STRICT NATURALISM AND CHRISTIANITY: ATTEMPT AT DRAFTING AN UPDATED THEOLOGY OF NATURE

by Rudolf B. Brun

Abstract. In the first part of this essay I sketch a view on cosmogenesis from the perspective of modern science, emphasizing, first, that the laws of nature are outcomes of the history of nature, not imposed on nature from outside of nature; and, second, that the universe, including human beings, is the result of a single, natural process. It consistently brings forth novelty through a probabilistic sequence of syntheses. Consequently, the new emerges from the unification of elements that were previously unified. This universal creative process is both probabilistic and nonlinear. It is probabilistic (historical) because each creative event occurs within a cohort of also possible events. It is nonlinear because the new has qualities that its elements in isolation do not possess. I refer to this model of understanding cosmogenesis as *strict naturalism*. In the second part of the essay I argue that deistic and theistic models of cosmogenesis cannot cope with strict naturalism because they exclude teleology and supernatural interference in the creative process. In contrast to deism and theism, I show that Christianity is capable of integrating strict naturalism. To do that I focus on the Christian notion of incarnation. At the center of this reflection is the attempt to increase the understanding of Christian faith that only the Word of God creates.

Keywords: Christianity; cosmogenesis; creation; evolution; naturalism; theology of nature; Word of God

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COSMOGENESIS, A VIEW FROM SCIENCE

Over the last decade or so astronomers and physicists have made tremendous progress in better understanding the origin of our universe. They found ways to confirm that the universe emerged from an original explosion. They obtained an amazingly detailed map of what happened. The

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map shows the distribution of the first patterns of energy and matter. These primary structures of the universe emerged within a fraction of a second of the original explosion of the Big Bang (Seife 2003, 2038). At that time some of the forces of nature also came into existence. Scientists do not have the data to understand how this happened. They know from experiments performed in particle accelerators that the forces of nature are carried by particles (Cho 2006, 1302). Some of these formed as the quark-gluon plasma expanded at close to the speed of light. The speculation so far is that at the earliest moment of time there may have been just one primary force, perhaps quantum gravity, and that the other forces of nature emerged from this original force. It may have split into X particles about 10^{-35} seconds "later." X particles might have carried the (so far also hypothetical) grand unified force, the "electronuclear force." About 10^{-3} seconds later it split into the electroweak force. This force united electromagnetism with the forces that hold atomic nuclei together and also control some forms of radioactive decay.

About 400,000 years after the original explosion the universe became transparent to light. At this time, four forces had emerged in the universe: gravity, the weak and the strong force (the two forces that operate at the nuclear level), and the photons that carry electromagnetism (Glanz 1998, 2156). The hypothesis that all forces of nature originated from a single one is supported by the discovery of Z particles in 1982 at the cyclotron of CERN at Geneva, Switzerland. Protons were accelerated one way around the cyclotron. As they traveled close to the speed of light they were made to collide with anti-protons (antimatter) that sped the opposite way. The crash produced an explosion with temperatures that had existed only within seconds after the Big Bang. At this temperature Z particles were detected. The fascinating finding is that Z particles unite two of the fundamental forces of nature, the electromagnetic force and the weak force, into one—the "electroweak force."

The discovery that separate forces of nature can reunite is the basis for the hypothesis that at even higher temperatures the electroweak force might merge with the strong nuclear force, the force that holds atomic nuclei together. There is hope that those particles will be detected that mediate this so far hypothetical electronuclear force. Machines are under construction that may be able to generate the temperatures in which these X particles could show up. If they did, it would be only the second time since the original explosion out of which our universe emerged.

From the discovery of Z particles at CERN, and extrapolating from the so-far-hypothetical X particles, the assumption is that at the instant of the Big Bang only one force, only one natural law, existed. The four basic laws of nature—gravity, the electromagnetic force, the weak and strong force—came into existence sequentially. The conclusion is that the laws of nature

emerged from events in the history of nature and were not imposed on it by some supernatural agent.

From this point of view, the possibility exists that the sequence of events that brought forth the natural laws in our universe could have been different in other universes. Current string theory suggests that there might be myriad universes (Witten 2005, 1085). If so, we are just lucky that in ours the laws of nature are such that life, including humans, could evolve (Brumfiel 2006, 10).

I like the idea of multiverses because it avoids the belief that some supernatural agency fine-tuned the parameters of cosmogenesis so that life and human beings could evolve. Nature is deeply probabilistic, and it seems to me unlikely that the explosion from which our universe originated stands alone. Rather, this "original" event likely happened zillions of times, and our universe emerged from within a cohort of multiverses in which the laws of nature are very different. From this point of view the laws in our universe emerged from chance events and were not designed or fine-tuned by a supernatural power so that life, including human beings, could evolve.

Some History of Matter. We are far from a complete understanding of what happened during the birth of our universe. We do know that it emerged sequentially from an original explosion. Although the universe has been cooling from this tremendous event of the Big Bang for some 13.7 billion years, scientists have measured the afterglow of the explosion. They have found that there still is a pattern generated by those areas that were slightly cooler than others, a patchwork of spots left by the uneven distribution of radiation energy. The first matter-antimatter elementary particles condensed out of the radiation field within a time shorter than the blink of an eye. Most of the energy of the Big Bang froze into dark matter, matter we cannot see. Only about 5 percent crystallized into matter that lit up, some of which became organized into galaxies and stars. Astronomers have quite recently discovered that there is also dark energy, a force that continues to increase the speed of the expansion of the universe (Brumfiel 2003, 108).

The first stars emerged from collapsing clouds of primary gases, hydrogen and helium. When some areas in these clouds contain slightly more matter than other regions by chance, the heavier areas attract matter from their surroundings. These at first only denser regions grow by attracting increasing amounts of nearby matter. The gravitational collapse compresses the converging gaseous matter, heating it to temperatures high enough to fuse hydrogen into helium, which in turn produces so much heat that the collapsing gas ignites. A nuclear furnace forms in which hydrogen burns and in the process fuses into helium. Helium atoms, however, are slightly lighter than the four hydrogen nuclei that fused to form it in the nuclear

reaction. The missing matter is transformed into energy according to Einstein's famous formula $E=mc^2$. This energy generated at the center of the forming star counteracts the gravitational collapse. Equilibrium is established between the gravitational force tending to make the star collapse into itself and the heat generated by nuclear forces, an equilibrium that is stable until the fuel at the center of the star is used up. If this happens, gravity wins and the star begins to collapse. The matter at the core is heated further by pressure of the gravitational force until temperatures are reached at which the carbon atoms fuse with remaining neutrons to form more massive atoms. The accretion of its matter causes friction. The center of the collapsing star heats up again until temperatures are reached at which the helium atoms fuse. The energy generated by this reaction counterbalances the gravitational force again until the nuclear fuel is running out. New generations of stars form in which heavier and heavier atoms emerge thanks to nuclear fusion processes. The process stops abruptly with the fusion of iron, and a catastrophic implosion ensues. It results in a supernova explosion in which the remaining elements such as nickel, cobalt, gold, and silver are synthesized.

The point is that all naturally occurring elements listed in the Periodic Table of the Elements emerge over time. They are sequentially synthesized in the nuclear furnaces of the stars. As they age and run out of fuel, the heaviest atoms form during the explosions in supernova events. The chart therefore summarizes a part of the physical history of the universe. Moving from the left side of this table to the right traces successive events in the evolution of matter. These events produced the increasing complexity of the heavier elements from the simplest possible organization of subatomic particles in hydrogen atoms. Already in the physical universe there was complexification. There still is.

Probabilistic Complexification, or: How Nature Creates. What can we say about how nature builds increasing complexity? I think the answer is through historical sequences of synthetic events. The pathways of sequential syntheses are not predetermined or goal-oriented but rather historical. By historical I mean that cosmogenesis proceeds through probabilistic events. This is, each event opens a landscape of future possible creative steps. The emerging statistical landscapes contain the probabilistic cohorts of possible trajectories. The directions the processes may take are within this landscape. Exactly which pathway a process will actually pursue, however, is open, because the time of the future is different from the time of the past; the future is open, but the past is closed.

The results of probabilistic complexification do not just pile up hodgepodge. Rather, the process brings forth complexity in which the elements are integrated. True complexity emerges from the unification of parts into wholes, or unities. Their parts unite in such a way that their individual

properties still exist, but the unification of their qualities brings forth new properties of the whole. This new reality of the whole transcends the parts because the whole has qualities that the individual parts have not (Ehrenfels [1891] 1985, 85). Unification brings forth novelty.

Synthesis, the unification of difference into unity, is creative. As I see it, the unification of diversity into unity is the universal creative principle. It is therefore also the creative principle of the evolutionary processes on Earth.

Earth and all of the other planets formed roughly 4.5 billion years ago. Our solar system emerged from a molecular cloud that formed from elements ejected from a supernova explosion. Over about one billion years the young and fiery Earth cooled to temperatures at which life could exist (Rasmussen et al. 2004, 963). How life began we do not know. Most likely, molecules aboard comets and meteors that crashed into the forming planet seeded the complex chemistry that led to prelife molecules. We do know that it took only about 500 million years for living things to appear, after Earth had cooled for 1.5 billion years. Considering that the universe is 13.7 billion years old, 500 million years is quite short. This suggests that the emergence of life must be a relatively easy process, which provides the basis for the hypothesis that life also formed elsewhere in the universe.

Once life appeared on Earth, competition for life's resources began. To multiply is the primary task of all organisms; only through replication can life continue through the flow of time. Not all of the information necessary to reconstruct life for the next generation is equally well suited for the task. At any given time there is variation between the individuals of a group of organisms. Some are slightly more efficient than others at reproducing in the existing environment. As a consequence they outcompete the other individuals in the group. This is the Darwinian law of variation (by chance) and natural selection. Organisms adapt to an ever-changing environment in the creative two-step process of variation and natural selection. Survival of the fittest is the law of life that emerges together with the emergence of life. It must be added to the list of the emerging laws of nature previously mentioned. The law of natural selection is a powerful example that the laws of nature emerge within the history of nature; they are not imposed from outside of nature.

The Complexification of Organisms. As far as we can tell, the human brain is the most complex structure that nature has yet produced. How it works to bring forth self-consciousness is a matter of current research. There are, however, significant clues in anatomy of how nature put our brain together. One way to trace its evolutionary history is to dissect it into its anatomical components. This method leads to the result that parts of our brain came together when reptiles and amphibians evolved. Some components date back even further, to the time fish first appeared roughly 400 million years ago. By dissecting the human brain into its parts, we isolate

older and older components. If we continue the process in our mind's eye, these components come together by even more ancient elements: cells. And if we dissect cells into their organelles we find that these cellular components are older still; some of them, like bacteria, were once free-living organisms. If we keep dissecting we find that the genetic material in these ancient organisms is composed of unities that are older still. The molecules that make up the genetic information are composed of atoms. As I have pointed out, atoms, including those that make up the chemical components of life, were synthesized in the stars. Any form of life, from the first replicating molecules to cells to multicellular organisms, emerged from a sequence of synthetic events.

Once nature brings forth the working structures of life it usually does not change them significantly. For example, cells have been around for about a billion years, yet their fundamental organization has not changed. Nature rather builds new things by repetitive arrangements of structures that already work, of modules already available. Cells are the modules from which multicellular organisms emerged. They evolved from colonies of cells that first were all the same. Then the division of labor between the cellular modules increased the efficiency of propagation. Some cells were sorted out for reproduction while others became specialized in gathering nutrients. The increased efficiency in extracting energy from the environment made it possible for organisms to become larger. As a consequence, the number of cells and cell types increased (Bonner 1988, 220). Division of function among the various cell types and their proliferation brought forth the various organs. As the environment changed, organisms had to change with it. Those forms of life that could even slightly better cope with the new circumstances increased in numbers while others decreased or disappeared.

This is Darwinism: new species emerging from the natural two-step process of variation (between the individuals of a species) and natural selection. For decades biologists have accumulated data showing that this mechanism is working. For example, cells frequently form in tissue cultures that have properties significantly different from those of the cells from which they originated. There are also statistically significant (and beautifully performed) field experiments the results of which clearly demonstrate that variation and natural/sexual selection are powerful mechanisms of evolutionary change. They work not only in laboratories but also in nature (see Ridley 1992, 328).

These experiments leave no doubt that Darwin was correct. In his time, however, there was no knowledge of how variations originated. The science of genetics started to flourish about half a century later, and it provided the insight that genes could spontaneously change and in this way alter the appearance of organisms. Variation was the result of mutating

genes. This insight led to neo-Darwinism, the view that mutations and natural selection drive the evolution of organisms.

Today, molecular geneticists have gained exciting new insights into the nature of mutations. Nucleotides, the modules that constitute DNA, may change and in this way produce new organismic traits. However, the genes that an organism possesses are organized into an overarching physiological whole: the genome. It is hierarchically organized, meaning that not all genes are equal. There are regulatory genes—super genes that control entire batteries of subordinate genes. As an embryo develops, regulatory genes are activated first. They activate secondary regulatory genes that turn on the appropriate genetic information necessary to construct the body of the embryo. The formation of a new adult from a fertilized egg is dependent upon a complicated genetic program.

We know that such programs already existed in Vendian/Cambrian times, 500–600 million years ago, thanks to the discovery of amazingly well-preserved fossils of early embryonic stages (Bengston and Zhao 1997, 1645). In addition we know from fossils discovered in the Canadian Rockies that there was an amazing variety of soft-body organisms (Briggs, Erwin, and Frederick 1994, 217). Skeletal elements did show up rather suddenly about 530 million years ago (Raff 1996, 89). There were sponges, worms, mollusks, echinoderms (sea urchins, for example), trilobites, and many types of creatures that died out.

Surprisingly, the architecture whether to be an insect, an arthropod, or a vertebrate emerged perhaps as far back as 800 million years ago (Runnegar 1994, 369). If so, the genetic programs necessary for the development of these different basic body types had already been assembled. The genes that provided the components of these developmental programs must have come from the already existing unicellular organisms. How they were brought together we do not know. The genes may have been transferred by viruses. There is an enormous reservoir of genes in the myriad viruses in seawater (Hamilton 2006, 683). Perhaps viruses transported genes between cells that led to the assembly of the first multicellular genomes.

We do know that once a program became assembled for the construction of a specific body type (a phylum) it did not change any more. Consequently, the "thirty-five living phyla probably all had their origins in the Cambrian, many of them in the Burgess Shale" (Raff 1996, 95). Molecular analysis confirms this stability. Those parts of the developmental programs that organize the different body plans have not changed over hundreds of millions of years. There is a fundamental component in the developmental programs that does not vary. Evolution cannot change this part of a genetic network because it provides the basic regulatory architecture for the construction of a specific body type (Davidson and Douglas 2006, 796). Because of this fundamental principle of construction any change in this part of the program is lethal. The genetic information involved in the

differentiation of organisms within phyla into classes, orders, families, and species came later. The genes necessary for this differentiation emerged through duplications and variations (by mutation) of already existing genetic components.

Over the last decade or so advances in molecular genetics have advanced tremendously. The main finding is that gene regulation is a multidimensional and extremely complex matter (Zamore and Benjamin 2005, 1519).

Darwin was correct that evolution works by variation and natural selection. Variation, however, is the result of processes that not only alter genomes by mutations but also change how genes are regulated. If genes were the keys on a keyboard, regulation would be the order in which they were played. One can play many tunes not by inventing new keys but by changing the order. To find out how nature accomplished the complexification of organisms from bacteria to human beings remains a project under construction. This, however, does not imply that the process of complexification is somehow beyond the capabilities of nature.

Models of Understanding

This may be a good time to lay my cards on the table. I have a fundamental disagreement with deism, the belief that God fine-tuned creation to reach a predetermined goal. I can understand the history of this claim. As scientists discovered that the world was not created more or less at once but came into existence through a historical sequence, the outcome of this sequence had to be somehow determined. How could God's plan for creation be realized if God was not controlling the process? One suggestion was to understand creation as clockwork: God made the clock and wound it up, and creation was ticking along a determined mechanical path. Natural laws, ordained by God, made certain that the pathway of creation could not deviate from the goal set in the beginning.

Darwin showed that this deistic view of creation did not fit the history of life. As science progressed in understanding that biological evolution is not determined but is the outcome of probabilistic historical events, the deistic-mechanical understanding of cosmogenesis became untenable.

In the first part of the twentieth century it became increasingly obvious that not only life but also the physical universe evolved. Physicists and astronomers worked out in ever greater detail how what we call matter emerged through a historical sequence of events.

Some theologians took notice of this new way of understanding how the world came into existence. The challenge for them was and still is how God's purpose for creation could be fulfilled through a historical, not predetermined, process. Process thinkers suggest various ways of how God may be involved in guiding cosmogenesis (Russell et al. 1993, 1). Some argue that God's creativity is constituting, supporting, and proliferating the capacities of creation (Gregersen 1999, 118). How does God do that?

"God is seen as reshaping the possibilities as the history goes along, by acting in different ways in different contexts" (Gregersen 1998, 359). Scientists would never notice these supernatural interventions because they are camouflaged within the uncertainty of outcomes in the history of nature. Supernature would be involved either all the time or at those times when the outcome really counts.

God's stealth interventions into the history of nature, for example at the quantum level, would make it impossible in principle for scientists to understand how nature really works. My problem with this kind of thinking is that it makes the work of scientists a joke. It undermines their search for truth even at the level open to scientific investigations. This view favors the position that what science finds out about nature cannot be relevant to theology. Why? Because the reality that science investigates is a dimension not of nature but of supernature. For example: "God is the creator of the fixed laws of elementary particle physics (a nonnegotiable position)" (Gregersen 1998, 364, n 21.1). If this is so, what is left for particle physicists to find out?

I have a fundamental disagreement with philosophers and theologians who suggest that the complexity of nature results from supernatural intervention. Not in the beginning, not on its way, and not in the "end" (if there is one) is cosmogenesis guided by aiming, intervening, or goal setting. I am not a theist, but I do appreciate the efforts made by process thinkers. They clearly see the mystery that shrouds the creativity of nature. My disagreement with theistic thought is that it strips this mystery from nature and places it into supernature. By doing so, the mystery of nature becomes an abstraction instead of being concrete in all that nature brings into existence. Furthermore, claiming that nature transcends into supernature cripples nature. It denies nature the power of really and fully becoming itself. Cosmogenesis becomes more or less a function of supernatural tutelage.

I am bonded to my colleagues in science. The ones I know believe that cosmogenesis is the exclusive outcome of an entirely natural process. I share their conviction of strict naturalism. That Christianity should integrate this view from science will hopefully become more intelligible in what follows.

If Christianity wants to be in harmony with the discoveries of modern science, and I think it must, an updated Christian theology of nature has to integrate strict naturalism.

How can this be done?

There are biblical signs that indicate the path toward this goal. The first mark, in the first chapter of Genesis, identifies the trailhead clearly. The text is unambiguous: God speaks and creation becomes. The trailhead is clearly marked. It is a rock that bears the bold inscription "The Word of God creates!"

From here one can make out a second pointer that indicates the direction in which to go. On it is a sign that reads "For just as rain and snow fall from heaven and do not return there without saturating the earth and making it germinate and sprout, and providing seed to sow and food to eat, so my Word that comes from my mouth will not return to me empty, but it will accomplish what I please, and will prosper in what I send it [to do]" (Isaiah 55:10–11 NAB).

From here we pursue the task, attempting to construct a way toward an updated Christian understanding of cosmogenesis. An unexpected sharp turn leads to the next marker. We are baffled by the following revelation on it: "In the beginning was the Word, and the Word was with God, and the Word was God. . . . All things came to be through him, and without him nothing came to be" (John 1:1, 3 NAB).

The first part of the text, "In the beginning was the Word," is familiar. It reaffirms what we were already told by the message on the trailhead: that the Word of God is the origin of all beginning, of all that is, of all creation. The second part, however, that "the Word was with God and the Word was God," is surprising. It lets us know that God is not alone, that God is with his Word that is God also. If the Word of God is also God, and Christianity believes that it is, this Word of God is the perfect expression of God. If it were not, it would not be God. God's word therefore is God but the perfect expression of God. Therefore, the Word of God is not identical with God but is rather God's perfect expression. It is God the Son: "God from God, Light from Light, begotten not made, one in Being with the Father" (Nicene Creed [Schaff [1910] 1919, 24]). There is "otherness held in love" *within* God, as G. W. F. Hegel puts it ([1827] 1970, 206).

This, however, is not all that this text reveals. The second sentence is again clear and straightforward; through the Word of God, through the Son of God, "All things came to be through him, and without him nothing came to be." "Through him all things were made" (Creed). There is otherness not only within God but also outside of God. "God has two revelations, as nature and as spirit, and both manifestations are temples which He fills, and in which He is present. God as an abstraction is not true God; His truth is the positing of his other, the living process, the world which is his Son when it is comprehended in its divine form" (Hegel [1827] 1970, 204).

This sheds light into the depth of what was previously revealed, namely, that the "Word that comes from my mouth will not return to me empty, but it will accomplish what I please, and will prosper in what I send it [to do]." The text clarifies that this departure of the Word of God that is God into that which is not God is an essential transformation, not just an increase in distance. God who is absolute eternal existence departs from God to bring forth created existence, existence that must become in time.

The Word of God that is God becomes that which is not God. God the Son, the otherness of God within God, departs into nothingness, the otherness of God outside of God. "For from him and through him and for him are all things" (Romans 11:36 NAB). "For in him were created all things" (Colossians 1:16 NAB). "[God] spoke to us through a son . . . through whom he created all things" (Hebrews 1:2 NAB). "[Jesus Christ] through whom all things are and through whom we exist" (1 Corinthians 8:6 NAB).

Christianity insists that the Word of God that is God brings forth that which is not God but creation. This is neither pantheism nor panentheism; the Word of God that is God does not cease to "exist." Creation is not God, as I understand pantheism to suggest, but rather essentially "otherness" of God. I cannot see how the various models of panentheism help in constructing a Christian theology of nature. The Christian revelation about creation does not proclaim that creation is an extension or a function embedded in God. Rather, the Word of God that *is and remains God* is given away to creation. It is a gift that empowers creation to become itself.

How it can be that the Word of God remains God yet also becomes the creative center of creation is beyond human understanding. It is a paradox of Christian faith that human logic cannot resolve. There is a light, however, that illuminates this paradox from another incomprehensible event: the mystery of Christmas. In this event true God becomes truly human. God becomes that which God is not, a human being. As I see it, the mystery of Christmas illuminates the mystery of creation. Christmas is the demonstration that God can be God in that which is not God.

The attempt to construct a trail toward an updated understanding of creation has led us from Genesis to Christmas. From here a view opens into the mystery that cloaks creation. From the mystery of incarnation shines a light in which one can see that Christmas and creation belong together. They belong together because the Word of God becomes otherness of God in creation and in the Christmas event. Pope John Paul II, addressing the bishops of the Catholic Church in a letter, wrote: "The mystery of the Incarnation will always remain the central point of reference for an understanding of the enigma of human existence, the created world and God himself. The challenge of this mystery pushes philosophy to its limits, as reason is summoned to make its own a logic which brings down the walls within which it risks being confined" (1998, 84).

God's logic of incarnation, the paradox that God can be God in that which is not God, is the foundation of creation. The Word of God incarnate in creation is that creative center from which all creativity of nature originates. This creative center is the Word of God that is God but departs from God, is given away to creation so that creation may become. The philosophical question "What is the nature of Nature?" finds here its answer: The nature of Nature is the Word of God given away to creation. It

is thanks to this creative gift that creation is capable of becoming itself.

If nature is free to become itself, how will God's plan for creation become reality? Our freedom of action is not an obstacle in Almighty God's plan becoming concrete. Consider Good Friday. All actors in this drama act freely, and yet, precisely through their decisions made freely, the saving plan of God becomes executed with absolute precision. Even the cock crows, at the right time, and exactly twice!

How then may we outline a Christian understanding of cosmos and creation? I think that such a sketch will show that creation is thanks to the creative Word of God. It will further help to understand that this Word that is God is given away to that which is not God. It is through this gift truly given away, no strings attached, that nothing could become something. In this view, cosmogenesis results from the creative source of nature. This source is the Word of God incarnate in creation.

How is it possible to integrate strict naturalism into Christianity? Perhaps by anchoring the model of cosmogenesis constructed by science in God's logic of incarnation.

That God is love is the fundamental revelation of Christianity. I therefore trust that creation is the gift of the loving God. This gift is God's creative Word. It becomes the creative center of nature. It empowers nature to freely become itself. Thanks to this freedom, nature is capable of bringing forth creatures that are free. We are these creatures that evolved from within the natural process. As a consequence, human beings belong to nature—we are "At Home in the Universe" (Kauffman 1995).

Christianity goes one step further and proclaims that human beings are not only rooted in creation but are the representatives of creation: "Creation awaits with eager expectation the revelation of the children of God" (Romans 8:19 NAB). We are those free creatures, capable of either accepting or rejecting the loving relationship offered by the Creator.

Conclusion

In the view from science on cosmogenesis that I have sketched, strict naturalism is essential. I have argued that it is also essential to Christianity, because the freedom of nature to become itself is the condition for free creatures to emerge. Human beings are these creatures, free to either accept or reject the loving relationship offered by the Creator. Strict naturalism therefore only makes explicit what is already implied in the fundamental revelation of Christianity, namely, that God is love.

NOTE

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