PANTHEISM RECONSTRUCTED: ECOTHEOLOGY AS A SUCCESSOR TO THE JUDEO-CHRISTIAN, ENLIGHTENMENT, AND POSTMODERNIST PARADIGMS

by John W. Grula

Abstract. The Judeo-Christian, Enlightenment, and postmodernist paradigms have become intellectually and ethically exhausted. They are obviously failing to provide a conceptual framework conducive to eliminating some of humanity's worst scourges, including war and environmental destruction. This raises the issue of a successor, which necessitates a reexamination of first principles, starting with our concept of God. Pantheism, which is differentiated from panentheism, denies the existence of a transcendent, supernatural creator and instead asserts that God and the universe are one and the same. Understood via intuition, modern cosmology, and other natural sciences, it offers an alternative worldview that posits the divine and sacred nature of the universe/creation. By asserting the fallacy of the creator/creation dichotomy and any attempts to anthropomorphize or personalize God, pantheism precludes hubris stemming from erroneous notions of divine favoritism. The links between Judeo-Christianity and the Enlightenment are traced and a case made that the latter has resulted in the equally erroneous and hubristic notion of human ascendancy to a Godlike status, with the concept of progress providing a secular version of the Christian belief in salvation. By reestablishing the natural sciences' metanarrative, even as it asserts the divinity of the material universe, pantheism simultaneously demotes postmodernism and reconciles science with religion. Pantheism provides a theological foundation for deep ecology and also stakes out a viable third position in relation to the ongoing dispute between advocates of intelligent design and the scientific establishment.

Keywords: Anthropic Principle; anthropomorphism; constants of nature; cosmic evolution; cosmology; creator/creation dichotomy; deep ecology; Enlightenment; environmental crisis; God; hubris; infinite monkey theorem; intelligent design; Judeo-Christianity; multiverse;

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panentheism; pantheism; postmodernism; progress; science and religion; science and theology; string theory; technology; universe; war and peace; worldviews.

Recent discourse in this journal has suggested that postmodernism is "exhausting itself." While not specifying any potential successors, Gregory Peterson has suggested further that "the postpostmodern moment is awaiting us" (2005, 883, 887). Here I argue that postmodernism's predecessors, Judeo-Christianity and the Enlightenment, are also exhausted and failing to provide a conceptual framework conducive to ensuring the long-term health of earth and its inhabitants. In that spirit, I also accept Peterson's invitation to articulate "shifts in perspective" that can lead to a "new, unified religion" (2005, 886–87) with the potential to succeed the faltering Judeo-Christian, Enlightenment, and postmodernist paradigms.

In his landmark essay of yesteryear, "The Historical Roots of Our Ecologic Crisis," historian Lynn White Jr. (1967) argued that certain Judeo-Christian religious beliefs are the root cause of the environmental crisis that was manifesting itself already forty years ago. He concluded, "Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not" (1967, 1207). While White confined his analysis to our ongoing environmental dilemma, he could also have made a strong case that contemporary crises of equal magnitude involving matters of war and peace, energy and other critical resources, social justice, and economic fair play likewise have deep religious roots. Moreover, these intractable problems often are closely interrelated. Thus, any fundamental shift in worldview that addresses all of them will go far in ameliorating our worsening predicament. It is from these premises that I propose pantheism as a successor to the Judeo-Christian, Enlightenment, and postmodernist paradigms. I argue that pantheism also provides a theological foundation for the deep ecology movement, reconciles science and religion, and establishes a viable third position relative to the ongoing dispute between the proponents of intelligent design and the scientific establishment.

The definition of *pantheism* I use here is: the doctrine that God is not a personality or transcendent supernatural being but that all laws, forces, manifestations, and so forth of the self-existing natural universe constitute an all-inclusive divine Unity.[1] Secondary definitions having to do with the worship of all gods or pagan animism are not considered here.

Philosopher Michael Levine has analyzed pantheism definitively in a book of considerable heft, *Pantheism: A Non-theistic Concept of Deity* (1994a). He elaborates on the defining tenets of pantheism, describing it as a nontheistic form of monotheism that claims God (the divine Unity) to be "radically immanent in the world." This is in sharp contrast to theism's primary emphasis on the transcendent nature of God. Indeed, "pantheists

deny God's ontological transcendence." Furthermore, pantheism denies the existence of an omnipotent, perfectly good "personal" God with minded states, intentions, and an inclination to intervene in human affairs based in part on the capacity to make judgments and arrive at decisions (1994a, 2–7, 163).

Pantheism also deals differently than theism with issues such as creation, evil, salvation, and immortality (1994a, 175–281). As a religion positing the reality of a divine immanence, pantheism "offers distinct formulations of these issues, and distinct solutions" (p. 7). In addition, Levine argues that pantheism cannot be reduced simply to theistic monism (pp. 84–93), and that the divine Unity can "allow for the existence of ontologically real and separate entities" (p. 2). Thus, the divine Unity can encompass change and the multiplicity of things in the world. It should be noted that some of the traits ascribed here to pantheism deviate somewhat from the pantheist doctrine of Baruch Spinoza (also see endnote 3).

Pantheism as defined here is also distinguished from *panentheism*. In the modern West, this latter doctrine was developed primarily by the twentieth-century philosophers Alfred North Whitehead and Charles Hartshorne (Griffin 1994, 200–201; Viney 2004). Today a considerable number of notable theologians align themselves with panentheism and have contributed to its elaboration (Peterson 2001; Brierly 2004, 2–5). Pantheism and panentheism are comparable, but to the extent panentheism conceives of God as an entity distinguishable in certain respects from the universe itself, it is considered here to be in the same general category as traditional theism. One succinct example of panentheism's concept of God is offered by David Ray Griffin: "God is essentially the soul of the universe. Although God is distinct from the universe, God's relation to it belongs to the divine essence" (Griffin 2004, 42). Levine has concluded that "panentheism is essentially theistic" (1994a, 11–13, 21), and so has one of its leading proponents, John Cobb, who stated, "Panentheism understands itself as a form of theism" (Cobb 1983, 423). As such, it is subject to the same critique I apply here to theism.

However, insofar as panentheism emphasizes the immanence (as well as the transcendence) of God in the world, a solid case can be made that it fosters a stronger environmental ethic than does traditional theism (see Griffin 1994, 192, 200–201). But if the degree of God's immanence (versus transcendence) in the world is to be the yardstick, the "radical immanence" of pantheism's divine Unity (Levine 1994a, 6) provides a theological basis for an exceedingly robust environmental ethic. Given that such an ethic is a primary consideration, this demonstrates one reason why a person might choose a pantheistic over a panentheistic worldview.

In recent decades panentheism has attracted a significant amount of attention. It was the subject of a conference held at Windsor Castle in 2001, and a book containing essays by sixteen scientists and theologians

who participated in the conference, plus two who did not attend, was published (Clayton and Peacocke 2004). In his review of this book, Edgar Towne (2005) correctly highlights the "considerable diversity" among the viewpoints expressed while also noting some of the panentheistic complexities revealed by the authors' various attempts to describe the relation of God to the universe. Compared to panentheism, I submit that pantheism is a significantly more precise and parsimonious doctrine and therefore a better exemplar of the principle of Occam's razor.

In contrast to panentheism's relative newness, pantheism is among the oldest of religions. Evidence for it can be found in the Hindu Upanishads from the sixth century B.C.E. and the writings of the Greek Stoics from the third century B.C.E. (Harrison 2004, 13–14, 18–19). The religious belief systems of many native North Americans and other indigenous peoples also have pantheistic aspects, including a sacred relationship with the world around them and a reverence for a "singularly mysterious and cosmic power" (Grim 1994, 49). The more modern Western concept of pantheism is thought to derive mainly from Spinoza's *Ethics*, published after his death in 1677 (Bald 1998, 101; Levine 2002, 1), although John Toland is credited with coining the term *pantheist* in 1705 (Harrison 2004, 28; Burchfield 1987, 2067). Pantheism was later implicit in the works of Johann Goethe in Germany and English-language writers such as William Wordsworth, Walt Whitman, John Muir, and Robinson Jeffers (Levine 1994a, 222; Harrison 2004, 29–33), but it has never enjoyed much of a following in more recent Western culture. It was officially condemned by the Roman Catholic Church in 1870 (Kneale 1963, 190). Nevertheless, "pantheism remains the classic religious alternative to theism" (Levine 1994a, 16).

The Predicament

Many believe that the human condition and the condition of our planet are continuing to deteriorate. While some environmental problems have improved since the first Earth Day in 1970 (for example, certain bird species decimated by DDT have substantially recovered because use of this chemical has been banned in much of the world), many others have become worse. The latter include human-induced global warming and an accelerating rate of extinction for many groups of organisms (amphibians, for example). The full extent of our ongoing environmental crisis has been thoroughly described by many authors (including Marshal 1994; Goodenough 1998; Ehrlich and Ehrlich 2004; Kolbert 2006).

Meanwhile, the age-old human dream of abolishing war remains just that, a dream. During the last decade the number of wars in the world has remained near historic highs, and religious differences often have been a contributing cause (Smith 2005). Not only are the United States and a few allies continuing to fight wars in Iraq and Afghanistan, but in the U. S. we

have recently seen the institution of war move beyond mere acceptance as a sometimes necessary evil to a status where it is venerated and glorified at the highest levels of government, in the media, and among much of the American populace (Bacevich 2005; Western 2005).

As nuclear proliferation continues, with India and Pakistan most recently joining the "nuclear club," the threat of future wars involving the use of these weapons remains a real possibility (Brumfiel 2005a). George W. Bush administration plans for new types of nuclear weapons, along with a significantly expanded nuclear use doctrine, have increased the likelihood that these weapons could be used preemptively against even non-nuclear nations (Arkin 2002; McNamara 2005; Schell 2005). Current U.S. policy appears to be based on the strategy of a permanent "war on terror" designed to keep the populace in a constant state of anxiety and pliable to increasing military demands, a diminution of constitutionally guaranteed civil rights and liberties, and government malfeasance (Weiner 2003; Hersh 2005; Schell 2006). Of course, all modern wars are environmental as well as human disasters. The ultimate human and environmental disaster would be global thermonuclear war. This nightmare scenario remains a possibility because the U.S. and Russia each maintain several thousand long-range nuclear missiles, many of which are still on hair-trigger alert, despite the end of the Cold War (Blair 2004; McNamara 2005).

Other crises involving human and environmental well-being are evident, but it is not my intention here to provide an exhaustive catalog. Suffice it to say that despite the best of intentions during two millennia of Judeo-Christianity, and several hundred years of materialistic progress and human rights projects born of the Enlightenment, the human condition and the condition of our planet are continuing to decline at an alarming rate. Given this situation, we must question our fundamental assumptions and belief systems. We need to discern how and why these crises have developed and how we might come to embrace new worldviews and attitudes that will enable us to solve our enormous problems.

First Principles Revisited

A reexamination of first principles should begin with a critical evaluation of the fundamental worldviews of modern Western culture (now worldwide to a large extent; Rupp 2001, 26), starting with basic religious concepts. The questions here for monotheists and others in the West are: What is "God," and what is our relationship to "God"? Even atheists need to acknowledge the importance of these questions, if for no other reason than the commonly held answers historically have provided the foundations on which Western societies have based their ethics, laws, institutions, cultural mores, and so forth. Furthermore, to the extent that the concept of "God" evolves, and technology itself has become a quasi-religion (Postman 1997,

29–32; Caiazza 2005, 17–18; Roy 2005), the struggle over notions of the divine persists. Despite the difficulty of the subject, it merits our attention.

A Critique of the Creator/Creation Dichotomy

Many religions have a long history of separating "God" (or "gods"), otherwise known as the "creator," from the creation (the term *creation* is here used interchangeably with *universe* and *nature*). Apparently the human mind has a strong tendency to do this, and it no doubt derives from routine experience; after all, if a painting exists, there must be a person who painted it, and if there is a song, it must have come to exist as the result of a songwriter's creativity, and so on.

However, when it comes to the existence of our universe, I maintain that the creator/creation dichotomy is a false one and an erroneous extrapolation from everyday experience. It is a flaw in human perception and cognition to posit this dualism where none necessarily exists, particularly in a realm that is so far beyond ordinary comprehension and experience. Moreover, there is no direct evidence for the existence of a separate, transcendent creator. Historically, the existence of such an entity has been inferred indirectly from the existence of the creation—for which, in sharp contrast, the evidence is overwhelming. Every day we perceive the creation with our senses, we measure it and study its properties. But the same cannot be said for a creator. Harold Wood discusses the monistic aspects of pantheism at some length and compares it favorably with the traditional theistic dualism of separating reality into creator and creation (Wood 1985, 151–56).

Ultimate causation is perhaps inexplicable by either religion or science (Leslie 1979, 7; Levine 1994a, 192–93). For pantheism, the universe/God/divine Unity is "self-existing," and beyond that its ultimate "cause" may forever remain a mystery (Levine 1994a, 176–79). Someday cosmologists may successfully demonstrate that our universe "came into existence spontaneously as a result of a quantum process" (Davies 2004a, 4–5). But to the extent that such processes do not obey the conventional laws of cause and effect, an explanation for the "cause" of our universe may still remain elusive. Stephen Hawking has commented on the "cause" or "creation" of our universe as viewed in the light of a quantum theory of gravity: "So long as the universe had a beginning, we could suppose it had a creator. But if the universe is really completely self-contained, having no boundary or edge, it would have neither beginning nor end: it would simply be. What place, then, for a creator?" (Hawking 1988, 136, 140–41) Two related ideas, which are also consistent with the monistic aspects of pantheism, are Gordon Kaufman's concept of God as "*creativity* rather than as creator" (2005, 329) and Paul Davies's contention (shared by others) that not only is our universe self-creating, it also is capable of *self-organization* (Davies 2004a, 5). Finally, evolving notions of *emergence*, such as those articulated by Davies (2004b, 104–8) and Donald Braxton (2006), also

have the potential to dovetail with pantheism and the connected concepts just described. This area certainly merits further study.

On a more earthly level, the creator/creation dichotomy of theism leads to several fallacies that form the basis for the systems of thought that now jeopardize the human race and our planet's health.

First, once the creator/creation dichotomy is invoked, there seems to be a nearly universal tendency for the human mind to assign all notions of divinity and sacredness solely to the creator, while the creation is perceived as simply profane matter or "ordinary stuff," at best, and inherently corrupt, demonic, and frightening at worst (Metzner 1994, 167). Especially in the West, the creation often is viewed as a "fallen world" through which humans are only passing on their way to the central goal of salvation in heaven (Rupp 2001, 24). Some religions, such as the Judeo-Christian tradition, are fairly explicit about this. Judeo-Christianity further claims that God/the Creator has given humans "dominion" over the creation and permission to "subdue" it, even as they are also commanded by God to "multiply and fill the Earth" (Genesis 1:26–31 NKJV). As White (1967), Ralph Metzner (1994), Sallie McFague (2001) and others have pointed out, this has provided humans with a theological justification to not only take from the creation as needed for survival but also to engage in rank exploitation of it without any concern or even the perception that something sacred is being desecrated. In marked contrast, native North Americans and other cultures with pantheistic aspects do assign notions of divinity and sacredness to the creation. As a result it is generally thought that the aboriginal peoples of these cultures were much more careful and sparing in their use of it (Hughes 1983; Grim 1994, 46–50; Metzner 1994, 166–67). However, gaps in our knowledge about aboriginal cultures, as well as cross-cultural complexities and ambiguities regarding contemporary Native Americans and other indigenous peoples, continue to make this assertion debatable (Nadasdy 2005).

A second fallacy that commonly develops once a creator/creation dichotomy has been invoked is the strong human tendency to first anthropomorphize and then personalize the creator. Although this is a common feature of many religions, it probably reaches its most extreme form in Western Judeo-Christianity (White 1967, 1205). It perhaps derives in part from the attempt to better comprehend God/the gods by the assignment of various human attributes. The gods of the ancient Greeks and Romans were well known for their human attributes—all had genders, for example—and for their intense emotional states, including anger and lust. Likewise, the God of the Bible is referred to in masculine gender terms and exhibits, at various times, human traits such as anger, vengeance, jealousy, and forgiveness. Such anthropomorphizing has taken concrete form in myriad artistic representations within many religious traditions. A quintessential example is Michelangelo's painting *Creation of Adam*. Kaufman recently made

a cogent critique of the fallacies inherent in conceiving of God "in traditional anthropomorphic terms as a kind of person-agent" (2005, 329–39).

In addition to somehow making God/the creator more comprehensible, it is evident that an anthropomorphized and personalized God is more approachable when it comes to the human tendency to curry favor with the divine through prayer, sacrifice, or other means. The strength of this tendency tends to be directly related to the intensity with which it is believed that a particular deity intervenes in human history and affairs. In the case of a polytheistic religion, if it is perceived that efforts to secure divine favoritism have been successful, this leads to the belief that one or more gods are "on our side." This belief can confer a tremendous psychological boost to the believers, but it has dangerous implications for their adversaries. Of course, more often than not, the adversaries similarly believe that one or more gods are "on our side." This provides the psychological backdrop for most wars and other types of human conflict. The advent of monotheistic religions only aggravated this situation. This is because if a group believes they are "God's chosen people," and the only God in the entire universe favors them above all other groups, they are psychologically prepared to demonize and obliterate any and all perceived foes from other groups.

Because of this, and despite cherished pretensions that we as a species are morally improving, most of humanity is still ruled by the crudest forms of tribalism and nationalism. An American example of this was displayed recently by U.S. General William Boykin, who in commenting on the "war on terror" was quoted as saying "the battle that we're in is a spiritual battle . . . Satan wants to destroy this nation . . . he wants to destroy us as a Christian army." In reference to a Somali military leader, Boykin went on to opine, "My God was bigger than his. I knew my God was a real God and his was an idol" (Arkin 2003). Some elements of Western religious culture have pushed the anthropomorphizing and personalizing of God to great extremes, as encapsulated in such expressions as "God is my co-pilot."

The anthropomorphizing and personalizing of God creates at least one other problem: Once God is given human attributes and rendered more comprehensible and accessible to human interaction, the process of blurring the distinction between God and humans has begun. For example, the emperors of ancient Rome were given a Godlike status that no doubt contributed to the belief, by some of them, that they were indeed gods. This encouraged behavior that resulted in unhappy consequences for nearly all involved. Of course, history is replete with other such examples.

The Book of Genesis states early on that "God created man in his own image" (Genesis 1:26–27 NKJV). In the remainder of the Old Testament, starting with the story of Adam and Eve, there ensues a long-running saga in which humans repeatedly disobey God at least partially because of their perception that they had achieved some kind of parity with God. What

was the sin that got Adam and Eve expelled from the Garden of Eden? They ate from the tree of knowledge—a forbidden attempt to become more Godlike (Gray 2004, 14–15). Although the Old Testament story of God, Abraham, and Isaac (God's "testing" of Abraham) ultimately is resolved by Abraham's obedience to God and the subsequent divine clemency (Genesis 22:1–18), it indicates that human insubordination to God's will (hubris expressed because of a perceived God/human parity) was manifesting itself in Hebrew society at the time. This contention is supported by the story of Lot, Lot's wife, and God's destruction of the sinful inhabitants of Sodom and Gomorrah (Genesis 19:1–29), a set of events that closely precedes the story of God, Abraham, and Isaac (22:1–18).

The blurring of the distinction between God and humans reaches its apex in Christianity, where God takes human form in the figure of Jesus Christ. Among all the prophets and other figures recorded in the teachings of the three Abrahamic, monotheistic religions (Judaism, Christianity, and Islam), Christianity stands alone in proclaiming the divinity of its founder, that God was manifested in human form on this single occasion. While this makes for a compelling story, and perhaps helps to explain the enormous success of the Christian faith, it also represents the crossing of a critical threshold. If God can take human form, why not the other way around? Can humans become Godlike? I address the implications of this line of thought later.

The Case for a Divine, Sacred Universe

In his *Tractatus logico-philosophicus*, philosopher Ludwig Wittgenstein wrote, "Not how the world is, but that it is, is what is mystical" (Rowan-Robinson 1999, 1). That something exists—that our universe as we know it exists, rather than nothing at all—has struck many thinkers through the ages as a profound mystery, and some have regarded it as a de facto "miracle." Furthermore, not only does something exist, but what exists is remarkably comprehensible and orderly. It can be described mathematically and behaves according to the laws of physics, chemistry, and biology. As summarized by Albert Einstein (2005, 259), "The eternal mystery of the world is its comprehensibility. . . . The fact that it is comprehensible is a miracle."[2] We can understand the divine nature of the creation via two routes: through intuition, or what might be called mystical experience, and, perhaps paradoxically, through knowledge obtained by modern science. Using either route we can arrive at an understanding that the creation is neither simply ordinary stuff nor inherently corrupt, frightening, or demonic. Rather, the creation is extraordinary, extraordinarily beautiful, and infused with an "intelligent design" that completes its divine, sacred status. The laws of physics, which both determine and describe in a mathematically precise fashion how matter and energy constitute our orderly universe, are a manifestation of this design.

Understanding Pantheism via Intuition or "Mystical Experience." Intuition—variously termed mysticism, revelation, or rapture—has a long tradition in religion. Paul Harrison points out that "Mystics of all religions report strikingly similar experiences: a sense of direct communion with ultimate reality, a sense of complete unity with all things, and a loss of all distinction between self and other" (2004, 80–81). However, mystical experiences within theistic religions often are anthropomorphic or anthropocentric. They may, for example, involve a vision of Jesus, the virgin Mary, or a humanlike angel. In contrast, pantheistic intuitive insights or mystical experiences nearly always occur in a natural setting where no human aspect or imagery is part of the event. Instead, sensory stimuli emanating from the ocean, the night sky, a nonhuman life form, or some other nonanthropomorphic phenomenon are the trigger for the experience (Harrison 2004, 1). This is an important distinction, even if it does not hold true in all cases. Certainly there have been instances when theistic mystical experiences have derived from natural as opposed to anthropomorphic stimuli (Levine 1994a, 14–15).

Does pantheistic intuition or mystical experience provide direct evidence for the divine nature of the creation? No, but it may engender a concept that can later be validated by scientific knowledge. Mystical experiences provide rare new perceptions of the world that often are exhilarating. Perhaps such insights are not so uncommon when we are very young. Aging often is accompanied by an alienation from nature and a habituation to the routine of living in mostly artificial environments, where the sun becomes just another light bulb and the sky a blue shade of wallpaper. Freya Mathews has explored this condition in some detail and asserts that most of us in the modern West "inhabit a disenchanted world" where we are "unawoken" and in a state of "anaesthetization to the true pulse of existence" (2003, 5, 8).

In any event, apprehension of the creation as an extraordinary, divine, and sacred realm is usually as hard for us to grasp as it is for a fish to know it's wet. But, like fish swimming in water, we are continually surrounded by something incredible of which we are usually only dimly aware. It is primarily a problem of perception, as William Wordsworth and other poets and mystics have noted (Harrison 2004, 76–77).

Reconstructing Pantheism via Modern Cosmology. The scientific study of our universe during the last several hundred years has increasingly revealed what cosmologist Fred Hoyle referred to as "the towering intellectual structure of the world" (1994, 423). Modern physics has established that the properties of so-called baryonic matter (consisting of subcomponents such as protons, neutrons, and electrons), which makes up stars, planets, humans, and other living things, are basically determined by four forces: gravity, the electromagnetic force, the strong nuclear force, and the weak nuclear force. More recently, cosmologists have pointed out that the

precise strengths of these forces, along with the strength of a mysterious fifth force (cosmic repulsion) and other properties of our universe such as the total amount of matter upon which these forces act, have determined the *general* course of cosmic evolution.[3] Cosmic evolution refers to our universe's history of change and increasing structural complexity during the 14 billion years or so since the "Big Bang." This history includes the development of large scale structures such as galactic superclusters in which different types of galaxies form and evolve, the formation and evolution of various types and generations of stars within these galaxies, the creation of all but the lightest chemical elements from the interiors of stars, the dispersion into and accumulation of these chemical elements in interstellar space, and the evolution of solar systems and planets from these chemical elements. Finally, if conditions are just right, life as we know it may evolve on certain planets, although evidence for such planets is so far limited to our earth (Ward and Brownlee 2000; Chaisson 2001; Ellis 2005b).

The relative strengths of the five forces, the density and overall texture of matter in our universe, and the basic properties of space find expression in the very precise mathematical values of a relatively small number of so-called constants of nature. Crafoord Prize–winning cosmologist Martin Rees has provided an analysis of these constants of nature and their effect on cosmic evolution in his book *Just Six Numbers: The Deep Forces That Shape the Universe* (2000).[4] As the title indicates, Rees focuses on six numbers or constants of nature: N (the "gravitational ratio"), ε (the "nuclear fusion efficiency"), (the " ratio of the actual to the critical density of matter in the universe"), λ (the strength of the "cosmic repulsion force"), Q (the "ratio of gravitational binding force to rest mass energy"), and D (the "number of spatial dimensions") (pp. 2–3, 168, 170–71).

Rees points out that these numbers have very specific values. Furthermore, if any one of these values were to differ by even a very small amount, the cosmic evolution of our universe would not have occurred or would have followed a very different course. For example, if λ were not a very small number, its effects would have counteracted gravity, and galaxies and stars (which depend on gravity to form) would not have come into existence. Another example is ε, whose value is 0.007. Rees informs us that if the value of this constant of nature were even 0.006 or 0.008, "we could not exist" because sufficient amounts of chemical elements such as carbon and oxygen could not be manufactured in the interiors of certain stars. A third example is D, the number of spatial dimensions, which of course equals three. Rees states that if D were two or four, "life couldn't exist" (Rees 2000, 2–3). Certainly life as we know it would not exist, and the universe would be a very different place. In this context it also is important to emphasize the informational content inherent in the precisely calibrated constants of nature (Lloyd 2006), which goes a long way toward explaining our universe's ability to self-organize (Davies 2004a, 76–77).

Thus, a strong case can be made that our universe is deeply mathematical in its structure, information rich, and hardly the result of a random and haphazard set of circumstances. Furthermore, the constants of nature are precisely calibrated in such a way that complex, dynamic systems have been able to evolve in our universe, including the evolution of life on earth. To again quote Einstein, an awareness of the "marvelous structure of the existing world" and "the Reason that manifests itself in nature" (Jammer 1999, 74) is a critical realization. Perhaps not surprisingly, some contemporary physicists (for example, those who expound string theory and eternal inflation; see Susskind 2005) attempt to explain our precisely calibrated universe by asserting that it is simply one of a colossal number of "bubble universes" comprising an infinite "multiverse," and thus a statistical inevitability resulting from the laws of very large numbers. This argument bears a close resemblance to the dubious "infinite monkey theorem" (derived from Borel 1913 and Eddington 1928),[5] which of necessity relies on the concept of infinity, an idea some mathematicians have disparaged as "not a good physical concept" (Ellis 2005a, 740). Furthermore, claims for the reality of a multiverse have also been criticized by other physicists as unscientific metaphysics (Richter 2006) and "indulging in . . . speculation" because there is "no chance whatsoever of observationally verifying . . . the existence of numerous other expanding universe domains beyond our visual horizon" (Ellis 2005a, 739–40). Davies lists five objections to the multiverse idea, a list that includes the ones mentioned here (2004b, 101–2). Ever parsimonious, pantheism accepts the single universe we can actually observe and casts a skeptical eye toward the baroque intellectual contortions of those in the physics community who develop elaborate models that have a tenuous empirical basis and are unlikely ever to be verified or falsified by any experiment or observation.

Once such unscientific attempts to rationalize the exquisite fine tuning of our universe have been discredited, it is not a huge leap to the further understanding that it is fundamentally ingrained with an intelligent design. I hesitate somewhat to use this term, as it is equated by some with creationism, literal interpretations of the Bible, efforts to suppress the teaching of Darwinian evolution, and the like (Brumfiel 2005b). But that is not what I am discussing here. Cosmic evolution definitely encompasses and acknowledges the process of Darwinian evolution (Chaisson 2004).

Nevertheless, I assert that the design imprinted in our universe imparts to it divinity and sacredness.[6] This design fulfills the criteria for divinity set forth in the classic work *The Idea of the Holy* by German theologian Rudolf Otto (1958), which he summarized as *mysterium tremendum et fascinans*. Harrison translates Otto's concept into "three key elements"—mystery, awesome power, and the capacity to inspire fascination or love (Harrison 2004, 41). Furthermore, from our human perspective, we must recognize that we owe our very existence to this design. We are a result of the won-

drous process of cosmic evolution, which has brought into existence the rest of the natural world as well. The human race is but one small part of this world and is inextricably connected to the great chain of cosmic events and processes that have unfolded during the last ~14 billion years.

In a postpostmodern world where pantheism holds sway, existential angst may be relieved by knowing that our universe, despite its immensity and violent aspects, has yielded through the process of cosmic evolution a most beautiful and hospitable place for humans and other forms of life: planet Earth. Paul Brockelman, who has explored the spiritual ramifications of contemporary cosmology and arrived at a more panentheistic viewpoint, likewise emphasizes the uplifting aspects of deeper cosmological knowledge (Brockelman 1999). In a similar vein, Davies argues that the new discoveries of nature's creative ability to organize the universe provide a "new way of thinking about the world [that] is more cheerful" (2004a, 197). It also might be said that life can be viewed as a gift derived from cosmic evolution, and gratitude for this would not be inappropriate.

After we die our remains sooner or later reenter the divine creation and recycle through Earth's biosphere, providing molecules that may become part of other living things. This is our "afterlife," or at least one aspect of it. Of course we also "live on" through our children, our accomplishments, and others' memories of us (Levine 1994a, 248–51).

Thus, we see that not only is pantheism compatible and consistent with modern science, but science provides one of two main avenues by which we may arrive at a pantheistic viewpoint. As such, pantheism is a naturalistic worldview that clearly reconciles science and religion even more successfully than panentheism does. The coinherence of science and religion (Hefner 2006) is also entailed by pantheism. However, to the extent that pantheism's metanarrative of cosmic evolution is incompatible with the postmodernist paradigm (which tends to reject totalizing metanarratives [Peterson 2005, 878]), pantheism would appear to exacerbate postmodernism's already exhausted condition (Peterson 2005, 883).

It is important to point out here that pantheism establishes a third position in relation to the opposing sides represented by advocates of intelligent design and the scientific establishment. Contemporary cosmology has elucidated a design imprinted in our universe since the time of the Big Bang. Pantheism claims that this design provides the foundation for the divine and sacred nature of the creation and the concept that "God" and our universe are one and the same. The ID movement is preoccupied with demonstrating that an intelligent designer created biological complexity, rapid change in the fossil record, and the large differences between species (Brumfiel 2005b). Pantheism denies that there is such an intelligent designer and affirms that biological evolution is explained by Darwinian principles and their modern enhancements. Pantheism diverges, however, from most of the scientific establishment in maintaining that there is pervasive

design in our universe as revealed most compellingly by the precisely calibrated constants of nature. This intelligent design is the primary basis for regarding our universe and God as one and therefore the creation as divine and sacred. It also has ethical consequences that commend it, and this I explore further below.

A Critique of Humans as God

It is perhaps no accident that the Enlightenment, which sought to replace ignorance, superstition, and to a large extent religion—all one and the same according to some—with learning and reason, first flourished in the Christian nations of Western Europe. Christianity, as pointed out earlier, surpasses the other monotheistic religions of the occident in blurring the distinction between God and humans by introducing the God-human or human-God figure of Jesus Christ. It is my position that once the concept that God can assume human form is established, the next logical (psychological?) step is that a reverse process can also occur—that humans can assume the power, authority, and role of God. Consistent with this assertion is Jon Meacham's recent observation that "The promise at the heart of the [Christian] faith [is] that God, as the fourth-century church father Athanasius said, 'was made man that we might be made gods'" (Meacham 2005, 48; from Athanasius's *De Incarnatione Verbi*, 54). I further maintain that in Western civilization this conceptual transition helped pave the road to the Enlightenment and modernity, in which the traditional Judeo-Christian concept of God was largely jettisoned and replaced by a belief in the perfectibility of humans and their societies, or "progress." In the words of Terry Eagleton, "God [was] killed off in all but name, and human beings hoisted into His place at the apex of creation" (2005, 92). Thus the Enlightenment resulted in a "secular religion" in which humans took the place of God and progress became a substitute for Christian salvation.

The concept of progress connotes the ultimate attainment of perfect rationality, which in turn will lead to the continuous development of technology, with an implicit promise of eventually bringing humanity to a state of utopia. The Enlightenment also ushered in an age in which it was accepted that the human mind alone can be the source of all law and that the collective wisdom ("invisible hand") of marketplaces consisting of self-interested individuals will ensure ever-growing (and, with the skilled application of technology, perhaps infinite in theory) prosperity for all people, with few if any negative repercussions.

This account of progress is decidedly materialistic, and although there is general agreement that the Enlightenment has had no small success in this realm, whether the West has achieved concomitant moral and social progress is debatable (Gray 2004). Certainly other cultures have experienced the Enlightenment as a mixed blessing, at best. As noted by Tu Weiming, "A

realistic appraisal of the Enlightenment mentality reveals many faces of the modern West to be incongruous with the image of 'the Age of Reason.' In the context of modern Western hegemonic discourse, progress means inequality, reason means self-interest, and individualism means greed" (Tu 1994, 24). McFague (2001, 126) and Eagleton (2005, 91–92) have articulated similar misgivings.

John Gray has cogently argued that Christianity helped to usher in the Enlightenment and modernity by establishing a religious precedent for the concept of progress: "The modern faith in progress is the offspring of a marriage between seeming rivals—the lingering influence of Christian faith and the growing power of science—in early-nineteenth-century Europe. From the eschatological hopes of Christianity we inherit the belief that meaning and even salvation can be found in the flux of history" (Gray 2004, 11). He goes on, "Modern projects of universal emancipation [i.e., progress] are earthly renditions of the Christian promise of salvation" (p. 12; bracketed comment added). Gray's assertions echo and elaborate Lynn White's earlier argument that the West's "implicit faith in perpetual progress" is grounded in Judeo-Christian teleology and that "modern Western science was cast in a matrix of Christian theology" (White 1967, 1206).

Thus, it makes sense that Enlightenment progress in the form of science, technology, industrialization, capitalism, and imperialism has achieved its greatest expression in nations of the Christian West during the last several hundred years. In these countries the theological underpinnings just discussed led, perhaps unconsciously, to the removal of most if not all of the psychological barriers preventing humans from assuming the role of God. For what is modern scientism if not the quest to know everything and stamp out all mystery? What are technological development and industrialization if not the quest to become all powerful? And what do imperialism and grandiose schemes to colonize the moon and Mars represent if not the impulse to exist and assert authority everywhere? But omniscience, omnipotence, and omnipresence are the classic attributes of God, not humans.

Of course we are not God. We are beings who are simply part of the creation, which, I have argued, is the only divine entity. To believe or even unconsciously assume we can take on the role of God is delusional and therefore, by definition, an error. It also is a sin, the sin of pride, and it is fraught with great risk. I submit that the sin of pride, or hubris, is perhaps the greatest of all sins, because it enables other sins such as violence and covetousness. A proud, individualistic person resists restraint, and when pride is fed by mass advertising campaigns/propaganda ("Just do it") and huge technological superiority ("shock and awe"), people believe they can do anything, and they *will* do anything, from indulging in excessive consumption to waging devastating wars.

Conclusion: Pantheism, Limits, and a More Peaceful and Sustainable World

Only by recognizing that we are merely one part of a divine and sacred creation, and limited human beings, not God, can we embrace restraint and a spirit of respect and cooperation that eventually will lead to a more peaceful, just, and sustainable world. Pantheism provides an inclusive, nonhierarchical, nonanthropocentric worldview that can help us recognize our limits and our kinship with the rest of the cosmos, especially the other living things with whom we share the planet (Levine 1994a, 359–60). It expands the democratic franchise (in the sense of a more equal distribution of certain inherent rights) to include other species, an idea thought to have originated (but which also ended, at least within the realm of Christianity) with Saint Francis of Assisi (White 1967, 1206–7). In this way pantheism subsumes certain Enlightenment principles, much as Einstein's theories subsume Newton's laws (the latter remaining a description of a part of reality that retains validity within that particular part). The Enlightenment's achievements obviously have been enormous, and it was right in many respects for the time and place in which it was born and thrived. But now we must move beyond it even as we retain its worthy aspects and ideas.

Humility is taught by many religions, but in acknowledging our debt to other life forms, pantheism is perhaps the most bracing of all tonics. For example, humans tend to be smug and self-satisfied about being more intelligent than other living things (although contemporary cognitive ethology is dramatically narrowing the gap between human intelligence/consciousness and that of certain animals; see Bekoff 2006, for example). However, we often need them much more than they need us, and they frequently have "skills" we lack but upon which we are utterly dependent. For instance, we cannot conduct photosynthesis like plants, but thanks to this marvelous "skill" plants and other photosynthetic organisms (including various eukaryotic algae and cyanobacteria, sometimes referred to as pond scum) produce the oxygen in the air we breathe and the food on which all animals, directly or indirectly, depend for survival (Madigan, Martinko, and Parker 2003, 327, 652–54). Through knowledge such as this we may come to embrace the intrinsic value of all life forms, one of the basic tenets of deep ecology, the worldview first articulated by Norwegian philosopher Arne Naess (Sessions 1994, 207–27). Pantheism and deep ecology share much in common (Levine 1994a, 232–34; Harrison 2004, 66), and the success of each as movements would be greatly enhanced by their mutual recognition and support. In particular, the deep ecology movement would be further strengthened by the theological foundation that pantheism provides.

By using a conceptual framework that recognizes human limits and dependencies, pantheism can lead to greater human wisdom derived in part from a repudiation of the sin of hubris. Does this mean that all scientific inquiry and technological development should end? No. The natural sciences continue to reveal the design of our universe and remain not only an intellectual adventure but also a "venture in religious understanding" in the tradition of Galileo, Newton, and other pre–nineteenth-century scientists (White 1967, 1206; Caiazza 2005, 15). In this essay I have argued that the venture in religious understanding afforded by the natural sciences is one of two ways we may arrive at a pantheistic viewpoint. With respect to the question of technology, it is worth recalling that even earlier cultures with pantheistic aspects, like those of the native Americans, developed and used such technologies as the bow and arrow.

However, having said that, I also assert that the time has come to remove applied science and technology from their pedestals. Accordingly, we can and should discard our quasi-religious belief that we will always find technological fixes for all of our problems, especially environmental ones. By the same token, we should abandon our contemporary ideology/theology (which comes complete with the most grotesque forms of idolatry—just peruse a recent issue of *Aviation Week and Space Technology*) that technology can and should be continuously pursued to produce ever more destructive weapons and new systems to "successfully" wage war against perceived foes. Instead, we need to eschew the sin of pride that derives from delusional notions of Godlike power and acknowledge that the acceptance of limits is the only moral choice in line with the truth of our condition. It follows that we need to limit our consumption, limit or even reverse human population growth, and move toward more localized, steady-state economies that rely as much as possible on environmentally benign technologies that protect the health of people and our planet to the greatest extent possible (Berry 1994, 232; Sessions 1994, 222; Korten 1995; Princen 2005; McKibben 2007).

Finally, the development of progressive social movements and institutions, while necessary in the struggle for a more peaceful, just, and sustainable world, ultimately is not going to be sufficient. For fundamental change to occur, the human race needs to alter its basic worldview and attendant systems of thought. We need what is otherwise known as a "change of mind and heart," as described in *The Earth Charter* (Earth Charter Initiative 2004, 148). Pantheism offers a way to achieve this profound change in hearts and minds. It is directly accessible through the intuitive apprehension of the divinity of the creation and through knowledge of modern science. The ethical foundation pantheism provides by recognizing the divinity of the creation and the limits of our rightful place within it (Wood 1985; Levine 1994b) can fortify our prospects for the long-term health of

Earth and its inhabitants. To the extent that it offers a "religious perspective based on a universal scientific cosmology that is designed to address global environmental problems" (Orr 2003, 908), perhaps pantheism eventually will enjoy widespread adherence.

NOTES

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1. This definition is derived from Neufeldt and Guralnik 1988, Gove 1971, Burchfield 1987, and Levine 1994a.

2. Notably, Einstein not infrequently made references to God, but when pressed to specifically describe his religious beliefs he often cited Spinoza and pantheism. Examples from Einstein 2005 include the following: "I am fascinated by Spinoza's pantheism." "My comprehension of God comes from the deeply felt conviction of a superior intelligence that reveals itself in the knowable world. In common terms, one can describe it as 'pantheistic' (Spinoza)." "I believe in Spinoza's God who reveals himself in the harmony of all that exists, but not in a God who concerns himself with the fate and actions of human beings" (pp. 99, 195, 197). According to Banesh Hoffman and Helen Dukas, in a 1929 letter Einstein described himself "as a 'disciple' of Spinoza, who looked upon all nature as God" (Hoffman and Dukas 1972, 94). Categorizing another person's religious beliefs is always a tricky business, but I conclude that Einstein's own words indicate that he was a pantheist very much in agreement with Spinoza's concept of God. This conclusion is generally supported by Einstein biographer Abraham Pais's contention that "If he had a God it was the God of Spinoza" (Pais 1982, 17) and by Gerald Holton (2003, 31–34). An in-depth analysis of Einstein's religious beliefs by Max Jammer (1999) does not precisely categorize those beliefs, but it does provide ample evidence for Einstein's admiration of Spinoza and his ideas (see Jammer 1999, 42–51, 144–49). Included in the evidence assembled by Jammer is the fact that Einstein even wrote a poem about Spinoza in 1920 titled "Zu Spinozas Ethik" (Jammer 1999, 43). In an appendix to his book Jammer includes the entire German text of this poem (p. 267).

3. I emphasize here the *general* course of cosmic evolution in the same sense that Davies uses the terms *predestiny* or *predisposition* to refer to the laws of nature that confer upon matter the ability to self-organize into greater states of complexity, including the state of life (Davies 2004a, 201). Davies distinguishes between predestiny (or predisposition) and *predeterminism*, which holds that everything was previously specified down to the last detail at the beginning of time. In other words, matter's ability to self-organize may lead inevitably to some form of life (predestiny), but no particular life form, including humans, is inevitable (predeterminism). Davies further elaborates: "Predestiny merely says that nature has a predisposition to progress along the general lines it has. It therefore leaves open the essential unknowability of the future, the possibility for real creativity and endless novelty. In particular it leaves room for human free will" (2004a, 201). In the effort here to reconstruct pantheism, it is worth noting that the denial of strict determinism and the leaving of room for human free will represent a departure from Spinoza, who adhered to strict determinism and held that "free will is an illusion" (Levine 1994a, 214). But, as Levine has pointed out, "although strict determinism may be intrinsic to Spinoza's system it is in no way intrinsic to pantheism *per se*" (p. 214).

4. Rees's book and John Barrow's *The Constants of Nature: From Alpha to Omega—The Numbers That Encode the Deepest Secrets of the Universe* (2002) expand and elaborate on ideas about the constants of nature explored earlier in Hawking's *A Brief History of Time* (1988, 123–27). Hawking and Barrow also discuss at some length the so-called Anthropic Principle, a highly contentious concept with multiple versions that derives from the finely adjusted constants of nature that have been discovered by modern cosmology (Hawking 1988, 123–27; Barrow 2002, 141–76). Hawking paraphrases the Anthropic Principle as follows: "We see the universe the way it is because we exist" (1988, 124). The relationship, if any, between pantheism and the Anthropic Principle is a subject that merits further study.

5. A. S. Eddington's early twentieth-century version of the infinite monkey theorem (although he did not use this term) was stated as follows: "If I let my fingers wander idly over the keys of a typewriter it *might* happen that my screed made an intelligible sentence. If an army of monkeys were strumming on typewriters they *might* write all the books in the British Museum" (Eddington 1928, 72). More recent versions of the theorem usually invoke an infinite number of monkeys using an infinite number of typewriters, and "one of Shakespeare's sonnets" is sometimes substituted for the phrase "all the books in the British Museum" (Hawking 1988, 123). Admittedly this "theorem" is often used whimsically, but in the present context it also has a serious application.

6. The argument from design has an ancient lineage and historically has been used by theists to argue for the existence of a transcendent, supernatural, creator God (Barrow 2002, 157). Here a particular form of the design argument, which derives from the precise values of the fundamental constants of nature (Barrow 2002, 159), is used to make a case for pantheism and a radically immanent divine Unity. A similar form of this argument has been employed recently also by theists (Swinburne 1990, for example).

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