DID GOD CREATE THE UNIVERSE?

 In the last chapter, the first evidence given for the existence of God is that there is a universe which points to God. But did God create the universe? Doesn’t evolution make belief in a Creator unnecessary and obsolete? These are the questions we will consider in this chapter. First, we will consider evidence in favor of a Creator, and then we will consider whether, even if evolution is true, it eliminates the need for a Creator.

Evidence in Favor of a Creator

Design

 The first evidence that God created the universe is the evidence of design. The appearance of design is widely acknowledged by scientists, including those who do not believe in the God of the Bible (their explanations for apparent design will be explored later in the chapter). For example, Fred Hoyle, former director of the Institute of Astronomy at Cambridge University, concluded that “a superintellect has monkeyed with physics, as well as with chemistry and biology.”And Paul Davies, English physicist and professor at Arizona State University, agrees that Hoyle was right in his impression, and says “On the face of it, the universe *does* look as if it has been designed by an intelligent creator expressly for the purpose of spawning sentient beings.”1

 The evidence for design is apparent at the smallest scale and at the largest scale, and everywhere in between. At the molecular level evidence for design is seen in the complexity and efficiency of DNA. The discovery of the DNA code by James Watson

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1. Paul Davies, The Cosmic Jackpot, New York: Houghton Mifflin Company, 2007, p. 3. Hoyle’s original quotation is from Fred Hoyle, “The Universe: Past and Present Reflections,” Annual Review of Astronomy and Astrophysics, vol. 20 (1982), p. 16.

# “The Discovery of the Molecular Structure of DNA - The Double Helix” at <http://nobelprize.org/educational/medicine/dna_double_helix/readmore.html>

and Francis Crick in 19532 is one of the greatest scientific developments of the 20thcentury. Our bodies are made up of 100 *trillion* individual cells, and DNA is the control center of each one of them.3 Within each of those cells, the human genome—just half the DNA contents, contains 3.1 billion base pairs.4 Within the DNA are found 23 chromosomes and 20,000 to 25,000 genes.5 These genes encode instructions that control the functioning of the body down to the smallest detail. For example, 575 genes are responsible for encoding the chemical messengers (protein kinase enzymes) that pass signals around the cell, and 900 genes control the nose’s capacity to smell.6 It is also through the genes that physical traits, as well as family illnesses, are passed on from parents to children.7

Not only does the complexity of DNA argue for a Designer, but also its suitability for its function. Michael Denton (British-Australian author, Ph.D. in Biochemistry from King’s College in London) identifies two properties of DNA, metastability and compaction, that contribute to its fitness to carry out its biological role. Metastability refers to a state of delicate equilibrium. This is seen in the delicate balance in DNA between stability, which is essential for storing genetic information, and flexibility, which is essential for gene expression and replication. DNA has both, in just the right balance. Compaction refers to DNA’s ability to compact an enormous amount of information into a very small space. The vast amount of information that needs to be stored in a human cell requires a DNA length of one meter long. Yet this can be compacted into a tiny ball less than 5-thousandths of a millimeter in diameter. This is possible because DNA helices have the ability to twist and bend into superhelices, which in turn can be bent into higher order helices, and so on.8 After talking about proteins as well, Denton concludes

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1. C. R. Calladine & Horace R. Drew, Understanding DNA, 2nd edition, New York: Academic Press, 1997, p. 2.
2. James D. Watson, DNA: The Secret of Life, New York: Alfred A. Knopf, 2003, p. 165.
3. Ibid., pp. 201, 257. Watson stated 35,000 genes, but the updated number from the Genome project is 20,000 to 25,000. See “how Many Genes are in the Human Genome?” at <http://www.ornl.gov/sci/techresources/Human_Genome/faq/genenumber.shtml>
4. Ibid., p. 200.
5. Ibid., pp. 9-10.
6. Michael Denton, Nature’s Destiny, New York: The Free Press, 1998, pp. 152-154.

by saying: “Everything that has been learned about the chemical and physical properties of DNA and protein since the early 1950s increasingly confirms the wonderful fitness of

these two remarkable molecules for their respective biological roles in the replicative

cycle.”9

Dr. Charles Thaxton (Ph.D. in physical chemistry at Iowa State University with post-doctoral work at Harvard University),10 notes that the complexity of the DNA code represents “specified complexity.” Although order with low information content (like a snowflake) does arise by natural processes, there is no convincing experimental evidence that order with high information content (specified complexity) can arise by natural processes. Dr. Thaxton concludes:

Uniform experience reveals that only an intelligent cause regularly produces specified complexity. To be sure, we may still posit a non-intelligent, material cause as the source of specified complexity, even though we do not regularly observe it. We may argue that in the rare occurrence, in spite of its trivially small probability, such an event **might** happen. The problem is, however, that to argue this way is no longer to do science. Regular experience, not negligible probabilities and remote possibilities, is the basis of science.11

The natural response, when one learns of the amazing complexity and suitability of function found in DNA, is to stand in awe of the One who designed it. On June 26, 2000 President Clinton announced, upon completion of the first draft of the Human Genome Project, “Today, we are learning the language *in which God created life*” (italics added).12 Surprisingly, the discoverers of DNA, James Watson and Francis Crick, believed God had nothing to do with it. How can this be? Francis Crick remarked, after surveying his role in the DNA revolution, “Biologists must constantly keep in mind that what they see was not designed, but evolved.”13 Overlooked in this perspective, however,

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1. Denton, p. 192.
2. “Charles Thaxton,” in Wikipedia.
3. Dr. Charles Thaxton, “DNA, Design, and the Origin of Life,” at <http://www.origins.org/articles/thaxton_dnadesign.html>
4. Watson, DNA: The Secret of Life, p. 191.
5. Nancy R. Pearcey and Charles R. Thaxton, The Soul of Science, Wheaton, IL: Crossway Books, p. 245.

is that explaining how something works does not explain how it came to be. Why would scientists think, when it took many years of high-level thinking from some of the world’s

most intelligent scientists to “break the code” of life, that this highly complex DNA code could have come into being without an Intelligent Designer? If it took intelligent minds to discover it, wouldn’t it have taken an even more intelligent mind to develop it? This was the attitude of ground-breaking scientists from a previous era, who understood that in making scientific discoveries they were “thinking God’s thoughts after him,” that is, they were coming to appreciate how God designed the universe (as discussed in chapter 6). And Francis Collins, who succeeded Watson as the director of the Human Genome project, although he once shared Watson’s atheistic view, endorsed President Clinton’s statement: “Today, we are learning the language in which God created life.” Collins states: “For me the experience of sequencing the human genome, and uncovering this most remarkable of all texts, was both a stunning scientific achievement and an occasion of worship.”14

One seeming problem for the design argument based on DNA is the presence of “junk DNA.” Watson describes “junk DNA” as the 98% of the human genome that apparently doesn’t code for anything, consisting of functionless stretches of varying length, many of which occur repeatedly.15 If the vast majority of DNA is in fact filled with useless sequences, how can we attribute this to God? For it would certainly be inappropriate to say that God created junk. But as progress continues to be made in understanding the human genome, it is becoming clear that “junk DNA” has function after all. “Junk DNA” actually consists of several types, including pseudogenes, SINEs, LINEs, and endogenous retroviral DNA. Rana and Ross show that recent discoveries have demonstrated functionality in each of these categories, and anticipate that new discoveries will further validate that these portions of the DNA are not junk afterall.16

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1. Francis S. Collins, The Language of God, New York: Free Press (Division of Simon & Schuster), 2006, p. 3
2. Watson, p. 197.
3. Fazale Rana with Hugh Ross, Who was Adam?, Colorado Springs: Nav Press, 2005, pp. 237-243.
4. “Junk DNA - Junk DNA & Evolution” at <http://atheism.about.com/od/evolutionexplained/a/JunkDNAGenetics.htm>

Even the atheistic website atheism.about.com acknowledges the fallacy of the “junk DNA” designation:

Stretches of non-coding DNA were originally labeled "Junk DNA" on the assumption that non-coding sequences did nothing at all. Our knowledge of how DNA works has vastly improved, though, and this is no longer the accepted position among biologists.17

The website quotes Bryan D. Ness and Jeffrey A. Knight from the *Encyclopedia of Genetics*:

Because they appear functionless but take up valuable chromosomal space, these noncoding sequences have been considered useless and have been termed junk DNA or selfish DNA. Recent studies, however, lend strong support to the possibility that the seemingly useless repetitive DNA may actually play a number of important genetic roles, from providing a substrate on which new genes can evolve to maintaining chromosome structure and participating in some sort of genetic control. Consequently, it is now out of fashion among geneticists to refer to these parts of the genome as junk DNA, but rather as DNA of unknown function.18

The above shows that the alleged lack of function in “junk DNA” should not be used as an argument against design.

Moving on, we see the evidence for design at the large scale in the fine-tuning of the universe. Astronomer Dr. Hugh Ross, in his book The Creator and the Cosmos, cites a list of 35 evidences for the fine-tuning of the universe.19 Among these is the expansion rate of the early universe. If the universe had expanded too quickly, matter would have dispersed so efficiently that none of it would have clumped to form galaxies. If no galaxies had formed, then no stars would have formed, and if no stars had formed, no planets would have formed. And if no planets had formed, there would be no place for life. On the other hand, if the universe had expanded too slowly, matter would have clumped so efficiently that the whole universe would have collapsed into a super-dense lump before any solar-type stars could have formed. The expansion velocity is affected by the cosmic mass density and by the cosmic space energy density. In order for the

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1. “Junk DNA - Junk DNA & Evolution” at <http://atheism.about.com/od/evolutionexplained/a/JunkDNAGenetics.htm>
2. Hugh Ross, pp. 154-157.

universe to have produced all the stars and planets necessary to explain the possibility of the Earth sustaining physical life, the value of the cosmic mass density had to be fine-tuned to better than one part in 1060 and the value of the space energy density needed fine tuning to better than one part in 10120. This is by far the most extreme fine-tuning discovered in physics.20

Another very sensitive parameter which demonstrates the fine tuning of the universe is the ratio of the electromagnetic force constant to the gravitational force constant. If this ratio were increased by just one part in 1040, only large stars would form. If it were decreased by just one part in 1040, only small stars would form. But for life to be possible in the universe, both large and small stars are needed—large stars because they provide the thermonuclear furnaces in which most of the life essential elements are produced, and small stars (like the sun) because only they burn long enough and stably enough to sustain a planet with life.21

These are only a few examples—similar fine-tuning facts pertain to each of the fundamental forces and ratios betweens pairs of forces. Many top astronomers have concluded from such evidence of fine tuning that the universe does indeed point to God. Dr. Allan Sandage, winner of the Crafoord prize in astronomy, said: “I find it quite improbable that such order came out of chaos. There has to be some organizing principle. God to me is a mystery but is the explanation for the miracle of existence, why there is something instead of nothing.”22 And Arno Penzias, who shared the Nobel Prize for physics for the discovery of cosmic background radiation, said:

Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the conditions required to permit life, and one which has an underlying (one might say “supernatural”) plan.23

When we come down in scale from the universe to the earth, we find additional remarkable evidence for design. Dr. Hugh Ross lists a table of 66 parameters of a planet,

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1. Ross, pp. 150-151.
2. Ibid., p. 153.
3. Quoted in Ross, p. 160.
4. Quoted in Ross, p. 159.

its moon, its parent star, and its galaxy that must fall within narrowly defined limits in order for life of any kind to exist. Among these are the mass of the parent star (sun) and the distance of the planet from the parent star, the axial tilt, rotation period, and magnetic field of the planet, and the quantity of oxygen in the atmosphere. Dr. Ross calculates that the probability that even one planet in the universe would fulfill all the conditions for life is so remote as to suggest that the Creator personally and specially designed our galaxy, our sun, our moon, and our planet for life.24

 Continuing down in scale, the human body also presents strong evidence for intelligent design. Michael Denton argues that the evidence strongly suggests that the only type of organism capable of manipulating, exploring, and eventually understanding the world is an upright bipedal primate of biology and design very close to that of *Homo sapiens.* He cites six features of humans that have been identified as being crucial to the success of our species: (1) high intelligence, (2) linguistic communication, (3) highly developed visual ability, (4) possession of a superb manipulative tool—the hand, (5) our upright stance, and (6) our being a highly social species.25 To these he adds one crucial ability—the ability to handle and control fire, which has led to the development of metallurgy and ultimately, through the use of metals, to scientific and technological knowledge. Denton comments: “It is hard to imagine these adaptations plus the additional ability to handle and manipulate fire (which poses its own rather specific design constraints on an organism) being possessed by any organism markedly different to a modern human.”26 In other words, the evidence strongly suggests that humans have been specifically designed for the amazing capabilities they possess.

 Regarding the cognitive capacities of humans, Denton acknowledges that other species, such as dolphins, parrots, seals, and apes, possess intelligence, but notes that none comes close to the intelligence of man. Regarding language, Denton says that human speech depends not only on intelligence but on the possession of appropriate organs to generate complex sound patterns. Even if a chimp had a human brain and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Hugh Ross, pp. 188-199.
2. Michael Denton, Nature’s Destiny, New York: The Free Press, 1998, p. 238.
3. Ibid., p. 239.

could formulate sophisticated thoughts, it would still lack the ability to communicate efficiently because it lacks the necessary vocal apparatus.27 Regarding the human hand, Denton notes that no other animal possesses an organ so superbly adapted for intelligent

exploration and manipulation of its physical surroundings and environment, He acknowledges that the great apes come close, but says: “Yet the hand of the chimp and gorilla, although possessing an opposable thumb, is far less adapted to fine motor movement and control.”28 Regarding fire, Denton notes that only an organism of approximately our dimensions and design—about 1.5 to 2 meters in height with mobile arms about one meter long ending in manipulative tools (hands)—can handle fire. He also comments that the handling of fire requires a developed sense of vision and muscles to control movement.29 Denton acknowledges that the evidence that humans have been uniquely designed to be the only thinking beings capable of acquiring knowledge and comprehending the cosmos is not compelling, but he says it is eerily suggestive. He asks:

Is it really just a coincidence that what may well be the most advanced possible biological brain possesses sufficient insight and intelligence to comprehend the world; that a biological brain capable of such feats need not be so large that it would require a clumsy elephantine quadruped to house it, but is of a size fit for an organism of the design and dimensions close to *Homo sapiens*; that the physical design is itself so fit for the manipulation of fire, the key to technology and knowledge; that the muscles provide sufficient power to move the body and limbs; that the speed of nerve conduction is fast enough to permit rapid coordinated movement ….?

He concludes: “The chain of coincidences underlying our existence, our ability to make fire, to develop technology, and ultimately to comprehend the cosmos, is simply too long and the appearance of contrivance too striking.”30

Advanced design is indeed evident at the smallest scale, at the largest scale, and everywhere in between. The incredible complexity of DNA, the extreme fine-tuning of the universe, the improbable combination of parameters making life possible on the earth,

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1. Ibid., pp. 239-240
2. Denton, p. 241.
3. Ibid., pp. 244-245.
4. Ibid., p. 261.

the unique design of the human body—these are just a sampling of the evidence that leads many people to the conclusion that there must be an Intelligent Creator.

Beauty

 A second evidence that God created the universe is beauty. Dean Ohlman, Christian TV producer at Radio Bible Class, states, “I’m convinced that the beauty we see and sense in the natural world is one of the most important evidences of God’s divine nature.”31 Design is concerned primarily with utility or function. A very complex machine is intricately designed, but not necessarily beautiful. Evolution also concerns itself primarily with utility—survival depends on ability to function effectively in an environment. But it does little to explain the overwhelming beauty and creativity of the world in which we live. Any trip to the aquarium, the zoo, or the botanical garden leaves one amazed with the variety of color and artistic design evident among living things on this planet. Likewise a trip to the ocean, a view from the mountain top, a look at a sunset, or a gaze into the star filled sky leaves one awestruck and inspired. Each season also has its own beauty—the spring the beauty of the blossoms, the summer the beauty of the green grass, the fall the beauty of the changing colors, and the winter the beauty of the fresh fallen snow. Beauty can even be seen at the molecular level in the double helix structure of DNA, which has been described as “flawlessly beautiful.” Crick, co-discoverer of DNA, noted its intrinsic beauty.32 Is all of this beauty simply the unintended by-product of evolution driven by randomness and natural selection?

In addition to the beauty of the natural world, the beauty and elegance of the laws of nature provide another line of reasoning pointing towards a Creator. Paul Davies says: “Mathematical elegance is not an easy concept to convey to those unfamiliar with mathematics, but it is keenly appreciated by the professional scientists.” While he does not believe in the God of the Bible, he goes on to comment: “If beauty is entirely biologically programmed, selected for its survival value alone, it is all the more surprising to see it re-emerge in the esoteric world of fundamental physics, which has no

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1. Dean Ohlman, “The Meaning of Natural Beauty,” posted February 8, 2010 at <http://www.wonderofcreation.org/2010/02/08/the-meaning-of-natural-beauty/>
2. Denton, p. 151.

direct connection with biology. On the other hand, if beauty is more than biology at work, if our aesthetic appreciation stems from contact with something firmer and more pervasive, then it is surely a fact of major significance that the fundamental laws of the universe seem to reflect this ‘something.”33

Dr. Robin Collins, who has a Ph.D. in Philosophy from Notre Dame, states: “When scientists are trying to construct a new law of nature, they routinely look for the simplest law that adequately accounts for the data.”34 He quotes Nobel prize winning scientist Paul Dirac, who said: “It is more important to have beauty in one’s equations than to have them fit experiment.” Dr. Collins further explains, “In Physics, we see an uncanny degree of harmony, symmetry, and proportionality. And we see something that I call ‘discoverability.’ By that, I mean that the laws of nature seem to have been carefully arranged so that they can be discovered by beings with our level of intelligence.”35 While not all scientists (including Dirac) who recognize the beauty and simplicity of the laws of nature see this as an evidence of God’s existence, many (like Dr. Collins) who take the time to reflect on this phenomena see it as a further evidence that “the heavens declare the glory of God” (Psalm 19:1).

Transcendent Qualities of Humanity

 A third evidence for a Creator is what we might call the transcendent qualities of humanity. The Bible says that God made man in his own image (Genesis 1:26-27). That means that man is similar to God in some respects. These qualities, several of which we will consider, make humans more than a biologically evolved animal. They give evidence that a touch of the transcendent world has been implanted into our being—evidence that we have, in fact, been created by God.

 The first is the religious nature of humans. Other creatures are not religious creatures, but humans are incurably religious. In spite of the efforts of atheistic governments to wipe out religion, it persists and flourishes. In spite of the arguments of atheistic scientists who present belief in God as obsolete, religion continues strong, even

in a highly developed and highly educated country like America. From the most ancient

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1. Paul Davies, The Mind of God, New York: Simon & Schuster, 1992, p. 176.
2. Lee Strobel, The Case for a Creator, Grand Rapids, Mich: Zondervan, 2004, pp. 146.
3. Ibid., p. 147.

times to the present, hardly a society has existed that did not demonstrate strong interest in religion. Why is this so? The most obvious explanation is that humans have an inherent longing to connect with God because God created them and made them for that purpose.36

 Second, humans have an awareness of moral law. This point was especially influential in leading scientist Francis Collins (former director of the human genome project) to faith in God. A simple question by a patient (Collins formerly practiced as a medical doctor) about what he believed shook him out of his comfortable atheism and led him to investigate the basis for faith. In reading the classic Mere Christianity by C. S. Lewis (also a former atheist), the argument that caught his attention the most was related to moral law: “Right and Wrong as the Clue to the Meaning of the Universe.”37 He saw that the concept of right and wrong appeared to be universal among all members of the human species and also to be peculiar to human beings. After careful consideration he concluded that this law of human nature could not be explained away as a cultural artifact or evolutionary by-product.38 He was stunned by Lewis’ logic when he wrote: “If there was a controlling power outside the universe, it could not show itself to us as one of the facts inside the universe—no more than the architect of a house could actually be a wall or staircase or fireplace in that house. The only way in which we could expect it to show itself would be inside ourselves as an influence or a command trying to get us to behave in a certain way. And that is just what we do find inside ourselves.”39 Collins says: “I had started this journey of intellectual exploration to confirm my atheism. That now lay in ruins as the argument from the Moral Law (and many other issues) forced me to admit the plausibility of the God hypothesis.”40

Third is the ability to uncover many of the mysteries of our own existence. Other

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creatures do not think about where they came from, nor do they have the advanced

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1. See Justin Barrett, Why Would Anyone Believe in God? (Cognitive Science of Religion Series), Lanham, MD: AltaMira Press.
2. Francis Collins, The Language of God, New York: Free Press (A division of Simon & Schuster), 2005, pp. 21-22.
3. Ibid., pp. 23-29.
4. Quoted in Collins, p. 29
5. Collins, p. 30.

intellectual capacity to engage in scientific discoveries about the laws of nature. Paul Davies comments on this amazing human capacity in the conclusion of his book The Mind of God:

The central theme that I have explored in this book is that, through science, we human beings are able to grasp at least some of nature’s secrets. We have cracked part of the cosmic code. Why this should be, just why *Homo sapiens* should carry the spark of rationality that provides the key to the universe, is a deep enigma. We, who are children of the universe—animated stardust—can nevertheless reflect on the nature of that same universe, even to the extent of glimpsing the rules on which it runs. How we have been linked into this cosmic dimension is a mystery. Yet the linkage cannot be denied.

Davies then asks, “What does it mean,” and says: “I cannot believe that our existence in this universe is a mere quirk of fate, an accident of history, an incidental blip in the great cosmic drama …. We are truly meant to be here.”41

 As already mentioned, Davies does not believe in the personal God of the Bible42 (his own views will be discussed later in the chapter). But the enigma he raises above is worthy of careful reflection and has no more clear answer than that provided by the theology of man made in the image of God. Man has the amazing ability to uncover nature’s secrets because he has been made in the image of God with that “spark of rationality” that links him to the Creator.

Having considered some evidences for a Creator, namely design, beauty, and the transcendent qualities of humanity, we must now answer the challenge explored in the next section: “does evolution eliminate the need for a Creator?”

Does Evolution Eliminate the Need for a Creator?

 While many find in design, beauty, and /or the transcendent qualities of humanity convincing evidences for a Creator, others feel that evolutionary theory renders belief in God unnecessary and obsolete. However, even assuming, for the sake of argument, that

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1. Davies, p. 232.
2. Paul Davies, The Cosmic Jackpot, New York: Houghton Mifflin Company, 2007, p. 265.

Darwin’s theory of biological evolution is essentially true\*, two big problems outside the realm of biological evolution lead to the reasonable inference that God, at least in some form, exists.

Before considering the two problems, both of which involve gaps in scientific knowledge, one important point should be made, namely, that even if all gaps in scientific knowledge were closed such that everything about the origin of the universe, the origin of life, and the origin of all life forms including humans could be explained scientifically with no need for God to “fill in the gaps” (this is the goal of those who are looking for a “theory of everything”), this would still fail to prove that God does not exist. At most, it would demonstrate the plausibility of not believing in God with reference to this issue. But those who, for other reasons (such as those that will be explored in the remainder of this book) choose to believe in God could still see God as compatible with science by seeing him as the Ultimate Cause who works through the means of the secondary, or natural, causes defined by the laws of nature. Davies acknowledges that, given this perspective, science can never disprove God: “The God of scholarly theology, by contrast, is cast in the role of a wise Cosmic Architect whose existence is manifested through the rational order of the

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\* Certainly, not all followers of Christ believe in evolution. There are three main views: 1) theistic evolution (or evolutionary creation), which sees God as creating through the means of evolution. 2) recent creation, which sees God as creating in six literal 24 hour days not long ago (between 6,000 to 10,000 years ago), and 3) old earth creation (or progressive creation), which still believes God directly created “each according to its kind,” (Genesis 1:21,24, etc), but sees the six days of creation as long periods of time. This view, contrary to the recent creation view, maintains that God created the universe in connection with the big bang, about 14 billion years ago. Both forms of creationism allow for micro-evolution within the Biblical “kind.” Recent creationists believe the Biblical flood of Noah’s time (Genesis 6-9) was a worldwide flood and that most of the fossils were formed during the flood and its aftermath. Old earth creationists generally believe Noah’s flood was a local flood in the region of ancient Mesopotamia. It is beyond the scope of this book to discuss and debate the various points of view or to defend one view over another. The literature is well developed and many creationist arguments have been given in response to each of the evidences used to support evolution. The following resources will give a good start to the reader interested in exploring the various creationist perspectives: 1) Evolutionary creation (or theistic evolution): Keith B. Miller, editor, Perspectives on an Evolving Creation, Grand Rapids: Wm. B. Eerdmans Pub. Co., 2003. 2) Recent Creation. Websites: [www.icr.org](http://www.icr.org) and [www.answersingenesis.org](http://www.answersingenesis.org). Books: Henry and John Morris, The Modern Creation Trilogy ( 3 volumes), Green Forest, AK: Master Books, 1996. 2) Old Earth Creation. Website: [www.reasonstobelieve.org](http://www.reasonstobelieve.org) Books: Hugh Ross, The Genesis Question, Colorado Springs: NavPress, 2001. Hugh Ross, A Matter of Days, Colorado Springs: NavPress, 2004.

cosmos, an order that is in fact *revealed* by science. This sort of God is largely immune to scientific attack.”43

It is because he takes this perspective that Francis Collins, former director of the Human Genome Project can say, “I see DNA, the information molecule of all living things, as God's language, and the elegance and complexity of our own bodies and the rest of nature as a reflection of God's plan.”44 Collins did not come to faith in God because he saw shortcomings in evolutionary theory (to the contrary, he remains a committed evolutionist), but for other reasons, such as the moral law argument, as referred to above. He does not see science as saying anything either for or against the existence of God, but because he does believe in God (for other reasons) he can see God as the Ultimate Cause working through the laws of nature. While I agree that science as such cannot prove God, it will be argued in this chapter that what we learn from scientific inquiry can form the basis for a reasonable inference in favor of God as Creator. But whether one agrees that the universe points *to* God or not (based both on what science can and cannot explain about it), it is important to recognize, at minimum, that science cannot disprove God’s existence.

Having said that, we can now consider these two formidable problems (both outside the realm of biological evolution) that suggest the reasonable inference that God exists. The first problem relates to the origin of life.

The Origin of Life Remains a Mystery

According to Darwin’s evolutionary theory, human life evolved from simpler living things, and they in turn evolved from yet simpler living things. But to begin the process, there had to be a living cell. But how did life itself begin? What physical and chemical processes can transform nonliving matter into a living organism? Paul Davies states that, although the problem is being tackled by an army of chemists, biologists, astronomers, physicists, and mathematicians, it remains one of the great scientific challenges of our

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1. Davies, The Cosmic Jackpot, p. 15.
2. Francis Collins (2007, April 6), “Why This Scientist Believes in God,” *CNN.com* Retrieved February 18, 2012 at <http://www.cnn.com/2007/US/04/03/collins.commentary/index.html>.

time.45  Let us retrace some of the efforts among scientists within the last 90 years to answer this challenging question.

*Early Chemical Evolutionary Theory*

Little progress was made on the subject until the work of Oparin and Haldane in the 1920’s. They assumed that the first living organism developed gradually from a mixture of molecules through a series of yet-to-be-determined chemical reactions. Haldane envisioned the process taking place in a “primordial soup” resulting from chemicals washing into the sea. Oparin proposed that the physical cell structure came first, providing a natural containment vessel in which the molecular marvels could proceed.46

The possibility of this hypothesis seemed to be confirmed by the Miller-Urey experiment in 1952. Urey had to guess regarding the composition of the early atmosphere, but decided on a mixture of methane, hydrogen, and ammonia. Miller circulated this gas mixture plus water through a glass vessel, and sent an electric spark through the mixture to simulate the effect of sunlight. After a few days, the experiment produced a small yield of amino acids, the building blocks of proteins, and basic ingredients in all terrestrial life. These results were widely considered the first steps on the road to the creation of life “in a test tube.” Many scientists concluded that a few chemicals plus an energy source are all that is needed to create life.47

However, later findings cast doubt on the significance of the Urey-Miller experiment. One of the most serious problems with the theory is that geologists no longer think the early atmosphere resembled the gas mixture in Miller’s flask. Methane and ammonia were unlikely to ever have been present in abundance in the earth’s atmosphere, and if the earth ever had substantial hydrogen in its atmosphere, it wouldn’t have lasted long, but would have escaped into space.48

A second major shortcoming of the chemical evolutionary theory is its inability to

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1. Paul Davies, The Fifth Miracle, New York: Simon & Schuster, 1999, p. 12.
2. Ibid., pp. 84-85.
3. Ibid., pp. 86-87.
4. Ibid., p. 87.

deal with the complexity of biological information required for a living cell. As Davies points out, amino acids may be the building blocks of proteins, but there is a world of difference between building blocks and an assembled structure. Just as the discovery of a pile of bricks is no guarantee that a house is around the corner, so a collection of amino acids is a long, long way from the sort of large, specialized molecules such as proteins that life requires.49

*The Difficulty of the Origin of Life Problem*

Davies goes on to explain why the origin of life problem is so difficult. Proteins are very specific amino-acid sequences that have specialized chemical properties needed for life. Given that the alternative permutations available to a mixture of amino acids is super-astronomical, getting a useful combination is a huge information-retrieval problem, like trying to track down a site on the internet without a search engine. The mere uncontrolled injection of energy won’t accomplish the ordered result needed, just as exploding dynamite under a pile of bricks will not result in a house.50  Furthermore, proteins are only a small part of what is needed for life—lipids, nucleic acids, and ribosomes, among other things, are also needed. Davies points out that even if scientists, using complicated and delicate laboratory procedures, were able to synthesize one at a time the basic ingredients of life, it is highly unlikely that the same set of procedures would yield all the required pieces at the same time. The complex molecules found in living organisms are not in themselves alive. Life is a phenomenon associated with a whole society of specialized molecules cooperating in surprising and novel ways. Even DNA by itself is not alive—pluck the DNA from a living cell and it would be stranded, unable to carry out its role. To function properly, DNA must be part of a larger team of molecules cooperating together. The interdependence of life’s component parts raises a difficult question: if everything needs everything else, how did the community of molecules ever arise in the first place?51

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1. Davies, p. 88.
2. Ibid., p. 91.
3. Ibid., p. 92.

*Attempts to Address the Origin of Life Problem*

1. Chance and Necessity

Scientists have gone in several different directions in their attempt to address the riddle of the origin of life. The first approach relies heavily on chance. Nobel laureate Jacque Monod, in his book, Chance and Necessity (1972), argued that life began essentially by random fluctuations in the prebiotic soup that were subsequently acted upon by selection to generate information. But even with natural selection combining with chance, he readily admits that life is such a remarkable accident that it almost certainly occurred only once in the universe.52 Monod concluded, “Man at last knows he is alone in the unfeeling immensity of the universe, out of which he has emerged only by chance.”53 For Monod, life is essentially a lucky accident, much more the result of chance than necessity. In view of the overwhelming improbabilities involved in the origination of life, as outlined by Davies above, Monod’s reliance on chance is simply believing in a miracle by another name and cannot be considered a rational explanation for the origin of life.54

 Additional models have been proposed since then in an effort to provide better odds. Manfred Eigen (Winner of the 1967 Nobel Prize in Chemistry) sought to give the origin of life a more “believable” chance with his RNA first model. Although he was not the first to propose the idea, his experiments popularized the idea. In 1974 Eigen and his colleagues experimented with a chemical broth and an energized form of the four nucleic-acid bases that make up the building blocks of RNA. As viral RNA was added to the mixture, a population explosion of RNA occurred. The amount of RNA added was reduced, until none was added at all, and yet replicating strands of RNA continued to be produced. The experimenters believed that they were witnessing for the first time the spontaneous synthesis of RNA strands from their basic building blocks.55 Therefore,

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1. Walter L. Bradley, “Information, Entropy, and the Origin of Life,” in Debating Design, edited by William Dembski and Michael Ruse, Cambridge University Press, 2004, p. 345.
2. Quoted in Davies, p. 272
3. Walter L. Bradley, “Information, Entropy, and the Origin of Life,” p. 345.
4. Davies, pp. 127-128

Eigen concluded that life began with a self-replicating RNA molecule that, through mutation / natural selection over time, became increasingly optimized in its biochemical function.56

 Do Eigen’s experiments re-create the steps that nature took in making life from nonliving materials? Davies says clearly not, pointing out that the experiments were highly contrived and a world away from the natural conditions that prevailed on the young earth. In particular, to achieve RNA synthesis, Eigen had to use a carefully prepared chemical mixture that included a customized replication scheme that was extracted from a living organism. Davies concludes that Eigen is a long way from demonstrating that nucleic acid bases will spontaneously assemble and replicate in an incoherent mixture like a primordial soup.57 Robert Shapiro, a Harvard trained chemist, is also very doubtful about RNA-first replicator models:

A profound difficulty exists, however, with the idea of RNA, or any other replicator, at the start of life. Existing replicators can serve as templates for the synthesis of additional copies of themselves, but this device cannot be used for the preparation of the very first such molecule, which must arise spontaneously from an unorganized mixture. The formation of an information-bearing homopolymer through undirected chemical synthesis appears very improbable.58

In spite of efforts to provide explanations that give life a believable chance, the solutions proposed still lead to a dead-end unless one is willing to push the limits of credulity by putting almost unlimited faith in the power of chance.

1. Panspermia

 A second approach, called panspermia, transfers the problem to outer space by proposing that life did not originate on earth, but somewhere else in the universe, and was transported to the earth by some mechanism, thus “seeding” the earth with life. Francis Crick, co-discoverer of DNA, along with L. E. Orgel, published a paper in 1973 proposing the idea of directed panspermia. Crick further developed the idea in a full \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Bradley, pp. 345-346.
2. Davies, pp. 128-129.
3. Quoted in Bradley, p. 346.

length book, Life Itself, in 1981. He proposed that “organisms were deliberately ­­­­transmitted to the earth by intelligent beings on another planet.”59 While other methods of

transport had been entertained (for example, a living organism traveling to earth inside a meteorite), Crick considered these scenarios so unlikely that the idea of intelligent extraterrestrials seeding life on the earth, far-fetched as it may seem, was deemed preferable. The best Crick and Orgel could hope for was to show that such a theory was not totally implausible, and they openly acknowledged that the scientific evidence of their time was inadequate to say anything about the actual probability.60

While the idea of directed panspermia seems far-fetched, the rationale for seeking life’s origin outside of the earth was later substantiated by discoveries pushing back the first life on the earth to as early as 3.85 billion years ago. Since the age of the earth is about 4.5 billion years, this leaves a narrow window of time (relatively speaking) for life to originate on earth. Moreover, the discovery that the earth and moon endured a period of heavy bombardment until 3.8 billion years ago means that life could not have survived on earth during that period.61 Davies concludes, “If Earth was pounded as fiercely as astronomers believe, and if surface organisms really were established by 3.8 billion years ago, then life must have burgeoned almost as soon as the effects of the last sterilizing impact were over.”62 Monod’s reliance on chance for the origin of life on earth seems completely out of the question with so little time to work with. At best, if one goes with the more firmly established date of 3.5 billion years for the first life on earth, the maximum time available for the life to originate by chance would be only 300,000 to 400,000 years. Davies therefore concludes “that either life came from space, or that it emerged quickly once conditions were halfway reasonable.”63 Davies, taking into account discoveries of life surviving under extremely harsh conditions previously thought to be incompatible with

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1. F. H. C. Crick and L. E. Orgel, “Directed Panspermia,” in Icarus 19, 341-346 (1973), Retrieved December 28, 2011 from <http://profiles.nlm.nih.gov/ps/access/SCBCCP.pdf>, p. 341.
2. Crick and Orgel, p. 341, 343.
3. Davies, pp. 158-160; see also Rana and Ross, Origins of Life, pp. 205-207.
4. Davies, p. 160.
5. Ibid., p. 158.

life,64 believes that living organisms could have come to the earth inside a meteorite, and discusses at some length the possibility that life once existed on Mars65 and may have traveled to the earth through a meteorite.66 However, he acknowledges that even if life did exist first on Mars or somewhere else in outer space, this simply transfers the problem of life’s origin to somewhere else in the Universe, but it does not solve the problem. Davies states: “It seems to me that shunting the problem into outer space does nothing to address the central problem of abiogenesis—the problem that has plagued researchers in this discipline for decades—which is that life seems just too good to be true.”67

Crick and Orgel acknowledge the objection that directed panspermia merely transfers the problem into outer space, but respond with the hope that on some other type of planet in the universe the origination of life may be more probable than it is on earth.68 They imagine that on such a planet life first originated and then evolved into intelligent life. Those intelligent aliens then “infected” the earth with life,69 where intelligent life evolved for the second time in the universe.70 But of course, this is all highly speculative, no such planet having been discovered. Crick and Orgel also acknowledge that the technology required to carry out such an interstellar infection of the earth is not available at the present time.71 While directed panspermia may be considered an interesting speculation, it clearly cannot be considered a credible solution to the problem of the origin of life.

Panspermia combined with an Eternal Universe.

Most scientists today believe that the universe has not always existed, but began in a big bang about 14 billion years ago. The fact that the big bang establishes a beginning

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1. Davies, The Fifth Miracle, pp. 163-186
2. Ibid., pp. 187-220.
3. Ibid., pp. 227-239.
4. Ibid., p. 243.
5. Crick and Orgel, p. 341.
6. Ibid., p. 343.
7. Ibid., p. 345.

and thus a time of limited duration was not welcome news to many naturalistic evolutionists at that time. Sir Arthur Eddington (British astrophysicist of the early 20th century), for example, rejected the big bang because “it seems to require a sudden and peculiar beginning of things” and countered with a cosmic model of his own invention that “allow[s] evolution an infinite time to get started.”72 Fred Hoyle, an accomplished but controversial English astronomer (founding director of what is now the Institute of Astronomy, Cambridge) advocated a theory that allowed for just that. His theory, known as the steady-state theory, which became the primary alternative to the Big Bang theory, postulates that the universe has no beginning or end, but has always existed. The steady state theory, like the Big Bang theory, recognizes that the universe is expanding. But it proposes that the average density of the universe has remained constant. Matter is continually created, forming into new galaxies that occupy the widening spaces between the old ones.73 This theory allows life an infinite amount of time to get started. Even though the odds of life starting naturalistically are so small, with an infinite amount of time available anything is possible. Once life started somewhere in the universe (Hoyle does not believe it started on earth), then it could be transferred through panspermia to other parts of the universe, including the earth.74 Whereas Crick, working within the restraints of 14 billion years, believed there was time for intelligent life to evolve only twice—once elsewhere and once on the earth, according to Hoyle’s theory, with its infinite amount of time available, there should be intelligent life in abundance throughout the universe.75

In response to Hoyle’s eternal universe idea, it can be said first, that it requires rejection of the Big Bang theory, according to which the universe *does* have a beginning about 14 billion years ago. The Big Bang is the consensus among scientists. Second,

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1. Crick and Orgel, p. 343
2. Quoted in Hugh Ross, A Matter of Days, p. 141
3. Davies, p. 248.
4. Panspermia. *ISCID Encyclopedia of Science and Philosophy*, retrieved December 30, 2011 from <http://www.iscid.org/encyclopedia/Panspermia>
5. Davies, p. 249.

Hoyle merely trades belief in an eternal God for belief in an eternal universe in which matter is capable of continuously creating itself. Scientists cannot prove that the universe has always existed, just as theologians cannot prove that God has always existed—both have to be taken by faith. As Davies comments, “You don’t explain something simply by declaring that it has always been there.”76

4) Deterministic Models

 The stubbornness of the biogenesis problem has led many scientists in the direction of biological determinism, believing that the laws of nature must somehow be slanted towards life. As Davies points out, this represents a significant shift in the scientific paradigm. Although biological determinists usually deny that there is any actual design inherent in their proposals, the idea that the laws of nature are slanted towards life seems to slip an element of design and purpose back into nature, a century and a half after Darwin banished it. Some scientists oppose biological determinism as little more than a miracle in nature’s clothing,77 while most theistic scientists embrace it, seeing God as the Ultimate Cause behind it. For example, Robert Faye, a Chemistry professor at Cornell University, says: “Most Christian scientists believe that God gifted the universe with properties that enable atoms and molecules to self assemble.”78 But in any case, the leading edge in origin-of-life research is moving in that direction precisely because philosophically naturalistic approaches, in the eyes of many scientists, have not provided a credible solution. The models proposed suggest self-organizational qualities in nature which allow nonliving matter to organize itself into a living organism. Among the earlier scientists to move in this direction were Steinman and Cole. Working at Pennsylvania State University in the late 1960s, their experiments seemed to confirm that molecules significant for life are made preferentially. Their tests showed that amino acids formed peptide chains in a manner that seemingly was “anything but random.” They went so far as to suggest that a “type of built-in ‘predestination’ can be identified at several levels of biological order.” Steinman and Cole imply that matter has an innate tendency to move itself along in

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1. Davies, p. 250.
2. Ibid., p. 263.

Robert Faye, comment RF12, feedback provided to the author on this chapter.

the direction of life by virtue of the chemical affinities that act between atoms and molecules.79

Sidney Fox, an American biochemist and early pioneer in biogenesis research, similarly concluded that “amino acids determine their own order in condensation” and that this nonrandom “self-instruction” infuses macromolecules with crucial biological information, paving the way for life.80 Fox had investigated what happens when a mixture of amino acids is strongly heated. He found that driving out the water as steam makes the linkage of amino acids into peptide chains much more likely, and he was able to produce quite long polypeptides, which he termed “proteinoids.” Unfortunately, the similarity between Fox’s proteinoids and real proteins is quite superficial—for example, real proteins are made exclusively of left-handed amino acids, whereas proteinoids are an equal mixture of left and right.81

Others have worked on self-organizational models as well, such as Ilya Prigogine, Russian born physical chemist and Nobel Laureate known for his work on complex systems, and Stuart Kauffmann, known for his work on complex systems and self-organization, especially in connection with the Santa Fe Institute. Prigogine has given examples of chemical mixtures that behave in a lifelike manner, forming elaborate spirals or undergoing rhythmic pulsations. The key feature of these reactions is that they take place far from thermodynamic equilibrium and require a continual throughput of matter and energy—as does life. Characteristic of such self-organizing systems is their tendency to reach critical “bifurcation” or indecision points, where their behavior is unpredictable. Prigogine envisioned a sequence of self-organizing systems, where matter driven by an energy flow jumps to higher and higher levels of organized complexity, until it is truly life.82

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1. Davies, p. 253.
2. Ibid., p. 253.
3. Davies, pp. 90-91.
4. Ibid., pp. 138-139.

Stuart Kauffman has tried to work out the details of the self-organizational route to life, focusing on a chemical phenomenon known as autocatalysis. The idea is that in the primordial soup some molecules could have played a dual role: on the one hand, they entered into certain chemical reactions as inputs or outputs; on the other hand, they also acted as catalysts for other reactions. So a particular molecule M could have had the effect of catalyzing the very reaction sequence that led to the production of M. The existence of M therefore accelerated the production of more M (an autocatalytic process). Kauffman predicts that at some critical threshold, the system would leap abruptly into a giant autocatalytic cycle—a self-organizational process that would involve a crude type of metabolism. This chemical process could be of the type envisioned by Oparin for the contents of their cell-like containment vessel. No special molecule like RNA was needed—that would come later.83

Davies points out that, attractive though self-organization may seem, it faces two major obstacles when it comes to the origin of life. The first is the lack of convincing experiments. Most of the “experiments” so far have been computer simulations rather than the real thing, which has earned the subject of complexity theory a bad name in biology. John Maynard Smith, British evolutionary biologist, in a now-famous put-down of Kauffman’s ideas, once described them as “fact-free science.”84 Kauffman himself acknowledged that there are no molecular experiments to support his theory.85

 Second, the self-organizational qualities that have been demonstrated are not enough to explain the complexity of biological information required for life. Davies states that life is actually not an example of self-organization, but of specified—that is, genetically directed—organization. Living things are instructed by the genetic software encoded in their DNA. In cells that form through spontaneous self-organization, there is no gene directing it; rather the organization is imposed externally, from the system’s environment. Davies concludes that the theory of self-organization as yet gives no clue how the transition is to be made between spontaneous organization, which in even the

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1. Davies, The Fifth Miracle, p. 140.
2. Ibid., pp. 140-141.
3. Kauffman, “Prolegomenon to a General Biology,” in Debating Design, edited by William Dembski and Michael Ruse, Cambridge University Press, 2004, p. 160.

most elaborate non-biological examples still involves relatively simple structures, and the highly complex, information-based, genetic organization of living things.86

In an effort to address this problem, Kauffman proposes that a law of nature may be discovered that explains the dynamics of self-constructing systems.  In his book Investigations (2000), Kauffman attempted to frame such a law, which he provisionally called “the fourth law of thermodynamics”– an innate tendency of life to explore the “adjacent possible” opportunities for building greater complexity.  Kauffman also proposed that this dynamic ultimately leads to the emergence of “autonomous agents” that are “able to act on their own behalf in an environment.”87 In attempting to describe this innate tendency for self-organizing behavior, however, Kauffman offers no explanation for how this could possibly be, but merely tries to describe in a law the behavior he postulates.  That is, a law would quantify the secondary cause, but the extraordinary nature of the behavior being described (its ability to self-organize) still begs the questions of an ultimate cause.

Davies, who also looks for a law to explain why nature is slanted towards life, sees the main problem in explaining the origin of life to be solving the mystery of where biological information comes from. Davies asks: “If the normal laws of physics can’t inject information, and if we are ruling out miracles, then how can life be predetermined and inevitable rather than a freak accident?”88 Davies proposes looking for a new law, not from the laws of physics, but from among the emergent laws of complexity theory. The hope of many complexity theorists is that some sort of self-organizing physical processes could raise a physical system above a certain threshold of complexity at which point these new-style “complexity laws” would start to manifest themselves, bestowing on the system an unexpected effectiveness to self-organize and self-complexify. Under the operation of such laws, the system might be rapidly directed towards life. If that is correct, Davies

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1. Davies, p. 141.
2. Peter Corning, Book review essay about *From Complexity to Life: On the Emergence of Life and Meaning, edited by* Niels Henrik Gregersen, *ISCS.* Retrieved November 22, 2011 from <http://www.complexsystems.org/essays/ReviewComplexity.htm>
3. Davies, p. 258.

says, then it would mean that life is not so much written into the laws of physics as built into the logic of the universe.89

Kauffman seems to recognize that the self-organizational behavior he seeks to understand cannot be explained merely by the laws of physics, for he thinks of nature itself as possessing divine qualities, most especially the intrinsic (therefore unexplained) ability to self-organize in such a way as to create life. In his book Reinventing the Sacred, Kauffman seeks to formulate a new scientific worldview and, in the process, reclaim God for nonbelievers. Kauffman says: “I'm saying God is the sacredness of nature. And you can go a step beyond that. You can say that God is nature …. The new view is that evolution of the universe is partially lawless and ceaselessly creative. We are the children of that creativity. One either does or does not take the step of saying God is the creativity of the universe. I do. Or you can say there is divinity in the creativity in the universe.”90 Kauffman asks: “Is it more astonishing to believe in a God who created everything that has come to exist -- planets, galaxies, chemistry, life and consciousness -- in six days? Or is it even more astonishing and awesome to believe what is almost certainly the truth: namely, that all of this came to be all on its own? I think the second.”91

Kauffmann is not offering a naturalistic explanation for life without God only according to the laws of nature. Kauffmann acknowledges that something lawless (beyond physical laws) and ceaselessly creative is going on, something which he refers to as divine. His view requires faith, for he says, “Or is it more astonishing and awesome to *believe* …,” and it requires believing in something that is “more astonishing” than believing in a personal Creator God. His view is no more scientific than that of those who appeal to a personal Creator—he is simply substituting faith in a personal God for faith in a mystical, divine nature that has unexplainably within it the ability to create life. Kauffman may have his own reasons for making this choice, but it is doubtful that they are scientific reasons. They may involve some of the other issues discussed in this book—the problem of evil

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1. Davies, p. 259.
2. “God Enough,” Steve Paulsen’s interview with Stuart Kauffman, in Atoms & Eden: Conversations about Science and Faith, Nov. 19, 2008 at <http://www.salon.com/news/environment/atoms_eden/2008/11/19/stuart_kauffman>
3. Ibid.

in the world or the influence of a different world view (he refers to himself as a secular humanist).

 While Davies approaches the ultimate cause differently than Kauffman, he too goes beyond a naturalistic, atheistic explanation. He acknowledges that the idea of nature’s laws being slanted towards life implies an aspect of teleology—that is, there is an end purpose in view that nature is somehow destined to achieve.92 He recognizes also that atheistic scientists dislike this idea very much because they see it as “a cover for the guiding hand of God being slipped back into science, even if it is a far cry from the God of traditional monotheism.”93 In saying this, Davies distinguishes himself from both the atheist and from a traditional monotheist. His inclination is to see a deep connection between life, mind, and cosmos.94 By mind he means thoughts, purposes, feelings—mental entities that are in a different class than physical, material objects, and which are much more difficult to explain. Human minds, he notes, are not mere observers in the universe, but seek to understand and interact with the universe.95 He envisions mind as a cosmic principle that gives rise to human minds, a principle which prior to the evolution of humans also had a participatory role in the origin of the universe and in the origin of life. Life, mind, and physical law are all part of a common scheme, mutually supporting, which enable the universe to engineer its own self-awareness.96

 Both Kauffman, with his view of nature as divine, and Davies, with his view of cosmic “mind” that participates in engineering life, introduce a source of intelligence that can explain nature’s otherwise unexplainable predisposition towards life. As far as the scientific evidence is concerned, Kauffman and Davies could just as well have concluded that the self-organizational qualities they have studied should be attributed to the design of a personal Creator. Other scientists, in fact, have come to this conclusion. Peter Corning (from the Institute for the Study of Complex Systems) remarks, “Needless to say,

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1. Davies, The Cosmic Jackpot, p. 233.
2. Ibid., p. 266.
3. Ibid., p. 231.
4. Ibid., p. 231.
5. Ibid., p. 231.

[Kauffman’s] vision leaves much room for advancing metaphysical explanations,” and notes that Niels Gregersen (editor of From Complexity to Life, published by Oxford University Press) provides a sophisticated and compelling argument for the role of intelligent design in evolution, admonishing us to “think of self-organization as the apex of divine purpose....We should see God as continuously creating the world by constituting and supporting self-organizing processes....Self-organizing systems are here seen as prime expressions of God’s continuous creativity.”97

 Is there any basis for deciding between Kauffman’s view of nature as divine, Davies’ view of cosmic mind, and Gregersen’s view of an Intelligent Creator as the ultimate explanation for why nature’s laws are slanted towards life? Science cannot determine the choice between these options, but it can be argued that philosophically it makes more sense to start with a personal Creator than with impersonal nature or impersonal mind as the source of creative intelligence. After all, our experience in this world is that intelligence and creativity originate with personal agents, particularly human beings. A stately building implies as architect, a beautiful painting implies an artist, etc. Whenever we see creativity or intelligence, do we ever attribute it to any other than a personal agent who possesses those qualities? While this argument may not be conclusive, it seems more intuitive to conclude that the starting point is a personal Creator rather than impersonal nature or impersonal mind.

*Conclusion: Origin of Life*

Although scientists have been working on the problem for about 90 years, the origin of life remains a stubborn mystery. It should be clear from the above summary that scientists have not adequately solved the origin of life problem in a philosophically naturalistic way (that is, without reference to God). Monod attempts to, but is left with substituting for faith in God almost unlimited faith in the power of chance. Hoyle assumes an eternal universe, which is just as incapable of proof as assuming an eternal God (and also runs contrary to the majority scientific opinion in favor of a big bang). Crick assumes the existence of an intelligent alien species that has never been discovered. The most promising answer involves laws of nature that are slanted towards life, but this proposal

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1. Peter Corning, Book review essay

signals a shift away from philosophical naturalism, and seems to beg the question of an ultimate cause. Recognizing this, Kauffman is left appealing to the divinity of nature and Davies to cosmic mind, whereas Christian scientists see a personal, Creator God as the ultimate cause.

While science cannot prove that God is responsible for life, since that is beyond the scope of what science can prove, it can be argued, based on what science can and cannot tell us, that this is the most reasonable inference to be made. In my opinion, the gaps that remain in explaining self organizational models still favor the view that God created life directly. There is the experimental gap, as self-organizational theory is supported by computer simulations rather than biological experiments. There is also an explanatory gap in accounting for the transition between spontaneous self-organization, which in even the most elaborate non-biological examples still involves relatively simple structures, and the highly complex, information-based, genetic organization of living things. Finally, there is a gap in the discovery of natural laws that demonstrate that nature’s laws are slanted towards life. Kauffman has provisionally framed a law (the 4th law of thermodynamics) and Davies has proposed that a law might be found from among the emergent laws of complexity theory. But both are really still searching for a law—it cannot be said that they have actually found it. Therefore, based on the present state of scientific knowledge, it can be argued that the most reasonable inference is that God created life directly. It could be that these gaps will be closed as scientists continue to work on the origin of life problem, but even if this proves to be the case, it would still be the most reasonable inference that God is responsible for life, for it is counter-intuitive to believe that nature is slanted towards life without some intelligent cause, and it is more consistent with our experience to attribute intelligent causation to a personal intelligence than to an impersonal one (whether nature or mind). In this case God would then be responsible for life in a different sense, as the Ultimate Cause working through secondary causes—not creating life directly, but being the one who established the laws of nature that are slanted towards life.

The Origin of a Bio-Friendly Universe Eludes Explanation

 A second consideration that suggestively points to the existence of God is that the origin of our bio-friendly universe eludes explanation. It was mentioned earlier that, even if biological evolution has taken place more or less as described by Darwin’s theory, one must still explain where the first living cell on earth came from. But, as it turns out, that is not even the hardest part of the problem. For even if one were to explain how and where the first living cell originated, there remains the problem of explaining the existence of a universe in which life is even possible. Examples of the fine-tuning necessary for a bio-friendly universe were already discussed at the beginning of this chapter in connection with the evidence for a Creator from design.

 Of course, most scientists believe that the universe began with the Big Bang.98 But the big bang in itself does not explain the existence of the universe. Physicist Paul Davies says concerning the big bang, that while it solves one set of problems, it is confronted by another, not the least of which is to explain what caused the big bang in the first place.”99 Many (not all100) Christian scientists and theologians, such as astronomist Hugh Ross101and Biblical scholar Gleason Archer102, accept the validity of the big bang theory, but believe it was God who caused the big bang, setting it in motion with finely tuned initial conditions to bring into being our universe, one in which it is possible that a planet like ours, having conditions suitable for life, can exist. (Deists believe God set the universe in motion once for all, without further intervention, while Ross and Archer are within the mainstream of evangelical belief, recognizing God as a personal God who intervened in various creative acts and also sustains the universe on an on-going basis).

*Hawking’s “No-Boundary” Theory*

 Brilliant scientist and popular author Stephen Hawking argues that God is not needed to explain the origin of the universe, even one like ours that demonstrates signs of extreme fine-tuning. In his recent book, The Grand Design, he boldly declares that

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1. Fred Hoyle with his steady state theory being a notable exception.
2. Paul Davies, The Mind of God, New York: Simon & Schuster, 1992, p. 48.
3. Recent Creation advocates do not accept the big bang theory and consider it part of evolutionary theory. For example, see Henry M. Morris and John D. Morris, The Modern Creation Trilogy: Science & Creation (vol. 2), Green Forest, AK: Master Books, 1996, pp. 206-220.
4. Hugh Ross, A Matter of Days, Colorado Springs: Nav Press, 2004, pp. 139-148.
5. Ibid., p. 135.

“because there is a law such as gravity, the universe can and will create itself from nothing.”103 Hawking accepts the big bang theory for the most part, but rejects the implication that it began with a point of infinite compression called a singularity. Generally, big bang theory envisions an expanding universe, or, looking at it in reverse, a universe which goes back in time to a point in which the entire cosmos was squeezed into

a single point. At that point the gravitational force and the density of material were infinite, and space and time were infinitely shrunk to nothing (because of the linkage of matter, space, and time in Einstein’s general theory of relativity).104 Thus the universe, including space and time, had a beginning, which as we have noted, many find consistent with the Bible’s opening statement: “In the beginning God created the heavens and the earth” (Genesis 1:1).

But Hawking claims to refute the idea of a beginning. He says: “As long as we believed the universe had a beginning, the role of a Creator seemed clear. But if the universe is really completely self-contained, having no boundary or edge, having neither beginning nor end, then the answer is not so obvious: what is the role of a creator?”105 Hawking’s conclusion is based on his quantum theory of gravity, in which he aims to combine the general theory of relativity with the theory of quantum mechanics.106  The general theory of relativity presumably breaks down when, going back in time, we approach the point of singularity. In particular, the critical period is the time before Planck’s time, which is 10-43 seconds. At this point, the effects of quantum fluctuations become very important and time begins to turn into space (as time and space are related according to the general theory of relativity). As it is now, time with three dimensional space forms a four dimensional space-time universe, but before Planck time, time may have turned into space, resulting in a four dimensional space.107 So we never actually

reach the point of zero time, and thus the universe, although it has not always existed,

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1. Stephen Hawking and Leonard Mlodinow, The Grand Design, New York: Bantom Books, 2010, p. 180.
2. Davies, The Mind of God, p. 49.
3. Stephen Hawking with Leonard Mlodinow, A Briefer History of Time (Large

 Print Edition), New York: Random House, 2005, p. 156.

1. Ibid., p. 127.
2. Davies, pp. 62-63.

nevertheless has no beginning. Hawking summarizes the implications as follows:

If there is no boundary to space-time, there is no need to specify the behavior at the boundary—no need to know the initial state of the universe. There is no edge of space-time at which we would have to appeal to God or some new law to set the boundary conditions for space-time. We could say: “The boundary condition of the universe is that is has no boundary.”

The universe would be completely self-contained and not affected by

anything outside itself. It would neither be created nor destroyed. It would just BE.108

*Responses to Hawking’s “No Boundary” Argument*

 A number of things can be said in response to Hawking’s claim that his “no boundary” theory eliminates the need for a Creator. First, as Paul Davies points out, it is highly speculative and involves questionable extrapolation of quantum mechanics to the universe as a whole. He says: “All this [that is, the ability of the quantum physicist to eliminate the need for God in bringing the universe into being] depends, of course, on the validity of quantum mechanics when applied to the universe as a whole. This is not clear cut. Quite apart from the *astonishing extrapolation* [italics mine] involved in applying a theory of subatomic particles to the entire cosmos*,* there are deep questions of principle concerning the meaning to be attached to certain mathematical objects in the theory.”109

 Second, Hawking’s theory depends on choosing a certain set of initial conditions for the universe, out of many possibilities. Davies says: “In fact, the theory permits an infinite variety of shapes. Which one pertained in the actual universe is related to the problem of choosing the right initial conditions … Hartle and Hawkings make a particular choice, which they claim is natural on grounds of mathematical elegance.”110 At best, then, Hawkings shows the possibility of a universe without a boundary, but by no means does he scientifically demonstrate its necessity or actuality.

 Third, is there even a need to go back in time before Planck’s time (10-43 seconds), the time period in which Hawking’s theory applies and the application of quantum mechanics “fuzzes out” the boundary? Instead, this brief interval of micro-time could be considered as the moment of creation. How long is 10-43 seconds? It is exceedingly far

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1. Hawking, pp. 155-156.
2. Davies, p. 62.
3. Ibid., p. 63.

less than the blink of an eye, which is about 150 milliseconds111 (1.5 x 10-1 s). It is so infinitesimally brief that it is almost inconceivable. Scientists cannot observe quantum fluctuations at such a small interval (according to Davies, the smallest interval they can observe is 10-26 seconds,112 which is still longer by a factor of 1017). It is such a small interval that it doubtful that it should even be called an “interval.” Why not rather consider it as the *point in time* that marks the beginning, the point referred to when the Bible says: “In the beginning God created the heavens and the earth”?

 Fourth, as John Lennox (professor of Mathematics at the University of Oxford) points out, Hawking’s assertion that the universe needs no creator confuses scientific laws with agency. He states, in his refutation of Hawking: “What Hawking appears to have done is to confuse law with agency. His call on us to choose between God and physics is a bit like someone demanding that we choose between aeronautical engineer Sir Frank Whittle and the laws of physics to explain the jet engine.”113 As argued in the previous section, his point is that, even if Hawkings’ theory is right, it does not disprove God as the Ultimate Cause.

 Fifth, in response to Hawking’s claim that the universe needs no Creator it can be said that the fine-tuning of the universe calls for a Creator. Some examples of this fine-tuning as presented by Hugh Ross were given in the first part of the chapter as evidences for design. Hawking, in The Grand Design, recognizes and gives examples of the fine-tuning of the universe (pp. 149-162). He says, “Our universe and its laws appear to have a design that both is tailor-made to support us and, if we are to exist, leaves little room for alteration. That is not easily explained, and raises the natural question of why it is this way.”114 Hawking recognizes that many would like to use these incidences of fine-tuning as evidence for the work of God, but he rejects this idea. The key to his explanation is the Many Worlds Hypothesis, a multiverse (as opposed to universe) theory.115

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1. <http://wiki.answers.com/Q/How_fast_can_the_human_eye_blink>
2. Davies, p. 62
3. [“John Lennox: A Response to Stephen Hawking’s new book A Grand Design” at http://www.kenboa.org/blog/2010/09/04/john-lennox-a-response-to-stephen-hawkings-new-book-the-grand-design/](file:///C%3A%5CUsers%5CDavid%5CDocuments%5CDavid%27s%20Books%5C)
4. Hawking, The Grand Design, p. 162.

*Multiverse Theory as Response to Fine-Tuning Argument*

This theory in turn depends on M-theory, a new and speculative theory of which the details and implications are still being developed. M-theory has eleven space-time dimensions and builds on previous string theory. The laws of M-theory allow for different universes with different apparent laws, depending on how the internal space (of the extra dimensions) is curled.116 Hawking says, “M-theory has solutions that allow for many different internal spaces, perhaps as many as 10500, which means it allows for 10500 different universes, each with its own laws.”117 Later, he adds that multiverse theory “is not a notion invented to account for the miracle of fine-tuning. It is a consequence of the no-boundary condition as well as many other theories of modern cosmology.” Hawking claims that “the multiverse concept can explain the fine-tuning of physical law without the need for a benevolent creator who made the universe for our benefit.”118 The reasoning is that, since there are up to 10500 universes to choose from, it is not unreasonable to suppose that one of them will have the natural laws and initial conditions necessary to support a universe such as ours.

*Response to the Hawking’s Multiverse Argument*

 Several things can be said in response to Hawking’s multiverse counter-explanation to the fine-tuning argument. First, the existence of the other universes is only theoretical, and cannot be verified observationally. Hawking himself raises the question, in his book A Briefer History of Time: “In what sense can all these different universes be said to exist? If they are really separate from each other, what happens in another universe can have no observational consequences in our own universe.”119 This in itself doesn’t disprove their existence, but the point is that neither can their existence be verified observationally, but

must remain in the realm of the theoretical.

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1. There are actually many variations of multiverse theory. Multiverses have been hypothesized in cosmology, physics, astronomy, religion, philosophy, and science fiction. See “Multiverse” in Wikipedia. Hawking’s version of multiverse theory is based on M-theory.
2. Hawking, p. 117-118.
3. Ibid., p. 118.
4. Ibid., pp. 164-165.
5. Hawking, A Briefer History of Time, p. 199.

Second, it is not clear that 10500 possibilities are sufficient to guarantee the existence of finely tuned universes. It should be pointed out that of the theoretically possible 10500 different universes, only those with three large space dimensions even have the possibility of supporting life. Again, Hawking himself argues this. He says there would be problems with more than three space dimensions because the gravitational force between bodies would decrease more rapidly with distance than in three dimensions. The result would be that the orbits of planets would be unstable and the earth would spiral away from the sun, and we would either freeze or be burned up. He concludes: “It seems clear that life, at least as we know it, can exist only in regions of space-time in which one time dimension and exactly three space dimensions are not curled up small.”120 By “curled up small,” Hawking is referring to the extra dimensions (eleven in all) postulated by M-theory. In our universe, only three space dimensions are noticed—the rest are curled up into a space of a very small size (a minute fraction of an inch).121 But this would not be the case in most of the 10500 possible universes. The dimensions could be manifested in all sorts of different ways. But only in those with exactly three large space dimensions (and the rest of the dimensions curled up small) could life be conceivably possible. This tremendously decreases the number of possible universes that could be candidates for supporting life. Of these candidates, there still must be the right kind of physical laws and initial constants to support life, and as we have seen, these constants are extremely fine-tuned. Recall that just one of these constants, the space energy density, must be fine tuned to better than one part in 10120. And that is just one of many constants which must be fine-tuned to an incredible degree. The probability of all these fine-tuned constants having levels suitable for supporting life at the same time must therefore be exceedingly small. Therefore, it is not at all clear that even 10500 theoretically possible universes are enough to explain the existence of a universe such as ours by chance from a multiverse model. Dr. William Lane Craig makes this point in his response to Hawking: “It’s not clear that 10500 possibilities are sufficient to guarantee the existence of finely tuned universes in the landscape. What if the probability of fine tuning is less than 1:10500? This may be

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1. Hawking, pp. 200-201.
2. Ibid., p. 196.

especially problematic concerning the arbitrary initial conditions.”122

Third, the multiverse explanation for the origin of a finely tuned universe such as ours runs counter to the principle of Occam’s Razor. This principle helps us answer the question, “If a given set of facts about the world can be explained by more than one theory, how do we choose between them?” The principle of Occam’s Razor is that you pick the theory with the least number of independent assumptions. For example, if you think of a theory as a computer program, and the facts of nature as the output of the program, then we should pick the shortest program that can generate that particular output. In other words, we should prefer the theory, or program, which offers the greatest algorithmic compression of the facts.123 Davies, while he does accept the possibility of multiple universes, argues that by introducing vast (indeed infinite) complexity to explain the regularities of just one universe, the many-universes theory runs contrary to Occam’s razor. He finds this approach to explaining the specialness in our universe to be scientifically questionable.124

Fourth, the multiverse does not resolve the problem of an ultimate cause because, as Davies points out, it still requires a lot of unexplained and very “convenient’” physics to make it work: there has to be a universe-generating mechanism, quantum mechanics has to describe everything, and unified laws of some sort (such as those that arise from string/M theory) have to be taken as a “given.” Davies concludes, “The problem of existence has therefore not gone away, but only been shifted up one level.”125

It can be concluded from the above discussion that Hawking’s “no boundary” theory of the universe, in combination with M-theory and multiple universes, although it is a brilliant, creative attempt to explain the existence of our universe without God, still does not provide a scientifically convincing explanation for the origin of our life-supporting

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1. William Lane Craig, response to question #180 at <http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=8401>
2. Davies, The Mind of God, pp. 135-136.
3. Ibid.
4. Davies, The Cosmic Jackpot, p. 264.

universe without a personal Creator. At best, it provides a philosophically plausible explanation. However, the multiverse theory is not the only attempt that has been made. Two other explanations will now be considered.

*A Unified Theory of Everything*

The main alternative to the multiverse theory among scientists is the possible existence of a unique final theory of everything, a theory that permits only one universe.126 It could be string/M theory or something else, but whatever it is, it will turn out to be founded on a profound mathematical principle that leaves no room for adjustment. All the laws of physics, all the parameters in the Standard Model of particle physics,127 the various constants of nature, the existence of space and time with three and one dimensions respectively, the origin of the universe, quantum mechanics, relativistic space-time and its causal properties—all of these will follow inevitably from this final unified theory.128 Some scientists feel that the discovery of this theory would leave no room for God, because there would be no choices to make, no free parameters, no room for design.

In response, we must remind ourselves that no such theory has yet been discovered, and there is no guarantee that such a theory exists. There is still a big gap between the concept of a theory of everything, which scientists have been talking about for some time now, and the actuality. Davies says, “There are certainly some gung-ho string/M theorists who foresee a future development of the subject in which numbers such as 1,836, the ratio of the proton to the electron mass, and 1040, the ratio of the electromagnetic to the gravitation force, will emerge from a welter of breathtaking mathematics. But at the present time this is just promissory triumphalism. String theorists are a long way from explaining even one of these numbers.”129

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1. Davies, The Cosmic Jackpot, p. 205.
2. The Standard Model of particle physics relates to sub-atomic particles such as quarks and leptons, and the forces that bind them together. It describes 12 quarks and 12 leptons and incorporates the GSW theory (Glashow-Salam-Weinberg) of the electroweak force and the QCD theory (quantum chromodynamics) of the strong force. Davies, The Cosmic Jackpot, pp. 100-101.
3. Ibid., p. 262
4. Davies, p. 172.

David Gross, a leading figure in the quest for a theory of everything, was awarded the Nobel Prize in Physics in 2004 for his discovery of asymptotic freedom, which is credited with bringing physics one step closer to fulfilling its grand dream of a theory of everything. Nevertheless, commenting a year later after the Solvay Conference on the quantum structure of space and time, in which he was a participant, Gross remarked that we are in “a period of utter confusion.” Gross thinks that we are missing something fundamental—that we need a leap in understanding, though it is not clear where it will come from. Many of the greatest minds in physics were at the conference, and yet no one had an answer. The New Scientist headline summed it up as follows: "Ideas needed: The hunt for a theory of everything is going nowhere fast."130 This doesn’t mean scientists like Gross are giving up—to the contrary, Davies quotes Gross as saying, “Never, never, never give up!” While persistence of this sort is an admirable quality, we must be honest in recognizing that at present, scientists are not close to finding a theory of everything.

Moreover, even if a theory of everything should be discovered, would that prove there is no need for God? If one’s belief in God depends on there being gaps that science cannot explain, then such a theory would be a threat to faith. But if one sees God as the Ultimate Cause working through natural causes, then God could still be seen as the One who designed the equation which formulates the theory of everything. And I believe it can be argued, going back to the arguments of beauty and design, that belief in God not only can accommodate a theory of everything, but that the very existence of such a theory would point all the more poignantly to the existence of God. Should it be taken as merely a fortunate coincidence that a unified theory of everything exists that guarantees the existence of life? Would there not in fact be ingenious design evident in the fact that a single elegant mathematical equation explains all the other laws of physics, constants of nature, etc. that have been discovered and unifies them into one grand scheme? Would not such an equation, from a mathematical viewpoint, be a beautiful thing that points to the existence of a Master Mathematician / Designer ?

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1. Wal Thornhill (2006, January 1). A Real ‘Theory of Everything.’ *Holoscience.com.* Retrieved March 17, 2012 at <http://www.holoscience.com/news.php?article=gdaqg8df>

*A Self-Explaining Universe with Backward Causation*

 Paul Davies, quoted frequently in this chapter for his critiques of other views, proposes, at least tentatively, a view of his own in which he believes the universe explains itself. His view was partially explained in the previous section on origin of life. He sees a deep connection between life, mind, and cosmos, envisioning mind as a cosmic principle that gives rise to human minds. In the far, distant future he foresees the universe and mind becoming one. He explains his reasoning as follows:

We can certainly imagine, as do many science fiction writers, that over the countless eons that lie ahead, life and mind will spread out into the cosmos, perhaps from earth alone, perhaps from many planets. A progressively larger fraction of the universe will be brought under intelligent control. More and more matter will be used to process information and create a rich mental world, perhaps without limit. Many scientists have speculated that, as the timeline stretches toward infinity, so an emerging distributed superintelligence will become more and more godlike, so that in the final stage the supermind will merge with the universe: mind and cosmos will be one.131

 Davies combines this amazing thought with another—namely that the future can be the cause of the past. He states that “the final state of the universe, infused with mind, would have the power to bring into being the pathways of evolution that lead to that same final state.132 He embraces the concept of “loops in time,” and believes that the far distant condition of mind and cosmos being one can be used to explain the past origin of the universe, including the need for intelligence to explain the fine tuning of the universe and its seemingly inevitable slant towards life. In this way, the universe literally explains itself.

 In response, it can be said that this theory requires one to embrace several highly speculative ideas. The first is the idea that mind and cosmos will one day be one. The paragraph above which ends in that conclusion begins by saying, “We can certainly *imagine*, as do many *science fiction* writers ….” The whole concept is based on speculation and belongs to science fiction, not science. Then, even if one were prepared to accept this first speculation as valid, there is the second proposal of the future causing

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1. Davies, The Cosmic Jackpot, p. 250.
2. Ibid., p. 250.

the past which strikes me, as surely it must strike most readers, as illogical and bizarre. Davies states that time travel and causal loops are not merely the stuff of science fiction, and refers to a model of a time machine called the wormhole time machine.133 He refers to several scientific theories which allow later events to influence earlier events, including one by Stephen Hawking, but acknowledges that there is no experimental evidence to support them. He insists that such theories are not “antiscientific” and notes that variants of them are still being investigated today.134 But likewise it can be said that belief in the God of the Bible is not “antiscientific.” Both belief in God and theories like the one Davies proposes go beyond science into the realm of the metaphysical / religious. Davies himself, while drawn to these possibilities, concedes regarding his views, “if I am honest I have to concede that this starting point is something I feel more in my heart than in my head. So maybe that is a religious conviction of sorts.”135 He also says, “At the end of the day, all the approaches I have discussed [including his view of a self-explaining universe with backward causation] are likely to prove unsatisfactory. In fact, in reviewing them they all seem to me to be either ridiculous or hopelessly inadequate …”136

*Summary: Origin of a Bio-friendly Universe*

We have considered three attempts to explain the origin of our bio-friendly universe apart from faith in a personal Creator. The multiverse theory depends on the existence of an almost innumerable number of universes which by definition can never be observed or verified. It also must assume the existence of some sort of universe generating mechanism and must take the still little understood laws of M theory as given, thus doing little more than pushing the question of ultimate cause up one level. The theory of everything still faces huge gaps in knowledge and those who believe there is such a theory must do so by faith. Moreover, even if the theory is discovered, it could be argued that the very existence of such an elegant mathematical theory would beg the question of a

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1. Davies, The Cosmic Jackpot, p. 252.
2. Ibid., p. 243.
3. Ibid., p. 268.
4. Ibid., pp. 258-259.

Master Mathematician. And Davies’ theory, while it avoids a personal Creator, does not really avoid the divine, for cosmic mind develops to the point of essentially being God in an impersonal sort of way. His theory also requires taking big steps of faith in connection with accepting the ultimate unity of the cosmos with mind and the possibility of backward causation.

 Of course, believing in a personal Creator God requires faith as well, nor is this option true by default simply because of gaps or far-fetched proposals in the other theories. But a personal Creator God, if he exists, provides the needed intelligence to explain the origin of life and the fine tuning of the universe. Those who believe it find the personal Creator explanation to be simple and intuitive. Davies, who has critiqued all the other views extensively, also has some issues with the personal God option. He acknowledges that attributing the design like qualities of the universe to a designer is reasonable enough, but says, “it suffers from the obvious disadvantage of being a conversation stopper. The simple declaration ‘God did it!’ provides no actual explanation for anything, unless one can also say *how* or *why* God did it.”137 But stating it this way is simply putting a negative spin on what is actually the strength of this view—it provides an answer to the ultimate cause question, which as Davies has repeatedly pointed out, the other theories do not (although he thinks his theory avoids the problem). Whenever you do answer the ultimate cause question, then that is in a sense a conversation stopper, because the ultimate question has finally been answered. That is not a bad thing. In another sense, however, the conversation is far from over, for Davies is right that the declaration “God did it!” does not explain how or why he did it. Those questions still remain open for inquiry, both through science and through theology based on Biblical revelation. Davies says the personal Creator option also runs into the problem of who designed the designer. But regardless of what view one takes, there must be a starting point at which something is taken by faith as given. As Davies points out, the multiverse theory has the problem of explaining the universe generating mechanism as well as the laws presupposed by M theory. Those must be taken as a starting point. If a theory of everything is discovered, summed up by an elegant, powerful mathematical equation, that mathematical equation must be taken as a

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1. Davies, The Cosmic Jackpot, p. 265.

starting point, without further explanation. In Hoyle’s view of an eternal universe, an eternally existent universe must be taken as the starting point instead of an eternally existence God. In Kauffman’s view of nature as divine, that divine nature must be taken as a starting point without proof. And even Davies’ view, which seeks to avoid the problem of an ultimate cause with its looping mechanism, still does not explain the origin of the mystical idea of mind / consciousness. While he argues that mind must be taken seriously, he acknowledges that the “hard problem” of explaining mind is far from resolved,138 which means that, for the time being, he must take it as a given. Regardless of what view one takes in explaining the origin of life and the fine-tuning of the universe, one *must* start with something. Those who believe in a personal Creator start with God.

 Davies’ final objection to the personal God option is that the identity of the designer need not bear any relation at all to the traditional God of monotheism.139 That is true, which is why additional revelation is needed. Christian theologians distinguish between general revelation and special revelation. General revelation is what we know of God through nature, which is basically that he is the Creator and that in order to create he must be intelligent and powerful. Special revelation is what we know of God through his revealed Word, which Christians take to be the Bible. The next chapter deals with the question of whether the Bible is the Word of God. If it is, then we have a reliable source to tell us about the identity and characteristics of this God. But all that nature can do is to point us to the existence of an intelligent, powerful Creator God.

Implications for Biological Evolution

While the purpose of this chapter is not to question Darwin’s theory of biological evolution, the conclusions of scientists like Kauffman and Davies in addressing the origin of life issue as well as the fine tuning of the universe certainly have implications for one’s understanding of biological evolution. If it is true that the most reasonable explanation for life is that the laws of nature are slanted towards life, then would not the same laws of nature that are slanted towards life also play a role in biological evolution? Davies seems \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Davies, The Cosmic Jackpot, p. 228,230.
2. Ibid., p. 265.

to think so, saying, “My own opinion is that emergent laws of complexity offer reasonable hope for a better understanding not only of biogenesis, but of biological evolution too.”140 Davies sees the operation of the same ingenious laws of nature that are slanted towards life continuing throughout the process of biological evolution.

Michael Denton, quoted earlier in the chapter for his arguments in favor of design, seems to have a similar view. He envisions an evolutionary mechanism for the actualization of higher life forms that may be written into order of things. He says:

… if the cosmos is fit for the being of higher life forms, then surely it is not inconceivable that an evolutionary mechanism for their actualization could also have been written into the order of things and that perhaps the entire process of biological evolution, from the origin of life to the emergence of man, was somehow directed from the beginning. I believe that our current knowledge of molecular genetics sanctions such possibilities.”141

Conclusion

 As argued in the first part of the chapter, strong indications for a Creator can be found in the amazing design evident throughout nature, in the beauty of nature, including the elegance of nature’s laws, and in the transcendent qualities of humanity, including the religious nature of humans, universal awareness of moral law, and our ability to uncover many of the mysteries of our own existence. Some, however, feel that Darwinian evolution eliminates the need for a Creator. But for evolution to occur, there must first be a living cell as a starting point, and for life of any kind to even be possible, our universe must be exceedingly fine-tuned. But, for all the decades of research by many of the most brilliant minds in the world, the origin of life remains a mystery and the origin of a bio-friendly universe still eludes explanation. Attempts to explain these mysteries have been made of course, as discussed at length in this chapter, but all require some starting point to be accepted by faith and all involve speculations that are far from being scientifically demonstrated.

Scientists often complain that those who argue for God’s existence on the basis of scientific gaps in knowledge are guilty of using a “God-of-the-gaps” argument.142 They

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1. Davies, The Fifth Miracle, p. 259.
2. Denton, p. 298.

point out that many previous gaps in scientific knowledge have been filled, and are confident that gaps that still remain (such as those pointed out in this chapter) will be closed as well. While it is true that many gaps have been filled and will continue to be filled, it should be noted that if one starts with an atheistic presupposition (not all scientists do, but I am referring for the moment to those who do) and also insists that conclusions can never be made on the basis of gaps, then he is basically locking in the assumption of his methodological approach as his conclusion. The methodological approach of most scientists is naturalistic—in other words, scientists assume, for the sake of their scientific work, that there is no God. Even if such scientists believe in God, they agree that as a scientist they should not appeal to God as the explanation for something; otherwise that explanation is not scientific. This means God should never be used to explain a gap. But an atheistic scientist should not conclude from this that God actually does not exist—to do so would merely be concluding what he assumes—that is, he assumes there is no God; moreover, his scientific methodology precludes ever resorting to God as an explanation; therefore he concludes there is no God. This is circular reasoning.

A better approach is to combine scientific knowledge with intuitive reason to arrive at the most sensible conclusion. When scientists are forced to explain something without appeal to God, their explanation sometimes becomes so far-fetched (at least in the eyes of many) that it requires more faith than believing in God. That is when one might use his intuitive reason to conclude that, in his opinion, it makes more sense to believe in God. It is the argument of this chapter that, given the vast difficulties that scientists are dealing with in trying to explain the origin of the first living cell or the existence of an exceedingly fine-tuned universe, it is reasonable to conclude that God, the Master Designer, is responsible. It is my opinion, based on the state of scientific knowledge (very advanced, but still facing seemingly impenetrable gaps), that it makes sense to believe, at minimum, that God directly intervened to create a carefully designed universe and that he intervened to create the first life. However, if someday science is able to explain the unsolved

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1. For example, see Richard Dawkins, The God Delusion, New York: Houghton Mifflin Co., 2006, p. 125.

mysteries of a bio-friendly universe, this would not prove God doesn’t exist, for he could still be seen, as mentioned earlier in the chapter, as the ultimate cause working through natural causes.

Those who do not believe in God should acknowledge that this is a choice, not a necessary deduction from science. Naturalistic science does not disprove God’s existence, but merely attempts to provide a plausible alternative. It is not a matter of faith versus science, as though one either chooses to accept science or to blindly believe in God, but it is a matter of choosing to believe in one thing or choosing to believe in another.

­­­­­­­ Those who choose not to believe in God should consider whether there are other reasons for their unbelief. After all, many scientists believe that God’s creative activity is the most reasonable explanation for the fine-tuning of the universe or for the origin of life and / or see him as the Ultimate Cause, or ground of creation. If not believing in God is a choice and is not required by science, then could it be that there are other reasons why you choose not to believe? Perhaps you don’t like the idea of being accountable to a Creator God? Or maybe you had a bad experience with religion? Or maybe you have an anti-faith bias due to the influence of your upbringing or education?

This chapter has argued that there is a universe that points to God. As discussed earlier, what kind of God is not known through nature alone. Kauffman proposes that nature itself is God; Davies postulates something like a divine mind. Whether the God or God principle responsible for the universe is the God of the Bible or not is an important question which depends on the answer to the question posed in the next chapter: “Is the Bible the Word of God?”