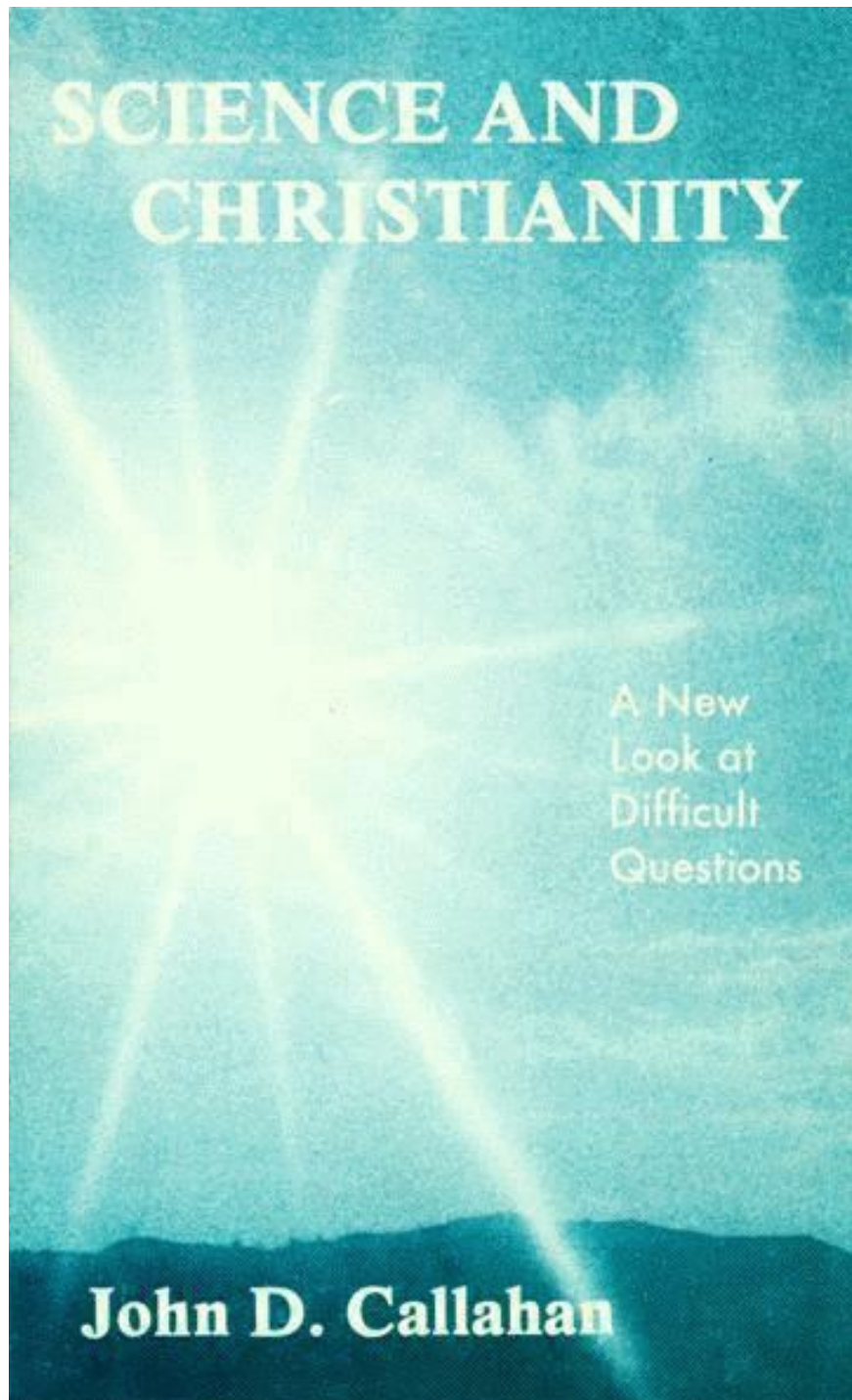


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Science and Christianity

by John D. Callahan

Third Edition

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Our little systems have their day;
They have their day and cease to be;
They are but broken lights of thee,
And thou, O Lord, art more than they.

Tennyson (1850)

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Dedicated to my parents, George and Rita

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Science and Christianity: Introduction & Chapter 1. Is The Bible Perfect?



The Crab Nebula

INTRODUCTION

This book is, as its title implies, about science and Christianity, and it reconciles the two. More than that it is a book about man's place in the universe, with fascinating implications. The book is written for everyone, Christian and non-Christian, and it will challenge both greatly. However, I am a Christian and make no attempt to hide my beliefs, but I am also an objective thinker and have studied science all my life.

Many Christians will disagree with me about the conclusions made in this book. Some will harshly denounce me. However, God has often raised up men with a message for the day, whether these men were accepted or not. Mankind is always advancing and learning new things, but the Church has often been stubborn to accept advances and new knowledge in science and technology. This attitude is wrong and hinders others from becoming Christians!

No one has it "all figured out," but on the other hand it is truly remarkable what man has learned about the universe. There is great cause to be hopeful, not hopeless, and encouraged, not discouraged. The possibilities for man are literally infinite, and he is indeed much more than just an ignorant animal. There is a God who transcends all, and He cares about man.

CHAPTER 1

IS THE BIBLE PERFECT?

It is widely held today that the Bible is flawless and without error. It is believed that the Holy Spirit wrote the Bible directly through the pens of inspired men. The Bible is often called "The Word of God." It is also a widely held belief that to doubt any part of the Bible is to reject the whole thing. These beliefs may sound good, right, and noble; yet they are in error. The Bible was written by men and men err. It's that simple. It is true that the Bible for the most part was written by great men of God who were inspired to write. But it is incorrect to believe that these great men suddenly became perfect while writing the Bible. God does everything He can for man, but He is still limited by man's imperfections and disobedience. This limitation does not suddenly vanish when men write scripture.

Take for instance these quotes from the book of the Bible Ecclesiastes: "It is useless, useless, said the Philosopher. Life is useless, all useless" (Eccles. 1:2), and "A human being is no better off than an animal, because life has no meaning for either. They are both going to the same place -- the dust. They both came from it; they will both go back to it. How can anyone be sure that a man's spirit goes upward while an animal's spirit goes down into the ground? So I realized then that the best thing we can do is enjoy what we have worked for. There is nothing else we can do. There is no way for us to know what will happen after we die" (Eccles. 3:19-22). It is simply ludicrous to suppose that the above scripture was written by God through an inspired man of God. It was not. It was written by a man who was at one time greatly anointed by God, but who fell away (Solomon).

The trouble with making any absolute statement such as "it is always so" or "it is perfect" is that one only has to show one case to the contrary to disprove the statement. It is often easy to disprove such a statement. Quoting the above scripture simply and completely destroys the view that so many unfortunately hold: that the Bible is the literal "Word of God" and without flaw. No honest human being can say that God wrote the lines quoted above, such as "A human being is no better off than an animal, because life has no meaning for either" (Eccles. 3:19). If the reader thinks that these verses are being quoted out of context, then let him read the book of Ecclesiastes. Such an exercise will only convince the reader more that the Bible is not the perfect "Word of God."

The Bible is the greatest book ever written and was inspired largely by God. Its circulation far surpasses any other book. However, just like every other book on religion, history, science, politics, etc. it is not perfect. It is flawed and manifests the imperfections of its human writers. Paul the apostle wrote a large part of the New Testament and was a great man of God. He, however, referred to himself as an imperfect sinner (see 1 Tim. 1:15). Consider these lines he wrote which show his imperfections: "I repeat: no one should think that I am a fool. But if you do, at least accept me as a fool, just so I will have a little to boast of. Of course what I am saying now is not what the Lord would have me say; in this matter of boasting I am really talking like a fool. But since there are so many who boast for merely human reasons, I will do the same. You yourselves are so wise, and so you gladly tolerate fools!" (2 Cor. 11:16-19). Again it is wrong to suppose that the above scripture was written by God through an inspired man of God. It was not. It was written by a great and inspired man of God who was not inspired at the time. Paul was displaying anger in a very human way.

Paul himself says in the above passage, "Of course what I am saying now is not what the Lord would have me say" (2 Cor. 11:17). Consider these words of Jesus which show that Paul's attitude was wrong: "But now I tell you: whoever is angry with his brother will be brought to trial, whoever calls his brother 'You good-for-nothing!' will be brought before the Council, and whoever calls his brother a worthless fool will be in danger of going to the fire of hell" (Matt. 5:22).

In addition to philosophical and religious ideas being corrupted by our humanness, so too the simple recording of objective facts is also corrupted. Whenever an event occurs in history it is an exact space-time event. That is to say, it happened in one and only one way, at one and only one time. When men attempt to record history they can do so only to a limited degree. The more detail which is given the more difficult it is to get the facts exactly right. For instance, to say that John F. Kennedy was inaugurated President of the United States in 1961 is exactly correct, but it is not very detailed. To write a book about the day John F. Kennedy was inaugurated would give much more detail, but the chances of erring in some small way would be greatly increased. This is because the writing of a book would require much research and effort. In all the search for correct facts the chances are that errors would arise: witnesses would confuse details, news articles would give conflicting reports, typographical errors would be made, and so forth. The finished book would be of value and

give the reader a much better idea of what inauguration day was like, but it would not be a perfect description.

So also it is with the Bible. It is a great work and gives the reader an extremely valuable history of God's dealing with man, but it is not perfect. Facts are confused. Take for example the conversion of Paul. There are three accounts given in the Bible: Acts 9:3-19, Acts 22:6-16, and Acts 26:12-18. In the first we read "As Saul was coming near the city of Damascus, suddenly a light from the sky flashed around him. He fell to the ground and heard a voice saying to him, 'Saul, Saul! Why do you persecute me?' 'Who are you, Lord?' he asked. 'I am Jesus, whom you persecute,' the voice said. 'But get up and go into the city, where you will be told what you must do.' " Now in the city of Damascus there is a Christian named Ananias. He has a vision and the Lord speaks to him. We read "Get ready and go to Straight Street, and at the house of Judas ask for a man from Tarsus named Saul. He is praying, and in a vision he has seen a man named Ananias come in and place his hands on him so that he might see again." Also the Lord says to Ananias, "Go, because I have chosen him to serve me, to make my name known to Gentiles and kings and to the people of Israel. And I myself will show him all that he must suffer for my sake." Ananias goes and it is just as the Lord had said, and Paul becomes a believer.

Now in the second account, which is much like the first, more detail is given when Ananias goes to see Paul. Ananias says to Paul, "The God of our ancestors has chosen you to know his will, to see his righteous Servant, and to hear him speaking with his own voice. For you will be a witness for him to tell everyone what you have seen and heard. And now, why wait any longer? Get up and be baptized and have your sins washed away by praying to him." Note that in the first two accounts Jesus tells Paul in a vision on the road to Damascus that in Damascus he will be told God's plan for his life. The plan itself is not revealed to Paul until he enters Damascus and is met by Ananias.

However, in the third and final account of Paul's conversion, God's plan for Paul's life is given by Jesus in the vision, and there is no mention of Ananias. We read (Paul speaking) "It was on the road at midday, Your Majesty, that I saw a light much brighter than the sun, coming from the sky and shining around me and the men traveling with me. All of us fell to the ground, and I heard a voice say to me in Hebrew, 'Saul, Saul!, Why are you persecuting me? You are hurting yourself by hitting back, like an ox kicking against its owner's stick.' 'Who are you, Lord?' I asked. And the Lord answered, 'I am Jesus, whom you persecute. But get up and stand on your feet. I have appeared to you to appoint

you as my servant. You are to tell others what you have seen of me today and what I will show you in the future. I will rescue you from the people of Israel and from the Gentiles to whom I will send you. You are to open their eyes and turn them from the darkness to the light and from the power of Satan to God, so that through their faith in me they will have their sins forgiven and receive their place among God's chosen people.' "

The point in the above example is that historic accounts of an historic event do not agree in every detail. Now the historic event itself could only have happened one way. Jesus, in the vision, either told Paul to go to Damascus where he would be told God's plan for his life, or Jesus told Paul directly. It could not have happened both ways. Therefore the Bible in the recording of historic fact is not absolutely perfect but rather suffers the fate of all historic works: it can only give an approximation of what actually happened. The three accounts, though, along with other evidence, especially the Godly life of Paul, do give us strong evidence that Paul did encounter Jesus on the road to Damascus.

Another example is the parable of the sower of seed. It is again recorded three times in the Bible: Matthew 13:1-9, Mark 4:1-9, and Luke 8:4-8. Let's compare the end of the parable. In Matthew 13:8 we read "But some seeds fell in good soil, and the plants bore grain: some had one hundred grains, others sixty, and others thirty." In Mark 4:8 we read "But some seeds fell in good soil, and the plants sprouted, grew, and bore grain: some had thirty grains, others sixty, and others one hundred." These two accounts are in good agreement except the order of the grains is reversed. That is, we read thirty, sixty, and one hundred instead of one hundred, sixty, and thirty. But now consider Luke 8:8. We read "And some seeds fell in good soil; the plants grew and bore grain, one hundred grains each." This is clearly a different concept. So then we see that none of the accounts agree 100.0%, and the third has a significant difference. The parable itself has great value and is undoubtedly very close to what Jesus actually said. The point is, it was not recorded perfectly.

So we have seen that the Bible is flawed like any other book. It is not absolutely perfect and "The Word of God" (in the literal sense) as so many believe. It is flawed both in its communication of religious and philosophical principles and in its recording of objective facts. The Bible portrays the humanness of its writers, but also like any other book, the fact that it is flawed does not rule out the possibility that it has value. Indeed the Bible has great value. It is by common consensus one of the greatest, if not the greatest, books ever written.

The Bible was written for the most part by great men of God, giving an account of the dealings of God with mankind.

How shall we approach the Bible then, knowing that it is flawed? We must approach it objectively. We must consider the claims it makes in the light of other facts, and then either accept or reject the evidence it presents on rational grounds. For too long Christians have sought truth under the presumption that the Bible is perfect. This has led to error because the presumption is incorrect. Here the Bible will be treated as valid but not perfect evidence in our search for truth. Much evidence from other sources will be used in conjunction with the Bible to arrive at the conclusions presented in this book. Before going on to the other chapters, let us consider the process by which men arrive at theories concerning the universe they live in.

Consider a human being that is born without the use of any of his senses. He cannot see, hear, smell, taste or touch. Also suppose this poor creature cannot move at all and even to stay alive needs to be fed intravenously. Now suppose this person has a perfectly normal mind capable of reasoning and thinking just as we do. The person would grow up and start thinking about things just as we do. He would start postulating and forming theories about the universe he lived in just like us. However, what would he base his ideas of reality upon? He has no evidence of what the universe is like other than his own thought patterns. He could certainly come to the conclusion: "I think, therefore I am." He could also reason that since he did not create himself and he has not always existed that there must be some other entity which created him. A concept of God could arise in his mind and he might attempt communication with God. Through a friendship with God, God could tell him things about the universe, but other than this our poor hypothetical man has little way of knowing anything about the universe, save the fact of his own existence and aspects of his thought patterns.

For instance the man might think about something one day and then forget it the next. Realizing that he has forgotten something would lead him to the conclusion that he forgets. This reasoning might sound silly, but a little further thought will reveal that within it lies a basis of human knowledge. To illustrate let's go back to the man's first conclusion: "I think, therefore I am." How did he arrive at this? The man made observations that he was thinking. He must exist in order to think. Therefore he concludes "I think, therefore I am." This conclusion is a theory about his universe based on the fact that he thinks. The conclusion or theory might also be thought of as part of a "model" (or collection of ideas) of

the universe he lives in. So far this is all he has: a model of the universe with one theory stating his existence based on the fact that he thinks. Keep those two words in mind: theory and fact. Now the man wishes to expand his model of the universe. So while thinking, he makes an observation of the fact that he forgets things. If it had happened just once the man might not have paid attention to it. However, it happened several times. This leads the man to another theory, based on fact, about his universe: he forgets things.

Suppose one day that the man got tired of studying his thought patterns and posed the question: Are there other creatures like me? The man now has a problem to solve concerning whether or not there are other creatures like himself in the universe. But whereas in studying his thought patterns the man had easily obtainable facts, this is not the case with this new problem. He has never had any evidence to prove or disprove the existence of other men. And unless he can obtain some evidence he will never know one way or the other, apart from divine revelation. The man decides to try and obtain evidence for the existence of other men. Using his current model of the universe, which consists of the knowledge of his own thought patterns, he constructs an experiment. Now an experiment, in general, may be defined as a systematic search for new facts based on old ones. An experiment also may be thought of as a test of a theory about the universe based on known facts and or other theories. Suppose the man theorized, "There must be other men because I exist and am a man." This theory is based on the known fact of the man's own existence. However, it is impossible for the man to know if this theory is correct without evidence.

So the man constructs an experiment. The man reasons that since he can hear his own thoughts, the other man, if he exists, must be able to hear his own thoughts too. However, they have never heard each other's thoughts, but maybe this is only because they have never tried communication with each other. The man reasons that if he speaks out in his thoughts towards another possibly existing man, that man might hear him and reply. This would give the man concrete evidence that he is not the only man in the universe. So the man thinks out, "Hello out there other man, do you hear me?" The man receives no response; he tries again, still no response. The man repeats his experiment many times and then stops trying.

What can the man conclude? He can certainly conclude that his experiment failed to produce evidence leading to the conclusion that there are other men. However, his experiment does not prove there are no other men. This is because he has not proved one of the bases of his experiment: that is, if he thinks out

toward another man that man will hear him. Another man could exist but be unable to hear our man. Also, it could be that another man did hear our man's thoughts but decided not to reply. Another possibility is that another man did hear our man and replied, but our man was unable to hear his response. If experiments could be devised which either prove or disprove any of the above conjectures, then this evidence taken along with the results of the first experiment might lead eventually to the answer to the man's problem.

At any rate as things stand the man does not know if there are any other men. If he were to conclude that there are no other men on the basis of his experiment, he would be wrong. If the man wishes to pursue the problem he has two possibilities. He can either continue to devise experiments, or he can depend on a direct revelation from God. Now the existence of God is something the man has been theorizing about. He reasons that since he did not create himself, he must have been created by some other independent entity. Since the man has power to think, he wonders if he can think another man, or any other kind of entity, into existence. He tries this repeatedly but is unable to think another man into existence. This does not prove it is impossible for him to do so, because other factors may be involved. For instance his thought patterns might not be exactly right. However, the man theorizes that he is unable to create another man simply because it is too difficult. He concludes that the "man" who created him must be greater than himself, and he further theorizes that this being's powers are infinite. He calls this theoretical man God.

Since God is infinite He knows all things. He is capable of telling the man whether there are other men or not, without the man having to perform any more experiments. This is, in general, the second basis for human knowledge: direct revelation from God. Of course it must first be shown by observation of facts and by experiment that God exists, and part of the evidence for the existence of God is revelation which can later be proven. For instance, suppose our hypothetical man assumes there is a God and goes to Him asking, "Are there other men, are they like me, and how do I communicate with them?" And suppose after this he is strongly impressed with thoughts which might not be his own but rather from God. These outside thoughts give the man answers to his questions. The thoughts say, "Yes there are other men, yes they are like you, and to communicate with them you must think of a round shape called a circle." So the man thinks of a circle, and then he hears the thoughts: "Hello other man. I've been waiting to talk to you, because I'm a man just like you." Now our hypothetical man would have strong evidence that other men exist, and that God exists also.

We have seen, then, that human knowledge has two basic foundations. One is the observation of objective facts which may be obtained directly or by experiment. Experimentation involves testing theories based on known facts and other theories. A theory may be thought of as a reasonable assumption concerning facts one should observe under the right conditions. A theory can become a fact, or thought of as a fact, if it proves to be correct. For instance, Albert Einstein theorized that time would run slower and objects would shrink in the direction of motion as objects moved near the speed of light. His theory was based upon known facts about mathematics and physics. However, it was only a theory and not necessarily a correct one until evidence could be obtained to prove or disprove it. Today Einstein's theories have been demonstrated many times in different ways, and while we may still speak of "the theory of relativity" we might just as well say "the fact of relativity." Relativity is part of an overall model we have for the universe we live in.

The second great foundation for human knowledge is direct revelation from God. For this evidence to be accepted, we need only have proof God exists and verification that He has communicated some objective facts. If God is infinite, knows all things, and is good, then we know that what He says is true. Assuming God exists, divine revelation is still subject to flaw; since it must come through human beings. Men corrupt it, as we have seen in the case of the Bible. For this reason divine revelation is only approximate and partial in the facts it gives us. But also the facts we obtain by the method of observation and experimentation are approximate and partial. For instance we know the strength of gravity well. However, we do not know it exactly, and there is even some theoretical and experimental evidence that gravity changes slowly with time. At present we do not know the exact answer to this problem, because our experiments have not been good enough to give us a definite answer. Although gravity does appear to be constant.

Whether by observation and experimentation or by divine revelation man has, through the centuries, constructed and refined his model of the universe. However, this model is always incomplete and partial and often contains incorrect assumptions. "What we see now is like a dim image in a mirror; then we shall see face-to-face. What I know now is only partial; then it will be complete -- as complete as God's knowledge of me" (1 Cor. 13:12). For instance we all know of the classic example of the belief that the Earth is flat. Today, of course, we still have difficulty understanding our universe.

However, we know much more than in the past, and we might ask, what is the value of correct understanding? Intuitively we know that the value is great. In general, the better we understand the universe, the better we are able to function in it. If we have a good model for the universe, we are able to utilize our knowledge to obtain worthwhile goals. For instance, it is a known fact that to reach the moon a spacecraft must reach a velocity of near 25,000 miles per hour with respect to the Earth. Knowing this fact makes it much easier to get to the moon. Can you imagine trying to send a spacecraft to the moon by guessing the correct speed? Correctly understanding the physical and spiritual universe holds great potential, as we shall see.

END OF INTRODUCTION & CHAPTER 1

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Science and Christianity: Chapter 2. A Lesson in Astronomy



The Pleiades

CHAPTER 2

A LESSON IN ASTRONOMY

It would seem fitting in an attempt to reconcile science and religion to start with what we know of the stars. The facts presented here are questioned by few men. By observation and experimentation mankind has indeed, over the centuries, amassed a wealth of knowledge about the stars. This is especially true when one contemplates what was known in the beginning. In this chapter will be given first an overview of the entire universe with an attempt to give the reader some comprehension of its size. Then will be given a brief discussion about man's experimentation which led to the knowledge.

In our attempt to comprehend the universe let us first start with a man. Consider him to be 6 feet tall. Now shrink the Earth, with a diameter of 8000 miles, down to the size of a meter (around a yard) stick. How big do you think the man would be if he shrunk with the Earth? Well, a meter is divided into centimeters (1/100 of a meter) and millimeters (1/1000 of a meter). Take one millimeter and divide it a thousand more times. This is one millionth of a meter or one micron. Our man is one tenth of this height or .1 microns -- one ten millionth of a meter. This length is a little smaller than a typical vibration of light and about a thousand times bigger than an atom. Next consider the distance between the Earth and sun (93 million miles). Let us shrink this distance down to meter-level and ask how big the Earth is. Well on this scale the diameter of the Earth is .1 millimeter or one ten-thousandths of a meter. Our man has shrunk to .1 angstroms or one hundred-billionth of a meter. This is ten times smaller than the smallest atom -- that of hydrogen.

We might ask next, what is the size of the sun-Earth distance if we shrink the distance from the sun to the nearest star, Alpha Centauri, down to meter length also? Alpha Centauri is 4 light-years away. Now a light-year is the distance it takes light to travel in one year which is 6 trillion miles, so the distance to Alpha Centauri is roughly 24 trillion miles. The distance to the Earth from the sun is 93 million miles or roughly 100 million miles. This means that our Earth is only 4 microns from the sun if Alpha Centauri is 1 meter away! Remember a micron is only one millionth of a meter or one thousandths of a millimeter. Our man on this scale has shrunk to half of one quadrillionth of a meter. This is only one thousandth the size of an electron!

Next, let's shrink the size of the diameter of our Galaxy, the Milky Way, down to meter level and ask how big is the sun-Alpha Centauri distance. Remember that the distance to Alpha Centauri is 4 light-years. The diameter of our Galaxy is around 100,000 light-years. Therefore if the diameter of the Milky Way is one meter, the distance to the nearest star from the sun is 40 microns. This is 1/25 of a millimeter. The size of our man is now not even worth mentioning, and on this scale the sun-Earth distance is about 1 angstrom or 1/10 of one billionth of a meter. This is roughly the size of an atom. Imagine, compared to the size of the Milky Way Galaxy, the distance from the sun to the Earth is only the diameter of an atom, if the Milky Way is shrunk to the size of a meter. Recall on top of this that if the sun-Earth distance itself were the size of a meter stick, the size of a man would be that of an atom.

The most logical next step is now to ask how big is the Milky Way Galaxy if we shrink the size of the known universe down to meter level? Can you guess? Well, on this scale the Galaxy is roughly 5 microns or 5 millionths of a meter. This is because the diameter of the known universe is around 20 billion light-years and recall that the size of the Galaxy is 100,000 light-years.

Now that we have an idea of the sizes of things in the universe let's consider numbers. There are 4 billion people on the face of the Earth. This may seem like a large number. Yet when we consider the population of stars in our Galaxy we find that there are 100 billion, or 25 stars for each human being on the Earth. Thinking of our meter stick again, consider shrinking all the stars in the Galaxy so they could all just line up on a meter stick. If this were done each star would be about one tenth the size of an atom! Next, considering that there are 100 billion stars in the Galaxy we might ask how many galaxies there are in the known universe. Well, it's not very well known, but we do know that there are

at least 100 billion and perhaps more.

In an attempt to better comprehend the number 100 billion, consider the following. There are approximately 100,000 individual letters in this book. If each one of these letters itself represented another book of 100,000 letters, then it would take 10 books to have 100 billion letters total. This is also roughly equivalent to the total number of letters in all the books of several libraries.

These numbers are truly astounding. It is also astounding that man, a little consciousness on a little planet, was able to ascertain these numbers. When men first attempted to gain knowledge about the universe, think of what they had. They could observe a seemingly flat surface, the Earth, where various points and bodies of light moved above in the sky. However, using methods for obtaining knowledge, which were outlined in the first chapter, man began to increase his knowledge. Today we have the incredible understanding outlined above.

When men first considered the nature of the Earth, many considered it to be flat, for so it appeared. Only a few men had the insight to propose that the Earth was instead round. Men had these two theories about the Earth: flat and round. To prove which theory was correct and establish the theory as a fact, men experimented and made observations. The flat-Earth side contended that anyone could see that the Earth was obviously flat just by looking at it. Yet they failed to conceive of a round Earth so big that it appeared flat. The Earth is about 6 million meters in radius. On the surface, the difference between a flat Earth and the true round Earth over a 1000 meter distance, roughly 500 times a man's height, is only .06 meters! This is not a perceptible difference to the naked eye. But as is so often the case, men were not considering a bigger picture but were rather assuming the obvious.

Even from antiquity, however, there were strong evidences that the Earth was indeed round. Ships sailing off toward the horizon would disappear from the bottom up, implying a round Earth. The shadow the Earth cast upon the moon during a lunar eclipse was that of a circle, implying a round Earth. Note that this conclusion was based on a theory and not a fact. It was many years before man could prove that a lunar eclipse was caused by the shadow of the Earth.

Another test for the curvature of the Earth involved two sticks and the sun. Assuming that light from the sun travels in parallel or nearly parallel rays, the curvature of the Earth may be measured as follows. Imagine two sticks placed perpendicular in the ground and separated from each other by a significant

distance (several miles). If at a given time the sun is shining directly over one of the sticks, no shadow will of course be cast by it. However, if the Earth is round, then at this same time the sun will not be directly over the other stick, and a shadow will be cast. Measuring the length of this shadow and doing some arithmetic will give the radius of the Earth. Just such an experiment was performed by the Egyptian astronomer Eratosthenes (276-195 BC). He measured the Earth's circumference to within a few percentages of its actual value of 24,000 miles. This was truly a brilliant feat. It is unfortunate that mankind did not universally accept the idea that the Earth was round until many centuries later -- not until the Renaissance.

The next most logical question to ask is how far away are the sun, moon, and planets, and what is the nature of their motions? For a long time it was believed that the Earth was the center of the universe, and that sun, moon, planets, and stars all revolved around the Earth. This seemed to be the obvious answer to anyone who observed the sky. However, just as with a flat Earth, there was evidence to the contrary. For instance the motions of some of the planets were not regular but would change direction periodically.

With the help of some great thinkers during the Renaissance, man was able to improve his model of the universe. Copernicus proposed that the sun, not the Earth, was the center of the solar system. Galileo's telescopic observations of the planets strongly supported Copernicus's theory. Kepler meticulously showed that the observational data for the planets was best explained if they moved in ellipses about the sun. And finally Newton's brilliant theory of gravitation consolidated the whole picture and put the sun unmistakably at the center of the solar system.

Kepler was able to calculate the relative distances of the planets from the sun. For instance if the distance from the sun to the Earth is 1.0, then the distance from the sun to Mars is 1.5. Therefore if the distance from the Earth to Mars could be measured, then one would also know the distance of the Earth from the sun and the dimensions of the solar system. But how was this first done? Well, it is a well known fact that objects in the foreground appear to change their position with respect to background objects as an observer changes position. This is called parallax.

Since the Earth is roughly 8000 miles in diameter, it is not too difficult to make simultaneous astronomical observations from two points on the Earth separated by thousands of miles. The planets are close enough that such observations will

show a parallax with respect to the fixed stars. The observations cannot be made with the naked eye. However, they can be made with only fair telescopes, and it was not long before man knew the dimensions of the solar system.

Once the distance from the sun to the Earth was known it became possible to determine the distances to the nearer stars. As the Earth moves in its orbit we observe the stars from different angles. Although the Earth is 93,000,000 miles from the sun, most stars are still too distant for us to observe any parallax. However, a handful of the closest stars do exhibit parallax and seem to move with respect to the more distant background stars. It is more than 10 times more difficult to see the parallax of nearby stars due to the motion of the Earth in its orbit, than it is to see the parallax of nearby planets due to different observations made from widely separated points on the Earth.

As we have seen, the distance to the nearest star (other than the sun) is 24 trillion miles. But how do we determine the distances to the distant stars and with this knowledge understand the size and dimensions of the Milky Way Galaxy? Well, astronomers studied carefully the light emitted by the representative sample of stars for which we have parallax measurements. Then astronomers studied the light of distant stars. This revealed that in many cases the distant stars looked very similar to the nearby ones. It is a well known fact that an object decreases in brightness with distance, according to mathematical principles. Assuming that the distant stars were similar to the nearby stars, distances could be calculated. Hence man was able to extend his knowledge of the universe.

Now many of these distant stars are embedded in clusters of stars; so we know the distances to the clusters. Some of the members of these clusters are very brilliant, and we have no nearby counterparts for them. However, since we know the distances to these clusters we can analyze and classify the bright stars anyway. Many of these stars are very massive giants burning brightly. Others are abnormal stars exhausting their last gasp of energy in death throes. Anyway, observing similar bright stars in the far reaches of our Galaxy gave us a pretty clear picture of the nature of it. As we have seen, our Galaxy is roughly 100,000 light-years across and contains approximately 100 billion member stars.

At first it was thought by many that our Galaxy constituted the entire universe. However, there were fuzzy objects observed in the night sky which might be outside the Galaxy and galaxies in their own right. There were other theories to explain these objects also, but for a long time there was not enough evidence to

prove which theory was correct. Experiments were run in an effort to gain the necessary facts, but nothing was shown conclusively until the 1920's. Then using the newly constructed 100 inch Mount Wilson telescope, the largest in the world at the time, astronomers were able to identify individual stars in these fuzzy objects. This proved they were galaxies outside of our Galaxy. In order to obtain distances, astronomers used bright stars which displayed periodic variations in brightness. These stars are called Cepheid variables and had been observed in clusters in our own Galaxy. There is a direct relationship between absolute brightness and period for these stars.

Observing the periods of Cepheid stars in other galaxies and therefore knowing their absolute brightness allowed astronomers to determine the distances to the nearby galaxies. For instance a galaxy very similar to our own and close to it is the Andromeda Galaxy. This galaxy is 2.5 million light-years away and contains a hundred billion stars like our own Milky Way. It also has about the same shape as the Milky Way (a spiral).

Now observing very bright stars in galaxies, to determine their distances, only works for nearby galaxies. For the more distant galaxies it is impossible to resolve individual stars. So how do we determine their distances? Well one method, as with stars, is to make use of the obvious fact that the more distant an object is, the dimmer it is bound to be. Since we know the distances to the nearby galaxies we may calculate their true brightness. Just as with stars, there are also different types of galaxies. Knowing the true brightness of a certain type allows astronomers to calculate a distance whenever that type is observed. However, the correlation between types of galaxies and brightness is not so nearly as strong as between types of stars and brightness.

Another method employed by astronomers to determine the distances to the distant galaxies is to make use of a fact discovered by the astronomer Hubble. He observed that the farther away a galaxy was, the faster it was speeding away from us. The speed of a galaxy can be determined by analyzing its light in a certain way and determining the light's "red shift." This is the amount colors of light are shifted toward the red. The effect is predicted by the theory of relativity for objects traveling at significant fractions of the speed of light.

Using red shifts astronomers are able to look out to the very edge of the known universe (10 to 20 billion light-years) by observing highly luminous objects called quasars. Quasars are very bright and very compact and their light is very red shifted. Exactly what they are is still a mystery. The universe at the distances

of the quasars, however, is not like that near our Galaxy. Quasars are billions of light-years from us. This means of course that it took billions of years for the light they emitted to reach us even traveling, as light does, at 186,000 miles per second. Therefore we are observing the quasars not as they appear today but rather as they appeared billions of years ago.

The methods outlined above do not exhaust those used by astronomers to calculate distances. However, they are some of the major methods and should give the reader a good idea of "how it was done."

So now we know a little about the size and contents of the universe. It is truly staggering, and one might ask could man have ever conceived of such a universe without observation and experimentation? Could man, using just his own reasoning powers, have imagined such a universe? Hardly, for without the evidence, man thought the universe consisted of a flat Earth at the center, with the sun and planets revolving around at unknown distances. The stars were fixed to celestial spheres which also rotated about the Earth. And who ever pictured galaxies and quasars?

Astronomers also know not only the nature of the universe, but ages of various bodies in it and how it has changed with time. For instance, we know that the universe probably started with a "Big Bang" 10 to 20 billion years ago. This explosion is the cause of the rapidly receding galaxies we see today. Also our Galaxy is about 10 billion years old, and our sun and solar system are about 5 billion years old. The solar system formed from dust and gas within the Milky Way. The Earth is approximately 4.5 billion years old. These facts were also arrived at by observation and experimentation, and they are questioned by almost no scientists.

Now it took man many years to form the accurate model of the universe we have today. It took steady refining of models. Old and incorrect ideas were replaced by better ones based on the evidence. The process is continuing today. One very significant question which is still unanswered is whether or not the universe will some day stop its expansion and start to collapse. The answer to this question awaits better experiments and collection of facts until the evidence becomes sufficient to make a conclusion. However, at present, the evidence appears to favor an ever expanding universe.

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Science and Christianity: Chapter 3. Who Are God and Satan, Really?



CHAPTER 3

WHO ARE GOD AND SATAN, REALLY?

A concept of a God, or gods is one that man has had from the beginning. There is strong evidence prehistoric man worshipped the supernatural. We know today that most primitive tribes have religion, and of course in our modern world, religion is the norm rather than the exception. Americans visit churches, Arabs visit mosques, Jews visit temples, and so forth. In fact only a small percentage of the general population claims to be atheistic. The rest if they do not ascribe to some religion will claim to be agnostic, which is to say they simply don't know one way or the other. Many agnostics also doubt the possibility of ever being able to find absolute truth in the supernatural realm.

In the scientific realm we know that it is possible to run experiments, make observations, and improve upon our understanding of the universe. However, in the religious and philosophical realm is it also just as possible? Are the agnostics right in their contention that it is not? At first glance it would seem that the agnostics are right. A new religion seems to be thought up every day, and with all the established religions around the world, it appears man has agreed little on what is spiritually right or wrong. But as was mentioned in the above paragraph, man does seem to agree that there is a supernatural of some sort. The exact nature of it is what's in question.

No matter what mankind as a whole believes, however, we must come to grips with a few obvious facts. First, the fact that there may be many answers to the

question does not mean that no answer is correct. Because there are so many religions and so many different answers to spiritual questions, there is often a tendency to throw one's hands up in the air and give up. This must not be done. The mere fact of confusion does not, in itself, preclude that truth exists amidst the confusion. Second, we must have courage to believe what is right, based on the evidence, no matter what other men believe. Just as in the scientific realm, if the evidence says such and so is correct, then it is, no matter what men believe. For example, if most men on Earth believed that the Earth was flat (which they did at one time) that would not make it flat. It's round, and that's that. So too spiritually if we find something to be correct based on irrefutable evidence, then it doesn't matter what men believe. The fact is still correct even if most men do not believe it. Absolute truth is independent of human belief.

How are we ever going to find spiritual truth amidst so much confusion? Well, just as in the previous chapter we will review what has been learned by observation and experimentation. Here, however, the truths we arrive at are not so universally accepted. This does not make them any less true. It only means that people are less willing to accept the truth when it comes to spiritual matters. This is not surprising since spiritual truth involves questions of right and wrong and morality.

First, man as a whole is right in his assumption that there is some kind of supernatural. The evidence is just too overwhelming to deny it. The laws of this world are transcended often. One can go to many hospitals in the country and talk to the doctors and nurses, and before long documented cases of the supernatural will arise. There are many, many cases of incurable cancer being healed, heart disease being healed, limbs being lengthened, and so on. We can also add to this the many cases of people having supernatural knowledge such as knowing the future and knowing much about another individual without ever having seen that individual. Many readers may remember the television series "One Step Beyond" and, more recently, "Unsolved Mysteries". Well these incredible programs are based on fact not fiction. Also many people have had dreams where they saw the future and then later lived it out. I personally have had this happen more than once.

If such things occur, and they do, what does it imply? Well first it means, just as in the scientific realm, that the universe is an incredible place and probably bigger and more complex than we imagine it. Now there are two possibilities for the supernatural: (1) it is not intelligent or self-aware, or (2) it is intelligent and self-aware. If the first is true, then as man increases his knowledge

scientifically he should be able someday to understand all supernatural phenomena. The unknown will become theory and then fact as man devises experiments and makes observations to improve his knowledge of the universe. If the second is true then we need to ask: Is there a God or many gods? What is He or they like? How do you define god in the first place? Are there supernatural spirits that have been created by God or the gods? If so, how many are there and what are their powers? To find the answers to these questions we must still run experiments and observe our world for facts.

Now that we have defined the problem somewhat better a logical next step would be to look for evidence of God. We need to look for both evidence that He exists and for evidence which will reveal His character and relationship to man. Note that we will look for a God, not gods or spirits. We are also of course assuming that the supernatural is intelligent and self-aware. We will look for one intelligent, self-aware, supreme, and infinite supernatural being called God. This seems to be a good place to start for many reasons. One of which is that the two great religions of Christianity and Islam believe in only one God. However, we could also look for a series of gods or for the supernatural in general. The facts we find may steer us in any number of directions, and remember we are starting out with a theory: that if the supernatural is intelligent and self-aware then it contains an infinite God. If the facts we find indicate otherwise then we must change our theory. Theory must always conform to fact. We cannot try to conform fact to our theories. If our theory about one God is wrong, based on the facts, then we must change it. Eventually we will be able to collect enough facts so that the theories we have may themselves become facts. Our model may be incomplete needing further observations and experiments, just as in the scientific field. However, let us see what we can come up with.

Let us start by examining the claims of some of the great religious and philosophical leaders of recorded history, such as Zoroaster, Buddha, Socrates, Muhammad, Confucius, and Jesus. Most believed in some form of the supernatural, and all taught a system of ethics by which man may ultimately find happiness and harmony with the rest of creation. Let us concentrate on their lives and beliefs, because we are searching for God. Then on the basis of this, let us study one or all of them more closely.

Zoroaster (628-551 B.C.) was born in northwestern Iran and ministered in northeastern Iran. He was married three times during his life and had several sons and daughters. He served, in his early manhood, as a priest in the polytheistic Iranian religion. However, even as a young man he began receiving

revelations from Ahura Mazda (the "Lord Wisdom"). At age 30 he was converted to the sole worship of Ahura Mazda. He began preaching and winning converts, slowly at first. Then he won over Vishtaspa, king of Chorasmia (in present-day Russia). The new religion then prospered. Zoroaster preached a religion with remarkable similarities to Christianity, such as the existence of both good and evil spirits and the judgment of human beings after death. Zoroaster was killed by invading Turanians.

Buddha (563-483 B.C.) was born in what is now present day Nepal, to the ruler of a petty kingdom. He lived a sheltered life of luxury and, when he was 19, married a beautiful princess, who bore him a son. His father wanted him to become a warrior ruler. However, Buddha showed, instead, an inclination for meditation and reflection. One day when he was 29 he encountered an old man, a sick man, a dead man, and an ascetic. Buddha was deeply struck by these scenes, and he abandoned his way of life to become a wandering monk. First he investigated Hinduism and found its caste system and asceticism futile. He continued his search for truth until, one day, he sat under a giant fig tree and determined to remain until he received wisdom. This was approximately 6 years after he left home. After 49 days under the tree, Buddha was enlightened (Buddha means "enlightened one"). He then began to preach and convert many, including his family. Buddha taught that suffering was caused by desire. Desire can be eliminated not by gratification or by self denial but by a middle path. There are four noble truths: (1) suffering exists, (2) suffering has a cause, (3) suffering can be eliminated, (4) ways to eliminate suffering. There is an Eightfold Path: (1) right views, (2) aspirations, (3) speech, (4) conduct, (5) livelihood, (6) effort, (7) mindfulness, and (8) contemplation. Buddha died at age 80 from a meal of bad pork.

Socrates (469-399 B.C.) was born in Athens to the artisan-sculptor Sophroniscus and a mid-wife, Phenarete. Socrates received the normal Athenian education in literature, music, and gymnastics. He married the notorious shrew Xanthippe, who bore him three sons. Socrates was law abiding but refrained from politics. Initially he took up the trade of his father. However, he felt an irresistible call to philosophy and the need to impart understanding to his fellow man. He believed oral argument was superior to writing and spent most of his days in the marketplace and public squares speaking with anyone who would hear him. Socrates had deep religious convictions and insisted that he was guided by an inner divine voice, the daemonion. Rather than teaching a set of doctrines, Socrates tried to get men to think for themselves, through cross examination. He believed that no one knowingly did evil; rather, evil was the

result of ignorance. Knowledge was therefore virtue, and he believed in purely objective understandings of justice, love, etc. Socrates was accused and condemned to death for corrupting the youth and introducing new divinities (the inner voice). He drank hemlock and died in the presence of his friends.

Muhammad (A.D. 570-632) was born in Mecca, to the influential tribe of Quraish. His father died before he was born, and his mother died when he was six. A grandmother and then a beloved uncle, Abu Talib, raised Muhammad after his mother's death. Muhammad was withdrawn and pensive in character, and he had outstanding abilities and moral sensitivity. In young adulthood he began to manage the business of a rich, older widow, who was so impressed that she offered him marriage. He was 25 and took no other wives until she died in 619. Then Muhammad married 9 more times before his death. All of Muhammad's sons died in infancy and only one daughter survived him. Like most of his tribesmen, Muhammad was a trader and made many trips to Syria. As he traveled, he probably heard Jews and Christians expounding their ideas. Perplexed by questions of religion, he would occasionally retire to a cave outside Mecca to meditate and pray for guidance. On one such instance, the archangel Gabriel appeared to him in a vision and proclaimed him a prophet. Muhammad then began to preach and win converts, but he was forced to leave Mecca with his followers after authorities there rejected him. Muhammad and his followers went to Medina where they fought and won a war against Mecca. After this, the Islam faith grew rapidly, as many tribes from throughout Arabia visited Muhammad. His original sayings are recorded in the Koran, where he expounds belief in one transcendent but personal God, the Last Judgment, social and economic justice, and his role as the last prophet. The Koran explicitly denies that Muhammad was divine or did any miracles. He died suddenly in Medina on June 8, 632.

Confucius (551-479 B.C.) was one of the most influential philosophers in Chinese history. He was born in the present day province of Shandong to the noble K'ung clan. His father died when Confucius was three, leaving the family in poverty. However, Confucius still received a good education. He married when he was 19 and had one son and two daughters. In his mid-twenties Confucius began a teaching career, traveling and instructing a small body of followers. He soon became highly respected for his knowledge and wisdom. He taught morality, happiness, and prosperity, in a society which was largely degenerate and feudalistic. Confucius lectured on ancient classics, and he believed highly that leaders must be good examples. He held public office only briefly, in his 50's, first as magistrate of Chung-tu and then as minister of crime

of the state of Lu. He was very successful but was removed by political maneuvering. Confucius continued his travels and then spent the last years of his life in retirement, writing on ancient books.

Jesus (5 B.C.-A.D. 30) was born to the virgin Mary, who had been recently married to Joseph. Both were Jews living in the promised land of Israel, and both were descendants of king David, from whom the prophesied Jewish Messiah would come. Before the marriage, the archangel Gabriel came to Mary and announced she would bear a son conceived by the Spirit of God. His name would be Emmanuel, which means "God is with us." Gabriel also appeared to Joseph to reassure him about the marriage despite Mary's pregnancy. After the birth of Jesus, Mary and Joseph had natural children in addition to him. Mary survived Jesus but Joseph did not. Jesus himself never married; although this was very uncommon for a Jew of his day. We know little about Jesus' youth, but at 12 years old he conversed with the priests in the temple and showed great wisdom. He calmly stated that he was only about his father's work. Jesus was an obscure and humble carpenter until around age 30. Then he started a public ministry which lasted approximately 3 years. He traveled, preached, and instructed a group of 12 disciples. He did countless miracles of great variety, including raising the dead. He taught love for God and fellow man, and he promised eternal life to anyone who would believe in him. Jesus proclaimed Himself to be the only Son of the only God (the Father). He taught that he was one with the Father and therefore divine. The Jewish priests forced Jesus' death by crucifixion. However, Jesus predicted it far in advance and stated that he was allowing it to happen. His horrible death would be payment for all the transgressions of mankind. Jesus rose from the dead 3 days after his crucifixion. This too he predicted and so did the ancient Jewish scriptures.

In summary, then, Zoroaster preached the monotheistic worship of Ahura Mazda. Buddha, coming out of a background of polytheistic Hinduism, did not deny the existence of gods, but the religion he originally founded was one whose chief focus was on man rather than any god. Socrates did not fully subscribe to the religion and gods of his day. This is largely why he was put to death. However, he had a deep sense of the supernatural, and in Xenophon's *Apology*, Socrates says, "As for introducing 'new divinities,' how can I be guilty of that merely in asserting that a voice of God is made manifest to me indicating my duty?" Muhammad emphatically stressed the existence of one supreme God. Muhammad himself was deeply aware of his own imperfection and did not claim to be anything but a mortal messenger (Koran 7:188; 17:95). Confucius was a moral teacher only, but of great wisdom. Lastly, Jesus claimed to be

divine and the saviour of the world. He did great supernatural feats and promised eternal life to his followers.

We have now briefly considered many of the prominent religious and moral leaders of history. None actively denied the existence of the supernatural, most believed in some form of it, but Jesus made a startling claim about himself. Jesus claimed to be God! He did not claim to be just a messenger or prophet from God, but rather he claimed to be God incarnate. Now this is very interesting and deserves further attention. For if it is true, we have only to study Jesus' life and words to discover much about who God is and his relationship to man. All other information about God will have to be interpreted in the light of what we know about Jesus. We are tempted to say, "God would never appear as a man, let alone at the time and in the form of Jesus." This is only a theory however. Let us consider objectively the historic and scientific evidence surrounding the life of Jesus Christ.

First we need to realize that the Gospels, the most detailed history we have of Jesus' life, are very authentic -- actually more so than any other writing of antiquity. We have thousands of manuscripts and some date to within only a century of the actual writings. A careful study of the manuscripts shows that they are nearly identical. These facts mean that the Gospels we have today are almost identical to what was actually written many centuries ago. The Gospel of Mark was written around 50 A.D., that of Luke, 60 A.D., that of Matthew, 70 A.D., and that of John, 80 A.D.

Concerning the internal validity of the writings, the following may be said. The Gospels were written by four different men of various backgrounds. They were not in close collaboration when they wrote, but their histories of Jesus agree on every major detail. The several other authors who contributed to the New Testament, such as Peter, Paul, and James, also all agree on Jesus. What was written has also stood the test of historical scrutiny. That is to say, archaeological evidence and concurrent secular writings strongly support the internal validity of the New Testament. Luke in particular was an excellent historian.

Given that the Gospels are authentic and valid, which they strongly seem to be, there is really very little question about Jesus' divinity. He claimed numerous times to be God's only Son, promised eternal life to His followers, did all manner of miracles, and rose from the dead as He promised. In delving deeper into these issues, let us consider who Jesus himself claimed to be. This is

important, because almost no one would deny that Jesus lived and was a great man. So what did this great and noble man say about himself? Well, it has been said that anyone who can read the Gospels and not see that Jesus claimed to be more than a man can also look all over the sky on a cloudless day at high noon and not see the sun.

Jesus claimed to be God in his direct speech. Let us consider a few examples: "Your father Abraham rejoiced that he was to see the time of my coming; he saw it and was glad." They said to him, "You are not even fifty years old -- and you have seen Abraham?" "I am telling you the truth," Jesus replied. "Before Abraham was born, 'I Am' " [John 8:56-58]. This passage, from the Gospel of John, seems to indicate Jesus' pre-existence, but its full meaning is brought to light from the Old Testament: God answered, "I will be with you, and when you bring the people out of Egypt, you will worship me on this mountain. That will be the proof that I have sent you." But Moses replied, "When I go to the Israelites and say to them, 'The God of your ancestors sent me to you,' they will ask me, 'What is his name?' So what can I tell them?" God said, "I Am Who I Am. You must tell them: 'The one who is called I AM has sent me to you' " [Exodus 3:12-14]. In other words, Jesus claimed the name of God: I Am. Further consider these words of Jesus: "You belong to this world here below, but I come from above. You are from this world, but I am not from this world. That is why I told you that you will die in your sins. And you will die in your sins if you do not believe that 'I Am Who I Am' " (John 8:23-24).

Jesus was put to death for being Who He was; let us consider an excerpt from His trial: "Again the High Priest questioned him, 'Are you the Messiah, the Son of the Blessed God?' 'I am,' answered Jesus, 'and you will all see the Son of Man seated at the right side of the Almighty and coming with the clouds of heaven!' " (Mark 14:61,62).

Besides His direct claims to deity, Jesus also implicitly claimed to be God in His life and words. Jesus accepted worship as God in the stories of the man born blind (John 9) and the leper who thanked Him after being healed (Luke 17). Jesus praises Peter after Peter's proclamation: "You are the Messiah, the Son of the living God" (Matt. 16:16). Similarly, Jesus accepts Thomas' words to Him: "My Lord and my God!" (John 20:28). Note that Thomas directly calls Jesus God. We might also note here that every New Testament writer accepted Jesus' divinity. For Paul's explanation see Colossians 1:15-19.

Another way Jesus showed his divinity was to promise eternal life to his

followers. The average man or prophet just doesn't do this. Only God has the power to give eternal life. Consider Jesus' words: "Whoever drinks this water will get thirsty again, but whoever drinks the water that I will give him will never be thirsty again. The water that I will give him will become in him a spring which will provide him with life-giving water and give him eternal life" (John 4:13,14). "For what my Father wants is that all who see the Son and believe in him should have eternal life. And I will raise them to life on the last day" (John 6:40). "I am telling you the truth: he who believes has eternal life" (John 6:47). "I am telling you the truth: whoever obeys my teaching will never die" (John 8:51). "I am the resurrection and the life. Whoever believes in me will live, even though he dies; and whoever lives and believes in me will never die. Do you believe this?" (John 11:25,26). In His description of judging all mankind at a latter date in time Jesus makes this statement: "These, then, will be sent off to eternal punishment, but the righteous will go to eternal life" (Matt. 25:46). Also from Matthew we read "And everyone who has left houses or brothers or sisters or father or mother or children or fields for my sake, will receive a hundred times more and will be given eternal life" (Matt. 19:29).

Remember, now, these are the words of a man who almost everyone would agree was one of, if not the most, noble and good who ever lived. The typical man on the street if he is not a believer in Jesus would at least say Jesus was a great and good man. The Muslims consider Jesus to be a great prophet, and Buddhists often praise Him. If Jesus is so great and good, would He lie about such things as His identity or His ability to grant eternal life? Of course not!

Next let us consider Jesus' power to perform miracles. Just as with His claims to deity, Jesus' miracles leap off almost every page of the Gospels. He had power over nature, sickness, and even death. Jesus turns water into wine (John 2), calms a storm at sea (Matt. 8; Mark 4; Luke 8), walks on water (Matt. 14; Mark 6; John 6), and multiplies food in an instant (Matt. 15; Mark 8; Matt. 14; Luke 9; John 6; Mark 6). Jesus healed many, many people. All of the accounts are not given for we read "Jesus healed them all." However, just to mention a few of the healings for which we have details, consider the man with a dreaded skin disease (Matt. 8:1-4; Mark 1:40-45; Luke 5:12-16), the paralyzed man (Matt. 9:1-8; Mark 2:1-12; Luke 5:17-26), the woman who touched Jesus' cloak (Matt. 9:18-22; Mark 5:21-43; Luke 8:40-56), the two blind men (Matt. 9:27-31), and the man with a withered hand (Matt. 12:9-14; Mark 3:1-6; Luke 6:6-11).

As if these feats of healing weren't enough, we also have three accounts of Jesus raising people from the dead. They are the raising of Jairus' 12-year-old

daughter (Matt. 9:18-26; Mark 5:21-43; Luke 8:40-56), the raising of the widow's son (Luke 7:11-17), and the raising of Lazarus (John 11:1-44). The reader should really take the time to read these incredible accounts. In addition, Jesus Himself rose from the dead, and not only this He calmly predicted it and gave many details on several occasions. This fact is thoroughly supported by the Gospels (John 2:18-22; John 12:27-33; Luke 9:22; Matt. 16:21; Mark 8:31; Matt. 20:17-19; Mark 10:32-34; Luke 18:31-34).

Besides all this evidence, even secular history confirms that Jesus lived, was crucified, and that His body was never found. It also confirms that He has been worshipped as God by millions upon millions of people for the past 2,000 years. Again, no other great religious leader ever claimed to be God, and no one who ever lived has convinced a large portion of the population that he was God -- except Jesus Christ. Of all great men, only Jesus predicted His own resurrection from the dead and then calmly proceeded to do so. Only Jesus' tomb is empty. Of the many documented, undeniable miracles which are still performed today, the vast majority are done in the name of Jesus Christ.

Who Jesus was is not a matter of religion. It is not even a matter of opinion. It is a matter of fact. Jesus was God, period. I have only given a brief overview of the vast evidence. If the reader would like to study the matter further he may wish to consult the many books written on the subject. In particular I recommend Josh McDowell's excellent work *Evidence That Demands A Verdict*. Before moving on, it need be stated that no one who sincerely and objectively considers the evidence can come to any other conclusion about Jesus than that He was exactly who He claimed to be -- The Son of Almighty God, and as such God in the flesh.

The Bible is flawed, and there are probably errors even in the passages just quoted. However, one thing is clear: Jesus was God. This theme is repeated directly or indirectly in almost every page of the Gospels. In the earlier example of the flawed book about JFK's inauguration, the fact that he was inaugurated would not be questioned; there's just too much evidence. In the same way, while the Bible may be flawed it is still nonetheless a valuable historical document, and Jesus' divinity cannot be questioned; there's just too much evidence. To cut out Jesus' divinity one would have to throw away most of the New Testament -- the most popular book in all of history and the most authentic book of antiquity.

This then is truly amazing. We have found God! Not only this but a careful study of the Bible gives us much information about God's nature, man's nature,

and the relationship between God and man. This is true because the Bible gives many, many quotes of Jesus along with other information about His life, along with the writings of several men who knew God. It is found among other things that true belief in Jesus brings eternal life to the believer (this will be discussed in the final chapter). This is again amazing, and what more does a human being want than eternal life in heaven with God? However, most people do not accept Jesus as both God and personal savior. Why is this? To help us in our understanding we now look at another aspect of the universe.

A study of the Bible and other evidence reveals that before man was created, God created supernatural beings called angels. They are spirits like God and intelligent. Almost everyone has heard of this concept of angels. However, we really don't know exactly how many God created, or when, or how powerful they really are. I will here propose theories, based on what we already know, to try and answer these questions.

We know from science that the laws which govern this existence have not changed significantly over the lifetime of the universe. We also know that from these laws we developed on this planet to live in a world where evil is common. This implies that evil has existed a long time and that it is a fundamental part of the universe. Now Jesus said about the Devil, "From the very beginning he was a murderer and has never been on the side of truth, because there is no truth in him. When he tells a lie, he is only doing what is natural to him, because he is a liar and the father of all lies" (John 8:44). In the scripture just quoted, note the words "very beginning" and "father of all lies." God must have created a great order of very powerful supernatural spirits before any of this material world we see today existed, and many of them turned against God to pervert the entire universe. They were created at least 10 billion years ago, because the universe is at least that old. As to the number He created, we can only roughly speculate. But if there are just 10 angels for every star we see today in the universe, then there would be something like 100 billion trillion angels. Remember our Galaxy, the Milky Way, is composed of roughly 100 billion stars. Ten times this is a trillion, and we know of at least 100 billion other galaxies.

The angels were created to be eternal, and also they were very powerful. They were created to assist God in His further creation. This is only logical, because we were created by God -- the source of all life -- and have been given by Him powers to participate and create. We write songs, build houses, gain knowledge, land men on the moon, and so forth. We, of course, even participate in the creation of new human beings, and we may in hundreds of years be able to make

robots as intelligent as humans. Now if we can do all this, imagine what the angels must be capable of! They were created far superior to us and were intended to participate to a much greater degree. When the apostles were concerned about Jesus' safety in the Garden of Gethsemane, Jesus said, "Don't you know that I could call on my Father for help, and at once he would send me more than twelve armies of angels?" (Matt. 26:53).

God did not create all the angels exactly alike just as all humans are not alike. Some were gifted in different areas and so forth. Also, not all the angels had the same degree of power. Of the exact nature of the hierarchy, again, it is hard to speculate. However, God seems to have created a handful of, next to Him, the most powerful beings in the universe. We know of at least three of them. They are the archangels Michael, Gabriel, and Lucifer. These may be the most powerful beings ever created by God in the entire universe. Since we now know something about the size and age of the universe, that is really saying something.

The universe was a spectacular, beautiful place filled with glorious, intelligent spiritual beings. There was no evil or suffering of any kind. However, for life to have real meaning, God created the angels with a free will. They were not robots but free moral agents. Now God, being the creator and also being perfect and infinite in His wisdom and judgment, has the right to ask submission and obedience to His will. Lucifer, one of the archangels and greatest beings ever created by God in the entire universe, didn't like this idea. Since there were only a few beings as great or greater than himself, Lucifer decided to exalt himself above God's will, and he claimed the right to rule the universe instead of God. He was egotistic, proud, and wrong.

Many lesser angels aligned themselves with Lucifer and worshipped him instead of God. Exactly how many, again, it is hard to speculate. Whatever the number, it was probably a significant fraction. There was a war in heaven, but since God is infinite He could not lose. He judged Lucifer and the rebellious angels by taking away much of their power and glory. They were to remain in the universe as perverted and fallen beings. Lucifer is referred to as Satan, and the fallen angels, who serve him, as demons. Why God did not simply end their existence or influence completely is not known. However, God does not go back on His word, and in a sense He is bound by it. When He created the angels He created them with certain rights and privileges which even He would not violate. The situation is probably a little like crime is today. What society can do to criminals, to bind and limit them, is governed by laws, and only so much can be done.

How God created the angels is not known. Whether they developed in some sense as humans do is not known. How long the magnificent spiritual universe existed before the fall is also not known. However, it probably was not very long, for, again, think of Jesus' remark: "You are the children of your father, the Devil, and you want to follow your father's desires. From the very beginning he was a murderer and has never been on the side of truth, because there is no truth in him. When he tells a lie, he is only doing what is natural to him, because he is a liar and the father of all lies" (John 8:44).

The fall was a catastrophic (to say the least) event and brought evil into the universe for the first time. From henceforth, Satan and the powers of darkness would oppose God and the powers of good as God further created. Again, God continued creation and His plans, despite Satan, due to the laws under which He initially created the universe. God would continue His plans under the present conditions for a certain time. Then this present age and order will come to an end on the "last day," which Jesus often referred to. For instance, consider Jesus' words: "For what my Father wants is that all who see the Son and believe in him should have eternal life. And I will raise them to life on the last day" (John 6:40). God will judge all beings and separate the good from the bad forever. The good will live with Him in heaven in perfection, while the bad will cease to exist or spend eternity in hell in suffering. The conflict between good and evil will end. God will most likely stop creating new beings, but the beings that do exist in heaven will continue to develop.

Remember that the angels were great beings and fundamental parts of God's creation. They were to have a very significant part in God's further creation. After the fall, God created the material universe we see. It started with a "Big Bang" approximately 10-20 billion years ago. Then the galaxies formed, life developed, and so forth. However, due to the influence of Satan and demon powers, the entire universe is perverted. The apostle Paul seems to have understood this, for we read him say, "Put on all the armor that God gives you, so that you will be able to stand up against the Devil's evil tricks. For we are not fighting against human beings but against the wicked spiritual forces in the heavenly world, the rulers, authorities, and cosmic powers of this dark age" (Eph. 6:11,12). Also see Colossians 2:8,20 and 2 Corinthians 4:3-4 ("god of this world"). The apostle John, in 1 John 5:19, states, "We know that we belong to God even though the whole world is under the rule of the Evil One." Also, Jesus referred to the Devil as not just an evil spirit but "the ruler of this world" (John 14:30), implying that the Devil's influence over the Earth is profound indeed.

The universe is not perverted on a superficial, easy to understand level, but the very laws which govern subatomic particles may be affected. In other words the perversion is deep, and we are caught almost, as it were, as pawns in a titanic spiritual struggle between good and evil. The conflict rages all across the universe -- in one galaxy and in another billions of light-years away. God and angels (perhaps myriads) serving Him are being opposed by Satan and demons (perhaps myriads), as God attempts to create and do good across the universe.

This explains our seemingly bizarre existence of birth, death, suffering, misunderstanding, and war. It also explains chaos in the universe, suffering in the animal kingdom and our development from these lower forms of life. But yet we struggle to understand, love, and do what is right. Let us now look at our origins, to better understand our position in the universe.

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Science and Christianity: Chapter 4. A Lesson in Life Upon the Earth



CHAPTER 4

A LESSON IN LIFE UPON THE EARTH

One of the most talked about issues today, both in and out of the church, is the question of evolution. Most Christians believe in either a literal interpretation of Genesis or a modified version where a day may not have meant a literal 24-hour period. In either case there is still a strong belief in the basic story of man's origin. That is, that God created the heavens and Earth and then two human beings, Adam and Eve, from whom we are all descended. Most scientists, on the other hand, are evolutionists. They believe from an objective scientific approach, using observation and experimentation, that the evidence clearly points to life having started in the sea billions of years ago followed by a slow process of change or evolution until we have the creatures, including man, that we see today.

Now remember, as was stated in the first chapter, there are two basic foundations for knowledge -- one being observation and experimentation, the other being divine revelation from God. The creationists base their arguments on the creation story as being the literal word of God, and therefore they assume that it must be correct. Since God said it, it must be right, and all observation, experimentation, and theory must be interpreted in this light. The evolutionists, on the other hand, do not start with any Biblical premise but rather are more swayed by scientific fact.

The Bible is a very valid source, but it must be weighed against other evidence.

If the Bible turns out to be wrong in areas, then it's wrong. In forming models of the universe we live in, our models often start out crude. Not surprisingly, this is true in a spiritual as well as physical sense. The story of creation as given in the Bible is a very crude model for what actually happened. Still, it does make some valid points. Moses was a man of God and had insight from Him (Moses is thought to have written Genesis and the creation account). The story is correct in identifying God as the supreme being and creator. The story is also correct in identifying Satan as the main opponent of God and man. There are also many valid points about the relationship between God, Satan, and man. And even in a scientific sense the account is right in many of its assumptions. For instance when the Earth was first created 4.5 billion years ago, it is fair to say that it was "formless and desolate" (Gen. 1:2). The story as a whole, however, taken in a literal sense is badly flawed.

As was mentioned earlier, there are practically no scientists today who doubt that life, including man, evolved on this planet. The evidence is just too overwhelming to the objective mind. There is a heated debate today over the exact mechanisms involved in the evolutionary process, but this is only a result of scientists attempting to further improve their understanding. The fact of evolution is not debated. It is much the same as astronomers debating whether or not the physical universe will one day halt its expansion and collapse. The fact that it is expanding right now is not debated, only whether it will one day halt (by the way, the evidence is favoring a never ending expansion). We will discuss evolution and man's origins later in the chapter, but for now let us first look at the creation story found in Genesis. We will note that besides the overwhelming scientific evidence against its literal interpretation the story contradicts itself.

"In the beginning, when God created the universe, the earth was formless and desolate" (Gen. 1:1,2). Everyone has heard this passage many times. It is the first sentence in the Bible. Now we are fairly certain that this present material universe began 10 to 20 billion years ago with a gigantic explosion -- the Big Bang. The Earth, on the other hand, is known to be approximately 4.5 billion years old from uranium 238 decay and other evidence. This means that the time from the beginning of the universe to the formation of the Earth is at least 5 billion years. So the author of Genesis covers at least 5 billion years, or half the time of the existence of the universe, in one sentence. There is no mention of the Big Bang, no mention of the expansion of the universe and formation of galaxies and stars, no mention of the formation of our solar system with the sun at the center. Later on in Genesis there is the mention of the formation of the sun,

moon, and stars: "So God made the two larger lights, the sun to rule over the day and the moon to rule over the night; he also made the stars" (Gen. 1:16). However, this statement comes several verses after the verse: "Then God commanded, 'Let there be light' -- and light appeared" (Gen. 1:3). Worse still, it (Gen. 1:16) also comes after the verse: "Then he commanded, 'Let the earth produce all kinds of plants, those that bear grain and those that bear fruit' -- and it was done" (Gen. 1:11).

So according to Genesis, day and night were created first, followed by plants, and finally the sun was created. Of course this is ridiculous, and one might try to argue that Moses was not implying a strict sequence of events. However, it is quite clear from the text that day and night were created on the first day, plants on the third day, and finally the sun on the fourth day. In addition, stars were also created on the fourth day, which is absurd. The stars existed before both the sun and Earth.

Now we know, again, from evidence which few objective scientists deny, that vegetation has only existed on the land masses of the Earth for the last 400 million years. This means that Moses not only has the events out of order, but he is off by billions of years. Also one has to speculate on Moses' understanding of the sun. For the sun was not created before or at the same time as day, but rather the sun was created after day in order to rule over it.

A few examples of the story clearly contradicting itself are given below. Animals were created first (Gen. 1:24) and men were created latter (Gen. 1:26). Yet in Genesis 2:7 God created the first man, Adam, and then we read in Genesis 2:18,19 "Then the Lord God said, 'It is not good for the man to live alone. I will make a suitable companion to help him.' So he took some soil from the ground and formed all the animals and all the birds."

If Adam and Eve were the first and second humans, then their first two sons, Cain and Abel, were the only others. There is no mention of Adam and Eve having any other children until after Cain kills Abel: "Adam and his wife had another son. She said, 'God has given me a son to replace Abel, whom Cain killed' " (Gen. 4:25). For his crime, God punishes Cain by forcing him to be a homeless wanderer (Gen. 4:12). If there were only two other adult humans on Earth (Adam and Eve), Cain should have no fear of other men. However, Cain expresses fear of other men and God protects him (Gen. 4:13-16). Not only this, Cain finds a wife, settles down, and builds a city (Gen. 4:17).

Now these are some of the fallacies of the creation story; there are many more. The point is that to the objective mind the story is not correct. The universe, the Earth, and man simply did not come into existence as described. We know this from concrete scientific evidence, and the story contradicts itself several times. The story is only correct in the crudest sense. It is a beginning model for the spiritual universe, much as the flat-Earth theory was a beginning model for the physical universe. Those who try and rationalize the creation story to be correct base their arguments on a false assumption: that the Bible must be perfectly correct. They start with this theory, which they will not change, and try to make the facts conform. Now this is not how the method of observation and experimentation works. Theory (that which is presumed and to be tested) must conform to fact (that which is known for sure). Fact cannot be made to conform to theory. As was pointed out in chapter 1, the Bible, for the most part, was written by inspired men of God. It was not written directly by God. In many places the Bible is clearly right, but in many others it is just as wrong.

Science has given us everything from the telephone, to the electric light, to air conditioning, to television. We have landed men on the moon, and sent spacecraft past the outer planets. It would not be possible to do these things if the science behind them was wrong. And the same kind of reasoning and scientific knowledge which has given us these wonders has also given us our understanding of the physical universe as described in chapter 2. For instance, scientists have a firm grasp of many of the laws which govern the behavior of the nucleus of the atom. This is why scientists were able to split the uranium atom and begin the nuclear age. When the first atom bomb was exploded in 1945, it was not an accident. What would happen was theoretically predicted based upon the facts scientists knew. Now scientists also understand much about the atomic decay of uranium into other elements. This knowledge is one way to determine the age of the Earth. That scientists are grossly wrong in their prediction of the Earth's age is highly unlikely. It is, again, around 4.5 billion years old. Yet many Bible scholars for many years held that the Earth was around 6,000 years old.

Science too has learned much about the origins of life and mankind. Let us start with the newly formed Earth. It was hot and water did not exist in liquid form. A primitive atmosphere of ammonia and methane existed. Active volcanoes were numerous and there was no life anywhere. Around a billion years pass. The Earth cools down, oceans form, and the primitive atmosphere changes slightly. There is lightning, rain, and thunderstorms periodically, as there is today. By the way, it seems highly unlikely that rain first fell upon the Earth in

Noah's day as many Bible scholars contend.

We know that there are around 100 basic elements such as hydrogen, oxygen, etc. The elements are capable of combining to form almost an infinite variety of molecules, from water to DNA. Due to lightning and other external forces, more and more complex molecules began to be built up in the primitive oceans. Also, molecules would change spontaneously. That is, certain molecules would form and then change into others. Considering the laws of physics and chemistry this is not really strange. For instance good whiskey improves with age due to gradual changes in its chemistry. These changes are spontaneous, occurring as the bottle simply sits on a shelf.

So we have now a primitive Earth where many, many molecules are forming. A variety of reactions and changes occur in the molecules continually. This process goes on for hundreds of millions of years. Note that a time span of 200 million years is a million times longer than the age of the United States. Eventually something very important happens. A molecule is formed which has the capacity to reproduce itself. It has a certain molecular structure, and as it moves in the ocean it attaches a variety of loose molecules to itself. Eventually it has a double structure, one consisting of the original molecule, the other consisting of a duplicate molecule. The two identical molecules then split. This may be considered the beginning of life, because the molecule, in a very primitive sense, eats food and reproduces itself.

This very primitive life form spreads throughout much of the oceans of the Earth. This life form and the other molecules continue to undergo change due to external forces and spontaneous changes. Millions upon millions of years again pass. New, different, and more complex reproducing molecules arise. As these primitive forms of life begin to crowd the seas, a competition arises for the food molecules they need to survive. The more advanced life forms win out and dominate. However, there is often, but not always, still a place for the more primitive ones. All of this is based on the fact that things do not stay exactly the same as the eons pass. A bolt of lightning hits the ocean just right one day and a new molecule is formed. A reproducing molecule, due to spontaneity, does not reproduce itself exactly and there is another different life form, and so forth.

Hundreds of millions of years pass. Then something new comes onto the scene, a cell. It is bigger, more organized, and capable of doing more than the simple reproducing molecules. Cells now advance and develop in much the same way as the primitive molecules did. There are many one celled animals, which

compete with one another for food. They reproduce by division. Cells which are more advanced and adapted to their environment increase in number. Cells less adapted and unable to compete decrease in number, and some forms disappear altogether. External forces and spontaneous occurrences continue to cause change in the organisms. Primitive cells in the form of bacteria have existed on the Earth for billions of years.

Now another significant advancement takes place: multiple cell organisms begin to appear. The process of change and advancement continues, and countless cells begin to organize themselves into organisms. Primitive animals arise with male and female representatives. Sex becomes the mode of reproduction rather than simple cell division. Seemingly incredible advancement has taken place since the formation of the Earth. Yet things have only begun. Let us look now at the development of life from when primitive multi-celled animals left numerous fossils, due to the development of hard shells and bones.

It is approximately 600 million years ago, and the land masses are still devoid of life. Plants and invertebrate animals thrive in warm shallow seas. The most advanced form of life is a little animal, about an inch long, which crawls on the ocean floor. It is called a trilobite. One hundred million years pass and the first coral and vertebrates appear -- small armored fishes. Another hundred million years pass and the first land plants and land animals arise. These first land animals are like scorpions, while the seas become bountiful with fish and invertebrates. Next, amphibians develop from fish who learned to crawl from evaporating pool to pool to stay alive.

Another 100 million years pass; the time is now about 300 million years ago. The middle United States is under water, and plants become numerous on land. Shortly after this we have what is called the "age of insects," because insects appear in amazing number and large size, along with great coal deposits and the first reptiles. Next, from these reptiles, fin-backed lizards evolve -- forerunners of the great dinosaurs. Also the first beetles are seen. Time passes and when it is 200 million years ago we see the first land dinosaurs walking on hind legs. Another 50 million years pass and the first small mammals and birds come on the scene, while reptiles of all shapes and sizes occupy the land, sea, and air. By the time it becomes 100 million years ago, dinosaurs rule the Earth. Also we see the first flowering plants and modern trees.

The dinosaurs suddenly disappear now, and mammals arise and evolve to take their place. There are many different and varied types, including hoofed

mammals and carnivores. Evolution continues, species change and some die off all together. This continues up to the present, and approximately one million years ago a new mammal evolves -- man. Also during this time continental ice sheets spread over much of the Northern Hemisphere.

Before moving on to a more detailed account of the rise of human beings, it would be beneficial to think further about this whole question of evolution. Let's first start with what we know for a fact. We know for a fact, from an extensive fossil record, that more primitive forms of life existed before more advanced forms. Often less advanced forms died off and became extinct. Now either the more advanced forms developed, or evolved, from the more primitive forms, or more advanced forms were suddenly created. We know, from everyday observation, that things do not suddenly pop into existence from nothingness. Even Christ when He multiplied the loafs and fishes started with a small amount of the same (John 6:1-13). Also when Christ made wine at a wedding, He did not do so out of nothing but rather turned water into wine (John 2:1-11). Also we know that almost everything in the universe is changing from existing forms: the whole universe is expanding, galaxies are evolving, stars are being born, evolve, and die, the Earth is slowing down as it spins, man's knowledge is increasing, etc., etc. Is it not also reasonable to suppose that life is changing and developing?

But are there other evidences which support evolution? Yes. We know for a fact that mutations, or changes, occur in animals and their offspring. This happens because the genetic code, the blueprint for life, contained within the chromosomes of the cells sometimes experiences change due to external forces and spontaneity. Sometimes a change is subtle, sometimes drastic. Now many hundreds of millions of years ago life was very primitive. It is easy to see that any random mutation which caused a creature to be more advanced would give that creature a better chance at survival. The creature could then pass the new gene to its descendants. Less advanced creatures might have trouble competing. This could all happen in an environment which stayed basically the same.

As life developed and spread all over the Earth, the above process continued. However, as life became more advanced, another important factor came into play. This is the fact that environments on the Earth are constantly changing, sometimes slowly, sometimes quickly and drastically. We know this from natural history and the fossil record. For instance the land masses of the Earth were at one time much closer together, but because of continental drift they have moved thousands of miles over the age of the Earth. Climates changed on

the land masses as they shifted their north-south position from the equator. Also, there have been global temperature changes. These changes in temperature could have resulted from fluctuations in the sun's radiation, or changes in the Earth's atmosphere, or changes in the Earth's orbit and tilt. Due to temperature changes, the amount of frozen water on the Earth has varied greatly over time. For instance most of the central United States was under water at one time. Later, great continental ice sheets covered much of the Northern Hemisphere. In addition to the above, cataclysmic events also change the Earth's environments. Volcanoes erupt on land and sea. Large meteors from space and even comets occasionally strike the Earth. A large impact is thought to have perhaps caused the extinction of the dinosaurs 65 million years ago.

The change in environments necessitated that animals also change (evolve) to meet the challenge. Only the animals best suited to their environments survived. We note today that all animals are well suited to their natural environments. For instance, giraffes have long necks in order to reach the leaves they eat, tigers are fast and have large canines to help them hunt and kill their prey, and penguins have extremely warm feathers to protect them from the Antarctic cold.

Although we do not understand every detail, evolution is by far the most reasonable explanation for the development of life upon the Earth and for the past and present animals we see. Evolution is greatly supported by scientific fact, especially the extensive fossil record. The overwhelming majority of scientists support the theory of evolution.

Anyway, human evolution runs something like this. About 60 million years ago a group of small mammals began to live in trees. These were tree shrews. They evolved into a number of animals called prosimians, which were larger and more adapted to tree living than the shrews. Various prosimians then evolved into monkeys. Monkeys are, in general, more intelligent and adapted to tree living than prosimians. By the time monkeys appeared, there were a great variety of primates. Primates are all these animals and also the apes and man. Variety was caused by many different trees and climates around the world. Also primates lived in different levels of the trees which called for different adaptations.

As forests retreated in some areas due to climatic changes, some species of monkey started to come down from the trees and live on the ground again. They evolved slightly to meet this change. Present day baboons and macaques are good examples. Monkeys are actually well adapted to make this change,

because in the trees they run along the tops of branches on all four of their extremities. Once on the ground, they can run like a dog or cat. Now of the monkeys which remained in the trees, which were the vast majority, a few evolved into apes. The present day gibbon, orangutan, chimpanzee, and gorilla are examples. Apes are different from monkeys, because instead of running along the branches of trees, they swing from branch to branch with their arms and legs.

Just as with monkeys, certain species of apes began to live on the ground. But whereas a monkey can easily adapt to running on the ground, because he runs along the tops of branches, this is not the case for apes. Apes swing through trees, and the readaptation to ground living was more awkward. Since the apes were not well adapted to ground living, they needed to evolve in some way in order to have a long term chance at survival. Now the apes made a remarkable adjustment indeed! They began to walk upright, which freed their highly dexterous hands. Their brains began to increase in size and use the hands to make tools. This gave the ground dwelling apes a great advantage over all other animals. Eventually they evolved into man and dominated the world.

This is all truly remarkable and fascinating, and while all the details may not be correct, the scientific model given here for the creation of life upon the Earth is much more accurate than the creation story given in the Bible. Although the creation story is not completely in error but has a little validity. However, the scientific model is much more factual and almost universally accepted by scientists, schools, and universities. The evolutionary approach does not preclude the existence of God, just as the sun-centered solar system of Copernicus did not. It simply means, as it did then, that God and the universe He created are much bigger and more complex than we at first imagined.

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Science and Christianity: Chapter 5. Who is Man, Really?



New York Casino, Las Vegas

CHAPTER 5 WHO IS MAN, REALLY?

Now that we have a good model for the nature of the universe in both a physical and spiritual sense, and because we now know man's physical position in the universe, we can explore man's true identity spiritually. Some theologians, without a clear picture of the universe, have conceived man to be God's highest ultimate creation and the center and meaning of all life. They thought of angels as "ministering spirits" (Heb. 1:14) created to serve man. How shocking it is to realize that this is not the case at all. A man's average life span is but 70 years, and we are evolved from apes. The universe, on the other hand, and the great spiritual beings in it have existed for billions of years. The number of these spiritual beings may be unimaginable, and their powers affect the fundamental laws of the entire universe. For they were created before it. Man is caught in the middle of a titanic spiritual battle which rages across billions of light-years in distant galaxies from one corner of the universe to the other. Satan and demons war against God and the angels as He works to create and do good.

To further put things in their proper place, let us consider the possibility of intelligent life, similar to man, existing elsewhere in the universe. Although there have been many sightings of UFO's and reports of "close encounters," no real "hard" evidence such as an alien book or machine or corpse has ever been found. It's a big universe and man has been on the scene only a very short time. The universe could be full of intelligent life which we are not directly aware of.

Rather than trying to prove that we have been visited by aliens, let's consider another approach. Let's try to predict the probability, based on what we understand, of intelligent life developing elsewhere in the universe.

It is reasonable to suppose that if the conditions which gave rise to life upon the Earth are duplicated in other parts of the universe then life will have a high probability of developing there also. The first question to ask is: how common is our star the sun? Well our sun is "normal" and a little hotter than the average star; it has a lifetime of around 10 billion years. Stars of this nature make up about 2% of the stars in the Milky Way Galaxy. Our sun has the further distinction of being a "single" star. That is, it has no companion star which orbits it. At least half the stars in the Galaxy are not "single" but rather "double" or "triple" stars. Therefore approximately 1% of the stars in the Galaxy are like the sun if we add this constraint.

In addition, the sun is 5 billion years old (the Galaxy is 10 billion years old) and formed in the spiral arms of the Galaxy, as opposed to the central regions. This latter constraint might make a difference in chemical composition. Now if we assume a uniform rate of formation of the stars and only consider stars between 4 and 9 billion years old, this reduces our 1% figure to .5%. Of these, at least half are in the spiral arms, so we are left with a rough figure of .25%. In other words, of the stars in our Galaxy, the Milky Way, approximately 1/4 of 1% are very similar to the sun. Since the Milky Way consists of around 100 billion stars, it is safe to say that there are 250 million stars like the sun and capable of supporting intelligent life.

Next we should ask the following. Of the stars capable of supporting intelligent life, how many have planets similar to Earth? Looking at our own solar system, we note that it consists of 9 planets spaced fairly regularly from very close to the sun (Mercury) to very far away (Pluto). This implies that the sun and planets condensed from an interstellar cloud of dust and gas. The cloud flattened into a disk while rotating, and the sun and planets formed from the material. Such a process is highly likely, given our understanding of physics and astronomy, and is probably the norm rather than the exception. We also know, from careful studies, that nearby stars, particularly Barnard's Star, seem to have planets. Getting back to our solar system, Venus and Mars are similar to the Earth in many ways, and these planets were almost "life supporting" like the Earth. Mars in particular once had great rivers of running water on its surface. It is, therefore, reasonable to assume that of the stars capable of supporting intelligent life, many also have planets suitable for life.

As a rough, conservative guess, let us say there are 100 million such planets in our Galaxy. Now of these, on how many has any kind of life actually arisen? Well we know from laboratory experiments that the molecules necessary for life readily form, and even in interstellar space, complex molecules containing half a dozen or more atoms have been discovered. Simple life, in the form of reproducing molecules, would most likely arise on any planet similar to the Earth revolving around a star similar to the sun.

The evolution now from reproducing molecules to intelligent creatures would slowly begin. It seems reasonable that life would eventually overrun a planet and develop into all kinds of forms, just as life has on Earth. In particular, trees and the creatures which live in them would develop. Certain of these creatures would doubtless become limb swinging apes just as on our planet. Some of these apes would eventually readapt to ground living developing large brains and erect posture. These intelligent creatures would be similar to us but truly beings from another world. They might have all kinds of modifications to the basic humanoid appearance, such as different heights, weights, colors and textures of hair, and relative sizes of limbs and features.

Now barring catastrophic events, such as the splitting apart of a planet by a huge meteor or the death of all life due to the explosion of a nearby star, it is likely that of the planets capable of supporting intelligent life, a significant fraction have indeed developed it. This is probably the case, for we know from our knowledge of astronomy that the catastrophic events, though not rare, are not frequent either. Also we have no reason to suppose that we will find any "unknown" factor which will grossly diminish the number of intelligent civilizations. Still, the probability of developing intelligent life is bound to be smaller than simple life. However, the probability is most likely not grossly smaller. This is, again, truly amazing and means that there are most likely millions of other intelligent races in our Galaxy alone.

Let's be conservative and say, for estimation purposes, that out of the 100 million planets we guess are capable of developing intelligent life, only 1 million actually developed an intelligent civilization. We know that there are also at least 100 billion other galaxies in the universe. This means that there are approximately 100,000 trillion intelligent civilizations similar to our own in the universe. Given that there are very roughly a billion creatures per civilization, as on our Earth, then there are 100,000 billion trillion intelligent creatures like ourselves in the universe! Moreover, new creatures with intelligence will

continue to arise in the future as the eons pass.

Many scientists believe that the above scenario is too optimistic, given the great complexity of biology. They believe that the conditions suitable for intelligent life occur much less frequently. However, even if circumstances must be "just right" for intelligent life to develop, there are still so many stars and galaxies in the universe that many intelligent societies would probably exist. For instance, if instead of a million intelligent civilizations per galaxy (as given above), there is only one intelligent civilization per million galaxies (this reduces the probability by a trillion), then there would still be 100,000 intelligent civilizations in the universe! By the way, if there is only one intelligent civilization per many, many galaxies then "close encounters" between different intelligent civilizations would almost never occur. This is because the closest galaxies are still separated by hundreds of thousands of light-years, and only the most incredibly advanced civilization could make such a journey and then find another intelligent civilization. For instance, if there is one intelligent civilization per one hundred galaxies, then any one civilization would probably never come in contact with another, but there would be roughly a billion intelligent civilizations in the universe! However, again, unless intelligent life is very sensitive to biological factors being "just right," there are probably many, many intelligent civilizations per galaxy.

To complete the argument for the existence of intelligent life in the universe other than man, let us take the above line of thought one step further. Enrico Fermi once proposed the famous question, "Where are they?", in reference to extraterrestrial intelligence (ETI). He was implying that if extraterrestrials existed, then we should be visited by them. This is a logical conclusion assuming a certain population of intelligent life within our Galaxy, because a number of these civilizations would have existed much longer than our own and would have overcome the immense difficulties of interstellar space travel. Since we do not have "hard evidence" that we are being visited, the conclusion is that ETIs must not exist.

However, since we exist, we know it is possible for the universe to produce intelligent life, but how probable is our existence? Although we know that there are many stars like our sun with probable planetary systems similar to our solar system, some astronomers argue that we are unique in the universe, requiring just the right galaxy, supernova rate, star, moon, magnetic field, thickness of crust, quantity of greenhouse gases, etc. Other astronomers believe our own Galaxy is full of intelligent life, despite Fermi's question. There is no consensus

among astronomers, biologist, and other scientists regarding the answer to this question, and it may be a long time before there is.

My answer is "here we are" implying that since we exist, there are (or will be) most likely other intelligent life forms in the universe (if not the Galaxy). If we make the simple and reasonable assumption that we are not a fluke, then our universe has -- at the very least -- a significant probability (say 50%) of producing at least one intelligent life form (us) in 10 billion years. If this is the case, then there is a good chance that there is at least one or a handful of other intelligent civilization in the universe right now or will evolve in the future.

The above argument is consistent with Occam's razor: accept the simplest explanation with the fewest assumptions and reject more fantastic and convoluted explanations. Since we exist, the simplest explanation is that the entire universe had a reasonable probability of producing at least one intelligent life form: us. Remember the universe is a big place -- much bigger than our Galaxy. The universe consists of at least 100 billion galaxies. Further, it is going to exist for a long, long time before entropy (like the slow running down of a clock) or collapse overtake it, and therefore life will continue to evolve over the eons in the universe's vastness.

Additionally, it is not inconceivable that our own race may perish in a thousand or million or billion years, and another intelligent life form evolves on this planet before our sun dies (another 5 billion years).

Let us increase the probability somewhat and suppose (purely hypothetical) that there is a 50% chance of life evolving once every 5 billion years per 100 million galaxies. This doesn't sound like much. However, when we take into account the size of the universe, it translates into hundreds of ETIs right now, and many tens of thousands over the lifetime of the universe. Further, no one ETI would ever contact another.

One footnote should be made. While the majority of scientists would say we have no "hard evidence" of ETIs, I am not as convinced as I once was that we have not already been visited. The reports of abductions, etc. cannot, in my mind, be 100% dismissed as fantasy. Although this may turn out to be the case.

God is working in the lives of these intelligent creatures also, just as He works with us. Jesus may have come to countless planets throughout the universe in the form of the intelligent life which lives there. Note in the following quote of

Jesus that He uses the article "this" instead of "the" implying that our world is not unique. "Jesus answered, 'You belong to this world here below, but I come from above. You are from this world, but I am not from this world' " (John 8:23). Of course the tremendous wicked spiritual forces, which hinder God's work on this planet, are also at work on other planets. The struggle to find God would doubtless be difficult for other intelligent civilizations just as it is difficult for us. However, it is not hard to suppose that some societies might do better than others. Some might be very close to God while others are very far away.

So in the midst of this great turmoil, man, as on other planets which contain intelligent life, is evolved from the more fundamental life forms of his planet. All of which are incapable of understanding any significant spiritual meaning to the universe. Man on the other hand, while he is far below the angels, is able to understand something of what is going on. He uses his mind to understand the universe in both a physical and spiritual sense. He constructs models, containing facts and theories about the universe, which he has arrived at through observation and experimentation. He also understands the universe through direct revelation from God. The models are only so good, though, and man continues to learn about the universe. Knowing how the universe works helps man to better function in it. For example, understanding the laws of medicine allowed Dr. Jonas Salk to discover a vaccine for polio. Knowing something about the laws of aerodynamics helped the Wright brothers to invent the airplane. And correctly understanding spiritual laws can even bring eternal life to men.

The mission of Jesus Christ, God in the flesh, upon the Earth was to reveal God to men and provide a way for us to receive eternal life. God is good, the creator, and infinite. He cares about all life everywhere. He is doing all that He can for us. However, He is being bitterly opposed by great supernatural powers, who He created and who turned from Him in the beginning in pride. That God chose to work in human history the way that He did is the most He could do. We must trust Him in this. It is true that many innocent people will never hear about Jesus, such as those who lived before Him (actually a small percentage given the population explosion) and those who live in remote parts of the world. But, again, God has done all He can do. If the innocent are lost, it is the fault of Satan, demons, and other men, but not God. Though He is infinite, God will not bind all evil until Judgment Day. He has granted the responsibility of life and free will, even if it is against His own will, and He must work within this framework.

We are not completely sure of what Jesus said. Yet the basic meaning of His words is consistent as He Himself speaks many times throughout the Gospels. Also the message is supported by all the other New Testament writers. Perhaps Jesus' clearest and most interesting explanation of man's relationship to God is found in the third chapter of the Gospel of John. Here a well-known and respected religious leader, Nicodemus, comes at night to visit Jesus. Nicodemus was profoundly impressed by the ministry of Jesus. Yet most other religious leaders of the day did not accept Jesus; this is why Nicodemus came in secret at night.

When Nicodemus confronts Jesus he says, "Rabbi, we know that you are a teacher sent by God. No one could perform the miracles you are doing unless God were with him" (John 3:2). Remember, as was discussed in chapter 3, Jesus had incredible powers over the physical and spiritual universe, including power over death itself. But just as today, most men, even in the face of these glaring realities, were unable or unwilling to face up to the implications of Jesus' life. Nicodemus was not one of them, for he came to learn about Jesus.

Now Jesus answers Nicodemus with a statement which is fundamental to man's relationship to God and also a problem in Nicodemus' life: "Jesus answered, 'I am telling you the truth: no one can see the Kingdom of God unless he is born again' " (John 3:3). Here Jesus sets the tone of the conversation, that is, salvation. Nicodemus knows that Jesus is, of course, not speaking literally. Yet he does not catch the true spiritual implications in Jesus' words. Nicodemus asks a question designed to set himself up as the judge of Jesus' teaching: " 'How can a grown man be born again?' Nicodemus asked. 'He certainly cannot enter his mother's womb and be born a second time!' " (John 3:4).

" 'I am telling you the truth,' replied Jesus, 'that no one can enter the Kingdom of God unless he is born of water and the Spirit. A person is born physically of human parents, but he is born spiritually of the Spirit. Do not be surprised because I tell you that you must all be born again. The wind blows wherever it wishes; you hear the sound it makes, but you do not know where it comes from or where it is going. It is like that with everyone who is born of the Spirit' " (John 3:5-8).

Nicodemus can no longer hide his ignorance. He replies, "How can this be?" (John 3:9). While Nicodemus did not understand, we can be fairly certain today of what Jesus was saying. When He said, "born of water and the Spirit" (John

3:5), the water referred to the baptism of John the Baptist. John's message was one of repentance. He urged the people to turn from their sins. At the same time, John acknowledged his role, mentioned in the scriptures, as the precursor to Jesus. About Jesus and His work John states, "I baptize you with water to show that you have repented, but the one who will come after me will baptize you with the Holy Spirit and fire. He is much greater than I am; and I am not good enough even to carry his sandals" (Matt. 3:11). "This is the one I was talking about when I said, 'A man is coming after me, but he is greater than I am, because he existed before I was born' " (John 1:30). This last statement points to Jesus' divinity, because John was actually born approximately a year before Jesus.

John referred to a baptism by Jesus, of the Spirit, and this is of course what Jesus Himself is also referring to. The Spirit is the Spirit of God, and Jesus likens Him to the wind in the physical world. We clearly see the effects of the wind in the physical world. Yet it is invisible and we do not understand its origin or destination completely. The fact that wind exists cannot be questioned. In the same way, those "born again" are able to perceive the effects of the Spirit of God. His (The Spirit's) effects are clearly seen in the world and the lives of men. Yet He is invisible and we do not understand His origin or destiny completely. The fact that the Spirit exists cannot be questioned.

The whole implication here concerning the believer's baptism by the Spirit is his (the believer's) personal awareness of God. To the true believer God is not some far off entity in the sky who we read about in books and try to please in our own human wisdom. Rather, the existence, presence, and actions of God are directly perceived by the believer. This implies a personal union, friendship, and dependance by the believer on God. Indeed there are other scriptures which indicate that the true believer is to be in direct communion with not only the Spirit but also the Father and Son (for example see John 14:23 and John 17:21).

Getting back to the dialogue between Jesus and Nicodemus, Jesus seems to react with indignation at Nicodemus' question: "How can this be?" (John 3:9). Jesus says, "You are a great teacher in Israel, and you don't know this?" (John 3:10). Here we see a great problem with the world. We have a man, Nicodemus, who is a priest, highly educated, a leader of the people, and even sincere. Yet he does not even understand the basics of man's relationship to God! However, this is not really surprising, considering what we now know about the universe and man's place in it.

Jesus now proceeds to throw more light on the issue: "I am telling you the truth: we speak of what we know and report what we have seen, yet none of you is willing to accept our message. You do not believe me when I tell you about the things of this world [note Jesus again uses "this" instead of "the"]; how will you ever believe me, then, when I tell you about the things of heaven? And no one has ever gone up to heaven except the Son of Man, who came down from heaven" (John 3:11-13).

"As Moses lifted up the bronze snake on a pole in the desert, in the same way the Son of Man must be lifted up, so that everyone who believes in him may have eternal life" (John 3:14-15). Here Jesus refers to an incident which befell the Jewish people, while they were wandering in the desert. Because of their disobedience, God sent poisonous snakes which bit the people. However, God instructed Moses to make a bronze snake and put it on a pole. Any Israelite who would turn from his or her sin and as a sign of repentance look at the bronze snake would be spared from the snakes. Jesus uses this as an analogy to His mission upon the Earth. We are all bound, to some degree, by sin and disobedience to God as a natural consequence of living under the present conditions (remember, in John 14:30, Jesus called the Devil "the ruler of this world"). This causes separation from God. However, we are largely innocent victims of the great spiritual war which is raging across the universe. God has provided a way for us to be right with Him by sending His only Son, Jesus Christ, into the world to die on the cross and pay the penalty for our sin. Anyone who will turn from his sin looking to and believing in Jesus will be saved. True repentance will bring with it a personal relationship and friendship with God, who will give the believer the understanding and strength to begin to overcome sin in his life. The believer will never obtain perfection in this life, but he will always be saved as long as he is "born of water and the Spirit" (John 3:5).

Jesus continues, "For God loved the world so much that he gave his only Son, so that everyone who believes in him may not die but have eternal life. For God did not send his Son into the world to be its judge, but to be its savior. Whoever believes in the Son is not judged; but whoever does not believe has already been judged, because he has not believed in God's only Son. This is how the judgment works: the light has come into the world, but people love the darkness rather than the light, because they do evil things. Anyone who does evil things hates the light and will not come to the light, because he does not want his evil deeds to be shown up. But whoever does what is true comes to the light, in order that the light may show that he did his works in obedience to God" (John 3:16-21).

This then is the solution to man's existence. Despite all the ironies and paradoxes of this life, true belief in Jesus brings eternal life. We may not understand it all; in fact we probably understand only a little. We know a little about the universe, man, and the great complexity involved with both. We know that the universe is much more vast and profound than we ever imagined, and we are caught, as it were, in a great spiritual conflict. However, we can be even more sure that Jesus is a historical figure and divine. He alone gives life everlasting and certain meaning. He alone was God incarnate and His words have changed the course of history. As He said, "Heaven and Earth will pass away, but my words will never pass away" (Mark 13:31).

END OF CHAPTER 5

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Science and Christianity: Summary & About the Author



The Whirlpool Galaxy

SUMMARY

Chapter 1. The Bible is the greatest book ever written. It contains the writings of great men of God who were largely inspired by Him. However, like any other document, it is not absolutely perfect, and in some places it is badly flawed. The Bible can be used as evidence to help us understand reality, but reality cannot be defined by the Bible. Observation and experimentation in addition to divine revelation are the keys man uses to unlock the secrets of the universe.

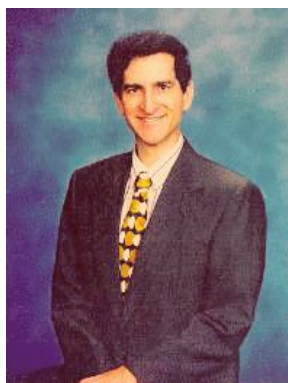
Chapter 2. The dimensions of the physical universe are staggering indeed. Our Galaxy alone, the Milky Way, is composed of a hundred billion stars; the sun is only one of them. We know that the universe consists of at least 100 billion other diverse galaxies. The universe is between 10 to 20 billion years old, and our solar system is 5 billion years old. The diameter of the Milky Way is 100,000 light-years, that of the known universe is billions of light-years. These scientific facts are questioned by few men.

Chapter 3. The spiritual universe must be interpreted in light of our knowledge of the physical universe. The evidence clearly shows Jesus to be exactly who He claimed to be: the only Son of God and as such God incarnate. God always existed and is the supreme being and creator. God created the universe, but it is perverted and contains evil. This can only be explained satisfactorily by understanding the nature of the created spiritual universe. The angels are far more numerous, old, and powerful than we ever imagined. They were created before any of the physical universe, and Satan's fall was truly profound. It

affected the entire universe at a very deep and fundamental level.

Chapter 4. The creation story found in Genesis is, for the most part, not correct. Rather, the Earth is 4.5 billion years old, and life began in the seas billions of years ago with very primitive forms. These forms slowly evolved into the wide variety of plants and animals we see today. Many, many animals evolved, lived and then became extinct. Man evolved over the last few million years from tree dwelling apes who began to live on the ground. Man's intelligence has allowed him to dominate the Earth.

Chapter 5. In light of all the evidence considered so far, we are now in a better position to understand man's true spiritual identity in the universe. Man is not the center and highest work of all God's creation. Besides the glorious angelic beings, intelligent life other than mankind most likely has developed or will develop somewhere in the vastness of the universe over the eons of time. Mankind is part of a great universe caught in the middle of a titanic spiritual conflict between God and Satan, good and evil. Since the conflict is so fundamental, we are to a large degree basically perverted, in darkness, and under Satan's control beyond our ability to understand. Despite this, God has provided a way for us to be right with Him and inherit eternal life. He came in the form of the man Jesus Christ nearly 2,000 years ago. Jesus died upon the cross as payment for our sins. True belief in Jesus involves repentance from sin and brings the personal presence and power of God into a human being's life. It also brings forgiveness, eternal life, and the solution to man's dilemma upon the Earth.



John D. Callahan, 1997

ABOUT THE AUTHOR

John Donnelly Callahan was born on May 27, 1955, in Los Angeles, California. His father was an engineer and his mother was a grammar school teacher (both retired). He has two sisters, Mary and Terese, 1 and 2 years younger than himself. Mary is a professor of accounting at Kennesaw State University (Northwest Georgia). Terese is a Berkeley graduate, business woman, and mother. Both sisters are married. John grew up and has spent his entire life in Southern California except for living in Northern California while attending U.C. Berkeley from 1975 to 1977.

John was fascinated at a very early age with astronomy and anthropology. At 5 years old he asked his mother to buy him a book about astronomy. Also at 5 he looked in a book on Western Civilization and saw the busts of the various prehistoric men, such as Cro-Magnon, Neanderthals, etc. In the 9th grade John aspired and planned to study astronomy. He received a BA degree from U.C. Berkeley in 1977 with majors in both astronomy and physics. In school and throughout his life John has also studied and kept up an active interest in anthropology. In 1978 he was hired by the Jet Propulsion Laboratory in Pasadena, California. John worked in the field of spacecraft navigation with television pictures. He left JPL in 1987 (although he did part-time consulting until 1989) to work for a number of other aerospace companies involved with such project as F16 trainers, advanced sensors and phenomenology, SDI, and Space Shuttle experiments.

John was raised in a traditional Catholic church but was for the most part an agnostic. However, having a scientific disposition he realized that the universe was one of order and rules which governed its operation. Further, these laws

were observable and discernible. John tried to find fulfillment in life but became withdrawn, frustrated, and depressed. This sparked him, in the 9th grade, to undertake a determined search for truth. Four years later, in his freshman year of college, he realized who Jesus was and became a Christian.

Through careful reasoning, attempting to be as objective and independent as possible, John concluded that Jesus was indeed God. This conclusion came shortly after studying the book *The Life of Christ*, written in 1941 by the Italian, Catholic author Giuseppe Ricciotti. Also by studying the same book John came to an understanding of man's basic spiritual problems and how men can be put right with God and receive eternal life. The year was 1974. The book was given to John as a Christmas present in 1973 by Marta Ruble, a dear cousin.

John did not abandon his understanding of the universe in the realms of astronomy and anthropology; although there was much pressure from most other Christians to do so. He was more amazed at the incorrect understanding of his fellow Christians than he was persuaded to change his thinking. As the years passed John was more and more impressed that these were not matters to be taken lightly. To him it was important whether the Bible was perfectly correct or not, whether man evolved, how old the Earth was, the true powers of Satan, and so forth. Finally the desire to write a book became too strong to resist, and the leading of the Holy Spirit was clearly evident. The book was begun in 1981 and finished in 1985. A second edition appeared in 1986, and a third, Internet version in 1996.

Faith & Reason Ministries was founded in 1989, and, having saved and invested well, John left full-time work as an aerospace engineer in 1996 to concentrate on the ministry. He occasionally tutors math and physics part time.

END OF SUMMARY & ABOUT THE AUTHOR

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Overview (backcover of 2nd edition)

WHO IS MAN ANYWAY? Most scientists believe we evolved from apes and live in a gigantic universe of billions of galaxies; man could be insignificant. Most Christians, on the other hand, believe that God specially created the human race from Adam and Eve; we are very important in the scheme of things. Yet we are evil and need to be redeemed by a Saviour, Jesus Christ.

This book takes a new look at our universe, in light of modern discoveries and age old problems, and answers intriguing questions. The author was a member of the technical staff at the Jet Propulsion Laboratory in Pasadena, California, and he has studied science all his life. Yet he was converted to Christianity in 1974 after an intense personal search for truth.

This book will give you new insights and surprises as it discusses: Biblical truths and fallacies, the dimensions and contents of the universe, the Big Bang, the great religious leaders of history, the deity of Jesus, the angels, the fall of Satan, the origins of life on Earth (evolution), the probability of life existing elsewhere in the universe, the solution to man's existence, and more!