

Cracks in the Foundation

Cracks in the Foundation:

Controversies in Christianity

By

Stephen Howe

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Dedication

To my wife and to my father-in-law,

Connie Compton and Don Compton.

Thank you so much for your interest and support.

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INTRODUCTION

This is a book written for thoughtful, inquisitive Christians who are keenly aware of sharp and divisive controversies that surround and permeate their faith. On such fundamental questions as how and when the universe began, and how humanity came into being, the differences between a literal reading of the Bible and modern scientific evidence are simply breathtaking. The Bible, read literally, states that God created the heavens and the earth 6000 years ago, and created humanity on the sixth day. But in recent times scientists have presented extensive evidence that the universe came into being 14 *billion* years ago, and that humanity evolved over millions of years from less advanced life. Furthermore, the Bible itself contains conflicting messages on critical questions. Were we each marked for salvation or damnation before Creation, or do our fates rest instead upon a key decision we ourselves make within our own lifetimes, whether or not to accept and embrace Christ? Both sides of that issue are supported by numerous biblical passages.

Do you, in your approach to Christian faith, find yourself struggling with questions like these? If so, then I invite you to join me in a journey of exploration and discovery. In this book we will unwrap and explore twelve of the hottest topics in modern Christian debate. On each issue, what we will seek is not a single didactic “answer,” but rather a wealth of perspective and insight. What insights can we gain from the Bible itself -- looking at the Bible in its entirety and not just at selected, favored fragments? What do leading scientists have to offer? What can we learn from great Christian thinkers of all eras, from Augustine to Martin Luther and John Calvin to Karl Barth and N. T. Wright? In many cases, what we will discover is that these apparent contradictions are not as severe as they appear. If we understand that the biblical creation story was never intended to preclude the subsequent findings of modern science, for example, then we can move past tragic impasse to mutual enrichment.

As for who I am and what I have to bring to such discussions, well, I do have a Ph.D. but that’s from decades ago in a field totally unrelated to religion. After retiring at the end of 2006, however, I have devoted the

nine years since to full-time independent studies and writing in Christian theology. I grew up in North Carolina, went to Davidson College as an undergraduate, and then to the University of North Carolina to earn a Ph.D. in Operations Research (applied mathematics) in 1972. That was followed by a career as a mathematics professor, transportation planner, and military operations analyst. While I was at Davidson I developed a keen interest in two topics totally unrelated to my career path: Philosophy of Religion, and Christian Theology. But I vowed then that I would return to that arena after I retired. After retiring I devoted the next three years to studies in theology, following degree programs and selected course outlines from two well-known theological seminaries. I then began writing my first book, *Belief in the Face of Doubt*, focusing on basic questions many believers have about God, Christ, and Scripture. It was published in 2012 and soon after won the Christian Choice Book Award for that year. Some time after that I began writing this book, my second, focusing this time on controversial topics in Christian debate.

The book consists of twelve chapters, presented in four parts devoted to different areas of controversy in modern debate. **Part I, “The Biblical Creation Story Versus Modern Science,”** addresses the huge differences between Bible and science regarding the age of the universe, and on how humanity came into being:

1. The Age of the Universe: 6 Thousand Years, or 14 Billion Years?
2. How Humanity Came to Be: Created by God, or Evolved from Apes?

In both cases the central question is whether the biblical and scientific accounts can be reconciled, and if so how.

Part II, “Issues Concerning God’s Nature and Will,” examines four contentious issues regarding God’s nature and His plan for humanity:

3. How Could a Good, All-Powerful Creator Allow So Much Evil and Suffering?
4. Does Hell Exist? Is It Really God’s Intended Fate for Anyone?
5. The Question of Predestination: What Does the Bible Really Say?
6. Is God Male, Female, or Something Else Entirely?

Chapter 5 in particular takes a thorough, balanced look at everything the Bible says (or does not say) about predestination. Were our ultimate fates really determined before Creation, or do they instead depend upon our own free-will decisions and actions?

Part III, “Issues Concerning the Reality and Nature of Christ,” looks into three controversial topics related to Jesus Christ:

7. Does the Old Testament Really Predict the Coming of Christ?
8. The True Jesus: Unique Human, or Divine Son of God?
9. The Resurrection of Christ: Historical Fact, or Statement of Faith?

The focus in Chapter 7 is the linkage between Old and New Testaments. A number of NT passages point back to OT prophecies, claiming they were fulfilled by events in the life of Christ. Yet the Jews have never accepted Christ as their Messiah. How can this be?

Part IV, “Issues Concerning Salvation and ‘The Last Things,’” examines three controversies surrounding salvation and the end times:

10. Was It Really God’s Will that Jesus Die for Our Sins?
11. The Scope of Salvation: “Only a Few,” “All Who Believe,” or All Humanity?
12. Will There Really Be a Second Coming? If So, When?

Chapter 11 in particular looks at the variety of biblical statements concerning the *scope* of salvation. Will eternal life be found by “only a few,” as Jesus says in Matt. 7:14, or by all who profess belief in Christ, or by all humanity as held by the “Universalist” school of thought?

In the course of exploring these issues and writing this book, I have learned a great deal. And now I’d like to share the perspectives I’ve gained with you. Are you ready to begin the journey?

PART I:
ISSUES CONCERNING CREATION

CHAPTER ONE

THE AGE OF THE UNIVERSE: 6 THOUSAND YEARS, OR 14 BILLION YEARS?

The Book of Genesis, if read literally, describes God's creation of the universe ("the heavens and the earth") as taking place in 6 days of 24 hours each. This incredible feat is described in an extraordinarily compact and elegant manner, requiring just one chapter containing 31 verses. Then if we expand our literal reading to include the genealogy sections in the Old Testament and at the beginning of the New Testament, we can trace all the generations of humanity from Adam and Eve down to Jesus, and from life spans provided in the Old Testament we can calculate the age of the heavens and the earth as some 6000+ years.

The findings of modern science, on the other hand, tell a dramatically different story. Based on the rates at which stars are separating, astrophysicists have estimated that the universe began as an explosion from a single point in space approximately 13.8 *billion* years ago – the so-called Big Bang Theory. Based on carbon dating of rocks, the age of the Earth has been estimated as approximately 4.6 billion years. Fossil findings indicate that the first single-cell life forms appeared on earth about 3.5 billion years ago, and the first multi-cell life forms appeared about 550 million years ago. The first animals on dry land appeared about 370 million years ago, and modern *Homo sapiens* first appeared about 45,000 years ago.

How can we reconcile such wildly diverging estimates for the age of the universe? Or perhaps more to the point, *can* they be reconciled? Six *thousand* plus years versus 13.8 *billion* years hardly seems like a negotiable difference. Well, there are many people who believe that the Bible was never intended to be a scientific text, that it was written long before modern science existed, and that it is readily amenable to enriched understanding provided by subsequent scientific findings. On the other hand, a large bloc of Christians continues to hold to a literal reading of Scripture, despite the findings of modern science.

The Biblical Creation Story—Taken Literally

Creation in 6 Days

The creation story in Genesis 1:1-2:2 describes the birth of the universe (“the heavens and the earth”) in an exceptionally elegant and concise manner. This story was written some 2500 or more years ago, based on what was known at the time. Certainly the author did not have the benefit of modern scientific knowledge concerning the magnitude of the universe, or the ages of the planets, or the ages of different elements of planet Earth. The author’s perspective is thus very restricted in both time and space, to what could be seen and known at the time. Hence the Genesis story is very much centered upon the creation of planet Earth, the sky, and nearby stars. The Bible describes the creation of this “universe” as occurring in just six days.

The creation story in Genesis is very compact, presented in just 31 verses. On the first day God created light, and separated light from darkness, and thus we have day and night. On the second day, God separated the expanse beneath from the expanse above, and thus we have the waters below and the skies above. On the third day, God created land and separated it from the waters, and also created plant life on the land. The fourth day brought the creation of the sun and the stars, to mark day from night and also the seasons of the year. On the fifth day came the creation of living things within the sea, and birds flying overhead. Then on a very busy sixth day, God created animals on land, created humanity in his own image, and gave humanity dominion over all living creatures in the air, on the land, and in the sea. Finally, on the seventh day, God rested.

But did this stupendous burst of creativity really take place in just six days of 24 hours each? Those who adhere to literal belief in Scripture take “day” as simply meaning 24 hours. But many others take it to mean something more like “a period of indefinite length,” and thus arrive at a very different perspective on the time span of creation. It should be noted that this relaxed understanding of the meaning of “day” has foundation in Scripture itself:

- The Hebrew word in question here, *yom*, can be translated either as “day” or as “a period of indefinite length”;

- Psalm 90:4 states, “For a thousand years in your sight are like a day that has just gone by”;
- 2 Peter 3:8-9 states, “With the Lord a day is like a thousand years, and a thousand years are like a day.”

Creation in 4004 B.C., Just 6000+ Years Ago

From a literal reading of certain biblical passages, one can calculate the year in which the universe was created as approximately 4000 B.C. If that is true, then it follows that the universe is now just a little more than 6000 years old.

In the mid-1600s, two men independently arrived at 4004 B.C. as an estimate for the date of Creation. The more famous of these two men was Bishop James Ussher, of Armagh in Ireland, who published his estimate in 1650.¹ But six years prior, in 1644, a less known but virtually identical calculation was published by Sir Dr. John Lightfoot of Cambridge University. Lightfoot even went so far as to specify the day of year and time of day. As Andrew White states, in *A History of the Warfare of Science with Theology in Christendom*:

“The general conclusion arrived at by ... students of the biblical accounts was that the date of creation was, in round numbers, 4000 years before our era; and in the seventeenth century ... Dr. John Lightfoot, Vice-Chancellor of the University of Cambridge and one of the most eminent Hebrew scholars of his time, declared ... that ‘heaven and earth, centre and circumference, were created all together, in the same instant,’ and ‘this work took place and man was created ... on October 23, 4004 B.C., at nine o’clock in the morning.’”²

Biographical notes concerning Bishop Ussher indicate that he relied not only upon the Bible, but also drew from his own extensive scholarship in the ancient history of the world. The same notes indicate, however, that the earliest extra-biblical datum he was able to use in his estimate was the Babylonian conquest of Judea in 587 B.C. Hence, evidently, all of his calculations from 4004 B.C. to 587 B.C. were based strictly upon Scripture.

In any case, it is possible to approximate the estimate of 4004 B.C. very closely, drawing strictly from passages in the Bible, specifically from the books of Genesis, Exodus, Numbers, Joshua, Judges, Ruth, 1st Samuel,

1st and 2nd Kings, and Matthew. Calculations thus made indicate that the overall time span from Creation to the birth of Jesus was exactly 4000 years, spanning 66 generations from Adam to Jesus. These calculations, and the passages from which they are derived, break down as follows:

1. **From the creation of Adam, to the birth of Noah’s son Shem: 1558 years, spanning 11 generations.** The genealogical sequence for this period, and the time spans for each step in the lineage, are provided in Genesis 5:1-32.
2. **From Noah’s son Shem, to Abraham: 390 years, spanning 9 generations.** For this period the lineage and time spans are both given in Genesis 11:10-26.
3. **From Abraham to Isaac to Jacob: 160 years, and 2 generations.** Time spans are given in Genesis 21:5 and 25:26.
4. **From Jacob to David: 882 years, spanning 11 generations.** Genesis 35:23, Genesis 46:12, and Ruth 4:8-12 together show the lineage for this period, without time spans. Here the overall time span of 882 years consists of the following elements:
 - 130 years from the birth of Jacob until the move of the Israelites from Canaan to Egypt (Genesis 48:23).
 - The 430-year sojourn of the Israelites in Egypt (Exodus 12:40).
 - The 40 years that the Israelites wandered in the desert (Numbers 14:26-34).
 - 39 years (approximate) in which the Israelites conquered cities of Canaan, and settled into the land. The Book of Joshua describes these events, but gives no indication of time duration. The NIV gives a separate estimate of 39 years.
 - 201 years (approximate) for the era of the Judges. Each Judge and his length of “rule” are given in the Book of Judges, but scholars believe these were overlapping rather than consecutive. The total duration of this era is estimated to be 222 years in the NIV, versus 180 years in the NRSV. Here we take the average, 201 years.
 - The 42-year reign of Saul, the first king of Israel and father of David (1 Samuel 13:1).
5. **From the beginning of David’s reign, until the Babylonian conquest of Judea in 587 B.C.: 423 years, spanning 19 generations.**

The succession of rulers in Judea, and associated time spans, are given in 1 and 2 Kings.

- 6. From the Babylonian conquest in 587 B.C., to the birth of Jesus: 587 years, spanning 14 generations.** Matthew 1:6-16 gives the lineage, and history gives the dates of the Babylonian conquest and Jesus' birth.

Summing up 1 through 6 above gives an overall time span of 4000 years, spanning 66 generations, from the Creation to the birth of Jesus.

The Scientific View of Creation: The “Big Bang”

The predominant view in modern science is that the universe did have a definite beginning in time, as it did Genesis. True, not *all* scientists subscribe to the “Big Bang Theory,” and there is even less agreement as to whether this explosive beginning was the act of God the Creator. But the overwhelming preponderance of scientific evidence to date, beginning in the 1920s and including the massive amounts of satellite data compiled in recent decades, attests that the universe did indeed begin at a specific point in time and space. It is certainly true that the modern scientific description of the universe's origin and expansion differs greatly, in *detail*, from the story as told in Genesis. But given that the ancient biblical text was written long before the birth of modern science, should we not expect the scientific account to be more detailed than the biblical account?

In this section we will examine a condensed presentation of modern scientific findings on the creation of the universe. Here we will cite extensively from the works of physicists Stephen Hawking, John Barrow, and Gerald Schroeder.

From Static to Expanding Universe: Edwin Hubble's Discoveries

At the beginning of the twentieth century, most scientists assumed that the universe had always existed more or less as we know it today. It may have existed from eternity, or it may have begun at a finite time in the past, but either way its existence had remained unchanged. As Stephen Hawking describes in *A Brief History of Time*, “Before the twentieth century ... no one had suggested that the universe was expanding or

contracting. It was generally accepted that either the universe had existed forever in an unchanging state, or that it had been created at a finite time in the past more or less as we observe it today.”³

In fact the belief in a static universe was so strong that it persisted even into Einstein’s formulation of his theory of general relativity in 1915. At the time, he believed so strongly in the unchanged nature of the universe that he introduced a “cosmological constant” into his theory to make it predict a static universe. Decades later, Einstein acknowledged that the insertion of this constant was “the biggest mistake of his life.”⁴

Then in the 1920s the American astronomer Edwin Hubble made a series of astounding discoveries. As Hawking states, “Our modern picture of the universe dates [from] 1924, when ... Edwin Hubble demonstrated that ours was not the only galaxy.... We now know that our galaxy is only one of some 100 billion that can be seen using modern telescopes, each galaxy itself containing some 100 billion stars.”⁵

Hubble’s studies in the 1920s continued to reveal more and more about the stars in the universe. The most distant ones are so far away that they appear as mere pinpoints of light: we cannot see their size or shape or even measure their distance from us with precision. Still, their light spectrums can be viewed with the use of special telescopes to gain further information. In particular, the light spectrum of a star shows quite accurately whether the star is moving away from us or toward us. From his study of stellar motion Hubble made a startling discovery.⁶

As Hawking further states, “In 1929, Edwin Hubble made the landmark observation that wherever you look, distant galaxies are moving rapidly away from us. In other words, the universe is expanding. This means that at earlier times objects would have been closer together. In fact ... there was a time ... when they were all at exactly the same place and ... the density of the universe was infinite.... Hubble’s observations suggested that there was once a time, called the Big Bang, when the universe was infinitesimally small and infinitely dense.”⁷

The staggering implication of Hubble’s findings is unmistakable. It means that instead of the universe having no beginning and no end, or having been unchanged throughout its existence, the universe was instead born in one tremendous stroke of creation and has been changing ever since. “One may say that time had a beginning at the Big Bang [and] imagine that God created the universe at the instant of the Big Bang.” The details may differ from the ancient description in Genesis, but there was

most definitely a grand event of Creation that was the beginning of everything that has come to exist since.⁸

The First Few Seconds: An Explosion of Matter and Energy

From today's observed expansion of the universe, determined from measurements of stellar motion, astronomers have extrapolated backward in time to estimate when the Big Bang occurred. This is a lot trickier than it sounds since no single telescope, neither earth-bound nor satellite-borne, can provide measurements for any more than a tiny fraction of the universe. But estimates derived from mathematical models of the cosmos, supported by extensive satellite measurements collected over nine years (2003-2012), have converged on 13.8 billion years as the age of the universe with an error bound of less than 0.3%.^{9,10}

What was this explosive beginning like? As Gerald Schroeder states in *Genesis and the Big Bang*, "While the conditions that existed prior to the appearance of energy and matter are not known, we can attempt to describe them at the briefest instant following the beginning, about 10^{-43} seconds after the start.... The universe was then the size of a speck of dust.... The temperature was 10^{32} degrees Kelvin.... Within the initial core location, an explosion ... occurred that forced the energy-matter out in all directions." The cause of this explosion is not clear, but some scientists believe that the infinite density within the initial core was suddenly let loose in an extreme burst of repulsion.¹¹

Another discovery in the 1960s further supports the theory that the universe began at a specific point in time and space. In 1964 A. Penzias and R. Wilson discovered the presence of a constant level of radiation, emanating not only from every direction but also at every distance in space. They first suspected they had "noise" in their instruments, but then they realized they were looking at a residue of radiation from the Big Bang, distributed evenly throughout the universe. In the 13.8 billion years that have passed since the Big Bang, this background radiation has now cooled from 10^{32} degrees to a mere 3.5 degrees Kelvin, just 3.5 degrees above absolute zero.¹²

Immediately after the Big Bang, the universe was infinitesimal in size, packed with extremely dense matter at extremely high temperature. Under these conditions almost all matter was reduced to pure energy, as it was

too hot for molecules or even atoms to exist. At this point the tiny, just-born universe consisted of a tumultuous soup of photons and electrons colliding with and annihilating each other. Also at this point the universe was pitch black: several hundred thousand years would pass before any light would be able to emerge. For now, photons and electrons were locked in chaotic mutual destruction, neither able to escape the gravitational pull of the universe's extreme initial density.¹³

Early Expansion and Formation: Some Amazing Balancing Acts

Among many amazing things about the Big Bang, one of the most amazing aspects is the incredibly fine-tuned balance between the competing forces of repulsion (expansion) and attraction (gravity). Without this balance, the universe could not have sustained stable expansion after the initial explosion. "If the rate of expansion one second after the Big Bang had been smaller by 1.0×10^{-17} , the universe would have re-collapsed before it ever reached its present size." Or if the rate of expansion had been just 1.0×10^{-6} larger, the outward rush of matter would have been so great that no stars or planets would have been able to form. And even now, 13.8 billion years later, the universe is still expanding at very near this same critical rate.¹⁴

In *The Constants of Nature*, John Barrow observes that the universe's expansion rate is "delicately poised [very near] the critical dividing line that separates universes which are expanding fast enough to overcome the pull of gravity and keep going forever, from those which will ultimately reverse into ... a cataclysmic Big Crunch.... In fact, so close are we to this critical divide that ... *it seems highly unlikely to exist by chance....* Only universes that lie very close to the critical divide can live long enough and expand gently enough for the stars and planets to form."¹⁵

About 100 seconds after the Big Bang, another fine-tuned balancing act came into play. This involved the *strong nuclear force* (SNF), which binds neutrons and protons together to form the nuclei of atoms. *At this point the temperature fell below one billion degrees Kelvin*, and suddenly protons and neutrons no longer had sufficient energy to escape the SNF. They were thus bound together to form the first atomic nuclei in the universe.¹⁶ *At the precise instant when this happened, the nuclei thus formed were 75% hydrogen and 25% helium.* To this day, the universe

still contains vast amounts of hydrogen and helium at near the same proportions. In the beginning, an abundance of both of these elements was critical for the later formation of all the heavier elements in the universe. If the SNF had been just slightly stronger, all of the just-formed nuclei would have been heavier and there would be no hydrogen in the universe. Without hydrogen, many key substances in today's universe – most notably water – simply would not exist. On the other hand, if the SNF had been just slightly weaker, the universe today would be pure hydrogen and there would be no planets or living things.¹⁷

Today the universe contains 92 natural elements. The additional 90 elements are all heavier than hydrogen and helium, but they make up less than 1% of the universe's overall composition. The heavier elements are concentrated within planets and within the cores of stars; the overall universe mostly consists of vast expanses containing only hydrogen and helium. Still, the heavier elements are crucial to the structure of the universe as we know it. The third and fourth most abundant elements are oxygen and carbon, and of course it is oxygen that binds with hydrogen to form water. All living organisms are approximately 80% water and 10% carbon.¹⁸

“Let There Be Light”?

Following those first critical moments when hydrogen and helium nuclei were formed, the universe just continued expanding for several hundred thousand years, and the density became less and less. During this time the temperature and the electron/photon energy level declined in proportion to the reduction in density. Then when the temperature fell below 3000 degrees Kelvin, another critical event occurred: at this point electrons no longer had the energy to escape the electromagnetic force attracting them to nuclei. Free electrons were thus pulled out of their frenzied dance with photons, into stable orbits around the nuclei, and the first complete atoms in the universe were formed. “The situation changed dramatically as this soup of chaotic collisions was suddenly cleared of the free electrons. With the electrons removed from this soup ... the photons could travel freely.” At this point “light separated from matter and emerged from the darkness.”¹⁹

Note the striking parallel between this scientific description, and the events described in Gen. 1:2-4: “And God said, ‘Let there be light,’ and

there was light. God saw that the light was good, and he separated the light from the darkness.”

The Formation of Stars, Heavier Elements, and Planets

Schroeder describes the subsequent formation of stars, a process that took billions of years. As eons passed, gases of hydrogen and helium were very slowly pulled together by gravitational attraction to form clusters of matter. These clusters increased in number and density, and gradually the gravitational attraction among them became sufficient to pull them into what eventually became stars. Here we see a reversal, within localized pockets, of the outward rush of matter that occurred in the Big Bang. The convergence of matter into stellar cores caused rising pressure, temperature, and energy. When temperatures rose to “approximately a million degrees Kelvin, the velocity of nuclei became sufficiently high to cause nuclear fusion [via] collision with other nuclei.” Hydrogen and helium atoms were fused to form heavier elements. This is how “the nuclear furnaces that still dot our night sky with light, the stars,” came into being.²⁰

Within a star, as Hawking describes, fusion of lighter elements into heavier elements consumes the supply of hydrogen and helium at a prodigious rate. When the star begins to deplete this supply, after billions of years, the star begins to burn out. With the energy from nuclear reactions now depleted, gravity pulls remaining matter toward the center. “What happens next is not completely clear, but it seems likely that the central region of the star would collapse to a very dense state.... The outer regions of the star may sometimes get blown off in a tremendous explosion called a supernova.” Heavier elements formed during the star’s life are flung back into space, and provide raw material for the next generation of stars. “Our own sun ... is a second- or third-generation star, formed some [4.6] billion years ago out of a cloud of rotating gas containing the debris of earlier supernovas. Most of the gas in that cloud went to form the sun, [while] the heavier elements collected together to form the bodies that now orbit the sun as planets.”²¹

Alternative Theories of the Universe’s Origin

The “Big Bang” conception of how the universe began is consistent with extensive data reported since the 1920s, and it is the consensus view

held by today's scientists. But as Hawking observes, "Many people do not like the idea that [the universe had] a beginning, probably because it smacks of divine intervention." Thus, in the decades following Hubble's finding, several alternative theories emerged. One of these was the "oscillating universe theory" proposed in 1963. In this theory the universe has always existed, but undergoes alternating phases of expansion and contraction. Therefore what we are witnessing today, according to this theory, is simply an expansion *phase* rather than steady expansion from a single point in time in space. These earlier alternative theories have since been discredited by overwhelming evidence supporting the Big Bang conception.²²

Many scientists have nonetheless remained troubled by the idea that there is one and only one universe, so precisely tailored for stable expansion and eventual human life on Earth. Thus there has recently emerged among some thinkers the thought that perhaps our universe is not the only one after all. Perhaps our universe is actually just one of many parallel universes, each with its own set of laws and constants. Proponents of this "multi-verse" theory say that if this is true, then it becomes easier to accept the idea that there is one universe (out of many) that does in fact have the amazingly fine-tuned characteristics necessary to support stable expansion and, ultimately, intelligent living beings.²³ But these ideas remain highly speculative at best. There is no concrete evidence to date to support the existence of any cosmos other than the one amazingly fine-tuned universe we live in.

Fine-Tuned Balance and Order: Evidence of Divine Handiwork?

Setting alternative notions aside, we return to our central theme that there is one and only one universe, which had a definite beginning in space and time. As we have observed, this universe as we know it would not exist were it not for the carefully calibrated balance between opposing forces of nature. These forces are governed by laws of nature that have controlled all physical and chemical interactions in the universe, from the beginning of time until now. These laws feature certain critical constants whose values, whether by design or by extremely improbable accident,

have enabled stable expansion, formation of stars and planets, and ultimately the rise of intelligent human beings.

Key instances of fine-tuned balance and order, described in the previous section, can be summarized as follows:

- The opposing forces of expansion and gravity are balanced on a razor's edge. If the force of expansion had been one iota less, gravity would have pulled the burgeoning universe back into a Big Crunch. Or if it had been one iota greater, the outward rush of matter would have been too great for stars and planets to form.
- About 100 seconds after the Big Bang, as the energy levels of particles subsided, the *strong nuclear force* (SNF) pulled neutrons and protons together to form the first atomic nuclei. This occurred at a critical instant: the nuclei thus formed were 75% hydrogen and 25% helium. If the SNF had been just slightly weaker, the universe today would consist of pure hydrogen – and no stars or planets. If it had been just slightly stronger, there would be no hydrogen today – and no water or living beings.
- Several hundred thousand years later, particle energy dropped to another critical level. At this level the *electromagnetic force*, which attracts electrons to nuclei, was able to pull free electrons into stable orbits around the nuclei formed earlier. Thus the first complete atoms were formed. Today there are 92 natural elements, and for each element the atomic structure is exactly the same everywhere in the universe: the same numbers of neutrons, protons, and electrons, and the same configuration of electron orbits. Here we see just one example of incredible *order* in the universe.
- Studies of light, emitted billions of years ago from very distant stars, have shown that the constants of nature and the characteristics of atoms are the same everywhere in the universe, and have been throughout its history.

What are we to make of this fine-tuned balance and order, which enabled the stable expansion and formation of the universe, and eventually enabled the existence of living, intelligent beings capable of discerning this balance and order? Could it all be the product of a gigantic random accident, something far greater than hitting the biggest jackpot in Las

Vegas history in just one try? Or is it the product of a deliberate design? And if it did come about by design, who might that designer be?

Here I would argue that we do not have to search far for an answer. As wonderful and awe-inspiring as the balance and order in the universe are, even they pale by comparison to the single greatest creative stroke of all: the Big Bang by which the universe came into existence in the first place. As Frances Collins states in *The Language of God*, “The Big Bang cries out for a divine explanation. It forces the conclusion that nature had a beginning. I cannot see how nature could have created itself. Only a supernatural force that is outside of space and time could have done that.” Further, says Collins, “if one is willing to accept that the Big Bang requires a Creator, then it is not a long leap to suggest that” it was the Creator himself who performed this fine-tuning.²⁴

Can Modern Science Be Reconciled with Biblical Creation?

Given all the scientific evidence that has poured forth in the past century, one might expect that only a small percentage would still hold to literal belief in the Genesis story of creation. But such is hardly the case, as Frances Collins has noted. A Gallup poll of American people conducted in 2004 showed that 45% still believed in a literal reading of Genesis, i.e., that the universe, the Earth, and human beings were all created less than 10,000 years ago, in 6 days of 24 hours each. A bare majority of 51% holds to the modern scientific view that the universe was created more than 10 *billion* years ago.²⁵

So the question still stands, as much as ever: is reconciliation between science and faith possible? Here I would argue most emphatically that the answer is yes. I do not believe the findings of modern science contradict basic Christian beliefs. I believe they instead provide greatly enhanced understanding, just as we should expect from increasing knowledge over time. The Genesis account and modern scientific evidence both clearly indicate that the universe had a definite and dramatic beginning. Genesis states that this beginning was the work of God the Creator. For many people the scientific version of this beginning, the Big Bang, is clear and unmistakable evidence of divine creation as well. Many people also see the incredible fine-tuning of the laws and constants that govern the

universe as a further indication of divine creation. So it is only in the details that the biblical and scientific views differ. Yes, the details are vastly different: creation of all things in just 6 days, just 6000+ years ago; versus an equally dramatic beginning followed by very gradual formation and evolution over 13.8 billion years. But should we view these differences as contradiction? Or should we view them as simply the kind of enhanced understanding one would expect in the progression from ancient biblical text to modern scientific knowledge?

I believe that science and faith can be reconciled, and that there are compelling reasons for taking a synthesized view embracing both the biblical and the scientific accounts of creation. The story in Genesis is an elegant description of creation as best as it could be understood at the time. But it was written more than 2000 years before the discoveries of modern science began, and surely was not intended to preclude the findings of science. By embracing the accounts of both the Bible and modern science, we gain a greatly enriched understanding. Hence we should, by all means, adopt a non-literal interpretation of the Genesis story that will open the door to this enrichment. This can be done by interpreting the Hebrew word for “day” to mean an eon of unspecified duration, or by utilizing 2 Peter 3:8-9: “With the Lord a day is like a thousand years, and a thousand years are like a day.”

Frances Collins similarly believes it is essential that we overcome the current schism, between science and faith, with a synthesized view incorporating both. In fairness to those who still adhere to a strictly literal view of the biblical creation story, he notes that such believers are “serious about their faith first and foremost, and deeply concerned about a trend toward non-literal interpretations of the Bible which might ultimately dilute the power of the scriptures to teach reverence for God.” But Collins believes that despite their sincerity, their fierce resistance against the findings of modern science is continuing to cause a tragic division between faith and science. This divisiveness is tragic in itself, but there is also a tragic missed opportunity for enriched understanding.²⁶

CHAPTER TWO

HOW HUMANITY CAME TO BE: CREATED BY GOD, OR EVOLVED FROM APES?

In the first chapter we examined the immense difference between the biblical account of the creation of the universe, and what we have since learned from modern science. In this chapter we will focus more specifically upon how humanity came into being, and again the key question is the huge disparity between biblical account and modern science.

The Book of Genesis describes how God created all things in a mere six days, including humankind on the sixth day. Genesis further describes humanity as a specific, unique, and direct creation of God, in God's own image. But again the story that emerges from modern science is dramatically different. Science tells us that following the creation of the universe 13.8 billion years ago, there was no known life of *any* kind in the universe until about 3.5 billion years ago, when the first single-cell microbes appeared in the oceans of planet Earth. Fossil findings indicate that it was not until 575 million years ago that the first multi-cell life forms appeared. Thus began, finally, a lengthy progression of increasingly complex life forms, until the large primates (apes and chimpanzees) made their first appearance 35 million years ago. The first "humanoids," forerunners of modern humanity, appeared six million years ago. From there the progression continued through a series of now-extinct humanoid or "hominid" species, up until the first appearance of modern *Homo sapiens* approximately 45,000 years ago.

Again we are faced with the question of whether it is possible to reconcile Scripture with modern science. Scripture portrays the appearance of humanity in the universe as a direct, unique creation of God that occurred in one day, just five "days" after the universe was created. But scientific findings indicate that there were no known living organisms in the universe at all for the first 10 billion years or so, and that the evolution

from single-cell life to the first modern human took another 3.5 billion years or so. Here again we have one large group of Christians who still hold to a literal understanding of the Bible, and another large group who believe the Genesis creation story simply reflects what was known when it was written, and is fully amenable to enrichment by knowledge gained since then.

The Biblical View of How Humanity Came to Be

Genesis: God Created Humanity on the Sixth Day

In the Genesis account of God's creation of the universe ("the heavens and the earth") in six days, it was on the sixth day that God created human beings in his own image and gave them dominion over all living things on earth:

Then God said, "Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, ... and over all the creatures that move along the ground." So God created man in his own image. (Gen. 1:26-27)

Christian Tradition: Humanity as "Image of God"

The Christian tradition has long held that humankind is the height of God's creation, over and above the animal kingdom. Furthermore, humankind represents a special and direct creative act of God, an act that was central to God's purpose in creating the universe. This view is expressed in the doctrine of the creation of humanity in the image of God.

The early Christian thinkers generally associated the image of God not with the human body, but with the human rational faculty, which they believed mirrored the wisdom of God. Then in the fifth century St. Augustine took this view further by associating the image of God with man's soul, intellect, and capacity for self-transcendence. Reinhold Niebuhr, in *The Nature and Destiny of Man*, describes Augustine's perspective:

[Augustine] declares: "For not in the body but in the mind was man made in the image of God.... It is in ... [man's] ... rational or intellectual soul, that we must find that image of the Creator".... But it is immediately

apparent that Augustine means by “the rational or intellectual soul” something more than the capacity for discursive reasoning.... Augustine is primarily interested in the capacity of ... self-transcendence in the human spirit. The human memory is of particular importance [in] man’s capacity to transcend time and finally himself.... He concludes that the power of transcendence places [man] so much outside of everything else that he can find a home only in God.¹

Augustine’s perspective, associating the image of God specifically with man’s capacity for self-transcendence, is still frequently encountered in modern thought. Daniel Migliore, in *Faith Seeking Understanding*, reiterates and builds upon this view:

In the modern era ... anthropologists have sought to identify and describe the uniqueness of being human ... [in terms of] ... the “self-transcendence” of humanity.... To a far greater degree than other animals, human beings ... are drawn outside themselves.... While never absolute or unlimited, human freedom does involve the possibility of reshaping and redirecting the given of our experience.... According to Christian faith, our ... finite but real freedom arises from the fact that ... we are created for fellowship with God.... Our Creator freely gives us life, calls us, covenants with us, and wants our response.²

Karl Barth, in his *Church Dogmatics*, set forth another modern perspective on mankind as image of God. Barth saw humanity as the focal point that illuminates the relationship between God and his universe, and believed humanity was the key to understanding why God created the universe in the first place:

Man is not the world.... He is less than this ... but we must also say that he is more than this. He is the point in the cosmos where ... its relationship to God is illuminated.... We have no direct knowledge ... to justify us in affirming ... [this, yet it is affirmed by] ... our knowledge of man as grounded in the Word of God.... In the disclosed relationship of God with man there is disclosed also His relationship with the universe ... illuminating man in his totality and also shedding light on the deepest and ultimate force which moves the cosmos.³

These traditional Christian perspectives, both early and modern, expound upon the biblical description of humanity as a special and direct creation of God. They associate the image of God not with man’s body, but with man’s intellect and in particular his ability to stand outside his