some support from the evidence for the anthropic principle

Past-Life Memories. Due to its intimate dependence on brain activity, one's personality is unlikely to survive the death of one's body in anything approaching an intact state.

The strongest evidence for the persistence of personality fragments after death is provided by cases in which children spontaneously report memories of previous lives. Over three thousand such cases have been compiled by the psychiatrist Ian Stevenson, his coworkers, and his intellectual descendants (see Tucker, 2007a, 2007b for a recent review.). These cases comprise the strongest body of evidence for the survival of death of at least some personality elements. In many of these cases, in addition to reporting a large number of memories of previous lives, the children may also manifest some of the skills and emotions of the putative previous personality. The child may also bear birthmarks related to the injuries received in the claimed previous incarnation.

However, mainstream scientists and many of the reincarnation researchers themselves have noted that this evidence may be explicable on the basis of false memory syndrome

combined with information gleaned through normal channels., such as newspaper reports and gossip.

Pure Consciousness. Stokes (2014) notes that the self that (seems to) persist over long time periods (from birth to death in the popular, most common view) is not the conglomeration of one's thoughts, feelings, memories, and sensations themselves, which is constantly changing, but rather the field of pure consciousness within which these qualia act out their drama. In other words, we are vessels of consciousness rather than the contents of those vessels, the movie screens rather than the movies.

The Evanescence of the Person. Stokes asserts the reason that we think that we ride our present brains from birth to death is likely that we have fallen under the powerful illusion that we are the Person Much like an oxygen atom temporarily trapped in one's body, we may have jumped on board well after birth and may depart well before death.

Our core selves, if conceived as centers of pure consciousness, appear intuitively to be unitary and not divisible into components. We might even enjoy the same ontological privileges accorded to fundamental physical particles, including conservation over time. Perhaps we are even identical with particles or fields already known to physics (much like a proton responding to a complex quantum-mechanical field connecting it to the rest of the universe may be said to be in some sense aware of that universe). On the other hand we may be a fundamental entity yet to be identified by modern science. In either event, our association with any given brain or other physical system is likely to be more ephemeral than we think. The illusion that one has continuously inhabited one's current brain for decades likely arises from the memories stored in its connectome (patterns of neuron connections) combined with your cognitive construction of the social entity known here as the Person.

The illusion of being the Person, the conjunction of our physical bodies and personality traits such as memories and desires, likely arises in part from this false identification with the physical body and its needs, which may serve our biological imperatives but perhaps not our spiritual needs.

Stokes[2] observes that our universe is one of conservation, of mass-energy, baryon number, and angular momentum to name but a few such conserved elements. It is a universe of rearrangement, not destruction. If, as centers of pure consciousness, we are granted at least some form of parity with such seemingly (to us) mindless and insignificant entities such as quarks and electrons, then it is likely that we, like they, are recycled from system to system, continually falling into the murky depths of one system of primitive awareness after another, but perhaps from time to time becoming united in a "supersystem," compared to which our present human consciousness will appear like that of an amoeba.

If the materialists are correct in their view that we are nothing but matter and energy and if our intuition is correct that we are unitary, much more like a quark or an electron than like a temporary conglomeration of atoms, then the pro-survivalist may rejoice. The universe conserves mass-energy, recycling it from one part of the cosmic show to another. Stokes conjectures that uncountable beauties and terrors may await us as we are torn free of our human form and the illusion created by our stories of the self and our false identification with the Person.

Just as the collection of atoms and elementary particles making up one's physical body undergoes continual change and replacement, so do one's thoughts, emotions, memories and personality traits. One's essential self persists, despite these continual changes in the contents of your consciousness as well as in your brain (and, we might add, in your subconscious and unconscious minds as well). Thus, you cannot be your personality or its "contents," such as your thoughts, emotions, and memories, which come and go while you persist.

Stokes asserts that, given the explosion of modern science's knowledge about the dependence of psychological states on brain activity, the most plausible candidates for souls that could survive the death of the physical body are centers of pure consciousness. Modern science is not even close to explaining the existence of such centers. This has led some materialist philosophers to deny the existence of consciousness altogether, surely an absurd conclusion.

Thus, consciousness may exist at many levels, from an electron, as is postulated by some modern-day panpsychists such as David Skrbina (2003, 2005), to a single neuron as proposed by Jonathan Edwards[3] to assemblies of neurons as proposed by Christof Koch (Crick and Koch, 2003; Koch, 1996, 2012; Koch and Crick , 1991), to the entire Internet combined with its users, and all the way up to the Universe and beyond as suggested by Teilhard de Chardin (2008).

Following Stokes[4], we will refer to souls at the microscopic level (e.g., elementary particles and neurons) as "microsouls," those at the macroscopic level (such as a brain or brain hemisphere) as "macrosouls" or more simply "souls," and to those at the supraorganismic level (such as an ant colony) as "megasouls."

Such centers of consciousness might be recycled in much the same way as oxygen molecules and atoms are. Indeed, Skrbina[5] suggests that such atomistic entities are associated with centers of consciousness. This would correspond to a form of reincarnation, likely without memory of the previous incarnation.

As Stokes notes , it is likely that such centers of consciousness would enter the body well after birth and will exit well before death. Thus, each incarnation may be a fleeting thing. Stokes recommends that you enjoy it while you can and make the most out of it (hopefully in a responsible way, as it might well turn out that you will be stuck in your brain for a quite a while). Also, follow the Golden Rule, for you may find yourself in the other's brain in no time.

It is thus an intricate conceptual web that we will explore in these pages. We will begin by developing a taxonomy of souls.

Conceptions of the Soul

This article explores the possibility that souls are real, and if so, what their nature is. It will not trace in minute detail the considerable evolution in the soul concept over the centuries in the world's major (and minor) religions. However, religious conceptions will be discussed from time to time, where relevant.

In some cases, the word "soul" may be used in nonstandard ways. As we will see below, the word "soul" may mean quite different things, depending on one's religious or philosophical stance. To avoid confusion, new terms will be introduced. Stokes[6] coined the term "thanatope," to denote that portion of one's self (if any) that survives the death of the physical body. Following Stokes, we will consider seven types of thanatope:

Thanatope #1: The Person (the union of one's personality traits such as memories, emotions and skills and current physical body),

Thanatope #2: The soul embedded in a dream body or astral body inhabiting a dream world and bearing many of the personality elements of the deceased person,

***Thanatope* #3:** One's personality or partial personality,

Thanatope #4: The soul as a center of pure consciousness,

Thanatope #5: The doctrine of no soul or self as promulgated by some Buddhists and some modern philosophers and scientists such as Daniel Dennett (1981, 1991), Susan Blackmore (2002), and Thomas Metzinger (2003, 2009),

Thanatope #6: The doctrine of multiple souls or selves, as found in ancient Egyptian mythology and Aristotelian philosophy and more recently proposed in the writings of modern neuroscientists such as Jonathan Edwards[7], and

Thanatope #7: The doctrine that one's self is part of a collective mind or consciousness, as promulgated by such disparate thinkers as C. G. Jung (1973, 1981), the Jesuit priest Pierre Teilhard de Chardin[8] (2008), and the renowned entomologists Bert Hölldobler and E. O. Wilson, with respect to ant colonies (Hölldobler and Wilson, 2008).

Stokes[9] uses the term "macrosouls" to denote spheres of consciousness associated with macroscopic objects such as a human brain, "microsouls" to denote spheres of consciousness (if any) associated with microscopic objects such as individual neurons or protons, and "megasouls" to denote spheres of consciousness (if any) associated with supraindividual objects such as ant colonies or the network consisting of the Internet conjoined with its human users, and "megasouls "to denoted spheres of consciousness associated with gods and Creative Intelligences, if such there be.

Stokes distinguishes four types of afterlife:

Afterlife #1: Physical, quasiphysical, or cybernetic resurrection,

Afterlife #2: A collective dream or astral plane,

Afterlife #3: Absorption into a collective mind, and

Afterlife #4: Reincarnation.

Thanatope #1: The Person. We will define the Person to be the conjunction of one's physical body, its mental states, and its center(s) of awareness. This corresponds with the usual use of the term (with eliminative materialists of course denying that there are mental states or centers of awareness, but being happy to grant the existence of at least the physical body).

The Person by definition cannot survive the death of the physical body. This does not mean that there is no afterlife for the Person, as several religious sects postulate the resurrection of the physical body (and its associated mental contents) at some future time, such as on the Day of Judgment as prophesized in the Abrahamic religious traditions (Judaism, Christianity, and Islam). This resurrection may take place in a "Resurrection World" that is distinct from the present physical universe

Several scientists, including Ray Kurzweil (2006) have argued that one could survive death through downloading all the elements of one's personality into a cybernetic replica or clone of one's physical body. This type of resurrection would take place in the present physical universe and might be consistent with physicalism. The resurrection of the Person is explored in much greater detail below.

Thanatope #2: The Dream Body. *I*f we do not survive death in some form of physical body, might we survive in some sort of dream world? The Dream Body is an image body fashioned after the one you wear in this present, physical life. You wear it in dreams. It is generally clothed and thus, at least in part, must be a mental construction. The Dream Body sometimes appears to the living in the form of apparitions (ghosts), sometimes as a character in one's dreams, and sometimes roams the physical world at the brink of death (in out-of-body experiences and near-death experiences) or by deliberate projection. T

Afterlife #2: A Collective Dream World. The afterlife available to **Thanatope #2** might be imagined to be a collectively-constructed dream (sometimes called the astral plane). This corresponds to **Afterlife #2** above.

Such dream-worlds include the realms of the gods in the mythological traditions (e.g., Olympus, Asgard, and the Dream Time of the Australian aborigines) and the various hells and heavens postulated in world's major religions, from the mythology of the ancient Greeks to the hells of popular Buddhism (even though more esoteric forms on Buddhism deny the existence of a continuing self or soul that might enter these hells, of which more later).

Many of the afterlives proposed in the world's religions would seem to correspond to dream-worlds (or at least to different universes than our own). Few people these days think that a physical heaven lies just above the cloud layer or that a physical hell resides beneath the earth. It may not contradict science to assert that the afterlife realms comprise dream-worlds or universes that are separate from our own, perhaps allowing for occasional leakage of information between the worlds. However, such leakage might contradict modern versions of physicalism. Also, the dreams with which we are most familiar appear to be generated through physical brain activity that would not be expected to continue beyond the veil of death.

Theories Regarding Astral Bodies and OBEs. Theories regarding astral bodies as vehicles of the soul date back to at least 5000 B.C., the time of the creation of portions of the Egyptian Book of the Dead (Mitchell, 1981). The ancient Egyptians postulated the existence of a *ka*, a form of astral body inhabited by the *ba*, or soul, after death. Likewise, the Tibetan Book of the Dead postulates the existence of a Bardo-body to house the soul after death. Some Mahayana Buddhists subscribe to the doctrine of *kayatraya*, postulating three bodies.

Metzinger[10] observes that the idea of an astral body is a widespread one. Sometimes it is conceptualized as "the breath of life," as in the Hebrew *ruach*, the Arabic *ruh*, the Latin *spiritus*, the Greek *pneuma*, and the Indian *prana* (although in many of these instances, the concept seems to be akin to an impersonal energy). Metzinger assimilates the subtle body to the Christian concept of resurrection body or glorified body (although these conceptions seem to relate to a physical or at least quasi-physical body). Metzinger further assimilates the concept of the subtle body to the "most sacred body" and "supracelestial body" of the Sufis, the "diamond body" in Taoism and Vajrayana Buddhism, and the "light body" or "rainbow body" in Tibetan Buddhism.

Even the present world may be a dream. The prominent Taoist philosopher Chang Tzu famously questioned whether he was a man who last night dreamt he was a butterfly or was today a butterfly now dreaming that he is a man. We have direct knowledge only of qualia. "Qualia" is a term coined by the philosopher Clarence Irving Lewis (1929) to denote mental elements such as sensations, thoughts, feelings, memories. We do not have direct knowledge of the physical world itself, or *Ding an sich* (thing-in-itself) as the philosopher Immanuel Kant called it. We construct and postulate the physical world based on regularities in the qualia presented to us. But they may be a dream.

For instance, you could be a brain in a bottle into which the qualia are being electronically fed (as in the *Matrix* movies). Indeed, such scientific and philosophical luminaries as George Berkeley and Isaac Newton have suggested that the physical world is itself essentially a dream had by a collective mind or God.

The noted Oxford philosopher Henry Habberley Price suggested that the afterlife might be some sort of dream-world and that we might inhabit such bodies as those we ride in the oneiric adventures we now call REM sleep (Price, 1939, 1940, 1948, 1953, 1959).

Frederic William Henry Myers (1903), a poet, classicist and one of the pioneers in the discovery of the unconscious mind, proposed the existence of a "metetherial world," which he conceived to be a world of images lying beyond the normal world of ether (the substance once thought to be the medium in through which light waves propagate, but which is now generally

regarded as nonexistent by physicists). Like Price, Myers compared the metetherial world to a dream-world.

The real question may not be whether a dream-world exists, but whether the physical world as we normally conceive it exists. Our mostly highly-tested and exactly-verified scientific theory, quantum mechanics, states that the fundamental components of light (and matter) behave both as waves and as particles, depending on how one decides to observe them, despite the fact that the particle and wave conceptions are contradictory and fundamentally incompatible. This might be taken as supporting the dreamlike nature of the physical universe. Some scientists (e.g., Lanza, 2009) have asserted that this and other fundamental incompatibilities in currently accepted scientific theories are evidence that there is no underlying physical world and that instead of the physical world, conscious minds comprise the ultimate reality.

It should be noted that most orthodox scientists would maintain that each dream is the product of one mind. However, few people think that their *conscious* minds are responsible for, or have even been granted much of an advance peek at, the scripts for each night's adventures. Thus, dreams are the product of something at least partially outside of each of our conscious minds. Most scientists nowadays would identify this something as subconscious brain activity.

It is generally thought that in these dream world afterlives, we will be housed in bodies resembling those we wear when awake. This likely reflects the fact our dreams during our biological lives are stabilized and at least partially constructed by a living brain containing our memories and self-images.

One difficulty with the hypothesis that we inhabit some kind of collective dream in the afterlife is the fact that the dreams with which we are familiar appear to be dependent on neural substrates and are intimately associated with particular patterns of neural activity. What is left to generate the collective dream after the dissolution of the brain?

Psi Phenomena. Psi phenomena such as telepathy, precognition and psychokinesis would be difficult to explain on the basis of known physical processes and might provide an avenue for the survival of some personality fragments in other people's brains, in a collectively experienced dream world or in some other extra-cerebral realm.

However, experimental psi effects are not easily replicable, and the vast majority of mainstream scientists doubt their existence. There is a vast and raging debate over the existence of psi that has spawned a voluminous literature. A comprehensive review of this literature is well beyond the scope of this article, which is directed at the existence of souls, the afterlives, and possible gods that would be combatable with mainstream physicalist science.

Psi, if it exists, is merely a channel for information flow. It is like the air that bears your words. It is not you. To paraphrase the great French mathematician and astronomer Pierre-Simon Laplace's well-known quip about God, we have no need of the psi hypothesis in our current quest for the soul

On the other hand, psi phenomena appear to involve information transfers that are hard to explain on the laws of physics, at least in their present state. Thus, their existence, if real, might be used to argue against various forms of reductive materialism. However, the present analysis is restricted to a consideration of the souls, afterlives and gods that are compatible with modern physicalistic science.

Thanatope #3: The Personality. If you do not have a Dream Body to encase you in the next world, might your personality (comprising your memories, sensations, thoughts, emotions and desires), or some fragments thereof, soldier on past your death? Evidence that such might be the case is provided by messages purportedly received from the dead and passed along to the

living via mediums or psychics. However, much of this evidence may be explained on the basis of fraud, subconscious inference, sloppy scientific methodology, and the propensity for humans to see patterns where none exist.

Not only is this evidence for the survival of personality elements very weak, It also flies in the face of an overwhelming body of evidence that mental activity is intricately dependent on brain activity, as reviewed in detail in the compendium edited by Martin and Augustine (2015). Surely it is absurd to postulate that personality fragments such as one's memories, emotions and thoughts can survive the dissolution of one's entire brain..

Thanatope #4: Pure Consciousness. The self that (seems to) persist over long time periods (from birth to death in the popular, most common view) is not the conglomeration of our thoughts, feelings, memories, and sensations themselves, which is constantly changing, but rather the field of pure consciousness in which these qualia act out their drama. In other words, we are vessels of consciousness rather than the contents of those vessels, the movie screens rather than the movies.

Stokes[11] asserts that, when Descartes famously remarked, "I think, therefore I am," his error does not lie in the second clause (the affirmation of the existence of a continuing and unified self). The experience of oneself as a continuing field of consciousness is immediately given. If one cannot even know that one is a field of consciousness that continues from moment to moment (at the very least over the course of the last five minutes or so), then one cannot know anything. To second Descartes' conclusion, the knowledge of one's own existence, at least from moment to moment, cannot be doubted.

Stokes asserts that Descartes' error in lies not in his conclusion (that he exists), but rather in his premise (I think). As a continuing field of pure consciousness, one does not think; rather, the brain prison in which one is somehow trapped does the bulk of one's thinking. As noted above, modern research in cognitive neuroscience has made it made abundantly clear that one's thoughts, one's feelings, and the other elements that make up one's personality are intimately dependent on brain activity. If that activity is radically altered or discontinued, they will not persist in any recognizable manner. However, one's true self, construed as a field of pure consciousness, might persist, either trapped in a vegetative brain or on to new adventures.

The evidence of a continuing self is not that it thinks, which it cannot do without massive assistance from a brain, but that it has feelings and experiences. Rather than thinking, this center of consciousness "has thoughts" in the same way that it has (i.e., experiences) emotions and sensations. Thus, Stokes suggests that a rectified version of Descartes' statement might be: "I'm nauseous, therefore I am."

The Simplicity of the Soul. Many philosophers have proposed that the soul or self is an indivisible center of pure consciousness. Aristotle, for instance, believed in a memory-less form of reincarnation in which nothing is retained of one's personal identity from life to life. (Segal, 2004).

The classical Greek philosopher Plato taught that soul is indestructible and imperishable, based on its indivisibility. Human bodies, on the other hand, are composite and continually changing, whereas the soul retains its identity. He taught that the souls were akin to the invisible Forms, such as mathematical truths, that are grasped by thought and not by the senses (Plato, 1961).

Philosopher D. H. Lund (2009) notes that the manner in which a composite thing is destroyed (i.e., dissolution of its elements) is not possible for souls, which lack parts in his view.

Similarly, Martin and Barresi (2006) cite the 18th century Anglican clergyman Joseph Butler's observation that the conscious self is something indivisible and simple and thus cannot be identical to a material organism (Butler, 1736/1852). Butler asserted that it is the simplicity of the soul, rather than its immateriality, that guarantees its survival of death. Butler also thought that "gross organized bodies" are no part of our selves and that their destruction is not ours (Goetz and Taliaferro, 2011).

The contemporary philosopher and theologian Stewart Goetz (2001) seconds Butler's view, observing that if you are not identical to your physical body, then it is possible that you survive the dissolution of the body. He conjectures that, if the soul is a simple and indivisible entity within the brain, it may be one of the simple "atoms" comprising the body. He notes that if you are a "simple self" that is located within the body and if the body is composed of simple selves, then the possibility that you are one of these simple selves cannot be ruled out on an *a priori* basis. Thus, under this view, one might survive death even if the universe is the deterministic world of classical, Newtonian physics .

Martin and Barresi[12] observe that the 17th century philosopher Thomas Hobbes (1893) viewed souls as material entities and that this view avoids (or at least diminishes) the enigma of how minds and brains interact. To this one might add that the fact that we seem to be somehow slapped onto our physical brains like so many pieces of chewing gum further argues for the physicality of a least some aspect of the soul (unless of course the universe is a very complex dream, hallucination, or thought, in which case nothing would be physical).

If the soul is unitary and indivisible, it could not be a compound entity such as a neuron, or even an atom for that matter. It would have to be something more akin to a proton than a protozoan.

Martin and Berressi[13] favorably cite the philosopher Edmund Husserl's view that the self is a transcendent ego or center of pure consciousness, for which everything that exists is an object (Husserl, 1954). Consciousness cannot be investigated through observation, as can the physical world, but only through phenomenological investigation. Consciousness exists absolutely and is indestructible. If the world were destroyed, Husserl maintained, consciousness would remain, as it is the absolute foundation of the material world. Martin and Berressi note that Husserl abandoned these views later in his career.

Philosopher and theologian Keith Ward (2010) seconds the early Husserl in writing that "consciousness is the condition of any and all possibilities existing…and not merely a very complex thing that happens to exist" (p. 295).

The Medieval Christian philosopher St. Thomas Aquinas viewed the soul as only one part of him, putting it on an equal status with his foot (Goetz and Taliferno, 2011). Thus, Aquinas asserted that the soul is not the person, but only part of the person. Consequently, he was more than just his soul.

The 17th century philosopher John Locke contended that one's identity is determined by the indivisible center of consciousness that is associated with one's physical body. The self remains the same even if parts of the body, such as one's foot and ear, are removed. Locke noted that this center of consciousness may become incorporated in other bodies after death, but without any memories of those previous lives (Locke, 1975). Thus, this would not be a form of personal survival.

Goetz and Taliferro[14] note that Locke's writings suggest that he also believed that different souls (centers of consciousness) could be associated with the same body during one's present lifetime.

Thomas Reid, (1872) likewise an 18th century theologian, proposed that the soul is indivisible and is distinct from the fleeting contents of its experiences, such as thoughts, feeling and emotions. Reid asserted that memories provide direct support for the existence of such a continuing self or field of consciousness. However, memories may be illusory.

The noted mathematician and philosopher Gottfried Wilhelm Leibniz proposed that the universe consists of centers of pure consciousness called monads. These monads form a hierarchy, in which the supreme monad is God. Leibniz called monads souls and proposed that each human being was ruled over by a "supersoul."[15]

Thanatope #5 Nothing. The existence of a center of pure consciousness that seems to persist while different sensations, thoughts, memories and feelings flow through it (or by it)and while the composition and configuration of one's physical brain and body continually changes seems patently obvious, at least to most conscious beings such as ourselves.

However, as already noted, some modern scientists and philosophers, such as Daniel Dennett[16], Susan Blackmore[17] Thomas Metzinger[18], Paul Churchland[19], his wife Patricia Churchland[20] and Bruce Hood (2012), deny the very existence of continuing selves, or "Cartesian theaters," as these self-proclaimed "skeptics" disparagingly call them. The self, these "skeptics" maintain, is a merely a convenient "story" we tell ourselves in an attempt to render our experiences coherent and consistent. As such, the self is an entirely fictional concept, and "we" are nothing more than the scattered contents (fleeting sensations, thoughts, and emotions) of "our" minds.

To most people the existence of a continuing self is immediately given and cannot be doubted. Any theory that denies the existence of any centers of consciousness is quite simply wrong. Such selves are an integral part of our essential existence.

It should also be noted that Bernard J. Baars, a prominent theoretical neurobiologist, has provided considerable evidence for the existence of a "global workspace" in the mind in which contents of various subsystems are melded together (Baars, 1988, 1997). This global workspace is very similar to the "Cartesian Theater" disparaged by Blackmore, Dennett and their ilk.

If Blackmore and Dennett are correct, there is no need to worry about whether the self will survive death. Indeed, the "self" does not even survive from moment to moment and in fact does not even exist at all.

Pure Nothingness. If at this point you are frightened at the prospect that death consists of experiencing your own nonexistence for eternity, put your heart at ease. You can't experience anything it if you don't exist. Non-existence can no more be experienced than a one-armed girl can grasp her own fist. Also, in a state of pure nothingness, you will no longer have any problems to trouble you. If that is not a state of pure bliss, I don't what is. Unfortunately, pure nothingness may not have staying power. In his recent book *A Universe from Nothing,* Lawrence Krauss suggests that the universe may be the result of a fluctuation in the false quantum vacuum that preceded our universe Krauss, 2012)[21] Of course, this is not literally creation *ex nihilo*, as the false quantum vacuum and the laws of physics themselves had to exist before our universe tunneled itself into existence.

The Western philosopher Arthur Schopenhauer maintained that the entire universe is a manifestation of striving of one great cosmic will and that our individual wills are but splinters of this great cosmic will, as are inanimate material objects. He endorsed the Buddhist practice of attempting to extinguish craving to escape from this world of suffering, but did not follow this practice himself, preferring to engage immoderately in the material pleasures this world offers. (Holt, 2012).

The Buddhist Doctrine of No Self. *O*ne of the tenets of Buddhism is that there is no lasting self or soul. However, reincarnation is a Buddhist doctrine. What then is it that reincarnates, if there is no self? Can we not equate the Buddhist thanatope with whatever it is that reincarnates, which is presumably a complex of thoughts, desires, and cravings? If so, (at least some) Buddhists seem to be adhering to the view that the thanatope is some partial remnant of the personality. This conception has already been found wanting above. Also, the simultaneous postulation of an afterlife and denial of a continuing self seems to be contradictory. Thus, this appears to be an incoherent philosophical position. It is no more coherent when uttered by an obedient army of monks with shaven heads and orange robes than it is when uttered by philosophers and scientists such as Blackmore, Dennett, Metzinger, and the Churchlands. The Buddhist doctrine of "no self" is nonsensical. The same is true of any doctrine that speaks of experience without an experiencer. Such doctrines are inconsistent with our direct and core introspective experience. It would be easier to entertain the possibility that the material world is an illusion.

Many (although, as we have just seen, not all) branches of Buddhism and Hinduism teach that one's true self is pure consciousness, not the contents or objects of consciousness. Thus, rather than clinging to the hope that one's personality will survive relatively intact in some sort of afterlife, many of the Eastern philosophies teach that our personalities are transitory and not our true selves. One's true self in this view is the pure consciousness (Atman) that in Hindu philosophy is taken to be identical with all consciousness, including that of the World Soul (Brahman). Under the Vedantic worldview, there is only one pure consciousness, and each of us is the Universe looking at itself from a different perspective. Thus, according to this view, when persons temporarily abandon their individual identities and perceive themselves as merging with the Cosmos or as being in perfect union with God, as in the mystical experiences described by William James (1902) and others, they are seeing directly into their true selves, as all centers of consciousness are manifestations of the one Consciousness that underlies this and all other worlds. In this view, we are fragmented splinters of the World Soul, our selves at once separate from, and yet identical to, one another.

This is the "perennial philosophy" that stands at the esoteric peaks of all religious traditions, as described by Aldous Huxley (1945/2009) and others. At the popular level, the various religions appear to be in irresolvable conflict, as their gods and godlings wear different faces and go by different names. At a deeper and more advanced level, they may be the same.

It should be conceded that survival in the form of pure consciousness with little continuity of memories, emotions, and predispositions and other assorted baggage from one's previous biological life may not be what most persons would consider survival in the true sense (i.e., survival with one's memories and personality completely intact). It would, however, be survival of one's essential self, the central core of one's existence, freed of this lifetime's burdens.

We are not quite yet done with those who deny the very existence of a center of pure consciousness that continues from one moment to another. The philosopher Galen Strawson (2009) for instance maintains that little transient selves are continually winking in and out of existence within one person's stream of consciousness, with none of them lasting more than an hour or so. He also asserts that, each morning one wakes with a new Cartesian "I." Thus, he does not deny that centers of consciousness exist, but maintains that they are transient. However, another way to parse this insight might be to maintain that the body is transient, especially in the long run, but that different spheres of consciousness may be continually attaching and detaching themselves from the brain, much like oxygen molecules. This view treats souls as quasi-material objects, but they are after all, at least temporarily, trapped in brains, so this may be reasonable.

This possibility will be discussed in more detail below Thus, there is no need to kill off Strawson's transient selves at the ends of their short lives. Perhaps they are only liberated.

The 18th century philosopher David Hume (1739/1978) noted that one can never perceive oneself by reflection, all that one can experience is some combination of perceptions or another. Holt reports that this view of the soul left Hume with profound existential depression, which he partially combatted by playing backgammon.[22]

Parfit's Part-by-Part Replacement. The philosopher Derek Parfit (1986) has noted that if one were to slowly replace each neuron in someone's brain one at time over a long period, we would still regard her to be the same person she was before the replacement. Parfit compares our concept of a person to that of a social club, which remains the same club even if all the original members have defected. This is similar to Hume's comparison of the self to that of a country.

Suppose that one were to replace each neuron with an electronic component that functions exactly as the replaced neuron. Further suppose that this replacement is done gradually over time. At the end of this process, the person would have an entirely cybernetic brain. If this brain functioned in the same way as the original brain, we might well regard this cyborg to be the same person as she was before this transformation. However, it is an open question as to whether such a transformation is even possible. There may be fundamental principles at work rendering preventing such a transformation. Artificial intelligence is a long way from producing a computer that can successfully mimic a human being.

Holt notes that Hume's and Parfit's views of the self are similar to the Buddha's conception that the self is "only a conventional name given to a set of elements"[23]. Holt notes that prior to Parfit's conversion to the "no self" point of view, Parfit thought that the existence of his self was a deep all-or-nothing fact. He viewed his life as glass tunnel, through which he was moving faster and faster every year and at the end of which there was darkness. Once liberated from the self, Parfit states that the walls of his glass tunnel have disappeared and that he now lives in peace in the "open air."[24].

Whitehead's Process Theology. Another philosopher who denied the concept of the self is Alfred North Whitehead (1929/1978). In his "process theology," Whitehead proposed that the universe consists entirely of "occasions." These are atomic (indecomposable) events that have both a mental and physical aspect. Each occasion arises from the previous occasions by "prehending" (i.e., sensing) them and then fades from existence as it is prehended by the succeeding wave of occasions. Thus, the universe contains no substances such as a soul or an atomic nucleus, but only processes and events.

The quantum physicist Henry Stapp (2011) sees Whitehead as expanding on William James' view that "thought is itself the thinker, and psychology need not look beyond"[25] (James, 1890, p. 401). Stapp notes that in Whitehead's process philosophy, each occasion occupies a restricted, microscopic region. As more and more occasions emerge from the previous occasions, the future spacetime regions are continually being filled in (by the collapse of quantum-mechanical state vectors in Stapp's view). Thus, both Whitehead and Stapp propose models that are based in the concept of the "moving" present in which future events (occasions) become fixed events, which then recede into the past.

Stapp notes that many of the "occasions" proposed by Whitehead may not have the "full richness of a fully developed 'high grade' human experience"[26] He suggests that the richness of an experience depends on the "complexity of the physical system upon which von Neumann's process 1 [the observation and collapse of the state vector] acts." In Stapp's view, each Whiteheadian occasion is conscious to some degree, placing Stapp in the panpsychist camp (the

view that all physical entities have some form of experience, which is discussed in detail later in this book).

The prominent philosopher Baruch Spinoza set forth a monistic philosophy (in which only one fundamental type of entity is assumed to exist, rather than two, such as mind and matter). Spinoza viewed sensations and consciousness simply as matter perceived from within.

The philosopher Whatley Carington (1949) proposed a form of "neutral monism" in which the basic components of the universe are "cognita." Cognita are similar to what are now termed "qualia" in modern debates about the mind-body problem (i.e., thoughts, sensation, emotions, etc.). Cognita relate to each other by mental processes such as, in Carington's day, the psychological laws of association. Carington asserted that an individual mind is nothing more that a cluster of highly associated cognita.

Klein and the Subjective Self. In *Current Directions in Psychological Science*, one of psychology's flagship journals, Stanley Klein (2012) argues that it is now the time to bring the study of the subjective self into the main arena of scientific of psychological science. He notes that one's subjective self is not an object that can be treated as "other" and thus located, grasped and studied scientifically. The self is thus is a seemingly poor candidate for scientific study. In Klein's view, the self is not an object, but an awareness, a consciousness, and as such is not knowable to anyone but the self. Thus, Klein notes, according to the orthodox view of science, the self would have to forfeit its subjectivity in order to become an object for scientific study. He goes on to say:

> What I am suggesting, therefore, is that although the scope of scientific analysis is well-suited to the study of behavioral and neural properties identified as components of self-knowledge, the ontological self, as a singular, conscious, knowing subjectivity, does not readily fall into the same scientific framework. To put this very complex matter in the form of a simple question: "How does a subjectivity, a unified, individual point of view, treat itself as an object of subjectivity while retaining its subjective nature?" Short of falling into the trap of a conceptual regress (e.g., the homunculus or Cartesian theater; cf. Dennett, 1991), the answer appears to fall outside the scope of current scientific inquiry."[27]

Klein argues that "we need a new, more inclusive metaphysics in which "reality is not reduced to *only* that which can be manipulated by science."[28]. He goes on to cite the philosopher William Earle's (1955) observation that "we have no way of surveying the whole of reality... and we should not attempt to close our ignorance through impatience with the infinity of the absolute itself."[29] Klein recommends that in the future philosophy should pay more attention to psychology.

We now ascend the ontological hierarchy from realm of souls to that of the god(s) themselves.

The Realm(s) of the God(s)

The Ungodliness of God. Many people believe in the existence of a God or gods, although this belief has declined substantially in Europe in recent years. One of the first duties of any deity is of course to create the universe. The Abrahamic (Judeo-Christian-Islamic) God accomplished this in a mere six days, essentially by acts of fiat. In polytheistic mythologies, this creation is often accomplished by acts of fornication, cannibalism and murder among the deities. Such gods seem no more refined than humans when it comes to spiritually, perfection, self-mastery, and tranquility.

If you consider such gods to be an archaic notion, consider the fact that before the Large Hadron Collider (LHC) recently built in Switzerland was turned on, there were concerns expressed that the collisions of particles in this detector might result in doomsday scenarios. These apocalypses included the creation of black holes or even white holes giving rise to daughter universes through mini-Big Bangs (and after cosmic inflation perhaps not-so-mini-Big Bangs). Lueptow (2009) cites several prominent physicists who had expressed concerns that the LHC would produce mini-black-holes, and he notes that experts were split on this issue. He cites calculations by Otto Rossler of the Max Planck Institute of the University of Tubingen that "the chances are good" that such a mini-black-hole would be capable of expanding through inflation and devouring the Earth in a matter of 50 months.

Yet, we turned on the LHC anyway. For those seeking further comfort in the wisdom of the previous generation of scientists, the Manhattan Project physicists who exploded the first atomic bomb did so over the objections of the noted physicist Edward Teller, who calculated that its explosion would set the Earth's atmosphere on fire. They exploded it anyway (Cohen, 1999).

If any universes newly created in the LHC suddenly inflated into sizable "daughter universes," as it is thought our own universe did, the denizens of such universes might entertain the notion that their universe was created by a troupe of mythological gods resembling themselves. They would thus entirely missing the truth of their genesis, namely that their universe was created by hundreds of grant-seizing physics-nerd aliens in white shirts with hyperdimensional pocket protectors, who were not even aware of the universe they created largely through miscalculation and by accident. Thus, the lives of their real creators might be a sorry soap opera indeed when compared to the magnificent pornographic antics of a typical horde of mythological creator gods.

Is the universe in fact nothing more than the result of an experiment conducted by one or more mad juvenile alien scientists in a cellar workshop in some other universe or pre-universe? To cite the prescient Sir Jeans once again: "The stream of knowledge is heading towards a non-mechanical reality; the Universe begins to look more like a great thought than like a great machine. Mind no longer appears to be an accidental intruder into the realm of matter...we ought rather hail it as the creator and governor of the realm of matter."[30]

The Creator(s) of this universe, with its tsunamis, hunger and cancer, may be akin to the Demiurge of the Gnostics. The Demiurge was not thought to be the true God of the Christians, but rather a subordinate Being responsible for imprisoning souls in base matter and subjecting them to the agonies of material existence (Peake, 2006).

Perhaps as Pope Benedict XVI optimistically concluded in his farewell address, God is merely asleep. Were the god(s) in fact physicists of some sort, setting up complex equations to govern the structure and behavior of a (possibly simulated or virtual) universe? Does this account for what Eugene Wigner (1960, p. 1) called "the unreasonable effectiveness of mathematics in the natural sciences" or the physicist James Jeans' observation that "from the intrinsic evidence of his creation, the Great Architect of the Universe now begins to appear as a pure mathematician" (Jeans, 1937, p. 134).

Swedish philosopher Nick Bostrum (2003) similarly suggests that the universe may be in fact a computer simulation (and a pretty darn realistic one for someone with a broken leg).

The physicist Steven Hawking asks, if the world in nothing more than an elaborate system of equations and mathematical truths, why does it go to the "bother of actually existing?"[31] Cosmologist Max Tegmark (1997, 2003, 2014) has hypothesized that all mathematically possible universes exist. Similarly, Robert Nozick a Harvard philosopher, suggested that everything one can imagine exists.[32] This would explain the evidence for the

anthropic principle (the fact that the universe we live in appears to be delicately contrived to support the existence of life and conscious observers, as discussed in the next section). Such observers would of necessity inhabit one of the mathematical universes in which their existence is possible, and all universes occur.

Another great physicist, Arthur Eddington (1920/1959), called the fabric of the cosmos "mind-stuff." More recently, another prominent physicist, Henry Stapp (2005a), has observed that under the *Weltanschauung* of quantum mechanics, the world has "an essentially 'idea-like' structure." In an essay in *Nature*, the flagship journal of materialist science, Richard Conn Henry (2005) proclaimed that:

> One benefit of switching humanity to a correct perception of the world is the resulting joy of discovering the mental nature of the Universe. We have no idea what this mental nature implies, but - the great thing is - it is true. Beyond the acquisition of this perception, physics can no longer help. You may descend into solipsism, expand to deism, or something else if you can justify it - just don't ask physics for help…
>
> The Universe is immaterial - mental and spiritual. Live and enjoy."[33]

One argument for the fundamental role of mind in the creation of the universe is that the laws of nature and the initial conditions of the universe seem to be delicately contrived to give rise to complexity and to living, conscious observers,.

Perhaps the universe was created by a conscious Being or beings to serve as some sort of cosmic amusement park. The fact that the universe seems designed to support the existence of intelligent beings has been commented on by many physicists, who have coined the term "anthropic principle" to denote this element of apparent design in the universe.

Had the rate of expansion of the universe immediately after its creation in the Big Bang differed even slightly from its actual value, life as we know it could not exist. Had the rate of expansion been infinitesimally slower, all matter would have collapsed into black holes shortly after the creation of the universe. Had the rate been slightly faster, the matter density would have been too small to allow galaxies to form. Also, had the mass distribution had been less homogeneous, the gaseous clouds needed to form stars, planetary systems and living beings would not have existed, and most of the mass in the universe would have been consumed in black holes. The prominent mathematical physicist Roger Penrose (1986, 2011) has argued that the universe was created in a very highly ordered state that would not be expected to occur by chance.

Many other physicists, including John Wheeler (1983), have suggested that the universe itself, conceived as a quantum process, could not have come into existence without some conscious observer to collapse state vectors and thus to give rise to a definite history of the universe. Wheeler termed this view the "participatory universe." Wheeler noted that this may explain the evidence for the anthropic principle. Potential universes that do not support the presence of conscious observers could not become actualized in Wheeler's view, as there would be no conscious observers to collapse their state vectors in the proper "direction" to create such a history.

The physicist Paul Davies (2008) proposes that that the existence of life was specifically caused by such a "teleological" quantum state vector collapse.

The physicist Edward Tryon (1973) also proposed that the creation of the universe may actually have been a quantum fluctuation. He further observes that the total energy of the universe may be equal to zero, as negative gravitational potential energies may balance out the positive energies of physical particles. If the total energy of the universe is zero, then there is no limit on

how long the universe might exist under the Heisenberg Uncertainty Principle of quantum mechanics. Thus, the universe may be the ultimate "free lunch." Tryon's observations are seconded in Lawrence M. Krauss' recent book *A Universe from Nothing* Krauss, 2012). Jenkins and Percz (2010) note that the primordial vacuum may have given rise to other universes besides our own.

If the universe is a quantum fluctuation that can only become real through being observed, as Wheeler thought, then the creation of the universe might have been the ultimate act of retroactive psychokinesis! (Wheeler himself would abhor this particular interpretation of his theory, as he was an ardent opponent of parapsychology.)

Recent scientific photography has uncovered the startling beauty of the inanimate physical world, from the microscopic domains such as electromagnetic fields to the haunting beauty of the cloudlike nurseries of infant stars. The "microsouls" discussed more fully below might in fact correspond to the protoconsciousnesses dwelling in empty space postulated by Walker to govern the collapse of quantum state vectors at remote locations. Such beings may be lost in an artwork universe of their own creation. Alternatively, if the mystical view that all consciousness is One is correct, the One may be wandering through Its creation one lifetime at a time, contemplating it from all angles, lost in its beauty and drama.

The Mind-Dependent Universe. The base reality of the world appears to be one of quantum probability waves inhabiting an abstract, multidimensional mathematical space rather than the solid, marble-like electron and protons zipping around in the four-dimensional spacetime continuum that we imagine to be the firm underpinnings of our material existence. The mathematical complexity and beauty of the laws of the quantum mechanics are remarkable. It does indeed seem as though the Creator is, as both Jeans and Einstein thought, a great mathematician.

Of course it could well be that the creation of the universe was a group effort, a kind of Manhattan Project involving trillions of microsouls embedded in an unimaginably complex "computer" made out of whatever passes for matter (if anything) in the "preuniverse." Given that we are embedded in organisms only a few genes removed from a chimpanzee (and possessing fewer genes than many seemingly simple plants such as rice), it may be no wonder that our brains are unable to unravel the real mysteries of the cosmos, including the origin and role of consciousness. Perhaps Colin McGinn (1999) is correct in his assessment that our present brains, with their mere 100 billion cells apiece, will never be able to penetrate these mysteries. There may, however, be nothing preventing us from one day in the distant future building a device that is capable of hosting a staggeringly large number of microsouls.

Such a cybernetic superorganism might not only be capable of grasping such mysteries, but may have the intellectual wherewithal to create new Big Bangs, giving rise to new universes (perhaps even with "improved" or at least more entertaining laws of physics). Such a superorganism might be considered to be a god under the definition of "deity" as the creating force or intelligence. However, whatever "gods" may have lurked in the preuniverse were perhaps just as puzzled by the mystery of their own existence as we are by ours. This is why recourse to any explanation of Creation in terms of a Creating Intelligence (CI) leads to an infinite regress, as one then is confronted with the task of explaining the CI's existence. However, such infinite regresses do not bother everyone. According to philosophical lore, Bertrand Russell was one told by an old woman that the world is flat and supported by an elephant standing upon a turtle. When Russell asked her what supported the turtle, she proclaimed, "It's turtles all the way down!"[34]

But if the universe is a thought as Jeans, Eddington and Stapp contend, whose thought is it anyway? Was the universe created as a vast cosmic "art gallery" for the entertainment of

microsouls (perhaps even those embedded in the CI)? Why go to trouble of designing such an elaborate version of "Disney World for microsouls," unless One intended to enjoy it Oneself, if only vicariously? Are our individual consciousnesses just aspects (or perhaps former components) of the CI, embedded in the myriad creatures the CI has managed to generate from its mathematical invention.

A Plentitude of Worlds. There are ways of accounting for the evidence for the anthropic principle without assuming that the universe was designed by a CI. Barrow and Tipler (1986) note that if one accepts Tryon's view that the creation of the universe was a quantum fluctuation, then Hugh Everett's Many Worlds interpretation of quantum mechanics (Everett, 1957) would imply that all possible universes must be created.

Under Everett's interpretation, every time a quantum mechanical decision occurs (e.g., which of two slits a photon of light will pass through), the universe splits into two (or even an infinite number) of parallel universes depending on the outcome of the quantum decision. For instance, there will be one universe in which the photon passes through the left slit and another in which the photon passes through the right slit. As there are an uncountable infinity (in the mathematical sense) of possible outcomes of quantum processes at any given moment of time, the number of "parallel" universes postulated in the Many Worlds interpretation of quantum mechanic is incomprehensibly large, and so the theory seems epistemologically profligate. However, the point is that even the bedrock materialist theories of physics suggest that there may be other worlds besides the one we inhabit at the present time.

Guth and Kaiser (2005) and Livio and Rees (2005), for instance, note that cosmic inflation (the currently favored model of cosmogenesis) may produce "pocket universes." In each pocket universe, the fundamental laws of physics might be different. Each universe might also have its own set of initial conditions, and the laws of physics might crystallize out into different forms in each universe.

Earlier, M. A. Markov (1985) hypothesized that universes may spawn "daughter universes" which become separate from the "mother universe." Indeed, there has been speculation that it might be possible for a mad scientist to create such a universe in his own basement. This would lead to another version of the many universes theory.

The physicist Lee Smolin (1992) suggests that some form of cosmic evolution may be taking place, in which "fecund" universes (those giving birth to many universes) outproduce less fecund universes. This view assumes that the laws of physics may be slightly different in each "offspring" of the mother universe. This is a common conception among cosmologists. However, this does not explain the evidence for the anthropic principle, as life-friendliness may not be well-correlated with fecundity.

As conscious observers, we must of course be living in one of the universes that is capable of hosting conscious beings. But this does not mean that a CI designed the universe, if Tegmark and Nozick are correct in their hypothesis that all possible universes must occur (see Tegmark, 1997, 2003; and Kuhn, 2007).

Mind as Immanent. Mind, viewed as the creator of the physical world, is literally deified. If the CI that created the physical world is somehow to be identified with the souls that now inhabit it, then that intelligence is unlike the post–Newtonian Christian God, who stands remote from his creation once it is complete (at least under the deist interpretation). Such a CI more closely resembles the Vedic view of the Universal Self that divides into the minds of the myriad creatures of the world, which derives from the *Brihadaranyaka Upanishad*. The philosopher Alan Watts was fond of comparing this Indian view of creation to God playing hide-and-seek with himself in the physical world (see Watts, 1989, for instance).

Consciousness and Matter

We now turn from an examination of the relation between gods and matter to that between consciousness and matter.

This section examines philosophical and scientific perspectives on the relationship between consciousness and matter. The traditionally-offered solutions of the "mind-body" problem will also be reviewed. We will start with an historical overview of the relation of mind to matter in philosophy, science and religion.

Historical Overview. Before launching into a discussion of modern views on the mind-body problem, it is helpful to consider the historical processes that gave rise to the "solutions" of the mind-body on offer today. In particular, an historical perspective will enable us to understand the almost religious vehemence with which some positions are held.

In the history of (Western) human thought up until surprisingly recent times, it was much more common to attribute mental or psychological properties to seemingly inanimate matter than it is today. Jonathan Shear, the founder of the *Journal of Consciousness Studies,* notes that the problem of accounting for the existence of conscious experience, which has modern science tied up in knots, was not a problem for the ancient Greeks, who viewed the material world as being imbued with mind, which served as a force governing the behavior of matter (Shear, 1995).

For instance, Thales of Miletus in the sixth century B.C.E., claimed that inanimate objects possessed a psyche, allowing them the possibility of self-motion. A century later Empedocles asserted that all elemental bodies were endowed with thought and sensation (Nash, 1995a).

Epicurus (341-271 B.C.E.) held that atoms have free will and could initiate collisions by swerving from their path, which was believed to be predetermined by such atomists as Democritus and Leucippus.. This idea has been revitalized many times over the course of development of Western thought.

Plato's World of Forms. Plato (347-427 B.C.E) divided reality into three different worlds: the physical, the mental world, and the abstract world of forms or ideas, which was the realm inhabited by propositions and mathematical truths[35] We note that the prominent modern philosopher Karl Popper (see Popper and Eccles, 1977) and the mathematician and physicist Roger Penrose (1989, 1984) held to a similar triune division of the universe. Plato taught that the soul underwent reincarnation and that a person could with effort remember philosophical and mathematical truths from the soul's previous sojourns in the World of Forms.

Goetz and Taliaferro[36] note that Plato held views on the nature of the soul that sometimes were mutually contradictory. In some of his writings, he characterized the soul as simple and noncomposite and thus immortal. In others, he divides the soul into three components: the appetitive (pleasure-seeking) soul, the rational soul (suitable for inhabiting the World of Forms, and the spirited soul (which assists the rational soul in resisting the temptations of the appetitive soul).

Aristotle Plato's student Aristotle (384–322 B.C.E.) asserted that the form of an object constitutes its soul and that when an object looses its form it ceases to exist. Aristotle viewed unformed matter as an abstraction that could not exist.[37]. On the other hand, Aristotle asserted that *nous* (perfect intelligence) survives the death of the body, but this was an impersonal form of survival that did not include one's memories, feelings or personality. The theologian Alan Segal[38] notes that Aristotle believed in a memory-less form of reincarnation, analogous to that of Stokes' Thanatope #4 (pure consciousness). This points to the need to define one's terms carefully when speaking of the soul.

Aristotle's impersonal form of survival was unpalatable to the medieval Christian scholars, who preferred the Platonic version, which postulated the existence of an eternal soul with some retention of mental content. However, the Roman emperor Julian's attempt to replace Christianity with a Neoplatonic religion in the fourth century did not succeed.[39].

Aristotle taught that the natural state of any body was one of rest. He asserted that the crystalline spheres that carried the planets and stars on their celestial voyages in his cosmology were associated with incorporeal "movers" that provided the force needed to maintain their motion. He viewed these movers as being spiritual in nature and conceived of the relation of a mover to its sphere as "akin to that of a soul to its body" (Mason, 1962, p. 42).

Aristotle's view was given a Christian interpretation by Christian philosophers such as Dionysius in the fifth century and Thomas Aquinas in the thirteenth century, with Aristotle's "movers" being equated with the angels described in the Scriptures. Aristotle also attributed psychological properties to baser matter, ascribing the tendency for a terrestrial object to fall to the Earth to its "aspiration" to reach its natural place.

Epicurus and Atomism. The Greek philosopher Epicurus (341–270 B.C.E.) held that the world consists of nothing but atoms and that atoms have free will and could initiate collisions by swerving from their path, which was believed to be predetermined by such classical Greek atomists as Democritus and Leucippus (Skrbina, 2005). Epicurus taught that death is the end of the self, and so we might as well just live it up. The modern word "epicurean," which denotes a devotee of luxurious living, derives from this philosophy. However, Epicurus believed that nothing comes into existence from nothing, and thus the universe has no beginning, but has always existed, and will always exist. Like Aristotle, Epicurus denied the survival of Stokes' Thanatopes #1, #2 and #3 (the Person, the Dream Body and the Personality, respectively), but leaves open the possibility of the survival of Thanatope #4 (a center of pure consciousness).

Theologian Alan Segal (2004) notes that Epicurus asserted that either the soul is an atomic (i.e., indivisible) body or it is nothing. It could not be incorporeal in Epicurus' view, as all things are material.

Epicurus' atomisn has been revitalized many times over the course of development of Western thought. Even as late as the turn of the last century, Ernst Haeckel (1899/1929) argued that in order for molecules to be attracted to one another, each must somehow "feel" each other's presence.

More recently, Bloom (2012) argues that when seemingly inanimate entities such as quarks and clouds of gas respond to the rest of the universe, they can be said to be aware of it. Bloom notes that even Johannes Kepler believed that the Earth has a soul, echoing Plato's notion of a World Soul. Bloom also cites Plato's notion that the world is a living entity. He contends that the invention of non-Euclidean geometry is best regarded as the product of a "group mind" within the mathematical community.

Bloom proposes a model of "time flow" in which each moment of time unfolds from the previous moment by a process of deduction from the previous moment using the axiomatic laws of physics. He proposes that the Planck time (the smallest measureable time in quantum mechanics, which is 10^{-43} seconds) should be used as the fundamental unit of time (i.e., as the distance between one moment of time and the next). Thus, under Bloom's model, the universe unfolds in discrete steps of time based on applications of the laws of physics to the present state to create the succeeding state.

Bloom asserts that entropy (disorder) in the universe decreased after the Big Bang, as free quarks joined to form protons and neutrons and gas clouds condensed to form stars and galaxies.

He also proposes that meaning has increased in the universe as more "interpreters," such as molecules and animals, have evolved.

The Decline of Animism. Animistic views of matter that granted psychological properties gradually crumbled under the onslaught of scientific advances. The law of the conservation of angular momentum (earlier called the doctrine of "impetus") led John Philoponos in the sixth century and William of Ockham in the fourteenth to banish the angels who kept the planetary spheres in motion. After all, if you spin a top, it keeps spinning by itself. (Philoponos was rewarded for this insight by being denounced as a heretic by the Church.)

In rejecting Aquinas' angels, William of Ockham was led to formulate his famous injunction "not to multiply entities beyond necessity," which has since become known as "Ockham's Razor." In fact, Ockham's Razor, which was originally formulated to justify the exclusion of a class of spiritual beings (Aristotle's angelic movers), is still one of the primary justifications used by modern scientists and philosophers to deny the existence of a realm of mental experience that is independent of physical events in the brain. With regard to Ockham's original application of his principle, the historian of science Herbert Butterfield (1957) viewed the impetus doctrine (in the form of the modern laws of conservation of momentum) as the primary factor underlying the banishment of a spiritual realm from scientific accounts of the world. This led to the establishment of the 17th century view of the universe as material clockwork-like mechanism. The Calvinist John Preston proclaimed in 1628 that "God alters no law of Nature"[40] (Mason, 1962, p. 181). Divine intervention by deities or angels was no longer permitted; events were seen to be predictable from, and governed by, the laws of nature alone.

Vestiges of divine intervention persisted at least into the 18th century. Isaac Newton asserted that divine intervention was necessary to reestablish the regular order of the planets' orbits, which were constantly being deranged due to gravitational forces among the planets and comets, as well as by a supposed gradual reduction in orbital velocity due to "ether drag" (Christianson, 1978). However, in general the picture of the universe that emerged from the seventeenth century (at least in Western philosophy) was one of a huge impersonal machine governed by strictly mechanical principles.

Once the picture of the physical universe as a soulless machine gained ascendancy, not only did matter get stripped of its mental and spiritual aspects, so did living organisms. For instance, while Ernest Haeckel used an analogy between the growth of salt crystals and that of living cells to proclaim that all matter had a spiritual aspect, his contemporary Carl Nageli used precisely the same analogy to deny that biological cells were associated with a spiritual force, instead arguing that their growth was due to simple mechanical forces. The chemical synthesis of organic compounds in the laboratory, exemplified by Friederich Wöhler's synthesis of urea in 1828, further undermined the vitalistic philosophies that asserted that a spiritual force governed biological processes.

Antoine Lavoisier had earlier demonstrated that the ratio of emitted heat to carbon dioxide was the same for candle flames as it was for animals, suggesting that respiration was a purely mechanical process.

Cartesian Dualism. One of the contributors to this mechanistic cosmology was, paradoxically enough, the seventeenth century philosopher and mathematician Rene Descartes, who is widely regarded as being the prototype of the modern dualist (a dualist being one who regards the realms of mind and matter as having independent reality). Among the phenomena that had most strongly indicated a mental aspect to matter were those suggestive of the operation of action-at-a-distance, such as gravitation and magnetism. Descartes was able to eliminate this stumbling block on the road to a totally mechanistic outlook by proposing theories of magnetism

(the vortex theory) and gravitation (the plenum theory) that avoided the problem of action-at-a-distance by assuming that these two types of force were transmitted through a physical medium.

Descartes extended his mechanistic philosophy to encompass living creatures as well as inanimate matter. He viewed animals as mere machines. He did not, however, question the existence of minds in humans; indeed, he thought one's primary and most direct knowledge was of one's own mind. He viewed mind as a totally different kind of entity from matter. In Descartes' view, one's mind (or ego) was indivisible and hence lacked a basic character of matter—that of extension in space. Thus, the mind inhabited a different plane of existence from the physical world and could not be said to have a spatial location. Descartes proposed that humans are comprised of immaterial minds existing outside of physical space and their associated physical bodies. Descartes' soul included the rational mind (endowed the power of reasoning), but excluded emotions and memories. He contended that the rational soul is often unable to assert power over the passions, which results in human behavior being almost (but not quite) deterministic. Descartes viewed the rational soul as indivisible and eternal, whereas material things are composite and cease to exist when their components undergo dissolution.

He proposed that memory traces were just modifications of the pores through which the "animal spirits" were thought to flow, based on previous activity (Colborn, 2011). This is amazingly close to the modern view that memory traces are stored in modifications of synapses (starring in the role of Descartes' pores), which result in changes in the neurotransmitters (starring in the role of animal spirits) released into the synapse and passed on to the next neuron.

Descartes hypothesized that the mind and body interact though the pineal gland (as this was a brain structure that was not duplicated in each hemisphere and could therefore provide a unification of experience). He asserted that the immaterial mind could influence the brain by modifying the direction of flow of the "animal spirits" in the pineal gland without changing the speed of their flow. Descartes' view was based on his law of inertia, which held merely that the total quantity of motion in a system remains constant (but not necessarily its direction),

However, the German mathematician Gottfried Wilhelm Leibniz and others were able to demonstrate that directionality as well as speed is conserved in the law of momentum, which closed the brain to the influence proposed by Descartes. Thus, Leibniz demonstrated that the physical body (as modeled by Descartes) was a deterministic system. There was therefore no room left for an influence of the mind on the body, and the mind was totally excluded from influence on the physical world. (It should be noted that mind retained a place in Leibniz' own "monad" cosmology, although that cosmology never gained ascendancy in Western thought.)

The Banishment of Mind. Once again, an application of the law of inertia led to the exclusion of the spiritual realm from scientific models of the world, only this time it was not angels being banished from the heavens, but the human soul itself being banished from its body. Indeed the historian of science Richard Westfall (1977) viewed the rigid exclusion of the psychic from physical nature as the "permanent legacy" of the seventeenth century, as a deterministic clockwork physical universe allows no room for mind-action (from outside the physical world). It is thus not surprising that Cartesian dualism soon yielded to the materialism of Hobbes and La Mettrie (and more recently Watson, Skinner, Dennett and the Churchlands).

The Angels Strike Back. Since the emergence of the theory of quantum mechanics early in the last century, the brain is no longer viewed as a deterministic system. Thus, the argument from determinism no longer works, and there is now the possibility that an immaterial mind could interact with a physical brain by selecting which quantum state the brain enters out of the many states that are possible at any given time.

The philosopher Michael Lockwood (1989) has noted that the prejudice in favor of matter was grounded in the apparent solidity of the former in the Newtonian worldview. Lockwood points out that the solidity of matter has disappeared in the theory of quantum mechanics. In quantum theory, material particles exist as probability waves in an abstract mathematical space until they are observed. Thus, mind and matter are now equally mysterious. Goetz and Taliaferro (2011[41] note that quantum theory has had little effect on materialistic philosophers, and that materialism is not the simple, no-nonsense alternative that it might once have appeared to be.

Next we will consider modern views on the relation between mind and matter.

The Mind-Body Problem

Materialism. The first "solution" to the "mind-body problem" is radical materialism, which postulates that only matter exists. Some radical materialists, including the founders of the behaviorist movement in psychology, B. F. Skinner (1953) and John B. Watson (1924/1970) have even taken the position that consciousness and its assorted contents such as memories, thoughts or feelings do not exist. This position is self-refuting. If the writings of materialists do not express thoughts, then they are caused by meaningless keyboard pushes and thus cannot be taken seriously. Skinner himself maintained that his manuscripts were the result of conditioned patterns of keyboard pecks, for which he had been reinforced, through royalties and promotions, in the past. His plight was thus much like that of a hapless pigeon in one of his experiments. (His children's plight was more literally like that of Skinner's pigeons, right down to the plexiglass box.)

It should be noted that Skinner did eventually retreat from this early radical version of his theory.

Closely related to radical materialism are neural-identity theory (J. J. C. Smart, 1959), central state materialism (U. T. Place, 1956, 1960) and double-aspect theory (often attributed to Spinoza), which assert that there is only one reality (the material world) and that conscious experiences are simply material processes experienced from within.

Most adherents to the above philosophical positions are physicalistic reductionists in that they believe that the behavior of material particles, including those that underlie consciousness, are completely determined by the known laws of physics. As the philosopher Thomas Nagel observes, "[I]t can seem that the only way to accept the argument against reduction is by adding peculiar extra ingredients like qualia, meanings, intentions, values, reasons, beliefs and desires to the otherwise magnificently unified mathematical order of the physical universe" (Nagel, 2012, p. 15).

Epiphenomenalism. A closely related view is that of epiphenomenalism, espoused by "Darwin's Bulldog," Thomas Henry Huxley (1874). Epiphenomenalists graciously grant matter the capacity to produce mental events such as thoughts and feelings that are not identical with the material processes in the brain that give rise to them. However, they deny that such mental events can influence anything in the physical world, including brain processes.

Like eliminative materialism, epiphenomenalism is hoist by its own petard. The writings of epiphenomenalists are attempts to explain mental events. They are thus presumably caused, at least in part, by the very mental events that they claim have no causal powers. According to the doctrine of epiphenomenalism, the writings of epiphenomenalists are not caused, even in part, by mental events. Thus, their scribblings appear to be devoid of any evidence of mentation, a striking confirmation of the theory of epiphenomenalism!

The theory of epiphenomenalism cannot be true, because (in an archetypically and delightfully Gödelian fashion) it denies the existence of any theory, truth, or belief that can be verbally expressed.

Emergentism. Closely related to epiphenomenalism is emergentism, in which novel and unexpected phenomena, such as wetness, arise from the behavior and properties of more basic entities, such as hydrogen and oxygen atoms. A recent proponent of emergentism is the philosopher William Hasker, who asserts that the conscious self is an "emergent individual" and not just an emergent property of the brain (Hasker, 2001). Hasker considers the question of whether such an individual could survive the death of the body to be an open question, comparing the possible thanatope to electrical and magnetic fields. In his later publications Hasker (2010, 2011) asserts that only if the brain functions as a whole could there be unity of the visual field. As such neural unity has not been demonstrated, he maintains that the conscious visual field is not part of the brain, but of the soul.

Idealism. The philosophical theory of idealism is the polar opposite of that of eliminative materialism. It denies the existence of physical events and proposes that the universe is entirely mental, a great dream or thought. As the idealist astrophysicist Bernard Haisch (2006) puts it, it is not matter than creates an illusion of consciousness, but consciousness that creates the illusion of matter. The various agencies presumed by idealists to be responsible for producing the illusion of the physical world have included (a) God (in the view of the prototypical idealist, the eighteenth century philosopher Bishop George Berkeley, (b) a collective mind or collective unconscious, and (c) the illusion-producing state of craving and ignorance (according to certain schools of Buddhism).

Perhaps the universe is your own dream (especially if you are a piece of God, as the Hindus and other pantheists believe). If the Universe is a dream, it is a whopper, produced by arcane mathematical laws of physics that few of us understand with our present cognitive apparatus. The universe certainly looks and feels real.

The reply of most modern scientists and philosophers of science to idealism is that scientific theories that postulate the existence of an objective physical world have produced more exact predictions about possible human observations than have idealistic theories and therefore should be preferred over the latter for that reason. (Such theories are even covertly preferred by most solipsists, who seem strangely reluctant to step in front of illusory oncoming trains.) The noted poet and essayist Samuel Johnson said of idealism, "I refute it thus," kicking a large rock and triggering one of the more painful sensations that can emerge from Pauli's exclusion principle in physics. However, despite Johnson's self-sacrificing efforts in support of the anti-idealist cause, his pain remains just that, a sensation.

The physicist Amit Goswami (1993) has contended that an idealist conception of the world is required in order to render modern theories of physics, in particular quantum mechanics, coherent. Physicist Richard Conn Henry (2007) contends that the only reality we can know for certain is mind. He endorses Eddington's view that the universe is entirely mental, as expressed in his 1926-1927 Gifford lectures (Eddington, 1935). Henry contends that life after death is less improbable than the fact of one's own existence. He notes that, in Eddington's view, while the "mind stuff" of the universe can be differentiated into parts, only here and there does it rise to the level of consciousness.

The philosopher Stephen Priest (2012) asserts that mind rather than matter is fundamental and that theology rather than science is the fundamental vehicle of knowledge. Priest notes that we lose our souls when we picture ourselves from a third-person perspective and get sucked into the illusion that we are physical bodies rather than unchanging souls.

Solipsism. The ultimate form of idealism (and skepticism for that matter) is solipsism, the doctrine that only one's self exists and the world is just a very complex hallucination. Solipsism is irrefutable, but is unlikely to provide the basis of a generative research program. It is also costly in that one must give up the existence of the material world, as well as that of other minds. As noted above, the universe appears to be based on a very complex set of mathematical laws that would be a challenge for one mind (at least with a typical human processing capability) to design. If I am just dreaming this universe, my subconscious mind is a great deal more powerful than it seems to be as one goes about one's daily routine, which doesn't usually involve computing the second-by-second results of string theory, so far as one knows. The remoteness and power of these unconscious regions of the mind might be more readily equated with the mind of God or with the manifestations of a virtual (i.e., idealistic) physical world. In any event, such a virtual and oftentimes surprising material world would seem to be, at least in part, dependent on something outside oneself. And this is what solipsism is designed to avoid.

Variants of Physicalism. If one were to charitably concede to the physicalists that the material world exists and in view of the undeniable reality of mental events (despite their denial by eliminative materialists), one is faced with two options. The first option is that mental events occur outside of the physical realm and there is a two-way interaction between brain events and mental events. The second option is to place mind within matter itself, as in panpsychism, pantheism, panentheism. and panendeism. At this point, the reader's head may be spinning, trying to tease apart the philosophies of materialism, dual-aspect theory, neutral monism, panpsychism, pantheism, idealism, physicalism, panentheism and panendeism. (Deism is the doctrine that God created the universe, but does not act upon it after the universe's creation, letting the laws of nature enfold in an unmolested manner. Thus the God of deism is not an interventionist God. A theistic deity continues to act upon the universe after it is created. Pantheism and pandeism, respectively, are the doctrines that a theistic (respectively, deistic) God is coextensive with the universe and pervades all things, so that all is within God, and God is within every thing. Under the panentheistic and panendeistic views, God extends beyond the universe. These doctrines all appear to be the same, so long as observable matter conforms to the laws of physics, as it appears to do. There seems to be no way of empirically or even conceptually teasing them apart, at least not if the Deity continues Her nap. Thus, these grand theories of the mind-body problem may all be operationally equivalent to one another. Phenomena such as psi and personal survival would throw a monkey wrench into the whole physicalist program insofar as they would violate the laws of physics or would at least be inexplicable by current laws of physics.

Quantum-Mechanical Interactionism. The advent of the theory of quantum mechanics overthrew the clockwork deterministic outlook of classical, Newtonian physics, thus opening the brain to possible influence by an immaterial mind. Modern day advocates of interactive dualism often base their views on such quantum indeterminism in the brain. These advocates include the physicist Henry P. Stapp (1992, 1996, 2004, 2005a, 2005b), the neurophysiologist Sir John Eccles (1953, 1970, 1977, 1979, 1980, 1983, 1987, 1989; Eccles and Robinson, 1984; and Popper and Eccles, 1977), the physician and mathematician Roger Penrose (Penrose, 1986, 1987a, 1987b, 1989, 1994, 2004, 2011; Penrose and Hameroff, 1995, 2011; Hameroff and Penrose, 1996), the physicist Harris Walker (2000), and the anesthesiologist Stuart Hameroff (1994). Stapp's theory is based on the behavior of calcium ions, Eccles' on synaptic microsites, and Walker's on electron tunneling (Sudduth, 2011).

There is an ongoing debate over whether quantum indeterminism provides sufficient latitude for an immaterial mind to influence the brain. Most orthodox scientists contend that, even if quantum indeterminism allows for macroscopic changes in brain activity or behavior, the outcomes of quantum-mechanical processes are totally random and therefore do not provide any

basis for the control of behavior. There is a vast literature relating to quantum mechanical models of mind-brain interaction, and space considerations do not permit a review in these pages.

There have been many who have had difficulty conceptualizing how mind could interact with matter in view of the fundamental differences between them. (Descartes and many subsequent philosophers have regarded mind as immaterial and lacking any spatial extension). However, each of us seems to be somehow "stuck" in a human brain occupying a particular region in space, however temporarily. Thus, it would seem that the self, construed as a field of consciousness, does have some spatial properties, if only the property that it is, at least temporarily, stuck in a human brain occupying a particular region in space. (Under the panpsychistic hypothesis explored below, the mind is conceived as a part of the brain, eliminating the need for such metaphysical Velcro.)

From this it does not follow that the self in its entirety is confined to a spatial location in the human brain or circumscribed region of space. Even elementary particles of matter such as electrons and protons typically do not have any particular spacetime locations until they are forced to adopt one through an act of observation. Thus, even physical matter lacks the material properties ascribed to it by eliminative materialists.

We are a long way from having measured with precision every minute energy transaction in human brains. In the process of doing so, it is conceivable that some unexpected energy transactions will be observed. If science should progress to the point where the action of spheres of consciousness on energy transactions within the brain can somehow be mathematically (or otherwise) described, this might be a victory for the contention that immaterial minds can exert physical force. If such spheres of consciousness are identified with known material particles, fields and/or systems, the physicalists could claim victory. If not, the dualists could declare victory.

In view of the fact that the perception of any single object involves the firing of neurons in widely dispersed areas of the brain, it is difficult to understand how this neural activity can possibly result in a unified perception of an object. This conundrum is generally termed the "binding problem" (Koch and Crick, 1991). The biologist Steven Rose (2005) has called the binding problem the "foremost problem of 21st century neuroscience." Philosopher Howard Robinson (2012) suggests that viewing consciousness as a field rather than as a particle might be one way to escape the conundrum of the binding problem.

Crick (1994) and Crick and Koch (2003) have ascribed the unity of perception to rhythmic oscillations in the brain, resulting in the synchronous firing of large populations of neurons. Neurophysiologist Wolf Singer also asserts that the unity of consciousness is brought about by synchronous oscillations of neural activity in the 20 to 80 Hz range[42] .

Pashler (1998) has observed that consciousness may act as an information-processing bottleneck. The channel capacity of human centers of consciousness is stunning low. In a very famous article the cognitive psychologist George Miller (1956), presented evidence that only around seven items of information can be held in human centers of consciousness at one time. This is a surprisingly low number, when one considers that the brain contains somewhere between 10 billion and 100 billion neurons and around 100 trillion synapses. If we had a computer with that sort of capacity, we could easily program it to remember more than seven "chunks" of information at a time. Similarly, Leonard Mlodinow (2012) notes that the human sensory system sends the brain about 11 million bits of information per second, whereas our conscious minds can process no more than 50 bits., Thus, the information-processing capacity of centers of consciousness is astonishingly low. Thus, such centers might be easy to fit into, say, a dragonfly.

Stapp (2011) asserts that only streams of consciousness exist and that there is no thinker, only thoughts. He cites William James (1890, 1911) and Alfred North Whitehead (1929/1978) in this regard. Thus, Stapp falls into the "no soul" camp. In a dialogue toward the end of Stapp's book, quantum physicist Basil Hiley notes that some of the arguments of "New Age" philosophers appear to be circular, in that they assert that there can be no stability of matter without consciousness and no stability of consciousness without stability of matter. One way out of this difficulty, Hiley notes, is to postulate some form of universal consciousness such as that proposed in certain versions of Hinduism.[43]

Panpsychism. There are philosophical positions that avoid the scientific absurdities of consciousness-denying eliminative materialism, the cavalier dismissal of the material world by idealistic philosophers, and the dualist's difficulties in explaining the interactions between an immaterial mind and a material brain. Such doctrines include neural-identity theory, central state materialism, and double-aspect theory, as discussed above, and panpsychism. As already noted, the first three theories contend that mental events are simply brain processes experienced from within.

Panpsychism offers an easy way out (and perhaps the only viable way out) of the scientific conundrum of consciousness for those gracious enough to concede the existence of matter. Science cannot currently explain how brain activity gives rise to conscious experience (as opposed to identifying brain processes that are correlated with wakefulness or with *reports* of conscious experience). Many thinkers such as Colin McGinn (1999) and other "new mysterians" suggest than a full understanding of consciousness will never be achieved due to fundamental limitations on the cognitive powers of human brains, which evolved to invent more effective ways to brutalize a fleeing warthog rather than to probe the fundamental mysteries of the universe (although our probing has been rather astonishingly successful in the past few centuries).

Science also has no explanation for how consciousness (as opposed to cognitive powers) arose from insentient matter in the course of the development of the universe and our planet. The emergence of consciousness is perhaps the most vexing, fundamental, and seemingly unsolvable problem confronting modern science and philosophy.

Panpsychism finesses the intractable philosophical problem of accounting for how consciousness could arise from insensate matter. It didn't. It was there all along. It was there at the Creation (i.e., Big Bang) and perhaps even before that (as part of whatever collective mind or agent set up the current laws of physics and then somehow caused an explosion to make them so).

To paraphrase Bertrand Russell's harasser, it is angels (not turtles) all the way down. Even an electron must somehow "sense" an electromagnetic field in order to respond to it. A white blood cell must "recognize" a pathogen in order to engulf it. A single neuron needs to sense the flow in order to go with it.

An electron may appear to lead a very boring life. However, quantum physics has taught us that even a single electron is generally entangled with a large number of other particles and thus must somehow sense their global state. Its experience might be very complex and beautiful as well as more tranquil than our own harried existence. It may just need to watch something like a complex light show, chipping in its own two cents worth every now and again, as it skis the mogul hills of spacetime.

Our bodies are composed of a vast number of cells and bacteria, with only a fraction of them (10%) from our own species. In fact, our bodies seem more akin to a ferocious battleground for microorganisms, which are replaced from minute to minute, than to a unified entity. If one is to grant consciousness to animals "all the way down," could not our white blood

cells possess a (possibly dim) consciousness capable of recognizing their foes and engulfing them?

Plant Psychology. Might plants be conscious? While they seem less complex than we are, rice plants contain upwards of 50,000 genes, compared to a measly 20,000 to 25,000 for a human being. Thus, appearances may be deceiving. Is it inconceivable that plants possess a glimmer of consciousness, perhaps operating on a much slower time frame than we do? If you watch plants in a speeded-up movie, their behavior seems almost animal-like as they open and close their petals and stretch to capture the maximum sunlight. Do plants experience thirst when deprived of water (to say nothing of the Venus flytrap, which might be expected to experience pleasure as it emits a contented burp)? It is true that plants have no nervous systems; however, might we not be biased toward nervous systems because of our present unfortunate location?

In fact, four treatises on the psychology of plants have recently been published (Chamovitz,, 2012; Trewavas, 2014; (Mancuso and Viola, 2015) and Wohlleben, 2015). Chamovitz for instance notes that trees with caterpillar-damaged leaves communicate through a chemical signal with undamaged trees, who then ramp up production of a chemical that inhibits caterpillar growth.

The Ruminations of Rocks. Panpsychism extends the reach of consciousness to all things, including not only animals and plants, but even inorganic matter such as rocks, thus creating fields that might be dubbed phytopsychology and lithopsychology.

And what of the highly-touted thermostat? Can it be said to be aware of the rise in heat? Might rocks as they weather and absorb radiation experience consciousness on an extremely slow time span? Perhaps the experience of a mineral might be something like the light show at the end of *Kubrick's 2001: A Space Odyssey*. If so, it might be far more peaceful to be a rock rather than to be subject to the harried life we humans endure. Thus, the very dust from which we were born and into which we will die may well still carry still the stuff of mind.

Mysterianism. Then there is strangely appealing doctrine of "mysterianism," whose most notable proponent is Colin McGinn McGinn begins his book *The Mysterious Flame* (McGinn, 1999) with a short story in which future silicon-based artificial intelligences stumble across the Earth and are astounded to find lumps of meat that can think (our brains). McGinn contends that the globs of 100 billion pulsating, amoeba-like neurons that comprise the biological wetware of our brains have evolved to discover how to better secure a stone axe head to a stick in order to beat our neighbor's brain into insensibility rather than to enable us to understand the realms to which our neighbor's consciousness has fled after we have completed our handiwork. In McGinn's view, the role of consciousness and the nature of the soul will forever remain beyond the grasp of our primitive primate brains. He even suggests that conscious minds may be remnants of a nonspatial world that preceded the Big Bang, and he hypothesizes that we may not be mentally equipped to solve the problem of how minds and brains interact.

Perhaps McGinn is right. Perhaps that is why consciousness is often referred to as the "hard problem" of the philosophy of mind. But, unlike our ape brethren, we have been to the moon and plumbed the creation of the universe down to the first femtosecond. It is premature to give up trying to understand the nature of our conscious minds. Such understanding may require us to relinquish core beliefs about the nature of our selves and the quasi-permanence of our association with any particular body.

Many of the most prominent practitioners of human thought have embraced some form of panpsychism, including Leibniz, Spinoza, and Alfred North Whitehead. Under the panpsychistic view, consciousness pervades all things, and the universe consists of a plenitude of spheres of pure consciousness, or "monads" in Leibniz' terminology.

Griffin's Panexperientialism. A prominent proponent of panpsychism is the philosopher David Ray Griffin (1988a, 1988b, 1994, 1997). Griffin prefers to call his doctrine "panexperientialism" rather than "panpsychism," as he does not contend that rocks and other inanimate collections of material particles possess a highly unified and structured consciousness, but rather ascribes only vague "feeling-responses" to them. In Griffin's view, more highly complex and structured forms of consciousness are restricted to "compound individuals." Such compound individuals are composed of, or arise from, a hierarchical collection of more primitive selves or "individuals." For instance, a neuron would be a compound individual in relation to its individual constituents such as molecules and mitochondria. A suborgan such as the hippocampus of the brain that is composed of neurons would be a compound individual somewhat further up the hierarchy. All such "individuals" would have both mental and physical aspects under the panexperientialist view, although only hierarchically-ordered structures would be assumed to have a highly organized and structured consciousness. Griffin's theory raises the possibility that human societies may achieve a global consciousness that is beyond our ken, with each of us playing the role of a neuron in some sort of global "hypermind," much as each of our neurons is essentially a specialized cousin of unicellular organisms such as amoeba.

Hive Minds. What if our neurons could move? Might their collective then be considered an even more complex brain?

As noted above, Hölldobler and Wilson (2008) propose that communities of insects comprise "superorganisms" and that evolutionary selection acts on the colony as a unit, rather than on the on the individual insects. Wilson has in fact written a novel featuring ant colonies as protagonists (Wilson, 2010). Can the whole of humanity be considered as a single super-brain, perhaps associated with global spheres of consciousness? Goldberg (2009) has even suggested that in the future the Internet may develop into an "advanced intrinsic consciousness" (p. 54).

Cellular biologist Jonathan C. W. Edwards[44] and Willard Miranker (2005), a computer scientist specializing in neural networks, have proposed that that each single neuron in the brain is associated with its own center of consciousness. Due to the complexity of the input to each neuron, each such center of consciousness would likely identify with the body as a whole and would thus fall under the delusion that it is the single conscious self "in charge" of the whole body. Indeed, each neuron may have its own perspective on a wide area of brain activity, much as each part of a holographic picture holds the image of the whole scene rather than a single point or aspect of the scene. Regarding science's disregard of the observer, Edwards notes that:

Physicist[s] seem to assume that the thing with a point of view, the observer, is some big lump of stuff [the brain] that does not have to fit into theories about things that are observed[45] (p. 69).

Semir Zeki (2002), a neuroscientist, has likewise proposed the existence of an array of micro-consciousnesses at each "node of neural activity." Neurobiologist Dennis Bray (2009) compares neurons to amoebas having a complex array of inputs and thus possibly comprising centers of consciousness. He notes that neurons can grow, shrink, and move, and he observes that each neuron has a very complex input and can learn from experiences. Philosopher and theologian Phillip Clayton (2010) offers living cells and electrons as possible centers of consciousness. Stewart C. Goetz (2001), also a philosopher, suggests that the soul may be one of the "simple atoms" in the brain.

We will follow Stokes[46] in referring to centers of consciousness associated with very small entities such as an elementary particle or neuron as "microsouls" and those associated with macroscopic objects such as brains, brain hemispheres, and brain regions (such as the cerebellum or superior colliculus) as "macrosouls."

Attributing consciousness to elementary particles would seem to ignore the usual roles attributed to consciousness by cognitive neuroscientists, which include attention and the binding of diverse neural activity into the unified perception of an object (as well as other functions, such as learning novel tasks and decision-making). In a review of studies relating to attention, Yantis (2008) notes that process of directing attention remains unexplained by current findings in neuroscience. It does seem as though the center of consciousness that is the "master of one's brain" is somehow able to direct such behavior as the writing of this article. However, perhaps that center is just "lucky" enough to be in the right place and the right time to direct the writing of this article. (It might, for instance, be conceived as affixed to Broca's language area in the left hemisphere of the brain, as it does seem to choose the words one will use. Other macrosouls might for instance have the jobs of moving one's limbs. Sometimes when one stops to think about it, it is amazing that one's arm executes an intricate sequence of movements without any conscious "micro-management").

Skrbina on Panpsychism. The philosopher David Skrbina[47] has provided a comprehensive defense of the doctrine of panpsychism. He argues for instance that an electron must somehow sense the presence of a proton in order to respond to its attractive force. (An electron may even enjoy a certain degree of freedom of action due to quantum indeterminacy and may be able to sense a quantum field that is highly complex and global in nature.) Even a proton must somehow "sense" an electromagnetic field in order to respond to it. A white blood cell must "recognize" a pathogen in order to engulf it. A single neuron needs to feel the flow in order to go with it.

Bryan (2009) has observed that both electrons and human centers of consciousness are indivisible, and he too has conjectured that individual electrons may be conscious, as has the neuroanatomist Robert Kuhn (2016).

As does Griffin, Skrbina associates more complex forms of consciousness with aggregates of matter, such as single neurons, or large assemblies of neurons such as hippocampi and cerebral hemispheres. However, it should again be noted that such aggregates of matter, much like one's personality and physical body, do not persist over time and thus cannot form the basis of a continuing self. Also, fields of consciousness appear to be unitary and indivisible, much more like a quark than like a molecule or a neuron.)

Skrbina points out that the panpsychist position solves the problem of "emergence," or how organisms acquired consciousness in the course of evolution (i.e., how insensate matter gave rise to consciousness). He observes that there is no definitive line of demarcation that can be drawn between conscious and nonconscious organisms, in either the present world or in the course of evolution. If all matter is imbued with consciousness or if fields of consciousness are fundamental constituents of the universe that have existed throughout its history, then the problem of the evolution of consciousness (and of how a three-pound "hunk of meat" like the human brain could generate conscious experiences in the first place) does not arise.

It should, however, be noted that panpsychism still faces the difficulty of accounting for the emergence of a unified mind or global consciousness out of a myriad of psychic elements, as was pointed out long ago by William James and, more recently, by William Seager (1995) and Thomas Nagel (2012).

***Consciousness Expanders and Consciousness Contractors*.** At the other extreme from panpsychists are those who would deny consciousness to animals, as well as many, if not all, human beings. For instance, the late Princeton psychologist Julian Jaynes (1976) denied self-awareness to human beings prior to the rise of Mesopotamian culture and mythology. Likewise, the neurophilosopher Thomas Metzinger[48] (2009) asserts that consciousness arose for the first time only 200,000 years ago, when humans developed culture. It is not clear what Metzinger

means by consciousness, as he denies the existence of qualia (conscious experiences) and asserts that there are no fundamental "atoms" or "nuggets" of consciousness. His denial of qualia is based on their ineffability (the fact that they cannot be adequately described in language). This is likely the driving force behind his contention that all nonhuman animals, early hominins, and present-day human infants do not experience qualia and are therefore not conscious. It should be noted that Metzinger's denial of qualia altogether seems to be a stretch, even if based on his own tortured reasoning, as he grants consciousness to human adults.

Even free will denier Sam Harris (2010, 2012), who views the self as a center of pure consciousness, states that it is as likely to be found in a hyena as a human being.

However, many other philosophers and scientists, following Descartes, deny the existence of consciousness in animals other than humans, or at least in most animals other than humans. For instance, the philosopher Thomas Nagel (1974) famously posed the question "What is it like to be a bat?" The philosophical community generally translates Nagel's straightforward query into the indecipherable and muddled question "Is there something that it is like to be a bat?" Philosophers in turn seem to treat this last question as equivalent to the more straightforward question "Are bats conscious?"

In response to this question, Henry Schlinger, a psychologist replies with a definitive "No!" He denies bats both qualia and consciousness on the grounds that they have no language to describe experience (Schlinger, 2008). One might reasonably ask how Schlinger knows that they do not have language. Also, is he working from the premise that only things or properties that can be described verbally exist? Would the world cease to exist if all the linguistically-advanced animals died off? Based on their linguistic incompetence, Schlinger also denies human infants both qualia and consciousness.

The philosopher Daniel Dennett believes that "acquiring a human language (an oral or sign language) is a necessary precondition for consciousness"[49]. Based on this premise, Dennett concludes the that nonhuman animals and prelinguistic children cannot suffer or feel enjoyment, as they have no organized selves.

We now consider in detail the views of three currently prominent and influential writers on the subject of consciousness who have recently published books in this area: Antonio Damasio[50] Nicholas Humphrey[51] and Christof Koch[52] (The last two writers even dare to violate modern science's taboo against speaking of the soul in the very title of their books, while the word "soul" does not even make it into the index of Damasio's book.

Antonio Damasio, There are still many, seemingly sophisticated modern writers who deny consciousness to nonhuman animals or to any but a small set of animals. Among them is the neuroscientist Antonio Damasio. In his 2010 book *Self Comes to Mind*, Damasio ties consciousness to the development of a sense of self. He states that consciousness exists only after a human brain develops language. He summarily denies consciousness to snails and nematodes, without any supporting argument (perhaps because their linguistic behavior is marred by mumbling and slurping sounds), and to plants (because they have no neurons). This is of little consolation to a fly trapped in the rapidly closing maw of a Venus flytrap. He also denies consciousness to subcomponents of the brain such as the hippocampus, the cerebellum, and the subcortical center responsible for blindsight (a condition in which a subject cannot consciously see anything due to damage to the visual cortex of the brain, but nonetheless manifests knowledge of visually presented items). Blindsight is generally thought to be based on a second visual center outside of the visual cortex, often thought to be located in the superior colliculus of the midbrain. Blindsight will be discussed more extensively below.

Damasio maintains that consciousness requires a "self concept" and states without any supporting argument that there can be only one self per body (p. 192). He concedes that there may be "protoselves" in the brain stem and the superior colliculus, but asserts that these centers are not conscious. In his view, these centers are not "interpretative homunculi" or "Cartesian theaters," and he states that "they know nothing, [and] they do not interpret anything" (p. 214). He bases this conclusion in part on the fact that patients do not report awareness of the activities of these centers.

Damasio asserts the "will to live" may have arisen from the "attitudes of numerous single cells joined cooperatively in an organism" (p. 258). He states that "prior to the appearance of nervous systems, unbrained organisms already had well-defined body states that necessarily corresponded to what we came to experience as pain and pleasure" (p. 259). In fact toward the beginning of his book, he states that "the survival intention of the eukaryotic cell and the survival intention in human consciousness are one and the same" (p 59).

Damasio concludes at the end of his book that "the mystery of consciousness is still a mystery" (p. 262).

Nicholas Humphrey. In his 2012 book *Soul Dust: The Magic of Consciousness*, psychologist Nicholas Humphrey notes that the hypothesis of personal survival of death requires the acceptance of a dualistic worldview in which the mind can function independently of the physical body. He somewhat surprisingly states that dreams suggest that the mind can function independently from the body, although one would have thought that it has been amply demonstrated that dreams are closely tied to brain states. He even goes so far as to endorse the 19th century social anthropologist Edward Tylor's suggestion that "dreams seem to provide as good evidence as anyone could ask for that the soul can say good-bye to the body and continue its individual life"[53] .

One might add here that you have seem to have "emerged from nothing" at least once, namely when you were born. And as the legendary writer and satirist Voltaire once wrote, it is no more surprising to be born twice (and one might add a billion times) than it is to be born once. However, to be reborn with memories of one's past life intact would indeed be quite surprising, based on our current experience (but see below).

Humphrey lists three conditions that a soul must meet in order for the belief in life after death to be sustainable: (a) it must be immaterial, (b) it must be able to operate independently from the body and brain, and (c) it should have endless "staying power" (p. 194).

Humphrey asserts that "immateriality is never going to be a problem," as it lies "at the very root of what phenomenal consciousness is all about" (p. 194). Of course, immateriality seems to be an immense hang-up for the reductionistic materialists who comprise the vast majority of contemporary scientists. As noted above, Humphrey asserts that dream states indicate that soul is capable of operating independently of the body (although this conclusion would be questioned by the overwhelming majority of neuroscientists). Thus, Humphrey gives the "soul" a "pass" on the first two criteria. However, he questions the "staying power" of such states, which falls short of many religions' promise (or threat) of eternal life.

However, Humphrey asserts that "human beings rationally ought to believe in an afterlife." He notes that belief in the afterlife and in religion generally promotes health. However, Humphrey still asserts that modern science rules out the existence of an individual personal soul that could survive death. (It should be noted here the concept of a "personal soul" encompasses personality elements such as memories and emotions, and is thus not restricted to pure centers of consciousness, which might more plausibly survive.)

Christof Koch. In his 2012 book, *Consciousness: Confessions of a Romantic Reductionist* neuroscientist, Christof Koch[54] embraces a form of panpsychism.

While he describes himself as a "romantic reductionist" in the book's title, he differs from the typical reductionist who would deny any causal role to the mind and would regard conscious experience as either identical to, or an epiphenomenon of, brain activity. Instead, Koch sees consciousness as a fundamental property of the universe.

Koch endorses Giulio Tononi's proposal that the amount of consciousness in a physical system is proportional to the information present in the system over and above the information contained in its parts (Tononi, 2008, 2012). For this reason, Koch states that a proton, being composed of three quarks and their associated gluons, would be conscious, where as an electron (which cannot be subdivided) is not. (Please note that the view that the soul as simple or unitary would favor the electron over the proton.) However, one might argue that in responding to an electromagnetic field, an electron must somehow "sense" the field.

Koch asserts that, while human consciousness is an individual unity, there are numerous relatively complex lower level "modules" in the brain. He describes such modules as "zombie agents," as he views them as highly integrated as the core self. He counts among such zombie agents the cerebellum, on the basis that it is less interconnected and unified than the cerebrum. He notes that much of human behavior is caused by such unconscious "zombie agents" in the brain.

One would think that if Koch is going to grant a proton consciousness, the same courtesy should be extended to clumps of neurons in one's motor cortex, as they are surely more than their parts. Perhaps Morton Prince's term "co-conscious" (Prince, 1906) rather than the word "unconscious" should be applied here.

Koch contends that all complex material activity, including that of "every living cell on the planet" is associated with some form of consciousness. He endorses panpsychism, as well as Julian Huxley's observation that "Evolution is nothing but matter become conscious of itself"[55]

In his recent book, Guilio Tononi (2012), whom Koch favorably cites, also endorses panpsychism and postulates that there are many centers of consciousness within each human being.

When it comes to the soul, Koch likens it to a "crystal" that is constantly changing with the mind's experiences, feelings and thoughts and that returns to the "unformed void" after the person dies.

Finally, Koch endorses the view of the Jesuit priest and paleontologist Pierre Teilhard de that evolution is the means whereby nature becomes aware of itself and the universe is in the process of evolving into a global mind (Koch uses the Internet as an example).

Microsouls. According to Koch, a single proton would be a center of consciousness. However, as a unified center of consciousness, one might be more akin to an electron than a proton, as Koch notes that protons may be subdivided (into quarks and gluons, for instance). Such elementary particles are more akin to center of pure consciousness either than are clumps of neural ganglia, which are highly compound entities. Under this view one's memories, thoughts and emotions would not survive the death of the brain that generates them (nor is it clear what purpose would be served by their so doing, if one cannot act upon them).

If we are microscopic centers of consciousness, or microsouls, there may be billions of us inhabiting a single human body. In that case, it is likely that, like protons, we are more or less continually being recycled. The idea that we enter a human body as an embryo and remain stuck in it until it dies is likely is the result of the delusion that we are the Person, the (changing)

collection of atoms and associated mental experiences that are our bodies and our minds. Instead of being imprisoned for long periods of time in our present bodies, we may instead be constantly recycled. Under this view, you might wake up in the morning as a dragonfly surfing the ultraviolet sunlight, with no memory of your temporary human incarnation.

In view of the complexity of the quantum mechanical wave function governing the behavior of individual physical particles, it might not be too big of a stretch to hypothesize that a single proton might possess consciousness in the form of "knowledge" of a complex array of inputs. Protons, despite their compound nature, are essentially immortal. Protons, despite their compound nature (they're made up of quarks and gluons), are essentially immortal. Their average lifetime is at least 10^{34} years, which is 17 orders of magnitude greater than the current age of the universe.

Elementary particles such as electrons and quarks sometimes become embedded in physical brains; these particles persist and remain stuck over "long" time intervals such as minutes and hours. If an electron can "incarnate" in a body for a period of time, then be expelled, and then be "reincarnated" in another body or physical system, then so might we. We may ourselves be material or quasi-material entities that can become stuck in individual brains on a temporary basis. We may be a particle or field already known to physical science, although it is more likely we are an entity yet to be discovered and explained.

We directly experience ourselves as single unified fields of consciousness that persist through changes in our brain states and bodily composition over periods of at least hours. We think we persist as the same selves over the lifetimes of our bodies. In this we may be wrong. If memories are, as an overwhelming body of scientific evidence indicates, stored as patterns of synaptic connections among neurons in our brain, how do you know that you are the same field of consciousness that inhabited your body when you fell asleep? If you can become attached to your brain shortly after conception (or in the view of some people at birth) and become detached from it at the moment of death, it stands to reason that you can also become attached to it long after birth and leave it well before death. Our association with our bodies may be only temporary. We may be breathed out and breathed in like so many oxygen atoms. Many philosophers (such as Descartes) have thought that minds or souls are not extended in space and time and are thus immaterial. However, we find ourselves stuck in physical bodies occupying particular locations in space and (even more mysteriously) located at a particular moments in time. This suggests that we too must (at least in part) be residents of spacetime ourselves, if only temporarily.

As noted above, if we are continually being recycled, then when we wake in the morning, we may not be in the same bodies (or objects or plasma fields) that we were in the day before If our memories, thoughts and emotions are largely a function of our brain states, we would not remember our existence as, say, a crow the day before. Our previous "memory pad," namely the crow's brain, is lost to us. We cannot find those memories in the same way that we cannot access a phone number written on a misplaced piece of paper. The telephone number and the pad on which it was written are not parts of our essential selves. Neither are we the memories stored in the brain of the crow that now perches outside our window or the memories and personality traits stored in the new human brain in which we have just awakened. What we will remember are the memories stored in that new human brain (sometimes after a period of momentary confusion upon awakening). We will feel the emotions caused by the intense firing of our midbrain neurons and the hormones and neurotransmitters rampaging through our cerebral cortex. Accessing the brain's memories of our sixth birthday party, we will immediately come to the conclusion that we have inhabited this brain and body for decades. The brain has evolved to serve the body and we are now made to serve that purpose as well, overwhelmed by the delusion that we are the Person, that is to say, the body and the memories, thoughts and emotions that result from the neural activity of that body's brain. We think we are in sole command of the body, whereas in fact our

nerves, the neurochemical soup in which they bathe, as well as numerous other centers of pure consciousness also mired in the same brain, may have as much or more to say about the fate of the body than we do. In short, we fall under the illusion that we are the Person, the physical body that continues from birth to death, and the stream of memories, thoughts and emotions that courses through it, rather than the centers of pure consciousness that we are.

Once we have shed our present body along with the cognitive "self-cocoons" we have wrapped around us to keep us firmly identified with our present personalities, who knows what wonders may await us?

Consciousness as "Hidden Variables." Many observers have noted that the description of the universe afforded by the laws of quantum mechanics is incomplete. We may discover new entities or processes that may be identified with the so-called "hidden variables" that determine the outcomes of quantum processes. Also, while quantum-mechanical outcomes may indeed be random in simple physical systems, they might be less random in certain complex systems, such as human brains. Our centers of consciousnesses may be somehow stuck in positions of closer physical proximity to our own physical brains than are available to outside observers.

Thus, it might turn out that the outcomes of quantum processes within complex systems such as brains are not randomly determined but are governed by fields of consciousness, whereas those in simpler systems are not so governed.

Many parapsychological researchers, going back to Schmidt (1969, 1970), have produced evidence that conscious minds may be capable of determining, or at least biasing, the outcomes of quantum processes. This issue is discussed in considerably more detail in the next section.

The Question of Psi Phenomena. Psi phenomena comprise one class of phenomena that appear to be incapable of being explained by modern theories of physics. Psi phenomena include telepathy (direct mind-to-mind communication that is not mediated by any physical signal), clairvoyance (anomalous direct knowledge of physical events), precognition (anomalous knowledge of future events) and psychokinesis (direct mental influence of physical events outside one's body that is inexplicable on the basis of known physical signals or forces). These phenomena are difficult to explain by known physical processes, as they appear to be independent of distance and may involve the perception of events that have yet to occur (and even more strangely, the influence of events that have already occurred but have not yet been observed). The wider scientific community has generally been skeptical of the existence of psi phenomena. This is in large part due to their inability to replicate the findings of parapsychological researchers. For this reason, claimed psi effects and other paranormal processes have been excluded from this analysis and deities, which is directed at conceptions of souls, afterlives and gods and godlings that are consistent with mainstream physicalistic science.

Afterlife #1: Physical and Quasi-Physical Resurrection. What most people mean by the survival of death is the continuation of the personality, including one's thoughts, feelings, emotions, and beliefs, after death. This is sometimes called personal survival to distinguish it from survival of consciousness without memory. In he most extreme view of personal survival, what survives death is the Person (i.e., one's physical body combined with one's personality, feelings, and memories.

The resurrection of the physical body complete with personality on the Day of Judgment is one of the central doctrines of the Abrahamic religious tradition (which includes Judaism, Christianity, and Islam). Many modern adherents to this tradition may not subscribe to this belief (or even know about it), but instead believe in a different, less physicalistic view of the afterlife. Some nonbelievers eagerly await their cybernetic resurrection in a robot, cyborg or memory-implanted clone of one's present body.

Supernatural Resurrection. The atoms in one's current body have resided in the bodies of countless other persons, which raises some difficulties from a literal interpretation of the Judgment Day prophesy that one's physical body will be resurrected. For instance, will you have to engage in some sort of spiritual melee with other ghosts on Judgment Day over who gets which atoms?

This problem can of course be avoided by denying that the resurrection body is molecularly identical to the premortem body or by asserting that the Resurrection World lies in a different space-time continuum than the one we presently inhabit.

If each of us does have a self that endures from moment to moment, from day to day, and year to year (however much it may be extinguished at death), then that self cannot be identical with any specified collection of material particles. The material particles that make up our bodies are constantly changing. Atoms and molecules are continually entering into and exiting from your body, so that the collection of material particles that comprises your body of today is a completely different assemblage of material particles from that which comprised your body of several years ago. Philosopher Alvin Plantinga (2012) cites an estimate that the matter in one's brain is completely replaced in one month or so. Yet, you perceive that you are the same self you were several months ago. If this perception is correct, then you cannot be identical to any particular collection of material particles, including your present physical body. Indeed, you have already survived the death of many physical bodies within your present lifetime.

Another good reason for disbelieving in the doctrine of bodily resurrection through the intervention of a deity is that there is no rational basis for believing in it, unless one is prepared to accept particular religious doctrines (out of a wide array of contradictory religious doctrines) as fact in the absence of any compelling supporting evidence.

Some of these difficulties with resurrection may be overcome by assuming that one's resurrection body is some sort of a glorified, super-healthy (indeed immortal) replication of the physical body one had on Earth or that the resurrection world lies outside of the spacetime continuum we inhabit during our present lives. The literal resurrection of one's physical body on the planet Earth does not conform to the conceptions of the afterlife and heaven held by most lay members of the Abrahamic religions today, who picture heaven as a dreamlike, albeit suprapersonal. realm.

The Lingering Death of the Quantum Observer. If not literally in the heavens (i.e., sky), perhaps heaven is a realm outside of our current physical universe, such as a dream world or one of the uncountable infinity of parallel universes postulated to exist in Hugh Everett's remarkably unparsimonious "Many Worlds" interpretation of quantum mechanics (in which all possible futures occur). Let us hope that it is not the latter, because then we might all be live Schrödinger cats, who (though an incredible streak of luck, or perhaps misfortune) never manage to die, perhaps because one's consciousness cannot observe its own death, as suggested by Anthony Peake (2006) and Max Tegmark (1997). We would thus become aged Methuselahs, forever breathing what we desperately hope are our last breaths. However, we would have to put up with this ghastly condition for only 30 more years until we reach the Singularity predicted by futurist Ray Kurzweil (2006), when nanotechnologies can repair and rejuvenate our aged and broken bodies and advanced cybernetics will allow our personalities to be uploaded into supercomputers. It should be noted that Kurzweil himself reportedly swallows 150 vitamin pills per day in an effort to prolong his life and make it to 2045, when the prophesized Singularity kicks in.

The Eternal Return. The philosopher Friedrich Nietzsche endorsed the notion of the "eternal return," that one simply lives the same life over and over again.

Artificial Resurrection. Several scientists, including Hans Moravec (1988), Grant Fjermedal (1987), Frank Tipler (1994), and Raymond Kurzweil (2006) among others, have suggested that one's thoughts, memories and personality could all be "downloaded" into a computer or robot, allowing one's essential self to survive after death in a cybernetic world or as a cybernetic simulacrum operating in the physical world. One's new brain might be entirely or in part biologically-based, and might be housed within an android facsimile of your body (possibly even within a biological clone of your own physical body).

Along similar lines, it could be argued that, if you are not the particular collection of physical particles that make up your present physical body, perhaps you are the particular *pattern* of molecules that make up your present body (including your brain configuration and thus personality). You would then remain the same person even if the physical particles that make up your body changed, so long as the general pattern remained the same. This is the basis of the famous beaming technique in the *Star Trek* television and movie series. In *Star Trek*, one can "beam" to a new location by undergoing a process in which one's physical body is atomized, information about the pattern of the physical particles that make up one's body is sent to a distant location, and a new body is reassembled (presumably out of new atoms) at the second location. Peter Oppenheimer (1986) and Derek Parfit (1987) have independently concluded that this beaming process would result in the death of everyone who used it as a form of transportation, followed by the construction of a replica of the person at the destination site. This replica may not be the original person any more than identical twins are the same person as one another.

Assume that more than one copy of the person is assembled at the destination site. Surely it would be difficult to believe that one's self could simultaneously inhabit all the replicas of one's physical body that are constructed at the destination site, insofar as a unified conscious self cannot have several separate and independent streams of consciousness occurring at the same time. The same objection applies to the "downloading" of one's personality into a computer.

Also, it might be possible that such a simulacrum of one's personality could be created before one's physical death. In such a case would your conscious self be located within the simulacrum or would you still reside inside your current brain? One suspects that the intuitive answer for most people is that one would still reside in one's original brain. We sense that we are somehow physically attached to our brains and that such brains are, alas, not so easily escaped. Thus, it is possible that the Person (your physical body and personality) might be resurrected and be recognized as you and accepted as such by your friends and acquaintances. However your essence, the center of consciousness that mysteriously inhabits your present brain, may be long gone and occupied in new adventures, while your simulacrum continues to fulfill your present role to the satisfaction of your friends, neighbors, and enemies, and spouse.

Personal Survival. If the afterlife is not a dream-world, might your personality (comprising your memories, sensations, thoughts, emotions and desires), or some fragments thereof, soldier on past your death? Evidence that such might be the case is provided by messages purportedly received from the dead and passed along to the living via mediums or psychics. However, much of this evidence may be explained on the basis of fraud, subconscious inference, sloppy scientific methodology, and the propensity for humans to see patterns where none exist. Suffice it to say that this evidence for the survival of personality elements is very weak and flies in the face of an overwhelming body of evidence that mental activity is intricately dependent on brain activity, as reviewed in detail in Martin and Augustine (2015). Surely it is absurd to postulate that personality fragments such as one's memories, emotions and thoughts can survive the dissolution of one's entire brain at this point in our knowledge of neurophysiology.

Afterlife #3: The Collective Mind. If you do not survive the death of your physical body cloaked in some sort of dream-body or "astral" body, perhaps you might live on in the form of

your personality (comprising your memories, sensations, thoughts, emotions and desires). Possibly only a fragment of your personality is preserved after death. Perhaps several fragments, or "sub-souls" survive, as thought by the ancient Egyptians. Such clusters of disembodied personality traits are frequently postulated to reside in some sort of "collective mind."

If our dream bodies are mere hallucinations, might we be the dreamer rather than the dreamt? Can facets of our personality such as our thoughts and memories survive in the absence of a body of any sort? Such incorporeal survival is not usually contemplated by believers in survival, as it is further removed from our premortem existence and such an afterworld may seem a dark and depressing place. But postmortem realms in which the departed are housed in some sort of astral bodies may only reflect the limits of our imagination as well as wishful thinking (i.e., not giving up anything from this life other than physical and spiritual ailments, certainly not one's clothes). However, it may be that if portions of the personality survive death, they may generate an hallucination of a physical body (and if this hallucination is continuous, it would difficult if not impossible, to distinguish between this form of survival and survival in the "astral plane" as discussed above).

Survival of Personality Fragments. Many people identify their essential selves or souls with their personalities, including their thoughts, memories, emotions and strivings. Some theorists have proposed that at least some of these personality elements may survive death, persisting in a collective mind, such as those proposed by the early psychical researcher F. W. H. Myers, the psychiatrist C. G. Jung, the physicist and mathematician G. N. M. Tyrrell, and the prominent American psychologist Gardner Murphy.

Myers (1903) postulated what he called the "subliminal mind," which was responsible for telepathy as well as ostensible messages from the dead.

Tyrrell (1953) proposed that people share regions of their minds at a deep unconscious level. He asserted that, at the unconscious level, the "midlevel centers [of the personality] possess in some degree both the qualities of selfhood and of otherness from self" (p. 119). Tyrrell proposed that it is in these regions that our dreams and hallucinations are constructed. He asserted that, as this deep region of the unconscious has no organization in space or time, it enables telepathic exchanges to take place.

Jung (1973) hypothesized that a collective unconscious exists and was responsible for synchronistic events (meaningful coincidences) such as telepathy and psychokinesis. Jung asserted that reality, including the material world, is "psychoid" in nature, meaning that even seemingly insensate matter has a psychic component.

Murphy (1945, 1973) proposed that the mind might survive death in a fragmentary state in a type of collective consciousness. However, Murphy noted that the idea that individual minds will survive death in an intact condition presupposes that the individual mind is a rigid, encapsulated entity. Instead, Murphy argued, the individual mind, being merely an aspect of a larger field of consciousness, may take on new qualities and form new structural relationships, no longer clinging to its narrow, biologically-oriented form of organization. He quotes philosopher Friedrich Nietzsche's remark that the ego is a "grammatical illusion," and notes that the Buddhists deny the existence of a personal soul.

Michael Grosso (1979) suggests that the ego may become fragmented in the afterlife and that, when one's wishes and desires are played out, one may eventually achieve the sort of transpersonal state experienced by mystics. Grosso attributes the repetitive, rudimentary forms of behavior frequently exhibited by ghostly apparitions to such fragmentation of the personality.

Mediumship. The belief that it is possible to contact the dead through the intermediary of a living person forms a part of many formal and informal religious traditions. As this article is restricted to conceptions of souls, afterlives and gods that are consistent with physicalism and as modern physicalists are skeptical that memories and personality traits could survive the death and dissolution of the brain, mediumistic phenomena lie outside the purview of this article.

It is unclear what benefit would be provided by the survival of personality fragments, if the "ghost" is generally unable to communicate with, or act upon, the physical world it has left behind.

Afterlife #4: Reincarnation. One exception to the general causal impotence of the personality thanatope is found in cases of reported memories of previous lives as assembled by Ian Stevenson and his coworkers (e.g., Stevenson, 1987). In some of these cases, in addition to reporting a large number of memories of previous lives, the children also manifest some of the skills and emotions of the putative previous personality. As these children are housed in physical bodies, they would be in a much better position to act on the physical world (such as by providing evidence that would lead to the conviction of the person who murdered them in their previous lives) than are disembodied spirits.

The evidence for reincarnation comprises the strongest form of parapsychological evidence for the survival of death of at least some elements of the personality (and in some cases even of bodily appearance). Also, reincarnation provides the easiest afterlife to imagine, as no imagination is necessary. You are already there!

Reincarnation is an appealing doctrine because of its simplicity. The recycling of souls from one body to the next bears a resemblance to the great cycles of nature, including the seasons, the rising and setting of the sun, the water cycle, the oxygen cycle, and the recycling of atoms and molecules between living creatures and the worlds they inhabit. Another advantage of the reincarnation process is that it renders our present incarnated state less puzzling. Under the official Judeo-Christian-Islamic (Abrahamic) view, one lives but one human lifetime, which is but a flicker of an eyelash when compared to the 13.8 billion years or so that have elapsed since the Big Bang as well as the eons that lie ahead before the universe's predicted quiet end in a "heat death." Because our lives are such infinitesimal spans when compared to the age of the universe, each conscious person must marvel at the fact that this present moment in time just happens to be one of the moments when he or she (construed as the conjunction of a physical body and personality, as in the Western religious tradition) exists. If a moment were to be chosen at random from the history of the universe, the probability that any person would exist at that time would be essentially zero. The fact that the moment that has somehow mysteriously been selected to be "now" is a moment within the reader's lifetime would seem to be a miracle if the Abrahamic single life hypothesis is true. The fact that "now" happens to be a moment within your lifetime would become much less surprising under the hypothesis of reincarnation, as the "now" would only have to correspond to any moment in a potentially endless succession of lives rather than a single human life. If one were to allow the possibility of incarnation in nonhuman life forms, on one of the now countless exoplanets orbiting foreign stars, or perhaps even in other universes, it becomes more and more probable that you (construed as a center of pure consciousness) would exist now.

Cultural Determinants of the Belief in Reincarnation. Many luminaries within the Western tradition, including Pythagoras, Plato, Henry Ford, General George Patton, William Wordsworth, Walt Whitman, Henry David Thoreau, Ralph Waldo Emerson, and Mark Twain have expressed belief in reincarnation. Reincarnation is of course the official dogma of the Buddhist - Hindu religious tradition (as well as several other religions).

The early Christian Gnostics, including such figures as Origen in the third century A.D., taught the doctrine of reincarnation. Origen was an Egyptian scholar who is often credited with the coalescence of Christian writings that became the New Testament (Stemman, 2012). However, reincarnationist beliefs within the Christian tradition were finally suppressed by an ecumenical council held in 553 A.D.

Despite this banishment of reincarnation as heresy, many people within the Western culture continue to believe in reincarnation. A Gallup poll of American adults indicated that 21% believed in reincarnation, with another 22% indicating that they were "not sure" whether reincarnation occurs or not (Gallup and Newport, 1992). In a much more recent poll, Farha and Steward (2006) found that 25% of college students professed a belief in reincarnation.

Even Thomas Henry Huxley, "Darwin's Bulldog" and a prime proponent of epiphenomenalism, believed in reincarnation, asserting that he was certain he had lived 1000 times before and hoped that he would return 1000 times again (Huxley, 1892).

Stemman (2012) notes that within the Jewish religion, the Hassidic and Kabblah traditions embrace reincarnation, as do Sufi, Druse, and Alevi Muslims, and the Jains. He observes that *Qur'an* is largely silent on the subject of reincarnation with the exception of the following passage: "God generates beings and sends then back over and over again until they return to him"[56] (Stemman, 2012, p. 9).

Matlock (2011) notes that approximately half of tribal cultures subscribe to a belief in reincarnation. These include several shamanistic traditions, including those of the native tribes of northwestern North America, the Trobriand Islanders, Australian aborigines, and the Ainu of northern Japan.

Of course within the mainstream Abrahamic tradition that predominates in Western cultures, a different view has held, namely that we live but one life. Many of the sects within this tradition hold that eternal damnation or salvation is dependent upon acts committed within this one physical incarnation, a stern doctrine indeed.

Philosophical Objections to Reincarnation. Several objections have been raised to the idea of reincarnation. One, which was raised by the third century Christian philosopher Tertullian and has more recently been dusted off and resurrected (or perhaps reincarnated) by the philosopher Paul Edwards, is based on population explosion (Edwards, 1997; Tertullian, 1997). There are many more human beings alive today than have lived at any time in the past. Thus, it is claimed, there would not be enough souls to animate each new human body, as the number of bodies must surely outrun the number of reincarnating souls however, this objection is mired in anthropocentrism.

Animals, of both the terrestrial and extraterrestrial varieties, could provide one obvious reservoir of souls, as would plants and elementary particles under philosophy of panpsychism.

It is also conceivable that souls might spend considerable amounts of time not housed in biological bodies, or indeed in any body whatsoever. As previously noted, the physicist Evan Harris Walker (2000) postulated the existence of "proto-consciousnesses" responsible for the collapse of quantum mechanical state vectors governing events that are remote in space and time from human (or other biological) observers. Hill (2005) has observed that, if the universe has been designed, it appears to be devised for creatures or consciousnesses that inhabit the vast, seemingly inhabitable regions of outer space. The design of such a vast cosmos for the mere purpose of creating a few randomly evolved, ephemeral sacks of protoplasm (such as ourselves) which crawling about on a minor planet of a second rate star would be most uneconomical indeed. Perhaps centers of consciousness are as common as electrons or quarks.

Objections Based on Memory. A second objection to reincarnation is that we have no memory of our previous lives. Actually, that may not always be the case. Much of the parapsychological evidence for reincarnation, to be discussed below, consists of instances in which persons have in fact claimed to remember details of their previous lives. Reincarnation could of course occur without any transfer of memory from one incarnation to another.

A considerable body of evidence now exists that memories are either physically stored in the brain or at least intimately dependent on certain brain structures. See the anthology *The Myth of an Afterlife* by Martin and Augustine[57], 2015) for a recent comprehensive review of these findings. It would be difficult therefore to imagine that memories could in general survive the dissolution of the physical brain at death.

In fact, we do not remember the events of many previous days of our present lives, although we lived through them. Our system of memories changes over time, with some memories decaying and new ones being formed. Our essential selves, on the other hand, seem to remain unchanged over time. We are thus not identical with any particular set of memories. Thus, it would be easily conceivable that one's self could be reincarnated in a new body, while retaining no memory of one's previous life. Several writers, including Ken Wilber (1990) and Stokes (2014) have suggested that reincarnation might occur in just such a memory-less manner.

Reincarnation and Spacetime. The mathematician Derek Lawden (1989) has suggested that minds or consciousnesses experience the passage of time only when incarnated in a physical body. This experience of "time flow" cannot be explained by current theories of physics, although. After death, Lawden proposes, the mind would exist in a timeless, mystical state of identification with the entire spacetime continuum. This mystical state of union with the cosmos as a whole is unstable according to Lawden, and so the mind's attention once again contracts to a single stream of consciousness and one is reborn into a new physical body.

In Lawden's view, the order among successive rebirths may not correspond to their order in physical time due to the timeless nature of the state between incarnations. Thus, one's "next life" may be in the Middle Ages, or one might be born again in the 20th century and encounter one's present self as a friend. If one were to extend Lawden's theory to encompass the alternate universes inherent in Hugh Everett's "Many Worlds" interpretation of quantum mechanics, as does Peake (2006), one could even imagine being reborn as one's present self, but eventually experiencing a different life history as one travels up a different branch of the tree of possible futures!

A very similar view was proposed by the biologist Carroll Nash (1995b). Like Lawden, Nash postulates the existence of a postmortem condition in which one's mind exists in a timeless state and is capable of seeing all the events of one's life (one's "worldline") at once. He proposes that this experience may form the basis of the "life reviews" frequently reported by persons undergoing NDEs. He further suggests that one might become bored with one's own worldline and thus might be drawn to experience other worldlines as well. In Nash's opinion, this common sharing of pain and pleasures would resolve some of the inequities of our earthly lives and would unify all minds in a single consciousness.

Both Lawden's and Nash's hypotheses are of course purely speculative. Lawden explicitly notes the similarity of some of his views to those of the Hindu-Buddhist tradition. In the Indian Vedic tradition, God or Brahman (the one Self of the universe) becomes bored with his solitary existence and splits himself into all the creatures of the earth. The Hindu tradition has it that one's progression from incarnation to incarnation depends on one's level of moral development. Persons of high spiritual development are rewarded by being reborn into more favorable conditions, while miscreants may be punished for their misdeeds in the circumstances of their next lives through a process known as karma. According to Hindu philosophy, the goal

of spiritual development is to realize the identity between one's individual self (atman) and the universal Self of the cosmos (Brahman). The Sufis also seek annihilation of the self in God (Segal, 2004).

Writing in the *Skeptical Inquirer*, a journal generally not enamored of the claims of parapsychology in general and of reincarnation in particular, atheist blogger Greta Christina (2005) proposes that each human being achieves a kind of immortality insofar as the worldline that comprises a human life enjoys a timeless status in the spacetime of general relativity.

As noted above, the theory of relativity denies the existence of a unique present moment and the concept of time flow. Thus, the continued existence of one's worldline in spacetime, when viewed from a "timeless" perspective, confers an immortality of sorts on all human beings. Christina's observations bear a certain similarity to Nash's theory, but omit Nash's proposal that one may experience one's own worldline repeatedly or experience the worldlines of other creatures (much like a visitor to a four-dimensional art gallery).

The physicist Richard Muller has recently published a book-length treatise on the nature of time and time flow (Muller, 2016). He likens the currently fashionable philosophy of physicalism to a religion. He cites St. Augustine's view that God is timeless. Muller debunks the widely held view that the direction of time may be defined in terms of entropy increase. He likens the quantum mechanical wave function governing an electron to a soul or spirit. Muller states that when he contemplates his own soul, he notes that he is confronted with a spiritual world that is separate from the real (i.e., physical) world. He proposes that wave functions between the two worlds are entangled. but that because the spiritual world is not amenable to physical measurement, this entanglement cannot be detected. He proposes that spirit can affect matter through this entanglement. In this it would seem that Muller's proposed entanglement is distinct from quantum entanglement, which is between physical particles rather than between mind and matter. Muller presents a novel physics-based solution of the "time flow" problem (the phenomena of the subjective passing of time (in which a "moving present" seems to travel forward in time. The notion of a moving 'now" is alien to the timeless world of general relativity. However, Muller bases his account of the moving "now" squarely on general relativity and the recently-discovered expansion of the spacetime universe, as proposed by the physicist Alan Guth. Due to the cosmic inflation the very fabric of spacetime itself is being stretched. This creates more space and more time with each moment. Muller proposes that this growth in time constitutes the basis of the phenomenon of time flow. This is a novel approach, we will see how it fares under philosophical and scientific arguments to come.

The Buddhist Doctrine of "No Mind". Reincarnation is a Buddhist doctrine. What then is it that reincarnates, if there is no self? According to many Buddhists what reincarnates is a complex of thoughts, desires, and cravings. These Buddhists seem to be adhering to the view that some partial remnant of the personality reincarnates. This conception has already been found wanting above. Not only that, but the Buddhist doctrine of No Mind appears to postulate the existence of experiences in the absence of any experiencer. Also, the simultaneous postulation of an afterlife and denial of a continuing self seems to be contradictory. Thus, this appears to be an incoherent philosophical position. It is no more coherent when uttered by an obedient army of monks with shaven heads and orange robes than it is when uttered by misguided philosophers and scientists such as Dennett , Blackmore, Metzinger and the Churchlands, who deny the very existence of continuing selves.

The Buddhist notion of "no self" as formulated above appears to be nonsensical. The same is true of any doctrine that speaks of experience without an experiencer. Such doctrines are inconsistent with our direct and core introspective experiences. It would be easier to entertain the possibility that the material world is an illusion.

In Buddhism, the goal of spiritual development is to reduce one's own suffering (and that of others) through the extinction of the cravings and desires that give rise to suffering (to the extent that they are invariably unfulfilled). The final aim is to achieve a state of total extinction of desire known as nirvana. Nirvana is essentially a state of extinction of the self. Despite Buddhists' belief in reincarnation, the Buddhist doctrine of *anatta* or "No Soul" is essentially a denial of the existence of a permanent self.

Ken Wilber (1990) notes that, while Buddhism denies a permanent existence to the individual soul or self, it does grant a "relative existence" to the soul. Indeed, the doctrine of *anatta* seems directed primarily against the idea that personality patterns and traits have a permanent existence. Thus, seekers of enlightenment should not cling to their present mental states. Rather, each such seeker should see himself or herself as pure consciousness and awareness, something separate from the personality traits, memories, feelings and sensations that may form the source or objects of desire or clinging, preventing one from reaching a state of enlightenment. The similarities between Eastern views regarding the extinction of self and union with a World Soul and Lawden's and Nash's views discussed above should be apparent (indeed, Lawden explicitly comments on these similarities).

F. W. H. Myers, one of the first explorers of the unconscious mind, postulated that each person possesses a Platonic soul that exists prior to birth and continues after death. He thought that after death the soul progresses through a number of spheres, eventually merging with an "ultimate principle." In this, Myers' views are similar to those of Teilhard de Chardin[58], the theosophists, and the tenets of Hinduism.

The most more compelling evidence of reincarnation consists of from the spontaneous recall of past life memories does not in general suggest the existence of any moral karmic principle governing the assignment of incarnations. Such a karmic principle would also seem to require the existence theistic "traffic cops" of some sort, although many in the Eastern traditions would equate karma with the unresolved cravings of the mind.

Spontaneous Recall. By far the most impressive evidence for the survival of personality elements are children's spontaneously reported memories of previous lives, generally within a few years of birth. In such cases, which occur primarily in cultures having a strong religious belief in reincarnation, the child typically claims to be the reincarnation of a person who had died within the past few years. The child may exhibit knowledge of that previous life that is difficult to explain on the basis of the child's experiences in his or her present life. The child may also manifest personality traits and behaviors consistent with those of the claimed former personality. These behaviors are sometimes at variance with the behavioral norms of the culture in which the child is being raised. There also may be birthmarks or other defects on the child's body that seem to be related to events in the claimed previous life (often the manner of death). The most prolific investigator of such cases has been Ian Stevenson, a professor of psychiatry at the University of Virginia. Stevenson, his coworkers, and his intellectual descendants, have produced a prodigious number of publications on the subject. It should be noted that Stevenson did not use hypnotic regression techniques in his investigations (Tucker, 2007a).

In a typical published case, a very young child reports memories of having lived in a different village, provides the names of close relatives, a description of the residence of the former personality, may evidence skills and attitudes consistent with the previous life, and may even report the manner of death (which is violent in a surprisingly large number of cases). In most of the published cases, the families of the previous and present personalities have meet and many of the child's statements are verified. The child may also manifest attitudes toward members of the previous personality that would be consistent with the role of previous personality.

In a typical case, the child begins speaking of the past life at the age of two or three, and ceases talking about it at the age of six or seven.[59]. Until recently, it was generally thought that these children cease talking about their prior lives by the time they reach adulthood. However, a study by Haraldsson and Abu-Izzedin (2011) indicates that such memories may fade less rapidly than previously believed.

Prevalence. Reincarnation cases are not as rare as one might expect. As of 1990, Stevenson's collection contained over 3000 cases. In a systematic survey of Northern India, Barker and Pasricha (1979) found an incidence rate of 19 reincarnation cases per 1000 inhabitants.

Birthmarks. Stevenson (1993) noted that in 35% of his reincarnation cases, the child is born with a birthmark or birth defect that seems significantly related to events in the life of the claimed previous personality, with similar percentages reported by other investigators (Keil and Tucker, 2005); Pasricha, 1998). Frequently such birthmarks correspond to wounds incurred at the time of a violent death. In one such case, the subject was born with a long birthmark around his neck that seemed to correspond to the wounds received by the person whose life the subject claimed to remember. That person had died of a slit throat (Stevenson, 1974). In a review of 225 birthmark-related cases, Stevenson (1997) presented cases in which: a girl with a malformed finger reported a past-life in which the prior personality had a finger cut off, a boy with only stubs on the fingers his right hand remembered a previous life as a man whose right fingers were cut off, and a boy with a small round birthmark on the back of his head and a larger, irregular birthmark on the front of his head remembered a life in which the prior personality was shot from behind. Stevenson noted that the most extraordinary of these birthmarks involved a 3-cm-wide area of pale scar-like tissue that extended around a girl's entire head. She recalled a past life in which she was a man who underwent skull surgery. Of course it is possible that these birthmarks may have led the subjects to construct past life stories in which they received wounds similar to the birthmarks. This would reverse the arrow of causation.

Announcing Dreams. Another feature of reincarnation cases is the announcing dream, in which a pregnant woman may dream of a deceased relative or acquaintance who informs her of his intention to be reborn as her child. Of the 24 cases that Stevenson (1977) investigated among the Haida Indians of British Columbia, 14 were characterized by announcing dreams. In one of Stevenson's Haida cases, a tribal elder had said that he wished to be born with only one hand so that he could avoid manual labor. After his death, his grandchild was born without a hand on his right arm.

Unusual Interests and Skills. Many of Stevenson's subjects displayed skills and interests that seem to represent a continuation of skills and interests developed in the claimed previous life.

Stevenson (2000) reports that in approximately one-quarter of his cases, the child engages in play related to the putative past-life. Also, many subjects display phobias that seem related to their past life memories. Tucker (2007b) reports that in 35% of the cases in which children report an "unnatural" death, such a phobia is manifested.

Prevalence of Violent Deaths. **I**n an extraordinarily large number of cases involving the spontaneous recall of past lives, the previous life ended in a violent death. Such deaths occur in well over half of Stevenson's cases (Stevenson, 1987). Tucker (2007b) notes that 75% of the cases on record contain a description of the cause of death. Of these cases, 70% involve an "unnatural" death. It could of course be the case that violent deaths may receive greater publicity that nonviolent deaths, increasing the sensory cues available to the subject.

Thanatopes in Reincarnation Cases. Stevenson offers a few speculations regarding the process of reincarnation based on his research (Stevenson, 1987). He suggests that between lives the personality exists as a discarnate trace, which he called a "psychophore" (to avoid the excess baggage of the concept of soul). The psychophore retains images, thoughts and intentions relating to the previous life. These images are then capable of being described once the child whose body becomes associated with the psychophore develops the ability to speak.

The distinguished philosopher C. D. Broad (1925) proposed that a similar entity carrying partial personality elements, called a ψ-trace, might survive death in a disembodied state, but would be conscious once again if reembodied (e.g., by possessing a medium or through reincarnation).

Jürgen Keil (2010) postulates the existence of "free-floating thought bundles" that are emitted by a dying person, which may get attached to people, objects, locations or even situations. In their ability to become attached to objects and places, a view shared by Roll (1983), who called such local traces "psi fields."

Stevenson (1987) noted that his cases provide little support for the hypothesis that a moral principle of karma guides the reincarnation process (i.e., that virtuous persons will have a favorable rebirth, while the nonvirtuous will have a less favorable rebirth). One exception is the retention of personality traits from the previous life (which some Buddhists view as a form of karma that is to a large extent under one's own control).

Criticisms of Spontaneous Recall Cases. Critics have attacked the evidence for reincarnation based on spontaneous recall on several bases. First and foremost is the possibility that the child may have acquired the information about the previous life through normal means and consciously or unconsciously used this information to construct a past-life fantasy or hoax. Certainly, in cases in which the recalled past life is that of a deceased member of the subject's family, the possibility for sensory transmission of information is enormous. In other cases, the subject's present family may have had contact with or knowledge of the family of his claimed former incarnation. In fact, in only about one-quarter of such cases are the two families unknown to each other (Stevenson, 1986; Cook, 1986).

The high proportion of cases involving violent death in Stevenson's collection raises the suspicion that the death of the prior personality may have received much formal and informal publicity, rendering it even more likely that the subject could have been exposed to information relating to the death through normal channels.

Memoryless Reincarnation. Reincarnation need not involve memory. As the ancient Greeks thought, we may drink of the river of Lethe and remember no more. Like the elementary particles that compose our physical body, our souls or selves (construed as centers of pure consciousness) may be constantly recycled through a succession of living organisms and non-biological structures (some such structures perhaps being beyond our ken at the present time). Memories, like a telephone number scrolled on a note pad, may reside in the structure of the brain, not in the soul, and may be lost in each transition.

The Filter Theory

A little more than a century ago, a few notable scientists and philosophers espoused the notion that the brain may not be the generator of consciousness, but rather acts as a "filter" to restrict the psyche's attention to stimuli that will help to ensure the further survival of the biological organism. These writers include the prominent French philosopher Henri Bergson (1911, 1914), William James (1898), one of the founders of American psychology, and the German philosopher Ferdinand Schiller (1891/1968). These theories have been reviewed by Gauld (2012).

Stokes (2016) distinguishes several versions of the "filter" theory (which are not often distinguished by their proponents):

- ***The Filter Model,*** in which the brain is seen as limiting one's attention to the events that are most immediately relevant to one's biological survival.

- ***The Transmission Model,*** in which the brain is seen as merely a transmitter for mental states.

- ***The Instrument Model,*** in which the subject's mind "plays" the brain like a piano or other instrument.

Under the Filter Model, if the brain is damaged or destroyed, higher consciousness would no longer be restricted and would flood into the subject's mind. One would expect that brain-damaged subjects would manifest paranormal awareness, floods of memory, feats of high skills and deep spiritual insights. Alzheimer's disease should make the mind clearer, rather than dimmer. Needless to say this is not what is usually observed (except in some cases of deathbed apparitions and terminal lucidity).

The Transmission Model would seem to be at odds with the findings of cognitive neuroscience, in which experimentally-manipulated brain states often give rise to complex causal chains that involve mental events. Thus, the direction of causation is certainly not always top-down.

The Instrument Model, the Transmitter Model and Physicalism all predict a degradation in communicated mental states if the brain is damaged.

William James contended that the function of the brain is not to produce consciousness, but rather to transmit it or allow it to enter from elsewhere. Thus, under James' view, the brain thus narrows the scope of consciousness, acting as a barrier or threshold that is low when the brain is working well, but higher when it is not.

Schiller noted that if someone loses consciousness as a result of brain injury, it is clearly as good an explanation to assert that the injury to the brain destroyed the mechanism through which consciousness manifests itself as to say that it destroyed the seat of consciousness.

The filter theory is still alive in some quarters today. As noted by Sudduth (2011), Chris Carter (2010) still argues that the correlation between mental and neural activity cannot be used to distinguish between the "productive" and "transmission models" of mind-brain interaction.

David Lund (1985) also argues that the brain may be the transmitter rather than the generator of consciousness. Under this analogy, a damaged brain may simply be unable to receive the signal from an intact consciousness. On the other hand, Barry Beyerstein (1987) has argued that a nonphysical mind should be able to compensate for the effects of brain damage. How, he asks, can the mind allegedly separate from the body in an out-of-body experience and perceive the environment if it cannot overcome perceptual deficits caused by brain damage (such as blindness arising from damage to the visual cortex)?

Terminal Lucidity. David Rousseau (2012) draws attention to the underappreciated phenomenon of "terminal" lucidity, in which a patient who has been neurologically compromised by conditions such as schizophrenia, Alzheimer's disease and hydranencephaly exhibit lucid thought and perceptions just prior to death. Rousseau's review covers over 130 such cases. This research may have implications for the views of Bergson and Myers that the brain may be a filter or receiver for consciousness rather than the generator of consciousness (see Kelly, 2007).

The phenomenon of terminal lucidity, in which a patient suddenly manifests highly-improved mental powers just before death, is often taken as supporting the Transmission or

Instrument models. However, Stokes[60] notes that it actually contradicts them, unless the physical brain that acts as the transmitter or instrument of communication is somehow miraculously repaired before death, producing a sudden clarity in the patient's mental state. Such improvement would likely also be compatible with physicalism. Thus, one is faced with the problem of distinguishing between the Transmission and Instrument models and physicalism on an empirical basis. Physicalism would seem to be more parsimonious than the Transmission and Instrument models, in that it does not propose the existence of some sort of mental realm in addition to the physical world.

It has been amply demonstrated that one's cognitive and affective life is intimately dependent on brain activity. Removal of one's hippocampus destroys the ability to store new episodic memories. How then, with their hippocampi long since decomposed, can the dead regale us with tales of their adventures in the afterlife? Remove his amygdala, and a violent maniac is turned into a docile creature. How then can a restless spirit, torn from not only its amygdala but its entire brain, terrorize us from beyond the grave to avenge some past injury? It is simply no longer possible to maintain that the personality is independent of the brain or that the brain is simply the conduit through which the soul speaks, rather than the generator of the personality. How, if a mind cannot maintain its memories once the brain has entered the ravages of Alzheimer's, could it remember its adventures on earth when the entire cerebrum has been reabsorbed into the dust?

Conclusions Regarding the Survival of the Personality. Stevenson's reincarnation research provides the best evidence that personality traits, memories, emotions and other aspects of the Person may survive death.

The vast majority of human beings have no recollections of former lives. However, if memories are stored as patterns of synaptic connections in the brain, as most modern neuroscientists believe, then this lack of memories of former lives would be expected, even if the centers of pure consciousness that comprise our core selves do transmigrate from brain to brain (and even from brain to non-brain and then back again).

Our core selves, if conceived as centers of pure consciousness, appear intuitively to be unitary and not divisible into components. If we are something like the proto-consciousnesses that govern the collapse of remote quantum state vectors, as proposed by Walker,[61] then we likely share the same ontological privileges accorded to fundamental particles, including conservation over time. Perhaps we are even identical with particles or fields already known to physics (much like a proton responding to a complex quantum-mechanical field connecting it to the rest of the universe may be said to be in some sense aware of that universe). On the other hand we may well be fundamental entities yet to be identified by modern science. In either event, our association with any given brain or other physical system is likely to be more temporary than we think. The illusion that you have continuously inhabited your current brain for decades likely arises from the memories stored in the connectome (patterns of neuron connections) of that brain combined with your cognitive construction of the social entity known here as the Person.

The illusion of being the Person, in the sense of the conjunction of our physical bodies and personality traits such as memories and desires, likely arises in part from a false identification with the physical body and its needs, which may serve our biological imperatives but perhaps not our spiritual needs.

This universe is one of conservation, of mass-energy, baryon number and angular momentum. It is a universe of rearrangement, not destruction. If, as centers of pure consciousness, we are granted at least some form of parity with such seemingly (to us) mindless and insignificant entities such as quarks and electrons, then it is likely that we, like they, are recycled from system to system, continually falling into the murky depths of one system of

primitive awareness after another, but perhaps from time to time becoming united in a "supersystem," compared to which our present human consciousness will appear like that of an amoeba.

If the materialists are correct in their view that we are nothing but matter and energy and if our intuition is correct that we are unitary, much more like a quark or an electron than like a temporary conglomeration of atoms, then the pro-survivalist may rejoice. The universe conserves mass-energy, recycling it from one part of the cosmic show to another. Uncountable beauties and terrors may await us as we are torn free of our human form and the illusion created by our stories of the self and our identification with the Person.

Souls, Microsouls, Macrosouls, Megasouls, and Gods.

We now consider revised views of souls and gods that may be more compatible with modern neuroscience and modern physics than are the traditional religious conceptions of the soul. We will begin with a consideration of the possibility of spheres of consciousness at different levels, from elementary particles to deities.

Souls. In view of the dependence of our thoughts, memories, emotions and sensations on the activity and structure of the physical "wetware" that is our brains, we are left with pure consciousness as the best candidate for the portion of our selves that could survive the death of the brain. Remember that neuroscience, at least in its current state of development, is fundamentally unable to account for the existence of conscious experiences (in the sense of "raw feels," or "qualia," as contemporary philosophers are wont to call them).

For instance, while neuroscientists may be able to identify the neural activity that is associated with the experience of, say, a red rectangle in the left side of one's visual field, it cannot explain how the electrical discharges in this tangled web of biomatter can produce the conscious experience of a red rectangle. They may be able to predict that this stimulus will generate neural signals leading to mouth and throat movements that will cause the subject to exclaim "I see a red rectangle!" However, for all the outside observers know, the subject could be lying (e.g., could be a philosophical "zombie" with no consciousness whatsoever). Modern cognitive neuroscience has gained remarkable insights into the nature of the brain activities that are associated with various forms of cognitive experience. What it has not thus far achieved is any explanation of how a lump of protoplasm, which is basically nothing more than an ongoing (albeit complex) electrochemical reaction, can give rise to conscious experience in the first place.

As we have seen, due to the replacement of atoms, if each of us does have a continuing self, then that self cannot be identical with any specified collection of material particles. The Person you were ten years ago has long been dead. Death may not be as terrible as that Person expected it to be..

If one is to be identified with a particular physical body, the probability that the set of genes that formed the blueprint for that body would ever have come into combination is virtually zero (and still smaller is the probability that the particular configuration of material particles that comprises one's present physical body would ever have formed, much less exist at the present moment). It is also surprising that the present moment in time just happens to within your lifetime, which is but a flicker of a candle in comparison to the eons that have already passed and those that are still to come. Yet here you find yourself (a field of consciousness that is unique and special to you at any rate) existing at the present time. This is most surprising (indeed virtually impossible) based on the view that you are identical with, or dependent on, the existence of a particular collection and arrangement of material particles at a particular moment in time.

Just as the collection of atoms and elementary particles making up your physical body undergoes continual change and replacement, so do your thoughts, emotions, memories and

personality traits. Your essential self persists, despite these continual changes in the contents of your consciousness (and, we might add, subconscious and unconscious minds as well). Thus, you cannot be your personality or its "contents," such as your thoughts, emotions, and memories.

As already noted, over the past four decades, neuroscientists have amply demonstrated that one's sensations, feelings, thoughts, emotions, memories, ideas, and even personality can be radically altered through electromagnetic, surgical, chemical, and accidental interventions in the brain. If relatively minor modifications of brain states can substantially alter the nature of one's experience and personality, how could your personality and experiences manage to continue on in a more or less uninterrupted fashion after the far more drastic event of the destruction of your entire brain? Also, many of the concerns that drive the structure of your personality have to do with the preservation of your own physical body and those of people who are closely related to you. What would be the point of the continuance of these concerns once your physical body has been returned to dust and your ability to intervene in the physical world perhaps radically curtailed?

The self that seems to persist over long time periods (from birth to death in the popular, common view) is not the conglomeration of one's thoughts, feelings, memories, and sensations themselves, but rather the field of pure consciousness in which these qualia act out their drama. In other words, we are vessels of consciousness rather than the contents of that vessel.

Creators. If one's true self is Atman, or pure consciousness, is there any Brahman or larger Consciousness for it to merge into, or be identical with? In recent times, scientists have turned their backs on the concepts of deities and a Creator. Arguments for a Designer have largely been abandoned as regressive. After all, if there was a Designer, who designed Him (or Her or Them or It)? If there was a "preuniverse," then what preceded that?

The answer for some is consciousness. The noted mathematician and physicist Sir James Jeans, pondering the subtleties of the mathematics of laws of physics and the seeming dependence of material events upon observation by conscious minds, observed that the "universe begins to look more like a great thought than a great machine"[62] Another great (and also knighted) physicist, Sir Arthur Eddington, remarked, "the stuff of the world is mind-stuff" (Eddington, 1920/1959, p. 200).

More recently, Henry Stapp (2011) avers that, under quantum mechanics, the world has an essentially "idea-like" structure." Richard Conn Henry, a physicist at Johns Hopkins University, asserts that that the universe is "entirely mental" in nature and "consists of nothing but ideas" (Henry, 2005, p. 29). Indeed, the base reality of the world appears to be one of quantum probability waves inhabiting an abstract, multidimensional mathematical space rather than the solid, marble-like electron and protons zipping around in a four-dimensional spacetime continuum that we imagine to be the firm underpinnings of our material existence.

But if the universe is a Dream, whose Dream is it anyway?

Are our individual consciousnesses just aspects of the Creator's (or Creators') consciousness, lost in an unimaginable form of contemplation of the myriad creatures It has managed to generate from Its mathematical inventions, much as we may become lost in the adventures of a goldfish in the bowl in our living room?

If the creating mind or minds are just looking at various combinations of physical laws and initial conditions to see what universes are generated as some sort of virtual parlor game and then letting themselves get lost in the resulting Dream or Thought, this may explain why the universe does not appear to be designed by an all-powerful, all-caring compassionate God. It may have been designed by mad scientists in the preuniverse for their own fun and entertainment.

It may be more akin to an amusement park than to the body or sensorium of the traditional Western God (Newton's view).

Thus, the creator(s) of our universe (if any) may not have the moral perfection or foresight ascribed to the Abrahamic God. However, the existence of an all-powerful and omnibenevolent God is difficult to square with the seemingly endless sequence of catastrophes such as tsunamis, wars and other forms of suffering and injustice. See Dan Barker's recent tome *God: the Most Unpleasant Character in all of Fiction* (Barker, 2016) for a comprehensive recounting of all the acts of sadism perpetrated by the God of the Old Testament. God may be more akin to a deranged particle physicist who is not particularly concerned with the fate of whatever life forms may inhabit any of the universes he inadvertently creates in his basement tinkerings.

The Participatory Universe. We ourselves may be more akin to antiprotons than to angels, small islands of consciousness born to force the amorphous clouds of quantum possibilities into the crystallized raindrops of actualized events. In the view of many interpreters of quantum mechanics, observation by consciousness is what causes such quantum collapse (i.e., collapse of the state vector containing an array of possibilities into one definite outcome). As already noted, the physicist Harris Walker proposed the existence of "mini-consciousnesses" or "proto-consciousnesses" that govern the collapse of quantum vectors that are remote from human observers.[63] Decades of psychological research indicate humans can hold only about seven items in working memory at one time. We ourselves may thus be mini-consciousnesses or microsouls.

Through the collapse of quantum state vectors, conscious minds may well produce the experience of "time flow" (the sensation that we ride the "now," as events in the future are carried to us and then recede into the inaccessible past). It would seem that in the last few decades philosophers and scientists have generally given up any attempts to explain the phenomenon of time flow, surely one of the most basic facets of our existence, along with the centers of consciousness that comprise our selves. Science and mainstream philosophy have not made much (if any) progress in explaining either of these core elements of the world.

As just noted, conscious observers may be more akin to Walker's "proto-consciousnesses" than to human brains with full-fledged information-processing capabilities (including both subconscious and unconscious activity). If physics suggests anything, it is that the fundamental constituents of the universe are more likely to be very small in comparison to the human observers that formed the center of the cosmos in the medieval ontology that we are just now abandoning. Our essential selves may be more likely to resemble an electron or electromagnetic field than a human body.

The parapsychologists Thouless and Wiesner (1948) proposed that each brain has associated with it an entity they termed the "Shin." They used the term "Shin" to avoid the religious and philosophical baggage of the term "soul." They conjectured that the Shin becomes aware of brain states through a type of "internal clairvoyance" and that this awareness manifests itself in consciousness as various forms of "cognita," to borrow a term from Carington (1949), such as sensations, emotions, memories, and impulses. Conversely, the Shin controls the physical body and brain activity through internal psychokinesis. Thouless and Wiesner postulated that psi phenomena as traditionally defined (which again, may not exist) correspond to an "externalization" of the mind's usual relation with the brain.

If one assumes that physical bodies are associated with immaterial minds that are conceived as fields of "contentless consciousness," and that virtually all of the activity underlying cognition and motor activity are embodied by material brain processes, some sort of theory analogous to that proposed by Thouless and Wiesner commends itself, if one wishes to adhere to

a dualistic model in which consciousness is conceived as a component of the world that is in some sense "external to" (i.e., not identical with any part of) the physical brain.

Of course, such dualistic terminology may only be provisional. Should a "Shin-o-scope" be invented that would allow the physical locations and activity of Shins to be measured, it is likely that Shins would come to be viewed as physical components of brains. We are, however, a long way from a complete, partial, or even minimal understanding of consciousness, and "Shin-o-scopes" do not appear to be in the immediate offing.

To the extent that such hypothetical Shins cannot at present be identified with any particular component of the physical world, it may be appropriate to continue to use the word "nonmaterial" to describe them, recognizing that such attribution of nonphysicality is provisional and may need to be withdrawn in the light of subsequent scientific discoveries. Indeed, the fact that Shins or souls, if they exist, seem to get "stuck," however temporarily, in physical brains suggests that they reside, at least partially, in spacetime. Thus, they may be quasi-material objects.

The Thouless and Wiesner Shin theory does carry one advantage over classical Cartesian dualism in that the apparatus of thought and cognition may be ascribed largely to the physical brain, whereas under many interpretations of Cartesian dualism, much cognitive activity is carried out in the nonphysical realm. While modern science has not yet established the identity of mental events with physical events, it has certainly revealed the intimate dependence of the former on the latter.

Microsouls and Macrosouls. We each seem to be single conscious selves (fields of consciousness) which in some mysterious manner became attached to our brains shortly after our conceptions and will persist in those brains until we die. But our brains are powerful and unimaginably large in comparison to our single-celled ancestors, who, we might suppose, bore the glimmerings of consciousness. Our brains and bodies are in essence colonies of trillions of one-celled animals. Many of us may ride in a single brain. For instance, as noted above, when a human brain is split into its two hemispheres by severing the corpus callosum (the primary bundle of neural fibers connecting the two hemispheres), two fields of consciousness seem to exist, sometimes with such differences in motivation that the right hand (controlled by the left hemisphere) may forced to grab the left hand (controlled by the right) in order to prevent the latter from carrying out an assault on one's spouse. Metzinger (2009) denies selfhood to the right hemisphere in such cases of "alien hand" syndrome on the grounds that it has no self model. Perhaps not, but it may have a doozy of a wife model.

In fact, the findings of split-brain research are precisely the evidence "neuro-philosopher" Patricia Churchland uses to refute the existence of a nonphysical self or soul in human beings (Churchland, 2002, pp. 46-47). Churchland is likely correct so far as the "single soul" theory goes, but the evidence suggests that multiple centers of consciousness or "souls" may exist within a single brain, with perhaps many of them falling under the delusion that they are the single center that is "in charge of" the body.

Philosopher Andy Clark asserts that the human brain is modular, with no central processor. These brain modules can integrate into "surprisingly integrated (although temporary) wholes"[64] Free will denier Sam Harris similarly notes that there are too many separable components for there to be a single entity standing as a "rider to the horse" (brain).[65]

Michael Gazzaniga (2011), a prominent neuropsychologist, proposes that the left hemisphere of the brain hosts an "interpreter," which in split-brain patients fabricates explanations for emotion and behaviors that are caused by the now isolated right hemisphere, and thus creates the illusion of a unified self. Perhaps each such "self" identifies itself with the entire

body in much the same way each member of a football audience may identify herself with the whole team. Gazzaniga views humans as the "last word" on evolution[66] There are probably lurking viruses laughing at him right now.

Blindsight. Consider also the phenomenon of blindsight. "Blindsight" is a term coined by Lawrence Weiskrantz (1986) to describe a syndrome in which cortically-blind subjects respond appropriately to visually presented stimuli even though they report no conscious awareness of such stimuli. Cortical blindness refers to blindness that is a result of damage to the visual cortex in the occipital lobes of the brain. Even though the eyes of such patients may be normal, they may be blind in part of their visual field because of such damage to their visual cortex. If you present a small dot of light to such patients in the blind areas of their visual fields, they will say that they saw nothing. However, if you ask them to just take a guess by pointing to where the dot of light might have been, they frequently point at the exact location that the dot occupied. If you present erotic pictures to such a patient in the blind area of the visual field, the patient may blush or giggle or say things such as "That's quite a machine you've got there, Doc!"

Marshall and Halligan (1988) cite a case in which a blindsight patient's rating of the desirability of a house was influenced by flames that she could not see consciously.

Many researchers have speculated that blindsight is mediated by a secondary visual center in a subcortical area of the brain known as the superior colliculus. Thus, the phenomenon of blindsight also suggests there may be multiple centers of consciousness within a single human brain.

A Hierarchy of Selves. The notion that the human mind may be composed of an assembly of interacting centers of consciousness is an old one. It may be traced as far back as Aristotle, who postulated the existence of a "vegetative soul," a "sensitive soul" and a "rational soul" in each person. F. W. H. Myers (1903) hypothesized the existence of several independent selves within the unconscious or "subliminal" mind. William McDougall (1920, 1926) proposed that the normal human mind is composed of a hierarchy of "coconscious personalities," each carrying out its own separate function. McDougall used Morton Prince's term "coconscious" rather than the usual terms "subconscious" or "unconscious" to describe such secondary personalities in order to emphasize their self-awareness (Prince, 1906).

In support of McDougall's hierarchical model of the mind, many lines of psychological research, including studies of subliminal perception, posthypnotic suggestion, preattentive filters, and automatic motor performance, suggest that the human mind is capable of conducting a great deal of sophisticated mental activity outside of the field of awareness of the primary center of consciousness.

In 1923, the biologist William Mackenzie proposed a hierarchical model of the mind in which new entities arise through the aggregation of lower entities. These entities could be either biological or psychic. Insect colonies and living cells would examples of such integration (Gasperini, 2012).

Freud's one-time rival for the leadership of the psychoanalytic movement, C. G. Jung (1978) postulated the existence of complexes, or centers of psychic activity that, like Prince and McDougall, he described as "coconscious." William James (1890) also suggested that such "secondary selves" are personal centers of consciousness.

Based on his investigations into hypnotic phenomena, Ernst Hilgard (1977) proposed what he called the "neodissociation" theory of hypnosis. Hilgard asserted that the hypnotized person was associated with a subconscious "hidden observer" that was aware of events for which the primary, conscious personality had no knowledge. Hilgard based this theory on phenomena such as hypnotically-induced amnesia, anesthesia, or negative hallucinations (e.g., when a

hypnotized subject is instructed not to see a particular person or object). Hilgard was even able to hold conversations with such "hidden observers," who frequently reported awareness of events (posthypnotic suggestions, pain, etc.) for which the primary personality claimed no knowledge, such as pain in the case of hypnotic anesthesia. However, many scientists have asserted that Hilgard's "hidden observers" were created by Hilgard's hypnotic suggestions rather than being autonomous entities that were "discovered" by Hilgard. For instance, Spanos and Hewitt (1980) were able to evoke a hidden observer that felt less, rather than more, pain than the primary subject under hypnotic anesthesia. They hypothesize that this "hidden observer" was an artifact manufactured through their own hypnotic suggestions.

Ramachandran and Blakeslee (1998) cite dreams in which another dream character tells an unexpected joke to the dreaming self as further evidence of the existence of multiple centers of consciousness within a single brain.

In the decades since the "cognitive revolution" (i.e., overthrow of behaviorism) in psychology, research into the "cognitive unconscious" has led to the creation of many hierarchical models of the mind, such as the "Massachusetts modularism" proposed by Jerry Fodor (1983), in which the mind is seen as being split into modular "computational" components.

Michael Gazzaniga (1985, 1989, 2011) likewise rejects the notion of a unitary consciousness in favor of the view that the mind is composed of a collection of independently-functioning modules that he, following William McDougall, describes as "coconscious." As evidence for this modular view of the mind, Gazzaniga cites post-hypnotic suggestions, apparent unconscious (or coconscious) problem-solving activity (in which the solution to a complex problem suddenly emerges full-blown into consciousness), blindsight, the existence of separate procedural and episodic memory systems, and split-brain research. Gazzaniga tends to identify the "conscious self" with the module that is in control of the language centers of the brain, and he refers to this module as the "executive module." This is likely consistent with one's own introspective experience. For instance, I seem to be the one choosing which words to type; however, when I think about it, I am always amazed that my fingers and my body obey my commands. How this is accomplished is outside of my introspective knowledge. That's somebody else's job.

Gazzaniga cites many instances in which the executive module uses confabulation to explain behavior that was in fact generated by other modules. For instance, a person who acts under a posthypnotic suggestion to close a window may claim that he was cold. Gazzaniga also cites several instances of confabulation by the left hemisphere to explain actions performed in response to directions given to the right hemisphere in split-brain patients. It might not be far-fetched to suppose that all or most modules might likewise maintain the illusion that they are the sole center of consciousness or in sole control of the body. For instance, modules listening to the mouth as it issues verbal utterances may be under the illusion that they were primarily responsible for producing those utterances. They might naturally identify with the body as a whole rather than with the particular brain region in which they are located.

Gazzaniga and Roser (2004) contend that the "left-hemisphere interpreter" may be responsible for the feeling that one's consciousness is unified. They suggest that either consciousness has a "graded relationship" to brain activity and that consciousness results whenever brain activity exceeds a particular threshold. They note that brain activations associated with consciously perceived stimuli differ from those associated with unseen stimuli in terms of their intensity and spatial extent.

Daniel Wegner (2002), in his book *The Illusion of Conscious Will*, notes that the well-known brain researcher Jose Delgado (1969) found that movements produced by direct electrical stimulation of the motor areas of the brain were experienced as voluntarily produced, thus

supporting the hypothesis that "free will" may in many cases be an illusion. Wegner does however affirm the existence of the self, which he defines in terms of a continuous memory structure. He asserts that in cases of fugue, multiple personality or apparent "possession" (if any genuine cases in fact exist), a new self exists if the person has amnesia for the prior self.

Multiple Personality and Dissociation. Ostensible cases of multiple personality and dissociation (if genuine) might represent instances in which one or more subordinate personalities or centers of consciousness within a brain have rebelled against the primary, executive personality.

However, the evidence for these phenomena has been attacked in recent years on the basis that the subject may be simply complying with the hypnotists' or therapists' suggestions and that some therapists and patients (e.g., Dr. Cornelia Wilbur and her famous patient "Sybil") may be essentially fabricating the cases for monetary gain (Nathan, 2012; Hall, 2012). In the case of Sybil, her therapist, Dr. Wilbur, was somewhat overinvolved in her patient's life, paying her rent and providing 18 hours of therapy per week. She also formed a company to split profits from books and other sources with her patient. Transcripts of her therapy sessions show that Dr. Wilbur was generally the first to suggest the existence of an alter personality.

There have been many claims relating to physiological differences among personality personalities. Among these are claims that EEG patterns and blood flow patterns differ among personalities (Coons, 1988; Matthew, Jack, and West, 1985). However one would imagine that role-playing could result in different EEG and blood flow patterns. Putnam (1986) reported that 37% of patients manifest changes in handedness between alters. This too could be role-acting (assuming it is not a temporarily successful mutiny by the right hemisphere).

Megasouls. As noted above, the prominent sociobiologists Bert Hölldobler and E. O. Wilson[67] propose that communities of insects comprise "superorganisms" and that evolutionary selection acts on the colony as a unit, rather than on the individual insects. Can the whole of humanity be considered as a single super-brain, perhaps associated with global spheres of consciousness? As noted above Stephen Goldberg, a neuroscientist and physician, has even suggested that in the future the Internet may develop into an "advanced intrinsic consciousness."[68] Would this be a center of pure consciousness at a higher level in the hierarchy than our individual selves, a "megasoul" if you will?

Koestler's Holons. The noted writer Arthur Koestler (1967, 1972, 1978) called such entities as a world mind, a society, a Person, an organ, or a cell "holons," a term he coined to denote an entity that is simultaneously a whole and a part of some larger system. He contended that there is a hierarchy of holons, with each holon being a part of a some holon on the next highest level.

Holt (2012) notes that it is a mystery how micro-minds can coalesce into a macro-mind or a mega-mind. Holt calls this the Combination Problem, and he notes that William James, who was otherwise friendly to panpsychism, found this to be the greatest stumbling block for a panpsychist account of the world. Holt notes that, based on current theories of quantum mechanics, even two elementary particles may not be separate things but may be quantum-mechanically entangled. Thus, in this case, the fundamental entity may be the system of particles rather than the individual particles. Finally, the fields of consciousness that we take ourselves to be seem to have arisen from the multispecies free-for-alls that we call our bodies. These are the selves that we know most directly, and we know that there are cognitive systems far below us and far above us in the physical hierarchy. Are these conscious systems as well? Or does the *meso-level* we directly experience form the only ground of awareness?

Gods. Now we will turn to the ultimate (or perhaps penultimate,) megasoul, God. When two people argue about the existence of God (or gods), their disagreements are often semantic rather than substantive. The word "god" may (and usually does) denote very different things to different people.

The first gods were human-like beings (or even animal-like beings such as Coyote, in the case of Native American mythology). Gods such as the Vikings' Thor, the Greeks' Aphrodite, and even the God of the Old Testament exhibited the failings of ordinary humans, such as anger, jealousy, and pride. They were essentially overgrown humans. The goings-on in Asgard, on Mt. Olympus, and in heaven rival and perhaps surpass the most inane antics displayed in modern day reality shows and soap operas. Indeed, early hominids' failure to invent television may well have been a primary cause of the creation of the mythological gods.

The omnipotent and benevolent God of the Abrahamic religious, tradition would seem to be a more powerful god than those of the mythological and shamanistic traditions. In what is called the *theistic* view of God, the deity still intervenes in the world, causing some events to happen and preventing others from happening. In other words, "He keeps His finger in the pie." However, the existence of an all-powerful and omnibenevolent God is difficult to square with the existence of catastrophes such as tsunamis, wars and other forms of suffering and injustice.

Deism Redux. Deism is the view belief in a being who designed and created the universe, but no longer participates in it. This was the view of Einstein, the late mathematician Martin Gardner (an arch-skeptic of all things paranormal), many of the founding fathers of the United States, its first ten Presidents, and Abraham Lincoln,[69] as well as philosophers such as Spinoza. The anthropic principle discussed above might be taken as support for the deistic view that the universe was created by an intelligent being or beings. However, as we have seen above, concerns were expressed that physicists at the Large Hadron Collider might create black holes that could give birth to new universes. Thus, the intelligent creators of the universe might well have had no clue as to what they were creating (and may not even know of its accidental existence).

Pantheism and Panentheism. In some religious views, God does not stand outside the universe, but participates in it. In the *pantheistic* view, God is the universe and is thus present in all things. Thus, everything in the world is thus identical to, or part of, God. If one equates God with consciousness, this is very similar to the panpsychist view.

In the related theological doctrine of *panentheism*, God interpenetrates the universe and is present in all things, but God also extends beyond the present universe rather than being identical to the universe. Under both of these views, one's self is part of God.

Philosopher and theologian John W. Cooper (2006) has provided a recent encyclopedic review of panentheism. He cites the 18th century theologian Jonathan Edwards' view that minds as continuing entities exist only in that God forms and communicates a coherent series of ideas. Edwards asserted that God literally thinks minds into existence and the whole of creation is in God's mind. Thus, in Edwards' view, God could therefore be conceptualized as a "World-Soul."

Cooper notes that within Islam, the 20th century theologian Sir Muhammed Iqbal asserted that there is nothing but Allah. He characterizes Iqbal's view as a form of panpsychism, citing Iqbal's remark that "every atom of Divine energy is an ego."[70] He notes that Iqbal contended that the "world and every thing in it, from atoms to humans, are "ego-unities." Cooper also cites Iqbal's view that the emergence of egos endowed with the power of spontaneous and hence unforeseeable action represents, in a sense, a limitation of the freedom of the all-inclusive Ego (i.e., God).

Cooper discusses the work of Sarvepalli Radhakrishnan, a Hindu philosopher and the President of India from 1962 to 1967. Radhakrishnan proposed a form of panentheism that sought common ground with Western and non-Hindu religions.

Cooper describes Radhakrishnan as a panentheist about current reality and a pantheistic monist about ultimate reality. Cooper notes that the Hindu tradition embraces both views. The great Hindu philosopher Sankara (who lived from 788 to 820) held that God is absolutely one and that all differences and distinctions were merely temporary illusions. The 12th century philosopher Ramanuja held that the world is the body of Brahman or God and, that individual souls are real and do not disappear into God. Radhakrishnan proposed an amalgamation of these views. In temporal existence (i.e., within spacetime) God is personal and souls are real, as asserted by Ramanuja. However, ultimately all things become indistinguishable, as held by Sankara.

Cooper classifies the popular Anglican priest turned Zen Buddhist Alan Watts, who died in 1973, as a panentheist. Indeed as noted above, Watts often described the universe as God playing hide-and-seek with himself.

As noted above, the search for a "first cause" of the universe will likely be a regressive one. If God created the universe, then what created God? If our universe emerged from a quantum vacuum and is thus a "free lunch" as many current physicists contend, where did the rules that the quantum vacuum must obey come from?

It will likely prove difficult to trace our origins past the Big Bang and into a possible "preuniverse," especially with the scientific methods and knowledge currently at our disposal. The universe may well be like a Russian doll, nested within an infinite hierarchy of dolls, each contained in the one before it and containing the one succeeding it. If so, its origins may be a fundamental mystery that will forever elude our understanding.

It should also be noted that many philosophers and scientists (e.g., Crick, 1994) have confused the issue of the origin of consciousness with the problem of determining the neural activity associated with conscious experiences. The problem is not that of determining what neural activity underlies, say, the conscious perception of a white cloud. Instead, the problem is to explain how that neural activity generates that conscious perception, which seems to be radically different in nature from the neural activity itself.

In the worldview of mainstream physicalistic science, there is no need to account for a two-way interaction between consciousness and brain activity because the two are one and the same. Consciousness is just brain activity known from within.

However, this conclusion seems at best premature in light of the fact that neuroscience can offer no explanation of how brain activity gives rise to a unified center of consciousness and conscious experience. These are deep mysteries that are unlikely to be solved in the foreseeable future, if ever.

Even after decades of research there is still no consensus as to the biological or psychological "purpose" of sleep, although many suggestions have been offered. This fundamental activity, in which humans (or at least the more fortunate humans) spend one-third of their lives, despite the obvious risks, remains a mystery. Perhaps this is because sleep centrally involves consciousness, in this case the lack thereof. Can the spheres of pure consciousnesses that, much to their misery, are somehow tethered to physical brains manage to free themselves from their shackles after all? Perhaps a "deal" is somehow struck in which they are paroled from their prison at the edge of night, when the breathing husks that are left behind will be least vulnerable.

Who knows? Tonight we sleep, perchance to dream, perchance to be released from our bondage, only to be eventually imprisoned in yet another host.

Prognostications. It is possible that one day we will be able scientifically describe and detect microsouls and macrosouls (especially if they have a physical aspect tying them to brains and other types of physical systems) and maybe even megasouls. The search for such entities will likely be confined to the present universe (but who knows?) and will likely be more fruitful than a quest for the First Cause, be it a pre-God or a pre-universe, that might entail our exploration of a nested labyrinth of pre-universes, each giving birth to the next.

Conclusions

There is no unified view of the soul at the present time. When people use the words "soul," "self," "god," "heaven," and "the afterlife," they may mean many different things by these terms. This may sometimes lead to confusion and seemingly intractable differences in religious viewpoints when the only disagreement is semantic. Under the irrefutable doctrine of solipsism, you might be the only center of consciousness that exists in the universe. The rest may be an elaborate dream. If so, the physical universe is a very complex dream, obeying complex laws that seem well beyond the capacity of our unconscious minds to conjure up. Within the major religious traditions there is a wide range of beliefs as to the nature of the thanatope. For instance, within the Abrahamic tradition, a fundamentalist Christian may believe that his personality and physical body will be resurrected on Judgment Day, based on a literal reading of the Bible, whereas a humanistic reformed Jew may not believe in an afterlife (or God for that matter).

Segal (2004) notes that the Bible of the Abrahamic traditions actually has little to say about the nature of the afterlife. He speculates that the Biblical silence on this issue may reflect an aversion to foreign cults and gods. Discussion of possible afterlives may have been perceived as opening the door to idolatry or the veneration of ghosts.

Similarly, some atheists believe in an afterlife, despite their disavowal of God. For instance, Buddhism is often described as an atheistic religion and yet embraces the doctrine of reincarnation, although they deny the existence of souls, which might be thought to be a precondition for reincarnation. (Of course at a more popular level, there are pantheons of Buddhist and Hindu deities, along with dreamlike heavens and hells.) Even resurrection need not imply a deity. For instance, an atheist might believe that she could survive death by having her personality uploaded into the cybernetic brain of an android replica of her body, which might be considered a form of survival of the Person.

Based on the nature of the thanatope, there are a variety of possible afterlives, including the resurrection world, an astral or dream world, a collective mind containing the remnants of one personality, reincarnation with and without memory, a world of pure consciousness or nirvana, or nothing (which is also a form of nirvana, according to some versions of Buddhism).

As noted above, Some distinguished philosophers and scientists, including Henri Bergson, F. W. H. Myers, and William James.[71] believed that the brain acts as a filter of consciousness, keeping one's focus on the everyday need for survival, rather than a source or transmitter of consciousness. Under this view, a damaged (and even better yet dead) brain may in fact open you to a wider realm of consciousness. The question then becomes one of whether the expanded consciousness would be so dissimilar to one's premortem personality (with its primary attention no longer focused on biological survival) that it would not be recognizable. There is a body of parapsychological research aimed at detecting the survival of at least parts of the personality. The strongest evidence in this regard is provided by children who spontaneously report memories of previous lives and who often manifest personality traits and birthmarks related to the previous life. In many such cases, these memories of previous lives have been

verified as accurate, by interviewing the relatives of the ostensible previous personality. However, this evidence is controversial, and skeptics both within and outside the parapsychological community assert that such reported previous lives may be based on cryptomnesia (forgotten memories of having heard the details of the claimed past life) and other normal processes.

Due to the continual turnover in the physical particles that make up your body and the fact that your personality, emotions and memories are also constantly changing, you cannot be either your body or your personality, as you seem to persist while these elements are fleeting.

Thus, there is really is no Person in the sense of a continuing aggregation of matter or a personality. Like the mayfly, who lives for only a day, we may be the universe temporarily lost in itself.

The Person is likely to be, just as Blackmore (2002) and Dennett (2009) insist, simply a story we tell ourselves. However, it is a very useful story, just like the story of one's car or my house. It helps credit card companies to obtain payments for purchases we made the preceding month and guides our interactions with former classmates at a high school reunion. But in an absolute sense, the Person is only a cognitive construct, much like the ever-changing body of water that is now called the Mississippi River.

The reason that we think that we ride our present brains from birth to death is likely that we have fallen under the powerful illusion that we are the Person. Much like an oxygen atom temporarily trapped in one's body, we may have jumped on board well after birth and may depart well before death. One should perhaps give up the illusion of the Person! It is a big cognitive adjustment, but you may find it to be an exhilarating and profoundly soothing one.

We are not the Person, we are not even Atman (in the sense of a sphere of pure consciousness inhabiting the same body from birth until death), and are likely no longer Brahman, although it is possible that we were once conjoined in an aggregate of consciousnesses that may have somehow "designed" the world.

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