

Youth Theology Institute Journal

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BERNHARD
CHRISTENSEN
Center for Vocation

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Dear readers,

The Augsburg College Youth Theology Institute (ACYTI) is a ministry of the Bernhard Christensen Center for Vocation, Campus Ministry and the Religion Department at Augsburg College. These three departments are committed to engaging youth and young adults in the life-giving art of theological reflection. For close to 10 years, ACYTI has been inviting high school youth to the campus of Augsburg College for this very reason. Each year approximately 20 high school youth gather for a week of disciplined engagement with both theology and our world. It is at this intersection of theology and lived-experience that we begin to learn more about the life to which God is calling us. We believe young people thrive at this intersection.

Our theme for the summer of 2013 was, “Navigating the Intersection of Science and Technology”. Our instructor, Dr. Nate Hallanger, guided us into three big questions . . .

1. How should Christian faith and science relate to one another?
2. How do scientific findings impact faith?
3. How does faith inform our view of scientific discovery?

We learned a variety of ways to relate science and theology. We explored the questions that arise when science and theology meet. We wrestled the constructive interaction between science and theology by looking at specific disciplines within science. We learned from a panel of science professors from Augsburg as they shared how they manage the intersection between their faith and their science. We explored the Science Museum of Minnesota for scientific findings that challenge our faith and those that deepen our faith in God. Our faith was challenged, our worlds were expanded and we also made life-long friends.

This journal is a snapshot of the theological reflection stimulated by this community of friends at the intersection of science and theology. These writings reflect the emerging questions of this community and our faithful attempt to chase these questions for a little while. We hope these writings will be a gift to you. We hope they will cause new questions to develop within you and among your community of friends. We hope our exploration of this intersection might grant you the courage to explore this intersection further.

Augsburg College will continue to create these types of opportunities to form communities of faith that are also communities of inquiry. Please feel free to be in touch if you would like to learn more about our work or contribute to its sustainability.

Sincerely,
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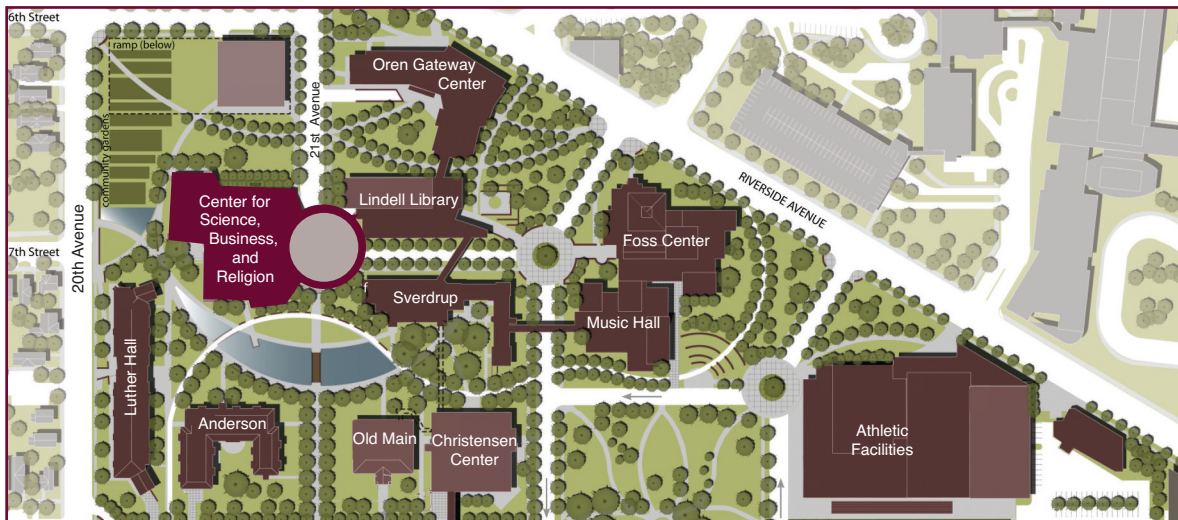
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Bringing together the study of global business, advanced science and technology, and world culture and faith traditions into a first-of-its-kind education center.

Our graduates must be prepared for a rapidly changing, complex, interdependent world. Mastery of leadership and cross-disciplinary problem solving is **critical to their future success**. The intersections of Science, Business and Religion have far reaching implications.

The center will allow Augsburg College to attract and keep the best and brightest faculty and students. Not only will the center help Augsburg build great classes of new Auggies, but **more students than ever** will be able to gain hands-on laboratory and research experience.

This new center is critical for Augsburg to effectively compete in the market. The Twin Cities has a strong tradition of science-based and ethical business. The Center for Science, Business, and Religion will **strengthen Augsburg's reputation** in this marketplace and demonstrate the value Augsburg delivers to the ongoing vitality of our city.



AS A LEADER IN THE COMMUNITY, you know the changes happening today in business and industry, in healthcare and education, and in our population and global competitiveness.

AS A COLLEGE IN THE CITY, Augsburg is literally at the center of this change. And we know what people like you are looking for from their colleges and universities:

People who can think.

People with real-world experience.

People who can work in a diverse world.



"I believe in this college. I believe in what it does for young men and women, helping them grapple with the issues of today and come out as leaders."

—MIKE GOOD '71

The “Battle” Between Genesis and Evolution

By Emma Blom, Brookston, MN

The battle between science and religion seemed to begin at the publication of Darwin’s “On the Origin of Species.” The Theory of Evolution and the biblical creation stories are common topics of debate, but they do not need to conflict. It is possible to believe in the creation story found in Genesis while also accepting the Theory of Evolution.

Darwin’s Theory of Evolution is widely accepted in the scientific community, but it is still just a theory and not a fact. This leaves much room for discussion on what is actually verifiable. Darwin’s theory states that every species is a result of changes through natural selection over a long period of time. There is strong fossil evidence, genetic evidence, and anatomical similarities between species that supports this theory. Darwin’s observations of the adaptation of different species such as finches support evolution, making it evident that it is true, at least to an extent. It is clear that there is truth to this theory, but the many missing links leave room for conflict and questions. Some people choose to put their faith in the creation stories.

The biblical stories of creation are ancient and still have many believers today. Within the book of Genesis, there are two accounts on the creation of the Earth. Genesis 1 describes that everything was created in six days, and God rested on the seventh day. Genesis 2 is less specific about the timeframe, but the moral is the same: God created the world and created mankind in his image.

The Bible is extremely complex, and many different people have differing interpretations on the Bible, including the creation story. Some people interpret the word “day” as a longer time period, giving room for evolution to happen. Some believe that the world was created in six days, but also believe that we live in a changing world. There are countless views on the creation story alone, but they all have at least one piece in common: God created the world. Siegbert W. Becker, the author of “Evolution and Genesis” states that “Genesis one and two were not intended to give us a record of *how* God created the world, but they are meant only to teach us *that* God created the world, even though this method of creating may have been a gradual, long drawn-out evolutionary process.” He paraphrases a theologian in saying that “no theologian has a right to say whether God really created the world in six days or whether he created it by evolution in billions of years.” There is some truth to his statement. No person on Earth will have all of the answers. The questions are for us to ponder, but we cannot expect to know everything because that is not what God intended.

The Theory of Evolution and the creation story seem to be opposing sides to one conflict. Darwin’s theory that “the strong kill off the weak” caused conflict, especially in the 1920’s. William Jennings Bryan said, Evolution “robs the reformer of hope” (Lienesch, 88). He also described how people reacted negatively to the Theory of Evolution because they thought that it brought with it bad morals, the extreme example being genocide during WWI and WWII. It also conflicts with the literal translation of the Bible, causing much question within religion and adding to the dispute.

There are also many questions that arise on both sides. Some wonder how a complex structure like the eye could have been a result of natural selection. The different tiny structures of the eye would not be beneficial to an organism unless they contributed to the already formed eye, making it extremely unlikely that it was a result of random events. Others argue that the eye is imperfect, which questions the idea of a creator (Barbour). Some question the biblical views, wondering why there is suffering in the world. Why would an all-powerful creator allow suffering in something that he created? These questions could feed the conflict forever. Although these unanswered questions are unsettling, there is still a way to integrate both sides into a person's way of thinking.

According to Ian Barbour, there are three versions of the integration of evolution and religion. These three versions are evolutionary design, God and continuing creation, and process philosophy. Those who believe in the first version believe that God designed the world with a plan. They believe that everything is evolving in a direction, but God is not in complete control. Barbour explains the second version with the analogy that "God is like the composer of a still-unfinished symphony" (Barbour, 114). In this version, God designed laws through which he works to continue his creation. This endless creation happens through the random events of nature. Process philosophy can be complicated. Barbour explains, "In process thought God is the *source of order* and also the *source of novelty*" (Barbour, 117). God presents the world with new possibilities but does not control what happens. These are three forms of integration between creation and evolution, but any person can find their own theory as well.

Charles Darwin himself was able to integrate his religious beliefs with his theory. He believed that God created many different species and left room for them to evolve (Livingstone, 148). He wrestled with his spirituality as he was learning more about the world, but God was still present in his life.

It is plain to see that there are countless views on this topic. Some cause conflict between the Theory of Evolution and the Christian creation story, but some can integrate the two. Each person can find what he or she believes to be true because no one will have all of the right answers. The best way to integrate the two subjects is to remember that God created a changing world; therefore, he created organisms that are able to change along with the world.

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The Fibonacci Sequence and Creation

By Ryan Brumm, Rosemount, MN

Science and religion often have a difficult time co-existing. The intersection of science and religion has been a hot topic, causing controversy in every section of religion and almost every section of science. Many theologians and scientists believe that science and religion cannot co-exist, that the two need to be kept in very separate domains and they must never cross or conflict will arise. One of the main points atheist scientists use is that there is no proof of any higher being or all intelligent creator. There are many seemingly random occurrences in nature that many atheist scientists believe are to be just that, random. Although these occurrences seem random, many theologians, such as myself, would argue that there is always an intended design by an intelligent creator. One such occurrence is the Fibonacci sequence seen in nature. The occurrence of the Fibonacci sequence in nature is evidence that there is an intelligent designer of the universe.

Most people do not know exactly what the Fibonacci sequence is. It is a simple sequence of numbers; the first ten digits are 1, 1, 2, 3, 5, 8, 13, 21, 34, 55. The rule on the sequence itself is rather simple. Each subsequent number in the sequence is the sum of the two numbers preceding it. So, to get the third number in the sequence you add $1+1=2$ and to get the fourth you add $1+2=3$, the sequence continues like this forever. These are just the basic characteristics of the Fibonacci sequence, but what makes it special?

There are many other seemingly random sequences of numbers, but there is one unique characteristic of the Fibonacci sequence that separates it from any other. That characteristic is that it appears everywhere in nature. The first question people ask is, 'Where is the proof of this occurring in nature?' One simple example is the number of spirals on shells. The number of spirals on any spiraled shell is always a number from the Fibonacci sequence, so the number of spirals will be 1, 2, 3, 5, or 8, or even larger depending on the size of the shell. A second example is the number of spirals on a spiral galaxy; the spirals are always one of the Fibonacci numbers. Below are pictures of the Milky Way galaxy (left) and the Andromeda galaxy (right).



A third example is the petals on flowers, always occurring in Fibonacci numbers as shown below:



Many opponents of merging of science and religion would contribute this to the chaos theory. One section of the theory states that any two random events having an exact correlation is by pure chance and by no design. As a proponent of God and science working together I would strongly disagree with that idea. The Fibonacci sequence and its correlation with nature cannot be by chance. God is the intelligent designer of the universe that we live in and more specifically, designer of our earth. God created the Earth and its inhabitants with meticulous care, including plants, humans, and animals. This is not all God has created. I am a believer that God gave humans science so that we may further understand his creation of the world and the universe. Understanding God's creation of the Universe and all life itself is often very hard for people to imagine. God may have created the Fibonacci sequence to act as a sort of catalyst, helping humans understand that God did create our universe and left the evidence almost like a fingerprint at a crime scene, so that we could discover it and make the connection between God and his creation of the Earth.

When a human builds a home they will always leave a mark, a specific and small mark that shows it was them who made that creation to indicate that it was that person who carefully crafted that home, and put a lot of work to create an incredible creation. This mark is sometimes large, or it is incredibly small, and can only be discovered by chance or by someone who knows to look for the mark. The Fibonacci sequence is that fingerprint, it is an incredibly small fingerprint left by God to show the world that it was He who created the universe, it is Him, who is the intelligent creator and sculpture of the Universe, and our Earth.

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How Science *and* Religion Help Us Discover Ourselves.

By Sophia Carlson, Shorewood MN

As human beings we want to obtain the knowledge of what we are, who we are, and why we are. Science and religion are not competitors in this quest, nor are they necessarily companions. All people are capable of thinking scientifically and religiously. Some people choose to think through science, some choose to think through religion, and some choose to think using both perspectives. Science fulfills the human desire to learn through physical knowledge. We want to know why the world is the way it is. We want to figure things out scientifically and have an explanation for the physical world. Religion fulfills the human desire to learn through spiritual knowledge. We have a desire to discover what we believe spiritually and to share those beliefs.

The term science is defined as “systematic knowledge of the physical or material world gained through observation” (Dictionary.com). We search for this “knowledge” that makes up science for an understanding of the world around us. As human beings we look at the physical world and want to understand why things are the way they are. The theory of evolution, discovered by Charles Darwin, is a perfect example of this. As the Theory of Evolution emerged and it was studied, tested, and questioned through experimentation by many people in the scientific community. People go into the field of science because they desire to systematically study and observe questions of the physical world.

The reason we developed the study of science was not only to understand the physical world around us, but according to Edward O. Wilson of Harvard, it was also to have a better understanding of the people around us (*Social Conquest of the Earth*). Things that we discover in science are directly linked to human behavior. People experiencing different climates, landforms, and physical challenges often acquire different personalities and moods. Wilson suggests that we study the physical world in order to explain the social behavior of each other. Relating back to the theory of evolution, where we came from explains why we are the way that we are. Wilson has dedicated his studies to understanding why we challenge each other. He strives to understand this from a scientific perspective. An example of this is attempting to prove something by obtaining physical evidence. Wilson suggests that we treat each other as a gorilla would treat a chimpanzee. We are a part of the same species, but we are all individually different. Science helps scientists like Wilson understand something that is being questioned by proving it. Science gives them cold, hard, physical facts that provide satisfaction for them when answering questions about who we are.

The term religion is defined as “the service and worship of a belief” (Dictionary.com). People participate in religion because it gives them something to believe in and a way to define themselves. Sometimes when children are raised in their parent’s religion, the children will rebel and seek out their own religious beliefs. So, even though they oppose their parent’s religion it is actually the religion they oppose that helps them discover their own belief system.

Religion gives people something to fight for that is not scientific. When fighting for beliefs people do not refer to physical facts in their arguments, instead they reference historical stories. These stories are passed down through generations allowing future generations to continue a belief, while molding and creating views of their own. In the Christian faith tradition, the bible is

used as a principle source for passing along these stories. Simply passing down one story can cause an entire generation to interpret it in one way. Then, share it with others through discussion, defend it for themselves, and share it with another generation to come. People share stories in this so that they can be a part of a spiritual belief system that can help define who they are. When a person has something they believe in they are developing themselves, and it becomes a part of who they are. When someone is asked about their religious beliefs, they will respond, "I *am* Christian/Buddhist/Jewish/Hindu" (or whatever their faith tradition happens to be) to describe who they are. These names represent that person in a way that is bigger than what they can explain in a long, complex statement.

We all strive to obtain the knowledge of what we are, who we are, and why we are. Some of us may choose to discover this going through spiritual and religious journeys. Others will find self-discovery through scientific and physical experimentation. Or sometimes we will decide to choose both. We all have the capability of being able to tell which process best suites us. Having that choice is what gives us our free will to discover what we are, who we are, and why we are.

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Science and Religion: Friends or Enemies?

By Hannah Davidson, Virginia, MN

When you hear of stem cell research, in vitro fertilization, and genetic coding you most commonly think of conflict. Maybe you think of big arguments in large court rooms, fueled by opinionated scientists and lawyers who are confident they are in fact correct and the opposing side is completely wrong. Or maybe, like me, you wonder if those things are what God wants us to be using for our knowledge. Thinking about how these and other controversial topics have already impacted our world can be frightening. Are we over-stepping our bounds? Where does bioethics come in? Should our faith in God take precedence over our knowledge in science? I believe the science and religion communities should respect each others views while learning to cooperate when necessary, all while keeping ethics in mind.

Jon and Kate Plus 8, Celine Dion, and Octo-Mom all have one thing in common: in vitro fertilization. This is the process in which eggs are removed from a woman's ovary and fertilized with sperm in a lab. The embryo is then put back into the woman's uterus. This process is extremely common for infertile couples who can't conceive on their own to do so. This process is also very controversial because the destruction of excess IVF embryos is sometimes necessary. This would mean a doctor would determine which embryos can continue to develop and which will be destroyed. Many people argue that this is going too far or "playing God". The term "playing God" is thrown around a lot and often used in arguments about morality. It is said that the first time someone wanted to "play God" occurs in this Bible verse from Genesis,

"But the serpent said to the woman, 'You will not die; for God knows that when you eat of it your eyes will be opened, and you will be like God, knowing good and evil.' So when the woman saw that the tree was good for food, and that it was a delight to the eyes, and that the tree was to be desired to make one wise, she took of its fruit and ate; and she also gave some to her husband, who was with her, and he ate." (Genesis 3:4, NRSV)

In this verse, Adam and Eve realize that they could have the capability of being God like, and that is appealing. This happens every day in our world, and this is where I believe the problem of respect between science and religion occurs.

Traditionally, power is attractive for humans. We want to be in charge, the boss, or the leader. Every war, argument, and little tiff begins because someone believes they know better than someone else or are more capable of assessing the situation. This behavior is common, but some religious people say this can also be playing God. For example, with IVF, some people say it is like abortion because you are killing the embryos. Even more critical people say it shouldn't be allowed at all, because it is humans doing the work of God. There are very solid arguments for both sides of this disagreement, but when are we over stepping our bounds? The science community is constantly scrutinized for not having a specific line that they shouldn't cross. It comes down to the age old question of the difference between right and wrong. Quite honestly, I don't where the line should be

drawn. If we say IVF should not be allowed because there are thousands of children to adopt, what if you realize you are those parents who cannot conceive on their own and need IVF to have children. It goes on and on and the answer isn't very clear. All we can do is ask God to guide us and help us make decisions we know in our heart are right.

Scientists commonly disagree with Christians who say that some research has to be limited or shouldn't be studied. Christians debate against some scientists who say that God isn't related to science, and that science and religion are completely separate. So where is the common ground? Christian scientists say God is in fact a part of this work. God does not limit it. God strengthens it. In his book, When Science Meets Religion, Barbour says "We must be careful not to overstate the case for the role of Christian thought in the rise of science" (23). I think this quote is very significant when debating these questions. Although I believe that Christ should be involved in every decision you make, I don't believe that our faith should make us less intelligent about a certain subject. I believe if God didn't want us to eventually learn about something God wouldn't have given us the tools to do so. If our faith in God is going to hinder our knowledge in another area, like science, why would God have even thought about creating the whole idea of science? For us to say science and religion should be separate is foolish. Likewise, for us to say science is more important than religion is naïve. Our world needs both.

Often times, when controversial things are in question, you won't hear the "religious nuts" as being beneficial to the topic of controversy. After all, they are basing their knowledge on a two-thousand-year-old Bible, or what they think they know based on the Bible. People who have their faith in science rather than in God see this as foolishness. They believe in what they can see or test, because it is extremely difficult to believe in something you can't see. This is part of what makes our faith such a beautiful thing. It is always changing based on how we use it. Maybe you can't do chemistry because of faith, but with faith all things are possible, and it can guide you through anything. This is why I believe that religion and science need to cooperate together. United they could do many things that they would not be able to do separately.

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God's Common Ground

By Annie Halloin, Eau Claire, WI

Ever since the dramatic divide between scientific and religious thought, two extremist sides on the opposite ends of the spectrum have taken up arms especially in the last decade. Whether that divide began with Copernicus, Darwin's theory of evolution, or the Big Bang, they brutally continue their war in doctor's offices, in school textbooks, and on car bumper stickers. Perhaps, though, these two sides need not take such a radical view. What if they were more similar than either side would like to acknowledge? While sometimes the differences between science and religion can be daunting, the notion that a completely rational and loving God created science so that we can illuminate the world He created is not only a revolutionary idea, it's a provocative one, yet it's one I believe in.

It is often argued that religion is not only completely irrational, but closes its eyes and refuses to acknowledge widely accepted facts about the world. Yet the early Christian church saw it very differently. The newcomers to faith, the Greeks, saw harmony and rational order to the universe. The Jews, who had grown up with the concept of a loving monotheistic God, declared him to be the origin of all wisdom and an active voice in the world. So, to unify these two groups, the writer of the gospel of John used the word 'Logos' to define God. Modern English has translated 'logos' to 'word', so it reads: "In the beginning was the Word, the Word was God, and the Word was with God" (John 1:1, RSV) or: "In the beginning was the [Logos], the [Logos] was God, and the [Logos] was with God". The Encyclopedia of Religion explains the noun Logos is "as old as the Greek language itself" (5500) and gives many ways to define it. The simplest way to define Logos is 'reason', or 'numerical or logical nature' (5501). A more complicated but comprehensive view of Logos is through the Greek Stoic philosophy the 'rational order of the universe'; Logos not only explains why the world is rational, but it is also "an idea that they applied to the individual beings within the cosmos as well as to the cosmos itself in its entirety" (5503). This is not only an idea from ancient times, but modern theologians and scientists agree that the rational order of the universe was no accident. Ian Barbour states that "God is the common ground of rationality in our minds and in the world."

Similarly to the Greeks, the Jewish faith has long celebrated and revered wisdom; but while Logos doesn't specifically have a religious connotation, the Jewish faith sees wisdom as a personification of the divine. Theologian Elizabeth A. Johnson goes in depth describing this intrinsic connection between God and wisdom—most commonly, as in the books Proverbs and Job. Wisdom is personified as a woman, who is known as *hokmah* in Hebrew, or *sophia* in Greek (in this paper, following Johnson's interpretation, she will be referred to as Wisdom Sophia). The book of Proverbs describes Wisdom Sophia as being with God at the first breath of creation, drawing parallels to Logos being with God in the beginning in John 1:1. Johnson explains, "So intimately is the divine blessing of life associated with [Wisdom Sophia] that she can proclaim 'whoever finds me finds life'" (Proverbs 8:35, 87). Though she is described as both dwelling among man in basic everyday forms—as a prophet, a hostess, a mother, and a construction worker—she is utterly transcendent, at the edges of the cosmos. Sophia reveals divine mystery, she is a radiance of eternal light, a "personification of cosmic order" (90) just as Logos is, and, perhaps most complexly, "Wisdom Sophia is Israel's God in female imagery" (91).

Combining these two thoughts, namely that God is loving and rational, set up the early Christian church to expand its borders and explore the world looking for God. Long before the relationship between science and religion turned destructive the two were seen as partners: modern science found its roots in religion. Though we have to be careful not to underestimate the contributions other cultures have made, historians have long wondered why, out of all the cultures of the world, modern science arose in the Judeo-Christian West. Barbour outlines a few reasons. The first is, “Both Greek and biblical thought the world is orderly and intelligible” (Barbour, 23). The Greeks with their idea of a rational being, Logos, began to explore the world looking for rational functions. Similarly the Jews had the idea of Wisdom being incarnated in Sophia actively moving and revealing in the world. Christianity, by combining Greek and Jew, had reason to look for God among logic. Secondly, “Only biblical thought held that God created both form and matter” (Barbour, 23) meaning that although a divine being created nature, nature was not in itself divine, and could be experimented, tested, and explored. Early scientists did not see themselves as enemies to their faith, quite the opposite! Many early scientists described their work as “thinking God’s thoughts after him” (Barbour, 23).

If religion can be logical, rational, and even scientific, is the reverse also true? Can science be humbling, awe-inspiring, and perhaps even spiritual? If the question is: can science point towards a specific religion, most would firmly answer no. In fact, some scientists would argue that science will eventually replace religion. Sociobiologist Edward O. Wilson argues that religion is one of the many human behaviors that can be explained with genetics and evolution—nothing more. Religion, Wilson explains, was a useful survival mechanism in the history of early man, but the power of religion will disappear once it is explained as a product of evolution, and will be forever replaced by philosophic understanding of science. Ian Barbour argues that if religion is being replaced by evolution, then “the power of science will also be undermined when it is explained as a product of evolution” (Barbour, 13).

While there are great scientific minds who firmly argue that science can prove there is no God in the universe, there are also scientists arguing the exact opposite. Calculations done by Stephen Hawking, who outlined the possibilities of the universe specifically turning out the way it has, are mind boggling. Hawking writes, “If the rate of expansion one second after the Big Bang had been smaller by even one part in a hundred thousand million it would have re-collapsed before it had reached its present size” (57). The expansion rate of the universe depended on several different forces being exactly in balance with each other: the initial explosive energy, the mass of the universe, and the strength of gravity to name a few. Hawking does several calculations such as this, carefully outlining how explicitly balanced different forces of the universe were to create the *perfect* conditions for life on earth. We cannot use means to literally prove our faith, but Hawking—a highly esteemed man of science—is quoted saying, “The odds against a universe like ours emerging out of something like the Big Bang are enormous. I think there are clearly religious implications” (58).

Dr. Eric Jolly, whom our group had the amazing chance to meet during our week at Augsburg, explained the relationship between science and religion in a very thoughtful way. He said there are things outside the realm of science that cannot be explained or understood by science. Scientific theories are designed to “explain, organize, and predict” what goes on around us. “So, take for example, the color red,” Dr. Jolly said. “I could tell you everything scientific about that

color, from its wavelengths to how your eye processes the light... but I can never scientifically explain *why* it is beautiful.” Dr. Jolly firmly stated that he believes the most important things in life—our goals, the people we love, the places we see, and the memories we make—can never be explained by science. Dr. Nate Hallanger, our professor, drew on the whiteboard a giant box and wrote inside the word, “SCIENCE”. He explained that it is true our understanding of science will grow, but there will always be limits to the box. “Many scientists have forgotten science’s limit,” Dr. Hallanger explained, and there is a fine line between *science*, which we can actively prove and disprove, and *philosophy*. There are many mysteries, Dr. Hallanger continued, that science tries to solve too quickly before the facts are proven. One thing that both science and religion must share to each be successful is an awe at the mysterious and unknown in the universe.

Science and religion are more alike in wonderful and in horrible ways. Science is not as unbiased as it often likes to believe it is, and has published racial and sexist studies to “prove” that other people are inferior. Religion is guilty of the same crime, and instead of preaching messages of love, it is very often messages of hate that people hear. This is exactly why they need each other. Pope John Paul II famously said, “Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish” (Barbour, 17). In its search to find answers, science can forget about the harm that their experiments can unleash to people, animals, and to the environment. Science needs an ethical and moral voice to consult. In the same way, religion needs science as well. Many men and women of religion cling too closely to the literal interpretations of a scripture that is incredibly old and heavily translated. If we are willing to let go of a literal interpretation of Genesis as our proof of God in the universe we find theories in science that are even more incredible, intricate, and awe-inspiring. In my opinion, it will prove God’s existence to be even more amazing than we ever dreamed. God created them both, and we need them both. I firmly believe that the best way forward, for our planet and every person on it, is an active partnership between science and religion.

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The Terrible Truth

Stephanie Hobot, Eagan, MN

“But ask the animals, and they will teach you, or ask the birds of the air, and they will tell you. Speak to the earth, and it will teach you, or let the fish of the sea tell you. Every one of these knows that the hand of the Lord has done this. The life of every creature and the breath of all people are in God’s hand.” This can be found in the Bible, from Jobs 12:7-10 (Holy Bible). Throughout the entire Bible it is made clear to God’s children that He created all, and regards each individual’s life with importance. This quote, found in Jobs, is just one of many that show God wants all to be cared for with compassion. The continuous problem of animals being used for experiments has been around for generations, and is a horrendous violation of caring for life created by God. In other words, humans were given the task of stewardship. It was one of God’s many commands for humans as Christians. Therefore, as stewards of God, Christians should not be supportive of human products being tested on animals.

In order to act as a steward of God, one must understand exactly what it means to be a steward. The initial recollection in the Bible, the Book of Genesis, tells of how God created the entire world. He created man and woman, plants, and animals. Humans and animals alike were created as part of God’s love and goodness. He gave man the eternal responsibility to watch over and care for all of His other creatures during their earth-bound lives (God’s Covenant with Animals). The basic definition of stewardship is one of being “trusted caregivers among who they live” (God’s Covenant with Animals). The relationship between man and animal is meant to be one of trust and leadership, and not one of dominance and exploitation.

However, in more recent and modern times, humans have abused this responsibility. There was one simple rule: to love and care for all of God’s creatures. Humans disrupted the peace centuries ago by bringing harm to animals through the sport of hunting and sacrifices. In today’s world, humans continue to harm animals by conducting experiments and tests on animals for their own personal gain. This testing is all for the purpose to learn of any harmful results that could possibly happen to humans if they were to use the same product.

Many tests that are carried out result in the impairment of the animal being tested, including skin irritation and death. One example of the more commonly used methods on animals is the Draize Skin Irritancy Test. This test is typically conducted on rats and mice. Their fur is shaved away, so that their skin is bare, which is then exposed to highly concentrated solutions of a given substance. The skin is watched, under a controlled environment, for any possible signs of irritation. Unfortunately, in a few horrendous cases, the substances being tested will actually burn all the way through the skin of the rats and mice (American Anti-Vivisection Society Brochure). This is evidence that humans have taken advantage of the technology and availability of animals in order to test products. Doing so is a clear violation of the responsibility to be stewards of God, by causing harm to these animals instead of caring for them as humans were told to do.

A second example of methods that are executed on animals is the Draize Eye Irritancy Test. This experiment usually includes using New Zealand white rabbits as the testing variable because of their very wide eyes. Sometimes the experiments are carried out on primates and dogs as well.

Typically, three to six animals will be used per test dose and they are restrained so that any response to irritation, such as scratching or rubbing, is not possible. On each animal one eye serves as the control while the other has a given measure of a liquid or powder test substance placed into it. No medical care is given to the animals that begin to experience harmful results. The eyes are evaluated for any reactions, lasting for one day up to three weeks. A scoring system is used to rank changes in the eyes, damage to the eyelids, conjunctiva, iris, and cornea. In most cases, but not always, the animals being tested on are then killed upon completion of the experiment being conducted (American Anti-Vivisection Society Brochure). Yet again, there is obvious evidence of harm being done to animals in laboratories. The exploitations of eye irritancy tests and irritancy tests completely go against God's will of humans to watch over and care for all His beloved creatures by bringing them discomfort and death.

In the world of cosmetics these two types of irritancy tests, as well as other less common ones, are still being used by large companies. One of these companies is the Mary Kay brand of make-up. A recent scandal has been brought up in the news concerning this famous name. For approximately twenty years Mary Kay had claimed its products to be free of animal testing. However, it has been found that they do indeed conduct tests on animals. They claim they only test products in cases required by law. For example, any products that are made and shipped to China must be tested and approved with the skin and/or eye irritancy tests (Liggett). In this situation, Mary Kay is guilty of misleading the public and lying about being "test free," while they were on a list of non-cruelty products. Only doing tests when required by law, instead of all the time, isn't enough. As stewards, the people of Mary Kay should know better than to harm animals. If their true intention was to be known for having no-cruelty products, then they should work towards only using alternatives methods of testing products.

One of the recently developed alternative solutions to animal testing is the *in vitro*, or test tube, method. This allows for scientists to develop cells or synthetic skin and organs to conduct tests on. In retrospect, this development is much more time effective. It also shows results that would be relevant to human health instead of relying on tests completed on animals, who would have to live through the torture of multiple experiments (People for the Ethical Treatment of Animals). In order to incorporate more stewardship into the cosmetics world, companies should be required to commit to using the alternative methods of testing. Should also train their scientists on how to properly carry out those new, more effective tests. Stewardship in the laboratories would lead to the elimination of animals testing, while saving many lives of God's beloved creatures.

In the beginning, God created man and woman, plants and animals all from His image of compassion and goodness. He gave humans many responsibilities, one of the most important being the act of stewardship, to care for and look after His animals here on earth. Over the past few generations, humans have broken and violated the trust that God put in us. As a whole, humans must come together and truly see the death and destruction that animal testing brings with it. The concept of stewardship needs to be incorporated into labs and experiments by using alternative methods of testing. Once this is done, only then will humans truly become the stewards that God wants us to be.

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The Interaction of Christianity and Science

By Peter Howitz, Shoreview, MN

There are many different perspectives people have on how Christianity and science interact. Some people believe that Christianity and science don't interact and are completely separate entities. Out of this perspective two different groups of people will emerge: the extreme religious who believe science is blasphemy, and the extremely atheists who think Christianity is false and used by weak minded people as a crutch in their everyday lives. Another common perspective is that Christianity and science are different, yet both hold authority on how the Universe was created along with everything in it. However, there is a caveat with this perspective which is that Christianity and science don't mix. I have noticed that the first perspective was the most common since science first challenged Christianity with the theory of evolution around 1859. This caused the major rip between Christianity and science. As time went on however, people began to accept science more and, in the 1900s especially, the second perspective became more common. As we progress through the 21st century, I believe this third perspective will become more common among people than any other: By comparing Christianity and science we can realize that they are not opposites, but partners that make up a complete picture of how the Universe was made.

One way, and perhaps the most important, that Christianity and science work together is through the creation of the universe. Science explains the creation of the universe through the Big Bang Theory, which states that the universe originated sometime between ten billion and twenty billion years ago from the cataclysmic explosion of a small volume of matter at extremely high density and temperature (worldnetweb.princeton.edu). Christianity explains the creation of the universe through Genesis, the first book of the Bible, where on the first day God separated the light from the dark, creating day and night. The second day God created the sky and the third day God created land, sea, and vegetation. On the fourth day God created the Sun and the Moon. On the fifth day God created birds and sea creatures. On the sixth day God created land animals and humans to rule them (Genesis 1:1-31 NRSV). Finally on the seventh day, God rested (Genesis 2:1-4 NRSV). These two explanations appear to be completely different from each other, yet there is the possibility that both explanations, when examined more closely, will appear to be working together to explain the creation of the Universe. For all we know, God could have been the cause of the Big Bang. The Big Bang could have been God's very first step in creating the Universe, which could have occurred on the first day or maybe even before the first day. After creating his canvas with the Big Bang, God could have continued on through the seven days creating and separating things to create the Universe. However the religious explanation of the things God created is fairly vague, but science comes along and further explains these things to us through geology, evolution, and many other forms of scientific study. Christianity and science, I believe, worked together to explain how the Universe was made.

Christianity and science also come together through our everyday lives. As seen throughout the Bible, a main point of Christianity is education. As we all know science was born from the pursuit of knowledge. However, the education in the Bible is more relevant to more ancient times as seen through men being taught a trade, how to read, write, and other useful skills and the women who were taught to be good housekeepers. As times have changed Christianity and science have come together on the basis of education with both openly stating it will better

humanity and ensure the future of the human race. Christianity and science do differ on certain parts of education such as the seemingly opposing theories of Creationism and the Big Bang Theory. Even though Christianity and science don't completely agree on certain aspects of education they still work together to support education, and even though it may not seem very significant it is a very important step in the process of Christianity and science working together.

Christianity and science do not, and most likely will never, have a perfect relationship and won't always work together on some things, but as time progresses the gap between the two has started to close. It seems the relationship between the two is like that of feuding siblings. When the siblings are younger they are always fighting trying to best the other and prove they are better in every way, however, as they get older they start to realize they both can be more mature and work together and collaborate and compromise, even if they still have an argument here or there. Christianity and science have started to become more and more intertwined with this more open generation which is accepting of many things our parents would have thought unacceptable when they were younger. Christianity and science, and the people who support one, the other, or both, will not immediately work together, but over time they will slowly come together until they can mutually respect and appreciate one another.

In closing, over time Christianity and science have become more of partners than enemies and will one day work together to create an understanding of how the universe was created. Christianity may have been the first to explain how the universe was made, but science came along and further explained how the things God created worked. However, they began to clash when the extremely religious and extremely scientific refused to collaborate with each other. However, as time progressed Christianity and science have started to agree on more topics such as education, and even though they may still disagree with one another they now can understand each other. I truly believe Christianity and science are brothers who start out young, petty, and immature, but eventually begin to realize that they both hold value to how the universe was created. To realize how things came to be and they have matured more to where they understand and respect each other without being in constant conflict.

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Two Ways of Telling a Story By Jansen Imhoff, Edgar, WI

How was our universe created? Who created it? These are questions that people of all faiths and beliefs have pondered for quite some time, particularly scientists and theologians. Both have different theories about the world and its origin. Scientists have used the Big Bang Theory to explain the origins of the universe and theologians use the Story of Creation found in Genesis of the Hebrew Bible. In order to think theologically, we must take all ideas into consideration whether or not they oppose our beliefs and ideas about God and creation (Meyers, Augsburg College Youth Theology Institute, June 16, 2013). Two theories to be considered are the Big Bang Theory and the Story of Creation found in Genesis of the Hebrew Bible. I believe that the Big Bang Theory and the Story of Creation each portray the way in which God created the universe. The Story of Creation begins:

“In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness covered the surface of the watery depths, and the spirit of God was hovering over the surface of the waters.” (Genesis 1:1-2, Holman CSB).

This is one of the most famous biblical passages because it describes the emptiness of the world before God began his great creation of everything that we know of and more. The next few verses in the first chapter of Genesis portray how God created the universe we live in out of nothing, also referred to as *ex nihilo* (Barbour, 48).

“Then God said, ‘Let there be light,’ and there was light. God saw that the light was good, and God separated the light from the darkness. God called the light ‘day,’ and He called the darkness ‘night.’ Evening came, and then morning: the first day.” (Genesis 1:3-5).

This sounds all too similar to the Big Bang Theory. The Big Bang Theory claims that all matter was in one single point at $T=0$. This refers to a dimensionless singularity in which the laws of physics do not apply. In biblical terms, it was the time before creation filled with infinite density and infinite radiation (Barbour, 41). According to the Big Bang Theory, all the matter packed into the singularity exploded with a flash of light and began to expand into the universe we now estimate today to be 47 billion light years across. Fluctuations in matter then began the formation of planets and stars through gravity and cosmic collision into a universe of over 100 billion galaxies and 10^{11} stars (Hallinger, ACYTI, June 19, 2013).

These cosmic events made the earth capable of containing life. About 3.5 billion years ago bacteria began to emerge on earth. These bacteria progressed slowly into more complex life forms (Vincie, 22). According to Genesis, “Then the Lord said, ‘Let the earth create living creatures according to their kinds: livestock, creatures that crawl, and wildlife of the earth according to their kinds.’ And it was so.” (Genesis 1:25, Holman CSB). What about humanity? How were humans created? “Then God said, ‘Let us make man in Our image, according to Our likeness.’” (Genesis 1:26, Holman CSB). Because all other creatures were created before humans, we can then argue that man did in fact evolve from apes. Both men and apes are primates which would strongly suggest that human beings evolved out of apes as well as the fact

that we share 98% of our DNA (Vincie, 19). My personal thought on evolution is simply that God created the earth as well as the creatures that inhabit it. But then the Lord gave the primates the means to evolve into something superior to rule the earth as he wanted. Charles Darwin found that evolutionary change occurred over a process of natural selection. His research was not done to disprove God's creation, but rather to explain it. His ideas have been manipulated over time and are now commonly used as a way for atheists to explain how life exists without a creator.

Stephen Hawkins asks, "What is it that *breathes* into the equations and makes a universe for them to describe?" in his book *Brief History of Time* (Vincie, 20-21). But what exactly is Hawkins referring to? He is referring to the cosmic ratios which had everything to do with how our world was created through the Big Bang. If any cosmic ratio had changed by a billionth of a millionth of a second, the world we live in would have never developed (Hallinger, ACYTI, June 19, 2013). "If the rate of expansion one second after the Big Bang had been smaller by even one part in a hundred thousand million it would have recollapsed before it reached its present size." says Stephen Hawking (Barbour, 57). But the use of the idea of these ratios in theological thinking requires the possibility of God creating more than just what we see today as well as worlds that we will never go to outside of our galaxy.

Assuming God did, why would the Lord create more than one universe? Perhaps God was unsatisfied with the first creation(s). Or maybe he was satisfied with his first creation and wanted to create more. Genesis 1:31 says "God saw all that he had made and it was very good" (Holman, CSB). Perhaps God is a scientist and his creations are his experiments. But how did the Lord do it? Multiple "Many Worlds Theories" have been suggested and could be used to explain how God created many worlds. *Multiple Isolate Domains Theory* suggested that one Big Bang created multiple domains, or worlds rather than more than one Big Bang occurring for each domain (Barbour, 43). *Successive Cycles of an Oscillating Universe Theory* claims that before our present era of expansion there was a contraction, (i.e., the Big Crunch,) before the Big Bang (Barbour, 43). No evidence of past cycles exists because it would be destroyed between cycles. Hugh Everett's *Many Worlds Interpretation* expresses the idea that whenever a quantum system can yield multiple results or outcomes, the world splits into many different worlds each with different outcomes and possibilities (Barbour, 69). Who is to say that we shouldn't ponder that maybe God also created heaven this way?

In conclusion, the Big Bang Theory could be thought of as a more complicated version of the first chapter of Genesis, mostly because it requires complex terminology as well as complicated equations. In fact, both explanations include the same order in which all things were created. That is, the Story of Creation and Big Bang claim that the order of creation was: the universe, all galaxies and planets, life, and then humans. Thus, the Big Bang Theory and the Story of Creation are similar stories of how our Lord created us and our world.

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True Integration

By Jacob Kinnen, Glyndon, MN

“Science without religion is lame, religion without science is blind,” Albert Einstein wrote in his essay “Science and Religion,” explaining how the two coincide. Though it seems science and religion have been enemies since the beginning of time, they both supply different arguments to how our world came to be and allow room for us to question our existence. Since the views of science and religion differ so much, is there a way for us to know the whole truth and use both equally to understand why we exist? Science and religion complement one another, as well as create inspiration to push humanity into understanding God’s world.

Science is about explaining the world around us and how things work, and scientific discoveries are constantly changing the way we view our world. Science is about data and facts that are to remain constant and never change. Science is unaffected by bias, cultural belief, and religion, so naturally, it conflicts with religious views. Everyone is aware of the big bang theory and how this differs from the story written in the book of Genesis. Science conflicts with religion based on the fact that religion can’t be proven, and faith is not something we can see. Although we cannot see things such as hope and faith, science also studies things we cannot see such as atoms or quarks. Science also does not explain everything that exists. Science cannot explain emotions, love, or artistic expression. Although there is no scientific explanation, all of these exist and can be experienced. Evolution is a scientific theory that also conflicts with religious views to most people. Since Charles Darwin was an atheist, the common trend is that evolution leaves no room for God or the Bible. In the theory of evolution, however, Darwin does not explain how evolution came to be. Since science does not use God as an explanation, Darwin could only create his theory based on what he saw. After the first sin, when mankind left the Garden of Eden, God no longer walks among us and cannot be seen. Since science only explains what can be seen and witnessed, and Darwin’s theory remains exactly that, a theory.

People place trust in scientific laws because they are based on experience and can be witnessed, but do not trust in the experience of religion. Some believe science is true because “believing is seeing,” but they themselves do not witness events such as quantum physics. They put faith in the scientists because they are tangible, but so are those who witness God every day in His creation. In science, humans have the power. In religion, we cannot touch or see God. It is the “what if” factor of not being able to control religion that scares people. People fear religion because faith is not something that can be tested, nor can humans contain God. People fear religion because they cannot control the outcome of their everlasting soul. This fear is irrational and comes about by the different interpretations of the Bible.

God gave us free will, so with this free will we are allowed to believe whatever we want and interpret God’s word as we see it. The problem with free will is that everyone’s mind is different, supplying many different views of God’s teachings. Humans are biased and are all far from perfect. Free will allows room for this bias and prejudice. Humans wrote the Bible and even though this is the word of God, free will is still involved. Therefore the Bible should be taken seriously, but not literally. Regarding divorce, verses such as Luke 16:18, “Anyone who divorces his wife and marries another commits adultery, and whoever marries a woman divorced from her husband commits adultery.” Verses discussing the topic of homosexuality, as in Leviticus 20:13,

“If a man lies with a male as with a woman, both of them have committed an abomination; they shall be put to death; their blood is upon them,” show extreme prejudice towards how love should be. Not every couple that marries stays together, and not everyone is heterosexual, but we do not punish either of these situations for occurring. God does not punish love in any form, nor does He want an unhappy couple to stay together. The literal meaning would say that God is a hating God, and the verse John 3:16 would contradict the afore mentioned verses. The serious meaning of the Bible is of a loving Father and God who takes care of His children. Professor Ian Barbour, in his book *When Science Meets Religion*, explains that “The biblical writings reflect diverse interpretations of these events; we must acknowledge the human limitations of their authors and the cultural influences on their thought” (18). In this explanation, Barbour encourages us to look past the cultural influences at the time the Bible was written, by looking at it seriously and not literally.

Science and religion differ by degrees of human understanding. So, in order for true integration, we must know everything God knows. Since that is impossible we must look at the potential limitations of both.

“If science and religion were totally independent, the possibility of conflict would be avoided, but the possibility of constructive dialogue and mutual enrichment would also be ruled out. We do not experience life as neatly divided into separate compartments; we experience it in wholeness and interconnectedness before we develop particular disciplines to study different aspects of it” (Barbour, 22).

Science is about us understanding our world, but there are many gaps within science, such as the reason for the theory of evolution. God fills in the gaps of scientific research, but by using God as an explanation for these gaps we must be cautious as further scientific research may override the religious explanation. This is the limitation of religion on science and the mystery of our Lord. Science has its limitation with religion as well because science cannot answer the question, “how shall I live?” Science and religion do form these natural limitations of each other, but they also push the other while forming ethical questions about how far is too far within both realms. Ethics and morals are formed through experiences in life and through religious outlooks on the world. So it seems religion itself drives science, but science also drives religious belief by either strengthening or hindering it. It is a “catch 22,” a never ending cycle that will point us to the will of God.

Free will allows our faith to falter and change so it is the key concept of faith that keeps us close and leads us to the verse John 3:16. We go to Heaven by keeping our belief in Jesus Christ and the Heavenly Father. This isn't the devil taking us from God, but the design of God. Religious views form our morals and these morals help us decide boundaries within science as well as what scientific discoveries should be looked into. Science helps us in our religious beliefs by providing us with the information of how amazing our Lord is by dissecting His design to see the intricacies of His creation. Through science we can see how much God truly loves us because of how He perfected His creation to work together and be self-sustaining. Pope John Paul II said it best, “Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish” (Barbour 17).

Science and religion compliment one another, as well as creating inspiration to push humanity into understanding God's world. God took time with His creation, perfecting it for His children and science allows us to witness it. Religion keeps science in check by forming limits on moral questions. They each drive the other and cannot be kept separate. By looking at both in a balanced way, not only will we understand our world but we will increase our faith and be closer to God.

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An Open Mind

By Nick Kinnen, Glyndon, Minnesota

Is it possible to be both a scientist and be devout to a religion? Is it okay for a religious official to look at the world in a scientific manner? Can science and religion coexist in harmony? In today's modern world, we are lead to believe that no, science and religion cannot coexist. We are taught that they are two separate entities that must be compartmentalized and that you can only choose one. Why do we believe this? Ian Barbour in his book *When Science Meets Religion* explains that it is

“... because scientific materialism and biblical literalism both claim that science and religion make rival literal statements about the same domain (history of nature), so a person must choose between them. They agree in saying that a person cannot believe in both evolution and God” (Barbour, 11).

It is the extremist views that hinder the possibility of science and religion from working together in harmony, not the subjects themselves. Throughout this paper we will explore the views of both scientific materialists and biblical literalists, and then reveal how science and religion work together. The key is to keep an open mind.

In order to understand the views of scientific materialists we must first define scientific materialism. According to Barbour, it is one who believes in the assertion that “matter is the fundamental reality in the universe,” and “the scientific method is the only reliable path to knowledge” (Barbour, 11). One particular scientific materialist who has gotten a lot of attention from the media is Richard Dawkins. In an article he published in *The Humanist* entitled, “Is Science a Religion?” he sums up his view of religion by saying: “It is fashionable to wax apocalyptic about the threat to humanity posed by the AIDS virus, “mad cow” disease, and many others, but I think a case can be made that faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate” (Dawkins, 1). By making such bold statements about religion, Dawkins has gathered many followers who share in his beliefs and ideas about religion and faith.

The reason scientific materialists are opposed to religious beliefs is because they find that religion has no evidence, and therefore, no merit. Dawkins even goes as far as to state: “Religious faith not only lacks evidence, its independence from evidence is its pride and joy, shouted from the rooftops” (Dawkins, 1). It is this so called “lack of evidence” that many scientific materialists find threatening because faith is personal to everyone so nothing can be a solid fact, unlike science. What these materialists have missed, however, is that religion's purpose is not to discredit the advances in science. Barbour explains that “Belief in God is primarily a commitment to a way of life in response to distinctive kinds of religious experience in communities formed by historic traditions; it is not a substitute for scientific research” (Barbour, 14).

Although, there are people who believe that religion can substitute science in explaining our universe and existence. This view comes primarily from literal interpretations of the Bible and those who share in this belief, appropriately named biblical literalists. Barbour writes that the

common view shared by biblical literalists is “that evolutionary theory presupposes a philosophy of materialism and undermines belief in God’s moral commandments” (Barbour, 15). This means biblical literalists believe that science is immoral and goes against God.

One area of study, evolution, is an area of deep concern when it comes to biblical literalists. In Ken Ham’s book, *The Lie: Evolution, Genesis- The Key to Defending Your Faith*, he argues that evolution could not be true because Genesis gives us an account of how the world was made according to God. He believes evolution to be false mainly because the men who proposed the idea were not there during the time of creation and not omniscient. He sums up this belief when he writes: “This whole issue revolves around whether we believe the words of God who was there, or the words of fallible humans (no matter how qualified) who were not there” (Ham, 17). Biblical literalists, like Mr. Ham, argue that the scientific community is biased in their search for the “truth,” in claiming that all scientists cannot believe in God and perform scientific experiments. They believe that in doing so they are saying the book of Genesis is false, and therefore undermining God.

The main issue with this form of religious extremism is that they feel threatened by science and are more than willing to fight for their beliefs. Biblical literalists feel that they must fight for a foot hold in the rapidly expanding world of science and try to prove it wrong. They have even created what is known as “creation science” as a way to prove literal biblical accounts of events to be true, contrary to what science may tell us. What they do not realize is that this actually causes more harm to their cause than helping to promote it. Barbour even goes as far as to state: “I believe that creation science is a threat to both religious and scientific freedom” (Barbour, 16). The problem with creation science is that the form of science they perform is adherently biased, in the fact that they only believe in what the Bible tells them. This close-minded attitude they assume when searching for the truth, very much like the scientific materialists, is actually hindering them from reaching the truth. The truth they both seek to find can only be revealed if science and religion are used together and the truth seeker keeps an open mind.

When looking at both sides of the science vs. religion debate there is one factor that runs rampant between the two: a closed mind. Both sides seem to ignore the fact that science and religion do not even answer the same question. Science answers the “how” and “what” aspect of life such as: “How does the respiratory system work?” or “What are stars made of?” Religion answers the “why” aspect of life such as: “Why are we here?” or “Why do we find beauty in certain things?” When both science and religion are used to explain the same idea or belief, we end up with a greater understanding of our subject than when we just use one or the other. Pope John Paul II affirms this belief when he said: “Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish” (Barbour, 17). The fact of the matter is that people’s beliefs about what science and religion are, and what they do, keep others from using them to explain our universe.

However, this is not the case at the Vatican Observatory. Director Father George Coyne is a Jesuit priest and astronomer that uses both science and religion in his exploration of the universe. In an interview for PBS Father Coyne had this to say when asked if he found conflict between the two subjects:

“As a religious priest I find it a very enriching experience to do my scientific research. So far from there being any conflict, in that sense in which I explained, the scientific research, being a scientist helps to support both my life as a Jesuit and my belief in God” (New River Media).

The reason why he finds no conflict is because he accepts what both subjects tell him about the world around him, which opens up his mind to an infinite number of possibilities and explanations. His open-mindedness allows him to combine the two subjects and use them to understand what he studies. Like Pope John Paul II had said, both subjects complement each other and enrich each other to form a greater understanding and Father Coyne is a great example of someone who has come to this understanding.

The science and religion battle may never end, as there are still many extremists on either side offering arguments that supposedly disprove the other. If we are to put aside the arguments from both sides we can see that it is the extremist views that hinder science and religion from working together, not the subjects themselves. If we utilize both of these great subjects when exploring our universe, we can open our minds to an infinite number of possibilities and reach a greater understanding of the world around us. The key is to keep an open mind.

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Protecting Human Life in a “Geneticized” Society

By Brie LaPlante, Oronoco, MN

“During the past two decades, numerous techniques have been developed that allow geneticists to assess the physical status of the fetus during a woman’s pregnancy... These screening and testing procedures are already the most widespread application of genetic technology to humans...” (Lippman). As stated in the quote from Abby Lippman’s article, “Prenatal Genetic Testing and Screening...” the scientific community has indeed made notable advancements in the field of genetics—prenatal screening, chromosome “blueprinting”, prenatal diagnosis of potential abnormalities, etc. However, as with all significant developments there is great need to examine possible concerns and issues that may arise as a result. Upon further investigation it has been determined that this ever-growing scientific field lacks necessary ethics and limitations, therefore deeming it a threat to human life. Because of this, religious values and ethics regarding human life must be held under strong consideration by scientists conducting prenatal genetic testing in order to prevent scientific capabilities from violating and destroying innocent human life. This essay will examine the issues created by genetic technology, their causes, and theological solutions.

The root of the ethical issues associated with the field of genetics and prenatal screenings are created by “geneticization”—the process by which society is continually led to believe that the human condition can be broken down and explained purely by genes. Furthermore, this “geneticization” can be narrowly defined in context with prenatal medicine as the “ongoing process by which differences between individuals are reduced to their DNA codes, with most disorders, behaviors and physiological variations defined...as genetic in origin” (Lippman). By this definition, prenatal screening is used to identify all traits and possible abnormalities of a child before birth, creating an entire genetic blueprint and causing “human biology [to be] incorrectly equated with human genetics, implying that the latter acts alone to make us each the organism he or she is” (Lippman). By this logic, any child that is found to have a potential genetic abnormality during pregnancy is bound to be an unfit human being—and “the issue of abortion... can be presented as a quick and inexpensive solution to a difficult problem” (Shannon). Additionally, as far as genetic sciences have come in recent years, “the [genetic] map tells us where the genes are, but not what they do” (Shannon). Therefore, “we will be able to identify more and more abnormalities, but we will have no idea of their significance, or implications, if any...” (Shannon). This poses an entirely new issue—not only can expectant parents potentially terminate a pregnancy if they are made aware that their child has some kind of genetic abnormality, they could very easily end the life of a child who’s genetic “defects” would have had little to no impact on their quality of life.

Though genetic technology in itself creates a large portion of the ethical issues surrounding prenatal genetic screening, a great amount also comes from a lack of established and taught ethics and morals in the scientific community. By definition, “ethics are standards of conduct that prescribe behavior... [but they] do not describe our actual behavior, since people often violate widely accepted standards” (Resnik). Though strictly scientific ethics do exist—the Hippocratic Oath, for one—they are not always widely taught or accepted. Further, “although ethics and morals are sometimes made explicit in religious texts, professional codes of conduct or philosophical writings, many ethical and moral standards are implicit” (Resnik). It has been

found that most scientific institutions do not formally teach ethical and moral standards to students, but rather assume that interacting with more experienced minds will pass on such knowledge and discretion to them. However, this lack of oversight and formal instruction produces scientists who lack the ability to “distinguish between right and wrong, good and bad, virtue and vice, justice and injustice...” in their field of study (Resnik). Therefore it is this lack of moral and ethical instruction, coupled with powerful technological capabilities that the scientific community does not yet fully understand, that threaten to violate innocent human life during pregnancy.

According to a study that has been conducted by the Centers for Disease Control and Prevention since 1969, 784,507 pregnancies were aborted at 48 health agencies nationwide (Pazol). The fact that that number is higher than zero should be disturbing to any Christian—repeatedly throughout the Bible God directly or through Jesus Christ reiterates the sanctity and value of human life. Immediately in the creation story God asserts that life comes from Him alone, as described in the second chapter of Genesis; “Then the Lord God formed a man from the dust of the ground and breathed into his nostrils the breath of life, and the man became a living being (Genesis 2:7, NIV). The use of prenatal genetic screening and blueprinting blatantly fails to recognize that God is not only the creator, but the destroyer, and He alone has the right to that immense power;

“This day I call the heavens and the earth as witnesses against you that I have set before you life and death, blessings and curses. Now choose life, so that you and your children may live and that you may love the Lord your God, listen to his voice, and hold fast to him. For the Lord is your life...” (Deuteronomy 30: 19-20a, NIV).

In a sense, scientists who screen for, diagnose, and encourage action in regards to potential genetic abnormalities are attempting to “play God”—essentially trying to grasp the immeasurable power over life and death that only God himself can wield. In recognition of the fact that only God has this power, and the lack of formal ethics in the scientific community, society must steer away from “geneticization” and come to understand the true value of life. Though the scientific community is not well known for its acceptance of religious beliefs, Christian morals and values must be instituted—and in doing such, expectant parents should no longer be able to have genetic “blueprints” of their children created or diagnosed, so there is no opportunity for them or their doctor to “play God”.

Therefore, due to the explosion of possibilities and capabilities created by advancements in genetic technology, as well as the lack of standardized and formally taught ethics among scientists, it is necessary that prenatal human life be protected by ethics and morals created by God and described in the Bible. It also becomes the moral responsibility of Christians to follow these values and challenge the ideals and prejudices against suspected “abnormalities” of “geneticized” society, in order to put an end to the destruction of innocent human life.

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Relating Science and Christianity
By Winter Manisto-Saari, Princeton, Minnesota

Do you believe in God, or Evolution? For centuries people throughout the world have asked that controversial question. The one sided answers that follow are generally agreed upon and not given extensive thought. Essentially the more you believe in one, the less you believe in the other. This way of thinking, through my eyes, is highly unproductive and does not help in the modernization of the world. My belief is similar to that of Ted Peters in his book, Can you believe in God AND Evolution, when he says, “The best science and our best thinking about God belong together” (viii). Therefore without God, the world wouldn’t have been created and without Evolution, God wouldn’t have anything new to continue improving as the world develops! They feed off each other and because of this Evolution isn’t an abomination but rather helps to explain how God works.

When it comes to the general views on the stereotypical side of Christianity, Evolution is out of the picture. Evolution is often seen as purely something that strips you of your faith just by believing in it. This may be due to the lack of knowledge on the subject because of what has been taught, preached or discussed. The defending argument commonly used by creationists begins in Genesis when it reads “God saw everything he had made and indeed, it was very good” (Genesis 1:31, NRSV). They go onto debate how if God saw everything that he created to be complete, why would he feel the urge to change it over time? Also, if God supposedly “created humankind in his own image” (Genesis 1:27, NRSV) how could we evolve from apes as the science of evolution so strongly states? Great lengths have been taken to prove otherwise through creationist and intelligent design arguments which state everything from God creating everything in seven days thus disproving evolution to the removal of natural selection out of the process of how life evolved in favor of a God directed outcome. There is even a creation museum with interactive exhibits that claim to change your belief about science and evolution – attempting to “prove” the science of creation.

Seemingly opposed, at least in the view of the extremists, lies science and its primarily positive views about the theory of evolution. Evolution is expressed as the process in which different organisms are thought to have developed during the history of the earth. The theory is widely acknowledged in the science field for a number of reasons. To begin, evolution is backed by countless evidence such as anatomical and fossil records. It can also be tested and proven by facts and the scientific method, which, to scientists and certain people, means truth. The creation story told in the bible cannot be 100% proven in those ways, causing evolutionists to turn away. Moreover, science has a great deal of differing branches which focus on individual subjects. The branches aid to ensure productivity and error free results. Branches of Christianity on the other hand tend to follow the same roots and traditions. Another huge factor which pays contribution to the mindset of many scientists is the National Academy of Sciences (N.A.S). It’s a society of scientific scholars looked upon as influential by many people, scientists and leaders. There has been a pamphlet published by the academy stating that science and Christianity are mutually exclusive, meaning that they have absolutely nothing to do with each other. For those in the scientific community facing the same problem as those on the side of theism which was lack of knowledge on certain topics, literature such as this is read and not questioned. Far too often does

this happen and consequently the outcomes are the same as what happens with the Creationists--one sided thinking.

Ultimately, I believe in both science and Christianity. Evolution science and religion are intrinsically related despite their differences. Being told to choose between the two is an untrue dilemma and there should always be a neutral ground. With Christianity focusing on private personal matters, and science focusing on public and communal affairs, they both have an aim of finding one truth, and this truth can be found if the two work in collaboration with one another. As Pope John Paul II once said “Science can purify religion from error and superstition; Religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish” (17). When so many say that evolution is an incorrect and terrible thing I question their opinions. The opinions that they so strongly assume to be true. I become equally confused when I hear of scientists speaking the same way about theism. God made Darwin specific just like God made everyone else. Even in the bible it clearly states “I have called you all by name, you are mine” (Isaiah 43:1, NRSV). If God had no intention of people questioning the process of what has always been, nobody would. When God created the world, and then all organisms, what’s to say he didn’t continue creating and evolving organisms to satisfy the needs of the world? If our loving God can do anything, why couldn’t he have changed his mind of what “complete” was and made slight changes to help organisms continue living? I believe quite strongly that this is the case. However, I equally believe that God gave us free will, the ability to think for ourselves, and the ability to evolve.

If we can one day find a way for all science (especially evolutionary science) and Christianity to agree and work together, new understandings will be gained. Science has its strengths as does religion. Putting the two together will result in less dispute and a better grasp on our world. All of these reasons combined contribute to the actuality that Evolution isn’t a disgrace to us all, but rather helps to inform us of our God and how intricately he works.

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The Role of Faith in Treating Cancer

by Kendra McCarthy, Mendota Heights, MN

Imagine if you were diagnosed with cancer. What would you do? Who would you tell? Would you turn to God for support and healing or rely on medical treatments? Using faith to cope with cancer is effective with treatments such as chemotherapy and radiation. Medical advancements have been proven to sometimes be effective paired in putting patients into remission, or at least giving them some more time. Using faith alongside medical techniques provides the same outcome without such harsh side effects from extensive cancer treatment. Faith healing can be a part of battling cancer and can bring you closer to God, and is an important part of treating cancer, as well as medical treatments.

So what exactly is cancer? According to Stewart B. Fleishman, cancer is a “term for diseases in which abnormal cells divide without control and can invade nearby tissues” (19). There are many different kinds of cancer, such as carcinoma, sarcoma, leukemia, and lymphoma (Fleishman, 19). There are also several types of cancer treatment; surgery, chemotherapy, radiation, hormonal therapy, and biological modifiers (Fleishman, 35). Each of these treatments have drawbacks and side effects. Surgery is a very effective approach if the cancer is small and isolated in one part of the body. If the cancer has spread to many different organs in the body, surgery is most likely useless (Fintel, 141). Radiation is another way to combat cancer. According to William A. Fintel, radiation is “the use of high-energy beams (X rays and gamma rays) that are colorless, odorless, and painless” (143). Cancer cells are killed by radiation therapy because the treatment damages the DNA in the cells. But, like surgery, radiation only works for tumors in one part of the body (Fintel, 142). Symptoms from the radiation include fatigue and less flexibility (Fleishman, 44). Radiation can also cause skin reactions, hair loss, and it can cause damage to bone marrow and blood counts (Fintel, 145). While surgery and radiation therapy can only treat small, concentrated amounts of cancer, chemotherapy is a treatment that addresses cancers that have spread to more than one place in the body. William A. Fintel says “chemotherapy is the introduction of certain drugs or chemicals into the patient’s body in an effort to eliminate cancers” (146). Chemotherapy can be given in three different ways; intravenously, orally, and locally (Fleishman, 35). Chemotherapy is aimed to kill cancer cells that are growing out of control, but they also kill normal cells (Fintel, 153). This is why patients who use chemo lose their hair, their fingernails will darken, have diarrhea, mouth sores, nausea, and vomiting (Fintel, 153). But when treatment stops, the normal cells will grow back and symptoms will stop. All these treatments can ride the body of certain types of cancer, but remission is not guaranteed for everyone.

When deciding on how to approach fighting cancer, it is important to remember the different kinds of medical therapies available. God may not choose to heal physically, but instead heals with love and forgiveness in our hearts so that when our time has come we go in peace with the world. It is important to always have faith that God loves you and that God has a special plan for you. God does not only work through miracles of healing, but God works through medicine and doctors as well (Fintel, 216). The medical advancements in treating cancer in recent years could be considered a miracle itself. Modern medicine is just another way that God works through the world. It is also important to remember that “no lasting remission from otherwise hopeless cancers gained from prayer alone - without the use of any medical treatment - has occurred in

recent years” (Fintel, 222). So do not be afraid to rely on medicine, that is God’s work as well as anything miraculous. Trust in yourself and your own decisions, but most remissions happen with a mix of faith and medicine, with medical treatment and prayer.

Cancer is terrifying, and for patients and their families it may seem like there is no hope left. When faced with many doctors and treatments as seemingly your only options, it can be easy to feel abandoned by God. Know that you are not alone, surround yourself with loved ones, and fill your soul with prayers of healing. Along with your faith in God, also have faith in medicine; even though treatments may seem like they are hurting more than helping, have faith in your doctors that they will do what is best for you, just as God is. As we all know, God works in mysterious ways. Being diagnosed with cancer may make it seem like there is no God, that there is no justice in the world. You must always have faith in God and that God has a plan for you. Focus on battling cancer with God instead of continually blaming God. No one knows why things happen, bad or good, but have faith in the Lord and He will have faith in you.

Dedicated to Eric Paulsrud, who inspired this paper.

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Evolution, I Want to Believe

By Patrick Murphy, Lino Lakes, MN

The universe is weird. A bunch of tiny particles pull themselves together into intricate patterns, that, with the smallest change will make something entirely new, however, on a larger scale, things stay closer to the same. Everything is built on chemical reactions and everything is supposed to follow a specific pattern, at least that was until life formed. Life is basically a bunch of chemical reactions that uses chemicals to make reactions to fuel themselves and grow until they can create a chemical reaction to create a similar chemical reaction, so they can continue this very cycle. These chemical reactions that we call life tend to adapt to their needs in order to continue their cycle over generations. The question is, are these adaptations caused by blind luck of being in the right place at the right time; are the life forms able force change among themselves or is there some greater power giving life what it needs, when it needs it? Life and the idea of evolution are extremely complex concepts, but I believe the simple answer is that evolution is that God is still active and continues to create.

We live in a new age of technology, and because of this we can now see what was there all along. We are no longer limited to blaming everything solely on supernatural phenomenon. However, even though we are able to explain things with science, that doesn't mean there isn't rhyme to these reasons. I find the fact that many atheists believe that, at the beginning there was nothing, and that nothing exploding into everything without any reason is almost as farfetched as the Earth being made in seven, twenty-four hour days. There are many things in our universe that are so statistically unlikely that there has to be an outside force controlling it in some way. I mean, our sun is the right size, our planet is the right distance, while forming just right with the right elements in the right way, leading to the chemical reactions we call life.

We have learned many great things that allow us to prosper. Many basic facts that were once seen as blasphemy are now theories or facts. For example, the idea of creatures adapting traits over time is nothing new (Kitcher 27). Adaptation has been observed several times before Darwin. He was just the one to popularize or spread the idea. Many stubborn people tend to look at the book of genesis to counter evolution by saying that everything came together in just days. The problem I have with this is that Genesis doesn't go into specifics on what a day is since the sun wasn't made until the fourth day. There's also a slight inconsistency between the story of "Adam & Eve" and "The Seven Days of Creation" since man was made on the sixth day, yet in the next verse it mentions God creating man for the first time again (Genesis 1,2). The Bible also mentions humans existing outside of Eden later on (Genesis 4:17). The point is that history is a game of telephone with bad reception. There have been times where we have to relearn things because of difficulties in sharing information. Fortunately, in today's day and age and thanks to things like the Internet, our main problem is more being too stubborn to look at new ideas. Though there is the fact that the idea of evolution is still fairly new compared to the bible and people need to get eased into it slowly, otherwise you'd just be crashing their world to the ground.

People say that Darwin became an atheist out of science, but this isn't necessarily true. He originally believed evolution to be God's work and it wasn't until after his daughter died that he drifted away from God out of hate (Shermer 118). I, like Darwin originally, believe it's God's work and that if we take a closer look at how evolution works, we can figure out why the religious and Darwinist can work together. For example, the basic idea of evolution is that the surviving species must already have the necessary trait to survive. To me, that's just too big of a coincidence for evolution to not be God's work. He puts creatures in a situation and says, "Learn, adapt and survive, and one day your offspring will thrive." Most creatures are limited to their environment and get what they get, while humans have grown and are learning more ways to take advantage of their environments and themselves each day. The Bible says that this is our world and we're responsible for it. That can be interpreted in more than one way. In other words, with great power comes great responsibility.

The fight is still very heated, even after more than a century. But this isn't the only fight that's been going on. Humans were once known as man the toolmaker, however that was before it was discovered that other animals could use tools as well. Complex social structures have also been observed in many animals that are similar to humans. Many people are even trying to get certain species, such as dolphins, to be declared sentient alongside humans (Frohoff and Dudzinski ix). There's also the fact that most other animal are born stronger and more independent than humans.

So what makes humans so special? Animals can have fun, create, work together, and care. The biggest thing that I could think of that makes humans so special is writing. Writing allows you to coherently tell your story long after its origin. It allows us to tell of the past and strive for what's new. It allows us to grow in understanding and make up for our weaknesses through comprehension. It allows us to learn in a less bias manner and it creates a living legacy that will never die. And through that we are able to make God forever in the minds of men.

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God and Divine Limitations

Maggie Peck, Arden Hills

When I was at a Lutheran family camp in South Dakota, there was a Reverend Doctor there who would discuss topics with the parents every day. One day she brought up the story of how her son came to be in a wheelchair. Her family, including her husband, daughter, and son, had been in Germany. While her son and husband were crossing the road during the day, they were hit, killing the husband and leaving the son with a handicap that would affect him for the rest of his life. The question that came along with this story was how a loving God could let something of this severity happen to one who was so undeserving? My parents struggled greatly with this question, which led me to study it closely as well. The idea of an all-powerful God is less helpful than the theory of a purposeful God when looking at suffering in God's creation. Recognizing that God gave himself divine limitations when he created the world explains the existence of violence in the world, the book of Job, and the evidence of evolution in species.

Violence is something that has always existed, going back as far as Cain and Abel. Mass genocides have wiped out millions of people; from the twelfth century Crusades to the twentieth century Holocaust. In "About the Bible", Terence E. Fretheim says that, "The Bible often speaks of violence. The Bible does so because it speaks of life as it really exists, rather than painting rosy, unreal pictures." The Bible itself speaks of many acts of violence, but also a God that is truly all powerful, "It is He who made the earth by his power, who established the world by His wisdom, and by His understanding stretched out the heavens" (Jeremiah 10:12, ESV). Why would an all-powerful God allow for such ugly characteristics in the beings that he modeled after Himself? The explanation for this seeming contradiction is God's divine limitations. Noah's Ark is a particularly good story in seeing evidence of this divine limitation, and it comes from a violent action of God. "So the Lord said, 'I will blot out man whom I have created from the face of the land, man and animals and creeping things and birds of the heavens, for I am sorry that I have made them'" (Genesis 6:7, ESV). After this violent action of wiping out practically the entire planet, God made a covenant with Noah, "'I will never again curse the ground because of man, for the intention of man's heart is evil from his youth'" (Genesis 8:21, ESV). God says himself that men are evil, and that he intervened once, and will never do so again.

The book of Job is another example of God not intervening, even if something horrible is happening to a faithful follower. Being unfamiliar with Job until fairly recently, I was astonished by how harsh his story is. The story goes that God somewhat bragged about how faithful his servant Job was. This bragging tempted an evil force to test how faithful Job truly was. In a series of unfortunate events, Job's oxen and donkeys are taken by Sabeans, his sheep and servants are burned by a wildfire, the Chaldeans make off with his camels, and wind blows down his eldest son's house, killing all of his children. An interesting aspect to Job's story is that all of the horrible events that occurred came from "natural things". "Note that Job does not take a "direct hit" from either God or the Satan. The immediate source of Job's suffering come primarily from elements in God's creation: fire and lightning, windstorm, and disease (1:13-19; 2:7). Scholars sometimes refer to these realities as 'natural evil'" (Fretheim, 126). It is later explained to Job that, "God has created a complex world, and in order for it to exist as it does, there will be risks. God has created a good, well-ordered, and reliable world, but it does not run like a machine" (Fretheim, 127). There is evidence in God's words to Job that evil is something

that happens in the world and that even if you are God's most faithful follower, God will not intervene to prevent the evil from affecting you.

Lastly, there is an affirmation to God's divine limitation in the evidence of evolution in species. In a letter to a friend Charles Darwin once said, "I cannot persuade myself that a beneficent and omnipotent God would have designedly created the ichneumonidae with express intention of their feeding within the living bodies of caterpillars, or that a cat should play with mice" This quote resounded deeply with me and forced me to look at evolution in a totally different aspect: not as evidence of a non-existent God, but as evidence that God purposefully created life on Earth to adapt and change. John Polkinghorne, both a scientist and Anglican priest said that, "If genetic information were unchangingly transmitted from generation to generation, nothing new would ever happen, and, if it were not reasonably reliable in its transmission, nothing would ever be perpetuated. A fertile world must be neither too rigid, nor too loose. It needs both chance and necessity" (Polkinghorne, 53). This purposefulness, however, does not mean that certain animals were able to adapt and survive. So why would God allow some species to expand while others slowly became extinct? He didn't, He gave all creatures a chance and did not intervene when some did not adapt well enough.

I am still not sure where my parents are in terms of the question of a God of divine limitations, but for me, after hearing the Reverend Doctor's story and going to the camp at Augsburg, this question is less confusing. The wonderful circumstance of being able to talk about science and religion and how they work together was life-changing. History, the Bible, and science helped bring me to the conclusion that God has divine limitations. These divine limitations help explain the existence of violence, the story of Job, and evolution in species.

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Evolution and Christianity

By Juliana Severson, Edina, MN

The theory of evolution can be a controversial topic in the church. Atheists argue that evolution disproves the existence of God (Hallanger, Lecture). Throughout history, the origin of life has been a question that theologians and scientists have encountered time and time again, and until recently, they have come to one agreement - one cannot believe in the theory of evolution and remain a devout Christian. When studying the views of some readers, Michael Ruse summarizes their thoughts as follows; “At the very most, if you accept Darwinism then you must reject Christianity, and conversely. The two belief systems are contradictory” (9). However, facts and theories exist that oppose this ideology. “There are many who argue passionately that science and religion, Darwinism and Christianity, can coexist harmoniously” (Ruse, 10). The scientific theory of evolution is compatible with a belief in God and the teaching of Christianity in the Bible.

Evolution is studied and examined through the means of science and analytical theories. The definition of science is “the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment” (Oxford College Dictionary, 1224). When used in the scientific setting, the “definition of theory is quite different from the everyday meaning of the word. It refers to a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence” (National Academy of Sciences, 11). Defining such terms as science and theory is crucial to understanding the conclusions of researchers, as in this case when reviewing the scientific evidence of those who have studied evolution. Evolution is “the process by which different kinds of living organisms are thought to have developed and diversified from earlier forms during the history of the earth” (Oxford College Dictionary, 478). An eminent researcher in this field is Charles Darwin, who published *On the Origin of Species* in 1859, a treatise which follows his travels to the Galapagos and outlines his findings regarding natural selection and evolution. Darwin describes this intricate lineage.

By the theory of natural selection all living species have been connected with the parent-species of each genus, by differences not greater than we see between the varieties of the same species at the present-day; and these parent species, now generally extinct, have in their turn been similarly connected with more ancient species; and so on backwards, always converging to the common ancestor of each great class. So that the number of intermediate and transitional links, between all living and extinct species, must have been inconceivably great. But assuredly, if this theory be true, such have lived upon this earth. (755)

Through his studies, Darwin analyzes the fossil record to establish his theory of evolution.

Darwin freely admits that the fossil record is erratic with many gaps and notes that “our evidence from fossil remains is fragmentary in an extreme degree” (760). Darwin attributes this sporadic record to several factors. First, “[o]nly a small portion of the surface of the earth has been geologically explored, and no part with sufficient care . . .” (760). Second, “[n]o organism wholly soft can be preserved. . . . I suspect that few of the very many animals which live on the

beach between high and low water-mark are preserved” (760). Conditions need to be ideal in nature for a creature to be preserved as a fossil. Third, species can migrate. Finally, Darwin proposes that the imperfections in the geological record result “from the several formations being separated from each other by wide intervals of time” (761). Therefore, gaps will exist in the geologic record, and Darwin references prominent geologists of the day (Sir C. Lyell and E. Forbes) whose theories align independently with Darwin’s own theories. Darwin eloquently concludes that the geological record is “imperfectly kept,” and “of this history we possess the last volume alone, relating only to two to three countries. Of this volume, only here and there a short chapter has been preserved; and of each page, only here and there a few lines” (777).

Despite large gaps in the evidence, the theory of evolution continues to withstand the test of time. “The theory of evolution is more than a hypothesis. It is indeed remarkable that this theory has been progressively accepted by researchers, following a series of discoveries in various fields of knowledge” (Ruse 52). Following Ruse’s logic, the geological record of evolution may always have gaps and leave some unanswered questions; however, Christians need to recognize the strength of the theory of evolution. Though religion and science can seem to contradict one another, Ruse demonstrates that one can be a Christian and believe in evolution.

Prudence aside, from the Christian viewpoint a certain theological openness to the success of science in this domain is warranted. *Ex hypothesi*, we have taken it that Darwinism in the general sense is sufficiently well taken that one should, qua Christian, accept it. Hence, one is already committed to a significant allegorical reading of the early chapters of Genesis. One agrees that life came developmentally from primitive forms to the marvelous array of complexity that surrounds us today, and that such evolution is likewise revealed in the fossil record. One agrees that God could and does guide the growth of every individual from the fertilized cell to the fully grown adult form. (67)

Science compels one to seriously contemplate Darwin’s theory of evolution. Science can guide one to many answers, yet mysteries such as the human soul remain. “As Pope John Paul II has said, ‘Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish’” (Barbour, 17). When author Ian G. Barbour quotes Pope John Paul II on the matter of science and religion, the Pope seems to integrate disciplined learning and theology with little conflict.

A key component for certain religious groups who oppose the theory of evolution is in the first chapter in the Bible, the book of Genesis. Genesis starts with the creation of all things.

The sequence of creation in the Bible parallels that of the theory of evolution. One can see this parallel when the Bible states that God created sea creatures first, just as the first living animals originated from water according to the theory of evolution. “And God said, ‘Let the waters bring forth swarms of living creatures. . .’” (Genesis 1: 20). Some may argue that evolution cannot be true because God created those sea creatures in one day. However one cannot assume that “one day” means a single 24 hour day relative to God’s “one day”.

Gerald Schroeder, a physicist committed to Orthodox Judaism, argues that *the six days of Genesis* in God’s time are *fifteen billion* years on our time-scale, since in relative theory

time measurements vary according to the frame of reference on the observer... Schroeder says that in a rapidly expanding universe, a day in God's time (identified with the whole cosmos) would be a few billion years for the processes on earth. In the creation of Adam on the sixth cosmic day God was for the first time intimately linked to our planet. (Barbour, 46)

Barbour examines many other theories in his book, When Science Meets Religion. The strongest theories seem to honor both Darwin's theory of evolution and religion's wonder at creation.

The beauty of creation justifies close examination of analytical, scientific theory and theology. Science and religion only seem to contradict each other – evidence has shown that the two can coexist. “Darwin himself believed that God had designed the whole evolutionary process but not the detailed structures of particular organisms” (Barbour, 10). Science affords explanations and religion provides appreciation of creation. The two are capable of positively interconnecting. “The religious idea of creation starts from wonder and gratitude for life as a gift” (Barbour 51). Ultimately, believing in evolution deepens one's faith as a Christian because God created the miracle of life on an earth that could evolve and sustain itself.

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Big Bang Theory Versus The Existence Of Our Creator

Timothy Van Gundy

It is my opinion that The Big Bang Theory can neither prove nor disprove the existence of our Creator, unlike Christianity or other religions, which can. In my essay I am going to try and show you why I believe this concept.

While attending the Augsburg Youth Theology Institute this summer I really learned a lot and came away with new ways of thinking about things. I really learned a lot at this camp. The biggest thing I feel that I realized is that I need to be more open to other people's opinions and views. Many times other people's opinions may be different than mine, but that does not mean that they are wrong or bad, just different.

Now, back to my theory discussed above. My biggest question is what created the particles which were the basis of the Big Bang occurring? By this I mean that people tell me that the Big Bang created everything; but what created the particles that collided causing this event? They did not just become present in our galaxy. Obviously something had to have created these things in order for them to collide. So they obviously could not have just been there in this perfect order to cause creation to begin.

My next point is that if they did collide, what is the likelihood of that happening in just such a perfect manner to cause such a miraculous occurrence? When I think about the enormity of this, what I visualize is this: think about if you were to zoom out and see a map of the United States of America and a tiny dot represented you on this map, well you would be pretty small. Now zoom out again to view the whole world, and you would be even smaller. Then zoom out once again to the solar system and your dot on the map would be even smaller!! Then zoom out to the universe, which has millions of solar systems in it and finally to our galaxy, which has billions of universes in it. Wow, we are such a tiny piece of the puzzle in this sense. On one of the first days of camp we learned that all of the above is roughly only 10% of the galaxy as we know it. So my question is what are the chances of tiny particles smaller than us hitting each other in this massive universe? I truly believe that there is a higher power out there controlling and creating all this.

So, my theory does not say that the Big Bang did not happen, what I am saying is that I believe that there is a higher power orchestrating these billions and billions of particles coming together in just the perfect way to cause creation to occur.

When people tell me that the Big Bang Theory just happened and that pure science was what brought all these things to happen and that there is no God that is where I have a problem with people saying things like this!

Okay, so let's just say hypothetically that the Big Bang happened, how do we know what happened next? Did everything come to exist as what we know now or did things just change from a simpler version of what we know? What if God wanted the Big Bang to happen and he planned on it happening? That this was his way of causing creation.

I often hear people say stuff like “oh you can’t believe in God and be a scientist too”, but I like to say that you can be. I think you can find some middle ground between the two. Sometimes you need to be able to step back and say this is my faith and this is my Creator. I feel that the Big Bang Theory could be part of the Genesis story. Maybe God just did not go into detail when telling us about it in the Bible. Maybe the Big Bang that God brought to happen was just too much for people to comprehend?

Throughout my time at Augsburg and over the course of this summer I have come to realize that you can be a person of strong religious faith and a person that believes in science at the same time. They are not mutually exclusive.

What I am saying is that to me at least the Bible makes more sense to me. Therefore, I put more faith in God than I do science because God is behind the science. I am not saying that science isn’t valid or anything like that, all I am saying is that personally myself I at least put more faith and comfort in God because when you look around and see all these things we have in life from our possessions to nature I realize that these things can not just be a random occurrence, they are too miraculous for that. I believe that God had to have his hand in it all. We cannot comprehend or understand it all, but that’s okay with me. I find comfort in putting my faith in the word of God and knowing that he is behind it all.

The Big Bang Theory just does not have enough meat on the bones I guess for me; by that I mean that it is good for some parts of explaining things, but it cannot explain all the things around us, there are gaps in it. It does not all come together to me. That is why it is called the Big Bang THEORY after all. A theory is an idea that has evidence to support it, but cannot be proven 100%.

So what I want you to understand is that I believe the Big Bang could have happened, but I believe that the Big Bang Theory cannot prove the existence or origin of the galaxy. The Big Bang Theory leaves out too many parts to explain to me the origins of things. Therefore, what I am saying is that God’s creation can stand on its own. It is my theory that God caused the Big Bang to occur to cause Creation. I hope I have presented to you my belief that the Big Bang Theory did not just happen as a random act of science, but rather that God was behind it

Thank you again Augsburg College for the opportunity to come to the Youth Theology Institute and experience a wonderful week of learning and growing in my faith.