

Chapter 5.02 God and Nature

We want to use our sense of wonder with religion and we want religion to go along with morality. We want to know if we can use the wonderful complexity of the world to prove the existence of God. If we believe in God regardless of whether we can prove God, we would like to know about his personality. We would like to know if God is all good. This chapter addresses those issues.

PART 1: ARGUMENT FROM DESIGN

The Argument from Design.

Complexity in nature suggests a planner behind it all just as a wedding or a wristwatch suggests a planner. This idea is at least several thousand years old, and is “natural” in that somebody will think of it eventually and most people will go along with it. It is called the “argument from design”. If it were true, it would settle a lot of argument; but it is not true. Complexity can suggest a planner but cannot prove one. Everything in nature, all its complexity, can be explained entirely by natural laws without reference to any god. This does not mean there is no god; it just means the complexity of nature cannot be used to prove a god or to disprove a god. If we don’t need a god to explain anything, then there is no point to assume a god except to satisfy our curiosity and feed our sense of wonder. I think that is a good enough reason but most atheists disagree. To show how natural law can explain everything would take a lot of space, and I won’t do that here. The best way to get the idea is to watch “nature shows” on TV and to read about evolution. See the Bibliography.

Strongly religious people sometimes push a misuse of the argument from design called “intelligent design”. The substance of the two arguments does not differ, only the name has been changed. Contrary to clear facts, proponents of intelligent design think they can find features of organisms that could not have evolved, and they use these features to “prove” that God exists. Every feature they have found can be explained in terms of evolution. Nothing they have found is beyond natural law. So I disagree with intelligent design. As far as I can tell, proponents of intelligent design do not know the evolutionary record and do not understand evolutionary theory. If they willfully ignore science and the intellect, then they insult God. Their arguments just do not stand up; their arguments are a kind of wish fulfillment.

Anthropic Principle.

I do endorse another variant of the argument from design called the “anthropic principle”. It does not depend on features of organisms, or on natural wonders like the rings of Saturn, but on natural laws, in particular the settings of natural laws. Briefly, the conditions under which sentient-moral life can evolve are rare. We need just the right natural laws, and the laws have to be set in just the right ways. That (1) we have the laws, and (2) the laws are set just right, imply a planner. These facts cannot prove a planner. The term “anthropic” is from Greek for “human”. In this case, it means “sentient-moral evolved being”. The argument says sentient-moral evolved beings are rare, and can only evolve with the right natural laws set the right way, so we are justified in using that fact to wonder about God.

The unusual physical conditions of life suggest some planner who set up the universe so that it would lead to life through evolution. They also suggest that, after starting the universe, the planner pretty much left the universe alone to do just that. This view is a variation on a view from the Enlightenment called “deism” except that this view takes evolution into account.

Life as we know it needs some unusual conditions to thrive: at least a dozen elements such as carbon, oxygen, nitrogen, hydrogen, sulfur, phosphorus, etc; a limited range of heat from about 400 degrees Kelvin to about 500 degrees Kelvin; water as liquid; not too much pressure; incoming energy, usually in the form of infrared radiation, light in the range visible to humans, and mild ultraviolet radiation; and gravity that is strong enough but not too strong. With recent telescopes, we have seen hundreds of planets within our sight that come close to these conditions; but still that is not very many places out the millions of places that we see. The way the universe works had to be set just right to generate the conditions to evolve life and sentient life.

At the time of the Big Bang, probably only one major physical force ruled the universe. Soon after, the one force split into the four forces that rule the universe now. The first two are gravity and electricity-magnetism. Scientists count “electricity and magnetism” as one force. Electricity and magnetism keep electrons near the nucleus of atoms, allow atoms to share electrons so they can bind into molecules, and thus allow the molecules needed for life. The “strong” force binds particles together in the nuclear center of atoms. The “weak” force sometimes breaks apart particles and the nucleuses of atoms; it causes radioactivity; and causes change. Now scientists think there might also be a kind of anti-gravity, or a variation on gravity, that pushes things apart. It is not clear if this should be considered a fifth force or a variation on gravity, like the positive and negative in electricity. All the other forces that we might think of, such as in friction, pulling a rope, or throwing a ball, can be explained in terms of these four forces. All the more complicated events in the world, such as in chemistry and biology, in theory can be reduced to these four forces. We can imagine a world without one or more of these four forces but it is hard to imagine that world with life. We can imagine a world in which a force was stronger or weaker (set differently) but it is hard to imagine that world with life as we know it.

Without gravity, the universe could still have been born and could still exist but not as it is today. The universe would have expanded much faster so that everything would quickly be too far apart to make much difference to anything else. There would have been no stars, galaxies, planets, moons, or comets. Likely there would be only hydrogen and helium dust without even very much light to see it by. At the Big Bang, only hydrogen and helium were created (the very light elements 1 and 2). All other elements were cooked up out of hydrogen and helium in the core of stars. Without gravity, there would be no stars, no other elements, and no life.

Not only is gravity necessary, but it has to be the right strength and the strength has to vary the right way. It is easier to understand how gravity varies by feeling first how heat varies. If you can find an old hot light bulb, or a newer “curly” light bulb, turn it on and SLOWLY move your hand closer to and further away from the bulb (LEDs do not work well for this stunt). The bulb feels cooler as you move away, and feels hotter as you move in; but not directly. It gets cooler faster than the distance gets longer, and it gets hotter faster than the distance gets shorter. More precisely, heat varies as the square of the distance rather than directly with the distance. If you start from 12 inches away and go to 6 inches away, it does

not get twice as hot, it gets four times as hot. If you start from 4 inches away and go to 8 inches away, it does not get one half as hot (twice as cold), it gets one fourth as hot (four times as cold).

Gravity works the same way. Gravity is four times as strong when you get half the distance (twice as close) to the sun, and it is four times as weak (one quarter times as strong) when you get twice as far away from the sun. Here is why this is important: planets, like the Earth, go in orbits around stars like the sun. The orbits are nearly circular; technically they are “ellipses”, which is like an oval. If the planets did not orbit, and if the orbits were not nearly circles, conditions on the planets would vary too much to sustain life. If the planets did not orbit, conditions would be wild, and most of the time planets would be frozen hard. If the planets did orbit but the orbits were not circular, sometimes the planets would be too close to the sun and thus too hot while other times the planets would be too far from the sun and thus too cold. Because the orbits are nearly circular, the planets vary a little bit in temperature and light but not too much. Because they do vary a little bit, life faces different conditions during the year, and thus evolves more rapidly. If gravity varied directly with distance, planets could not form orbits, or, if they could form orbits, the orbits would not be nearly circular. What kind of orbits the planets would make under different conditions of gravity is too technical to go into here but one kind gets the point across: the planets might form complex spirals in which the distance to the sun would get continually larger or continually smaller.

Without electromagnetism, the universe could still have been born but would not be as it is today. Light is an electromagnetic particle, so there would be no light. It is not clear if electrically charged particles such as the proton and electron could still exist without a charge, but, if they could, they would have little attraction to each other. Electrons would not circle around protons in the atomic nucleus, and so atoms could not form. Particles that are now in the nucleus, such as protons, neutrons, and quarks, might still exist and interact but they would not form stars, galaxies, planets, or anything else we know of today. Most heat is carried by a kind of light. There would still be heat in movement of the “nuclear” particles but the heat would move around much more slowly than it does now.

Similar problems arise when we change how electromagnetism varies as when we change how gravity varies. We saw that electromagnetism (including heat and light) varies not directly with distance but with the square of distance. If we changed that setting, electrons could not orbit around the nucleus of an atom in any way that makes sense now. It is possible to imagine other orbits, like the weird spirals that arise out of altered gravity, but to explain them would be too hard here. Most likely, there would be no orbits of electrons at all, no atoms, no molecules, and no life.

Because heat from a star (electromagnetism from a star) does not vary directly with distance, but with the square of the distance, there is a band around the star that is just the right temperature to support life. Around our sun, and around most stars, this band is fairly wide. Around our sun, the band extends from Venus to Mars. If heat did not vary as the square of the distance, the band would not form, or the band would not be right to support life. If heat dissipated quicker, the band would be small and variable, probably hovering only near the sun, around Mercury. If heat dissipated slower, the band would be wider but also less variable. The area too hot to support life would extend far from the sun, probably as far as Earth now. Conditions would be nearly constant within the band, as they are on Venus, and tend to stay too hot, again as on Venus. Life would not face the challenge of variety, and so would evolve too slowly.

Without the strong force, we would have few of the particles that make up an atomic nucleus such as protons or neutrons because there would be nothing to hold them together. Even if we did have the familiar "nuclear" particles, nothing would bind them into atomic nuclei, and we would not have atoms, molecules, or life. Without the strong force, hydrogen and helium could not combine in the middle of stars to make other elements for life. The heat of stars arises when hydrogen and helium combine. Without the strong force, there would be no heat from stars. Stars would be merely very dense, cold, dark, gigantic globs of dust; or they would be black holes. If the strong force were a bit stronger or weaker, then hydrogen and helium might combine too slowly or too quickly, and so stars would burn too fast or too slowly for life. If the strong force were a bit stronger or weaker, stars could not cook up just the right elements that are needed for life.

The weak force causes radioactivity. It seems as if radioactivity has little to do with sustaining life within the right limits, but it does. Most of the heat within the Earth does not come from the sun but from the radioactive elements inside the Earth. The Earth is a big slow nuclear reactor. Without radioactivity, the Earth would be too cool to support life except for maybe a few pockets on the surface that got regular exposure to intense sunlight. If there were more radioactivity, the Earth might be too hot. Even if the Earth was not too hot, additional radioactivity would destabilize the complex molecules that life needs. The circular orbit of Earth does keep it within the narrow band of proper heat from the sun but even that narrow band sometimes fluctuates enough in temperature to endanger life. The heat from the radioactive furnace of the Earth serves as a secondary heat buffer to make sure that the Earth does not get too cool for too long by accident.

The lessons of water are a good way to sum up the effects of cosmic laws and their settings. Ice is a crystal. A crystal is like a flower lattice. A crystal is made up of linked nodes in particular relation to each other. Each node is a molecule or a small cluster of molecules. Ice is a lattice made up of linked nodes of water molecules in particular relation to each other. The relation determines how far apart the molecules are, how dense the crystal is, and how heavy the crystal is. The shape of the molecules, and the relation of the molecules to each other, is determined by the play of two major forces: the strong force and electromagnetism. The crystal is like a big Tinker Toy assemblage. Each node is like a wheel in the Tinker Toy set. The spokes coming from the wheel are like the two forces. How far apart the wheels are, and the relation of the wheels, is determined by the connector pieces (the forces).

Ice is the solid form of liquid water. Almost all solid forms of matter are denser and heavier than their liquid forms. Solid iron sinks in liquid iron. Solid mercury sinks in liquid mercury. But solid water, ice, is very unusual because it floats on liquid water. It floats on liquid water because of the setting of the two forces that make up the molecules and the arrangement in the ice crystal. If the two forces changed even just a little bit, solid ice would not float on liquid water but would sink. If solid ice sunk in liquid water, life would be pretty much impossible. Liquid water would continually form ice and sink. Ice that was under liquid water would never melt. The oceans would gradually fill up with ice. Snow on land would melt more slowly than it does now. Rain that fell on the snow would not melt the snow but would float on the snow to freeze as ice. All the land would gradually be coated with ice. We owe sentient-moral life to the presence and exact setting of the strong force and electromagnetic force as they make up water.

We also owe the stability of life to the exact setting of the weak force that causes radioactivity. Water is made of hydrogen and oxygen. In most of their natural forms, oxygen, and especially hydrogen are

hardly radioactive at all. The basic building block of life is hardly radioactive at all. It is a strong stable platform on which to build. If the weak force were even a little stronger, or if the strong force caused hydrogen and oxygen to be made even slightly differently, then water would not be stable enough to serve as the basis for life.

To repeat: these facts suggest a planner God but they do not prove a planner God. A determined skeptic has several rejoinders.

The imagination of Mike Polioudakis is limited. Just because I can't imagine how life would evolve with different laws or with current laws set differently doesn't mean it couldn't happen. It might be that life would evolve better and faster with different laws or with current laws set differently. Life might even evolve better sentient-moral beings or might evolve them faster.

Just because we have these laws and they are set as they are doesn't mean the situation was planned. It is likely this universe is not the only universe that ever was or ever will be. Other universes might have different laws, or other universes might have the same laws we have but set differently. Some of the other universes might have less life or worse life, and some might have more life or better life.

Just because there are other universes with different laws or different settings doesn't mean there is a planner God. Universes might come and go just like hair colors. Sooner or later, one universe will have the right laws set the right way so that sentient-moral life evolves. In that universe, the sentient-moral beings (people) will imagine that a God caused it all. They would be wrong but they can't help thinking of God anyway. We just happen to be in that universe and we just happen to be those people.

Logically this is all correct but it seems contrived. If I gave evidence in a court of law similar in strength to what I gave above for a sentient planner god, for example, evidence that the spouse of an atheist is a cheater, or that the brother of an atheist is an embezzler of family funds, even the atheist would convict. Suppose my neighbor invited me to dinner, I went, and he-she had ready a delicious four-course dinner with soup, salad, and dessert. If anybody said my neighbor was not sentient and did not act on intent, every reasonable sane person would say the doubter was crazy. Suppose over two weeks, a well-ordered vegetable garden appeared on my neighbor's property. If I gave evidence similar to the above that my neighbor was a sentient being with intentions, and that he-she had made the garden, every reasonable sane person would go along. If anybody did not go along, we would say the doubter was crazy. The evidence for a sentient planner God is not logically perfect but it is strong enough to stand up in a court. Yes, there is always logically possible doubt, but there is not reasonable doubt. Eventually the counter arguments sound like attorney whining. We might want to consider what a reasonable case for a planner god might be rather than a logically perfect case – always keeping in mind that we could be wrong.

PART 2: EVIL IN NATURE

Chaos, badness, and evil exist, even in nature, even apart from human choice, and I do not see any way the chaos, badness, and evil can be accommodated with simple belief in an all-good and all-powerful God. The presence of evil suggests that either God is not all good, or not all-powerful, or that we cannot

understand. I do not find any theology about God and evil convincing. In the end, we just have to accept a certain amount of chaos, badness, and evil without being able to explain. I do not know if this would make moral atheists happy or sad.

Among explanations for natural evil that do not lean on traditional theology, maybe the best explanation is that God has to endure a certain amount of chaos, badness, and evil in order to set the stage for evolution to produce sentient-moral beings, and God has to endure a certain amount of chaos, badness, and evil within evolution to reach the same goal. God has to endure some chaos, badness, and evil to produce beings with free will. The beings with free will have to endure it too. This argument is probably true but it is not fully comforting. See the movie "Time Bandits". This argument suggests again that God is limited. Even if we accept this argument, we cannot know God always makes sure that only the most limited necessary amount of evil arises. It seems to me there is more evil in this world than is strictly necessary to produce sentient-moral beings.

The best way to convey the problem of chaos, badness, and evil in nature is through a few sharp examples, primarily examples of evil in nature that is caused by the action of organisms, is not caused by people, and is not caused by purely physical events such as a tsunami or a hurricane. I could offer dozens of other examples.

"Oxygen Catastrophe".

Geologists use this phrase for an amazing transformation of the biosphere that occurred about 2.4 billion years ago. Originally the atmosphere of earth had little free oxygen. The atmosphere was mostly nitrogen and methane, much like the atmospheres on Venus, Jupiter, and Saturn. Most of the oxygen was locked up in compounds of iron, carbon, or silicon, and so was not available for life. Carbon was not widely available as carbon dioxide but was locked up too. The original organisms on earth did not breathe oxygen as do animals now, and did not even use carbon dioxide as do plants now. The original organisms were anaerobic, neither plant nor animal. They used energy in gases or heat, used some sunlight, and "ate" methane. Leaving aside life forms that we cannot well describe now, probably the most similar modern life forms to original life forms are prokaryotic bacteria. The atmosphere then did not block harmful sunlight very well, and it stored a lot of heat. Earth was like Venus but much cooler. Land life could not have existed. Animals as we know them could not have existed because animals need a lot of energy that can only come from burning food with oxygen, and there was no available oxygen to burn.

Then some carbon dioxide became more available; I do not explain why. Then some organisms evolved the ability to transform carbon dioxide into carbon and oxygen, keeping the carbon but releasing the oxygen. Some of the organisms might have used heat or chemical energy to do the job at first but eventually some of the organisms that used carbon dioxide also developed the ability to photosynthesize, to use light from the sun to do the job of "eating" carbon dioxide. As they ate carbon dioxide, they released oxygen. They were the first plants. They flooded the atmosphere with oxygen so that the composition of the atmosphere changed to be similar to what we have now but with even more oxygen. This was massive biological pollution on a scale seen never before or since, far surpassing the pollution that people cause now. We think of oxygen as a good thing but at that time oxygen was corrosive poison. The vast majority of world life died because some organisms selfishly used carbon dioxide and left

poisonous oxygen as a byproduct. We do not know how many species died out because they were soft organisms that left few fossils. Even some photosynthesizing species died out because the amount of carbon dioxide dwindled while the amount of oxygen increased. Some of them literally polluted themselves to death. Nature turned on itself. Not all of nature is necessarily good.

At the same time, the new atmosphere cooled the surface of the earth, and it also created the ozone layer to protect against some of the harshest rays from the sun. With the new high levels of oxygen, a large amount of energy was available for species that could use oxygen to burn food. Animals could evolve in the sea. With plants using carbon dioxide to make oxygen, and animals using oxygen to make carbon dioxide, life developed the cycle that we find now. Under the protection of the new atmosphere, the new cycle became stable, and plants could move onto land. Animals followed the plants onto land, and a bigger version of the cycle then became stable on land. Nature had overcome its turning on itself. A new road opened, which led eventually to people and morality and ideas about God – but only at a huge cost. If you wish, you can say God overcame evil (oxygen poison) to find a greater good (plants, animals, natural cycle, evolution of sentient beings); but this opinion comes from looking at things from the human point of view; and the organisms that had to die to allow the overcoming of evil would not agree with this point of view.

Great Extinctions.

The end of the dinosaurs about 65 million years ago was a big extinction of big animals but it was hardly the biggest extinction ever on earth. After the oxygen catastrophe, there were at least three, perhaps five, massive “extinction events” that led to the end-of-life-as-it-was-then-on-earth and to the arising of new kinds of life. I give some ideas about the causes for the events but nobody knows for sure. Life did not evolve gradually in a series of small polite steps in which the “lower” aided the “higher” but through a process more ugly and perhaps more beautiful too.

Cambrian-Ordovician-Silurian Extinction Events.

This was a series of events taking place about 540 to 450 million years ago. Life was still in the seas. The amount of oxygen in seawater depleted, and perhaps glaciers covered much of the earth. Maybe animals were using oxygen faster than plants could make it – not unlike what people are doing to the Earth now. When oxygen depleted, it might have triggered off the cold. The combination of low oxygen with cold temperature killed plants even in the ocean. The lack of plants then killed animals. Because animals died, the level of oxygen increased again until the usual plant-animal-carbon-dioxide-oxygen cycle began again. Plants and animals might have gone through several cycles like this until they evolved a reasonably stable long-term balance.

Permian-Triassic Extinction Event.

This was a single massive extinction, the greatest in earth history other than perhaps the oxygen catastrophe, about 250 million years ago. It wiped out maybe 96% of all species at the time. Paleontologists call it the “Great Dying”. Most life was still in the seas. Perhaps the Great Dying began when stored gases such as methane and carbon dioxide were released from the sea floor, upsetting the cycle of carbon dioxide and oxygen. Probably shortly after the decline began, the greatest volcanic

eruption in “modern” history occurred (in this framework, ancient history is history in the first billion years after the initial formation of the earth), maybe in what is now Siberia; that eruption finished off the process of massive short-term death.

Triassic-Jurassic Extinction Event.

This was about 200 million years ago, probably caused by changes in the balance of oxygen and carbon dioxide, and by fluctuations in temperature. Life had already moved onto land. Plants moved onto land first. It took a long time for animals to follow. Maybe the plants on land created oxygen without yet enough animals on land to restore the balance between carbon dioxide and oxygen. The imbalance likely caused other effects such as widespread glaciers and cold. Death spread across the land and into the sea. The extinctions at this time did begin the era of “middle life”, the Mesozoic, and led to the development of modern fishes, amphibians, and reptiles.

The Cretaceous-Tertiary (K-T) Extinction Event. This was the extinction of the dinosaurs about 65 million years ago. It separated “middle life” (Mesozoic) from “modern life” (Cenozoic). The extinction of the dinosaurs allowed mammals to diversify, proliferate, and dominate, and so eventually led to humans. The cause was a large meteor that just happened to hit the Earth. Suppose we say the extinction of dinosaurs was necessary for the rise of mammals and the rise of humans with morality, so the extinction of the dinosaurs was part of God’s plan or Nature’s plan. Still, this seems like a terrible waste, and an immoral way to reach a higher morality.

Tarantula Hawks.

Spider wasps are a group of several species of wasps that live by preying on spiders, often by leaving their larvae in spiders as a parasite. Tarantula hawks are a type of spider wasp that specializes in tarantulas. A tarantula is a big spider that is itself a hunter. It digs a burrow or builds a nest in a tree, and then comes out to capture other animals. Sometimes they are big enough to capture lizards, birds, and small mammals. They do not bite people without being annoyed first, and some people keep them as pets. Tarantulas fear little but they are terrified of tarantula hawks. Tarantula hawks are solitary wasps; they do not live in colonies like bees. The female hawk looks for a female tarantula outside of her burrow. The female hawk seeks a female tarantula because females are bigger, meatier, and juicier than males – so much for sisterhood and the natural sanctity of shared motherhood. The wasp stings the tarantula, which sting permanently paralyzes the spider but does not kill it. Although the wasp is smaller than the tarantula, it drags the spider back into the spider’s own burrow. The wasp lays a single egg on the tarantula. From the outside, it seals up the tarantula’s burrow to insure the safety of its egg and the egg’s meal, the paralyzed tarantula. Then it flies away. When the egg hatches into a larva, it eats its way into the still-living paralyzed tarantula. It eats inside the tarantula for days. The larva avoids the vital organs, eating first the muscle and other organs, to keep the tarantula alive as long as possible. When the tarantula begins to die, the wasp larva eats it all. It finally leaves a dried out husk. Then the larva transforms into a wasp, digs its way out of the burrow, and goes to seek its own tarantula. If people are like tarantulas, then tarantula hawks are like the “aliens” from the movie series “Alien”. If nature is like tarantulas, then people are like tarantula hawks. I do not see how this process can be called anything but evil even if it happens between spiders and wasps. It long predated people, I do not see how the devil

could have caused this evil to appear in nature, and the rising of people did not in any way overcome and transform this evil.

Comments.

My ideas about chaos, badness, and evil are necessarily from the point of view of a limited being who evolved within the system and evolved to dislike too much chaos, badness, and evil. Still, I stick to my judgment. I can't do anything else.

I do not accept the existence of the Devil, and so I cannot use the Devil to explain away evil. Because some of the evil is in nature apart from humans, I cannot use bad human will to explain away all the evil. We are just stuck with some evil.

If all this chaos, badness, and evil is part of God's plan, then that level of planning is beyond me. Being eaten by tigers and being eaten by cancer are both natural. I can accept the idea of predators-and-their-prey-with-an-even-chance-for-the-prey (tigers and deer) but I cannot accept the idea of a child being eaten alive from the inside by cancer. I cannot accept debilitating diseases such as arthritis, malaria, and elephantiasis. We might have to tolerate some evil and we might even benefit from some evil but God could have arranged the universe to evolve humans without evolving as much hard evil along the way. I can see how facing evil that is created by humans might be part of God's plan and might be part of growing up for humans. I do not see how natural evil can be explained that way. I do not see how excess evil, human or natural, against which no reasonable person could prevail, could be useful or how it could be part of God's plan. I do not see how child abuse that results in a warped and abusive adult can be part of God's plan. I do not see how turning children into raping, murdering guerrillas can be part the plan. I do not see how destroying most of the biodiversity on Earth now by supposedly moral sentient beings (humans) can be part of God's plan, even if it resembles the oxygen catastrophe, even if it leads to a higher form of life later.