Chapter 2
What’s God Got to Do With It?

In 1633, the Tuscan scientist Galileo Galilei was brought before the Roman Inquisition to be tried for heresy. Galileo’s crime was publishing an account of heliocentricism, the concept that the Earth is neither the center of the universe nor is it fixed in place, both of which are contrary to scripture. He was pronounced guilty and condemned to house arrest for the remainder of his life.

Today, not only is the fact that the Earth is neither fixed in place nor the center of the universe not only known to be the case, it is accepted by virtually every major institution on the planet, including the church that tried Galileo for heresy nearly four centuries ago. That church, by the way, continues to survive even though scripture turned out to be technically incorrect, although it is admittedly facing different challenges today.

To pre-industrial Europeans, the idea that the “world is firmly established, it cannot be moved,” (1 Chronicles 16:30) was perfectly reasonable. From their perspective, the Earth never changed in position, while one could easily see the sun and moon circling it. Any other interpretation was counter-intuitive. Ironically, though, the idea of heliocentricism had occurred in India, Greece, and the Middle East well before the origin of Christianity, and the Polish scientist Nicolaus Copernicus had demonstrated it nearly a century before Galileo was condemned. Moreover, with no idea of the cosmos nor the geophysical forces that shaped the planet, it was also perfectly reasonable for pre-industrial people to believe that the world and everything on and around it were constructed by super-natural beings, and physical phenomena those people could not understand were appropriately taken to be signs of those beings’ existence. A case in point would be weather. Lightening, for example, has long been taken to be a sign of God showing his displeasure, and even as recently as 2005, some people claimed that Hurricane Katrina flattened New Orleans because of God’s anger at the sin that was said to be rampant within the city. We know, of course, that lightening is nothing more than an electrostatic discharge that occurs when a charge builds up in one part of the atmosphere and is released to another. In the case of cloud to ground lightening,
the discharge often finds the shortest possible distance between its origin and destination, usually a low point in a cloud and a tall structure like a building or tower on the ground. In natural areas, suburban developments, and the past, the tallest structure could very well be a tree, and lightning striking a tree can knock it over or set it afire. If houses or other lower structures are nearby, a struck tree could fall on or spread fire to them, lending credence to the idea that the resident is being somehow punished.

The late Stephen Jay Gould of Harvard University showed the fallacy in that reasoning by pointing out that in medieval Europe, the tallest structure in any village was usually the village cathedral, and lightning usually hit it more often than any other building, including the village tavern or brothel. By the same token, hurricanes and other weather phenomena follow random, though often cyclic, patterns. Hurricane Katrina was no more indicative of the wrath of God than is a tornado or lightning striking a church; it was a chance event, just as any destructive storm or other natural disaster is. Indeed, given New Orleans' location and topography, it is surprising that it has not been the target of many more such natural disasters. In the end, however, the carnage that resulted and the innocent people who suffered along with the guilty were simply results of misfortune, a city that was largely built below sea level, and an infrastructure that was not up to the task demanded of it. It was not collateral damage from the rage of a vengeful deity.

As science has progressed and knowledge has grown, understanding of the movement of the planets and weather, among other natural phenomena, has improved. Today virtually nobody would insist that the Earth is the center of the universe, and most people understand that there are natural laws that govern weather; it is not an emanation of some angry or capricious divinity. The same holds true for evolution. As I will try to show in subsequent chapters, the growth of biological knowledge has shown evolution to be a natural phenomenon, and there are observable and verifiable realities that affect it. Nevertheless, evolution seems to be the cause around which religious dogmatists have rallied. Their logic appears to be that if evolution is somehow disproved, their argument wins by default, a case of the non sequitur not A, therefore B. In contrast, equally dogmatic atheists argue, often just as passionately, that the existence of evolution is somehow counter to the existence of God. Ironically, both arguments are incorrect. Religion and science are not mutually exclusive entities; they are unrelated subjects that serve totally separate human needs. The veracity or inaccuracy of one has nothing to do with the other.

The religious argument against evolution often includes the assertion that the bible provides a thorough, literal account of and explanation for the origin of life and the current state of biodiversity that exists on the planet. Moreover, those who advocate that contention also maintain that the bible is an accurate description of history and an unambiguous account of God’s revelation. A careful reading of the bible, however, shows that it is anything but unambiguous. Case in point, Chapter 3, Verse 16 of the Gospel of St. John in the King James edition of the Holy Bible states:

“For God so loved the world, that he gave his only begotten Son (my italics), that whosoever believeth in him should not perish, but have everlasting life.”
In the same bible, Chapter 6, Verse 2 of the book of Genesis states:

“That the sons of God (my italics) saw the daughters of men that they were (sic) fair; and they took them wives of all which they chose.”

One passage states clearly that God had only one “begotten Son,” while the other states equally clearly that God had more than one son. If one is to interpret the bible literally, both passages cannot be correct. By the same token, two different accounts are given of the genealogy of Jesus in Matthew 1:2–16 and Luke 3:23–38. Neither of these can be correct, however, because both have Jesus as a descendant of King David through Joseph, presumably his father, while it is a major tenet of Christianity, and Islam as well, for that matter, that Jesus was born of the Virgin Mary. The same gospels that list his genealogy state that he was conceived by the Holy Spirit; no mortal father was involved.

These objections to the bible disappear if one allows for an allegorical interpretation. However, those who deny evolution on religious grounds usually demand to have the bible interpreted literally. With that being the case, the description of biological creation is also contradictory. The best-known account is given in Genesis 1:11–27 that has God creating first life on the third day. The order of creation is grass, herb yielding seed, and fruit trees. On the fifth day god created fowl that flies, great whales, winged fowl (again), cattle, creeping things, and beasts of the earth, and on the sixth day he created man, male and female (my italics). But there is another account of creation that is divided among Genesis 2:7, 19, 21, and 22. It has God creating man, or Adam, first, beasts of the field and fowl of the air next, and finally woman, Eve. Neither version describes, for example, the creation of arboreal mammals, beasts of the trees as it were, or bats, beasts of the air. Likewise, animals like ostriches and emus, fowl of the earth, penguins, fowl of the ice, and many other forms of life are not mentioned. Numerous other examples of biblical inconsistencies are described by journalist Christopher Hitchens’ (some would call it blasphemous) book God is not Great (Hitchens 2009). Again, none of these apparent contradictions present a problem if one allows for an allegorical or otherwise non-literal interpretation of the bible, but in a literal interpretation, they present a conundrum.

Parenthetically, I have often found that dogmatic creationists will deny that any contradiction occurs in the bible. They will argue, for example, that the sons of God in Genesis are really angles, or that the two stories of creation are really the same story. This in itself is contradictory because it renders one of the accounts at best metaphorical. Calling metaphor literal truth is disingenuous.

The specificity of creation as presented in Genesis has led some to identify a precise time of creation and, consequently, the age of the earth. Perhaps best known of these was James Ussher (1581–1656), an Anglican bishop in Northern Ireland, who calculated the origin of the earth to have occurred just about six thousand years ago. Owing to a gap in the biblical record between the end of the Old Testament and the beginning of the New Testament, Ussher was forced to rely on Roman and Greek history as well as the chronology given in the bible. In addition, his calculations were no doubt made more difficult by the conversion from the Julian calendar to the Gregorian calendar, which occurred in 1582.
Ussher was by no means the only person to have attempted to date the beginning of the earth, and his calculations are pretty consistent with those of other scholars. For example, the Jewish calendar holds that the age of the earth is a bit less than 5800 years; it corresponds with the earth having been created in around 3760 BC. According to the Chinese calendar, the age of the earth is a bit over 4,700 years.

Not all creationists take Ussher’s calculation as precise. Some acknowledge that the earth may be as much as 10,000 years old, but none of these accepts the antiquity of the planet that science has shown to be the case. A young earth, however, introduces many complications given the physical realities of the planet. Some of these are considered in a later chapter.

The discovery and elaboration of DNA is further evidence against any kind of special creation. If, for example, one considers the DNA of great apes, two of them, chimpanzees and bonobos, are biochemically more like humans than they are like other apes, which means that they are more closely related to humans than they are to other apes. This is counter-intuitive; superficially, structurally, and developmentally, all apes appear to be more like one another than any of them is like us. Still, their DNA says otherwise. In addition, among ourselves, there is so little variation in DNA that the concept of race, long an issue in our particular society, turns out to be, for all practical purposes, nonexistent. In spite of this, creationists have argued that DNA is itself a product of creation that it and its functioning are so complicated that in no way could it have resulted from random evolution; its development had to be directed. They have called this concept intelligent design. That, in reality, is little more than a renaming of creationism or what has been euphemistically called creation science. Parenthetically, the same argument about complexity was used more than a century ago. Back then, however, it stated that the diversity of life was so great that it could not possibly have resulted from random evolution; it must have been the result of deliberate creation.

Throughout nature, there are many cases where the design would appear to be somewhat less than intelligent. An example of this might be sexual cannibalism, as described by biologist Marty Crump (2007). Dr. Crump talks about, among other things, female spiders that eat their mates immediately after mating. Indeed, the males often appear to offer themselves as meals. From a biological perspective, there is arguably some sense to this. A well-nourished female is more likely to produce viable eggs. By sacrificing himself to his mate, a male may insure that by providing nourishment, the genes in the sperm he just donated will stand a better chance of making it into the next generation and his DNA will be perpetuated. Perhaps the same logic applies to some species of preying mantises, where the female also dines on her mate. But more bizarre among these insects is that sometimes the female eats the male during copulation, and sometimes she will bite his head off prior to mating. Regardless, the decapitated male may still succeed in fertilizing his murdereess. Indeed, Crump states that decapitation actually facilitates sperm release, in which case, once again, the male’s genes stand a better chance of surviving into at least the next generation. There are, admittedly, other possible explanations for this behavior, but it happens frequently enough, and the process sounds pretty grisly, especially as described by entomologist L.O. Howard in 1886 (Gould 1984).
If sexual cannibalism is weird, how would one describe parental cannibalism? Some species of spiders, pseudoscorpions, and earwigs practice matriphagy, where young eat their mother. In the words of Gould, greater love hath no woman. The practice sometimes occurs when food is scarce, and it is believed that it prevents cannibalism by the young among the spiders and pseudoscorpions and greater survival among the young earwigs. In both cases, the mother’s sacrifice is an attempt to ensure the survival of her offspring, and in the grand scheme of nature, such that it is, is it any different from a doe’s giving herself up to a pack of wolves so that her fawn might survive? Still, one would think that a benevolent deity would have found a kinder way of solving the problem.

Perhaps less bizarre but still puzzling eating behavior occurs in two species of colobus monkeys. The black and white colobus monkey and the red colobus monkey are inhabitants of Africa, where they both live in the forest canopy and survive by eating leaves. Oddly, the leaves they consume are full of toxic chemicals that other monkeys cannot tolerate. Colobus monkeys, however, have a complex digestive system and bacteria living in their stomachs that allow them to decompose the intricately structured chemicals and toxins in the leaves they eat. However, they do not appear to do it with impunity. Colobus monkeys often sit around lethargically for hours after they eat, and they have been described as looking dyspeptic. Some colonies of red colobus monkeys in Zanzibar living in or near what have been described as perennial gardens near human habitations, however, have learned that by eating charcoal, they can relieve the dyspeptic symptoms. Moreover, these colonies live in greater population densities than one finds among forest dwelling groups, suggesting better survival (Strhsaker et al. 2004).

Charcoal is not a normal part of an animal’s diet. In fact, only red colobus monkeys and humans eat it, and those monkeys that do live in the proximity of humans. Why they began, nobody knows, but in doing so, they have apparently improved their lives. Eating toxic leaves does not make much sense, unless one considers that the monkeys doing it do not have to compete with other leaf-eating animals. It can be argued that God gave the colobus monkeys the digestive equipment to deal with such a toxic diet, but if he did, why did he not equip them to live more comfortably with the consequences of it. Moreover, why did he give only a few of them, which coincidentally live near humans, the means to relieve those consequences?

An even more strange behavior pattern is coprophagia, the eating of feces. The natural decomposition of these materials by bacteria and fungi is, of course, a necessary process in returning essential plant nutrients to the soil. That is one reason why rotted animal manures are used extensively as fertilizers and soil builders in gardening and organic farming. Furthermore, the consumption of fecal matter by insects like dung beetles and fly larvae is understandable enough because it facilitates the decomposition process, although one might take pause upon seeing this kind of behavior in brightly colored, attractive butterflies. However, coprophagia by mammals is, in contrast, considered to be aberrant if not completely disgusting. Yet it happens commonly. Rabbits, for example, typically eat their feces, often plucking the material directly from the anus. Dogs routinely eat
the feces of other animals, and a couple of our biological near relatives, orangutans and gorillas, eat their own and those of conspecifics. In the latter two, this was first observed among confined animals in zoos, where it was assumed to be a response to crowding or some kind of stress. However, it has since been observed in the wild where stress did not appear to be a factor.

From a biological standpoint, the behavior is not at all odd. Dogs are scavengers, and fecal material is known to contain nutrients. It is often an easy meal for them. Rabbits, orangutans, and gorillas have diets that contain much coarse and difficult to digest vegetable material. A single passage through their digestive systems is often not adequate to break food down completely; a second passage provides greater access to many nutrients, including some vitamins that are manufactured in the large intestine. But the consumption of another animal’s feces also introduces the possibility of encountering intestinal parasites or other infections. Worms are commonly found in animal intestines, any many shed their eggs with their hosts’ feces, counting on another animal to eat them. It would seem to be a far more clever idea on the part of a designer to have either equipped animals that eat coarse diets with a digestive system that could handle such material, or else provided them with a desire for and access to more digestible fare.

Such behaviors are usually not part of our own nature; consequently, they have been historically considered abnormal in other animals as well. Yet they are common. Even homosexuality, considered an abomination by many of us, is routine enough in nature. Indeed, the animal that practices it most routinely is the bonobo, which, as mentioned previously, is, along with the chimpanzee, our closest animal relative.

One sees other apparent natural paradoxes among mammals, ourselves included. During embryonic development, for example, we produce and then abandon gill slits and other primitive features. Our ear bones initially form in our lower jaws and then migrate, rather than forming in our middle ears, where they are eventually used. Our skeletons originate as cartilage models, like the skeleton of sharks. That by itself would not appear to be really odd, unless one realizes that the part of the mammalian skeleton where this does not occur, that is where bone is produced without replacing cartilage, the upper skull, represents a part of the skeleton that sharks lack. Much of this seems energetically wasteful; pregnancy could be shorter and less energy intensive if some of these seemingly unnecessary steps did not occur. Additionally, in humans specifically, the upright posture that served us so well during the hunting-gathering days of our ancestors now becomes problematic as we age. The stress on our knees and hips makes them targets for arthritis, and lower back pain and crippling resulting from herniated intervertebral disks is often the result of stress on our spines.

Returning to reproduction for the moment, it can conceivably be argued that sexual cannibalism is actually part of design. After all, it provides the female with nourishment that she can use, but if that is the case, one would have to ask why it is so rare. Moreover, why are there ways around it? Among some orthopterans (grasshoppers, crickets, etc.) male glandular secretions are often presented to the female to be eaten. Among some predacious flies, the male offers captured prey to
the female for her consumption. Both of these behaviors satisfy the female’s need for nourishment without sacrificing the male in the process, thus freeing him, potentially, to mate again and increase his gene frequency in subsequent generations. Consequently, while sexual cannibalism apparently works toward insuring gene survival, it is less than a perfect method of maximizing gene presence in the succeeding generation and a less elegant design than that of the orthopterans and flies. Moreover, if all three are the work of a single designer, why are there three separate designs? In the case of matriphagy, once again, if it is a good design, why do we not see more of it? Besides that, it, along with sexual cannibalism, seems rather sadistic.

The plant and animal kingdoms are replete with bizarre strategies for reproduction and survival that defy rational explanation other than that they work. If they are the result of design, one could credit the designer with something of an odd sense of humor. Representative of that is what has been called the “prostitute orchid” of the tropics. In this plant, the reproductive structures of the flowers are arranged into a mimic of a female wasp. They even produce a chemical that duplicates the sex-attractant pheromone of that wasp. Males of the wasp species mount the decoy in the flower, attempt to copulate with it, and end up getting nothing for their efforts other than being dusted with the orchid’s pollen. Whatever sperm the wasp deposits and energy he expends are wasted; there is no perpetuation of his genes, not even a meal of nectar that most pollinating insects get from the flowers they visit. Worse, while covered with pollen, he can be lured to another orchid blossom on which he again wastes his efforts, but the orchid gets pollinated in the process. One can argue that from the orchid’s perspective, if this is a case of design it is indeed intelligent, but from the wasp’s, it is rather mean.

A practice sometimes used by logicians in trying to decide which of multiple explanations is most likely correct is known as “Occam’s razor.” Ascribed to 14th century Franciscan friar William of Ockham, it is another way of saying, “When you hear hoofbeats, think horses, not zebras,” and can be boiled down to “the simplest explanation is usually the best one.” Three separate, deliberate designs for feeding female invertebrates, one of which is described at best as bizarre, seems a bit complicated in contrast to each of these strategies having arisen as a result of random mutation and subsequent selection. Moreover, the mass of arthropods eating their mother and the frustration of the male wasp hardly seem to be reasonable ends of a creator generally held to be benevolent. And while some in the religious community insist that such natural oddities could not have occurred in the absence of a creator, others disagree. Indeed, the General Assembly of the Presbyterian Church, the Central Conference of American Rabbis, and more than 10,000 Christian clergy representing multiple denominations have drafted letters supporting the compatibility of evolution theory with religious teachings. Furthermore, on October 22, 1996, Pope John Paul II reaffirmed the Vatican’s earlier position that evolution and faith are not irreconcilable. Consequently, anyone who objects to evolution on the basis of faith has to recognize that he or she is not subscribing to a unanimous agreement. Indeed, it might well be the minority position.
The contrary argument that the reality of evolution somehow disproves the existence of God or is contrary to faith is also something of a non sequitur. While some may argue correctly that there is no tangible evidence to support the existence of God, the counter argument, the absence of evidence is not evidence of absence, is equally true.

Indeed, science can neither prove nor disprove the existence of God. Its realm of study is limited to the natural world where tangible evidence can be gathered and hypotheses tested. God, by definition, is supernatural. His existence can be accepted or rejected only as a matter of faith, and faith is the acceptance, or rejection, of something in the absence of evidence. Visually, it would look something like this.

The above axis is a hypothetical representation of our world. The region to the right of the zero line represents the concrete, hands on world in which we live. This is the realm of science, where objects can be explored, measured, and manipulated. The left of the zero line represents the world of religion. Science cannot enter it, and so it can never be described in anything but the abstract. Moreover, our sense organs, which evolved in the natural world to perceive phenomena within the natural world, are incapable of observing events anywhere but within the natural world.

 Syndicated columnist Cal Thomas has argued that the inability of science to prove God’s existence demonstrates the weakness of science. Perhaps so, but could not a nonbeliever similarly argue that the inability of the religious to accept scientific fact on the argument that it disagrees with their beliefs represents a weakness of faith?

Just as there are people of faith who accept evolution, there are people of science who, coincidental with their acceptance of evolution, have faith. Cases in point would include Brown University biologist Kenneth Miller, co-author of a best-selling high school biology textbook, who points out that “… religious scientists look for God in what science does understand and has explained,” rather than describe everything that has not yet been explained by science, along with much that has, as divinely created. Along the same lines, Francis Collins, director of the Human Genome Project and now director of the National Institutes of Health, has stated, “God’s domain is in the spiritual world, a realm… must be examined with the heart, the mind, and the soul.” University of Cambridge, England, paleobiologist Simon Conway Morris has written books about the
harmony between faith and evolution. Not all scientists are believers, of course. Some are vocal atheists, but that is their position as individuals. There are also atheist economists, musicians, and accountants. Science itself does not take a stand on religion, other than on points where religion chooses to contend.

Spirituality appears to be a universal human characteristic. Undoubtedly there have been doubters in every society in all ages, but in general, belief in a supernatural being or beings appears to be characteristic of practically every civilized, barbaric, and savage culture in the history of mankind. Ancient Rome and the recent Soviet Union are among the few in which atheism was openly embraced. Indeed, there have been recent books, such as Dean Hamer’s *The God Gene: How Faith Is Hardwired into Our Genes*, that suggest that spirituality is part of our genetic heritage and is necessary for our social survival, an indeed ironic piece of evolution if correct (Hamer 2005). It might suggest that we created God and not the opposite, sort of supporting Voltaire’s “If God did not exist, it would be necessary to invent him.” But at the risk of being repetitive, the existence of God and the veracity of science are not mutually exclusive concepts. Furthermore, the actuality of evolution does not invalidate the existence of God, and disproving evolution would not confirm the existence of God. The natural and supernatural domains, if the latter does indeed exist, are separate and will probably remain so for at least the foreseeable future.

**References**


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