

# Religion vs. Science?

(Draft)

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## 1 Understanding Science and Religion

In examining the creation evolution controversy one can't help but come across the words "science" and "religion". Often times I have heard the whole controversy itself being referred to as an instance of "science vs. religion". Unfortunately, most books I have read on the subject haven't really bothered to carefully discuss what is meant by the words "science" and "religion". These are words that we use very frequently but most people have a hard time defining what science is let alone what presuppositions science requires one to make! For precisely this reason I will start off defining and examining science and religion.

### 1.1 What is Science?

We examine what Webster<sup>1</sup> has to say:

**sci•ence** \ noun

**1:** the state of knowing: knowledge as distinguished from ignorance or misunderstanding

**2 a:** a department of systematized knowledge as an object of study; the science of theology;

**b:** something (as a sport or technique) that may be studied or learned like systematized knowledge; have it down to a science

**3 a:** knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method

**b:** such knowledge or such a system of knowledge concerned with the physical world and its phenomena: natural science

**4:** a system or method reconciling practical ends with scientific laws <culinary science

**5** capitalized: Christian Science

The word science can reflect a wide variety of meanings as seen by the definitions above. Notice definition 2a where theology is referred to as a science. In this usage science refers to a systematize study of an object in the case of theology that would be God. We will restrict our use of the word science to the meaning prescribed by definition 3a. The following definition also taken from Webster is included for completeness:

**scientific method \ noun:** principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses

In the definition of the scientific method there are a few statements which presuppose certain conditions. It is extremely beneficial if we recognize these assumptions. The phrase “the recognition and formulation of a problem” assumes an intelligent person recognizing and formulating. This in turn implies that the taxonomy which regards one person as existing and distinguishes that person from others and their environment is valid and not arbitrary. The phrase “the collection of data through observation and experiment” assumes the basic reliability of human sense perception. From the phrase “formulation and testing of hypotheses” we can see that science involves making hypotheses. These hypotheses are generalizations of the observed data. The ability to make generalizations is tantamount to assuming the existence of order. These assumptions are summed up in the following list.

### **1.1.1 Necessary presuppositions for Science**

- 1) There is order in the universe and the laws of logic are valid
- 2) The taxonomy which regards one person as existing and distinguishes that person from others and their environment is valid and not arbitrary.
- 3) People have the ability to think somewhat rationally.
- 4) People’s sense perception reflects objective reality to a reasonable extent
- 5) The order in the universe is of such a character that man is able identify useful approximations of that order.

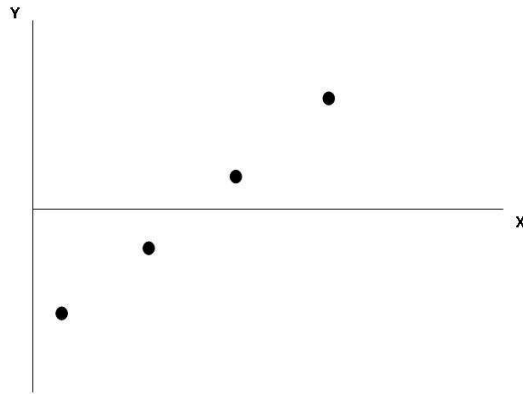
It is worth noting that I have placed caveats on items 3 and 4. In regard to item 3 it is very evident from the fact that people possess conflicting ideas that we are not all entirely rational all the time. And as far as item 4 is concerned there seems to be situations such as the color blind man who experiences a different sensation than the majority of people when staring at red and green objects, since they conflict one has to be in error, in addition even when the sensations are in agreement our perception of that sensation may vary to see this one need only consider optical illusions such as

## **Insert optical illusions here**

The following example is included in order to help the reader gain a better understanding of the modeling process.

### **1.1.2 Example of Scientific Modeling**

Suppose we have the following data set relating the observed values of two quantities X and Y.



### Assumptions

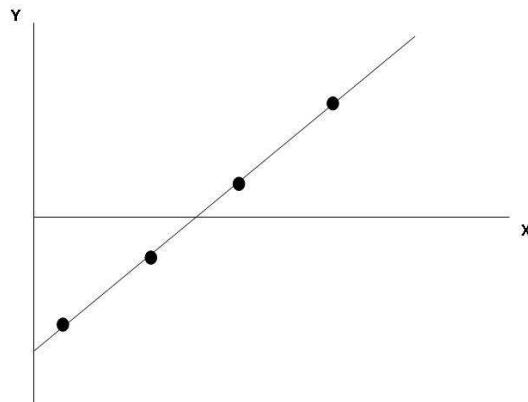
1. Assume that for every value of X there is a unique value of Y and we desire to be able to predict the value of Y for a given value of X. (We call X the independent variable and Y the dependant variable)
2. Assume there is a direct relationship between X and Y (i.e. it doesn't depend upon any other quantities)

The goal of the scientist is to make the most useful generalization concerning the relationship between the value of X and the value of Y that fits the data points.

Now the words "most useful" as stated in the goal are kind vague so let me list a set of characteristics that would help a model to be useful. (This list is not exhaustive)

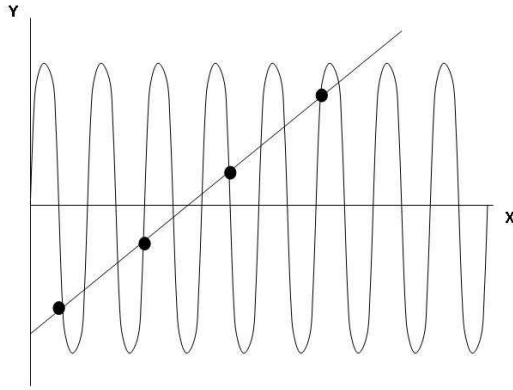
1. The relationship between X and Y is valid over a large range of the value of X.
2. The relationship between X and Y could be expressed by a mathematical functional form.
3. That functional form which was continuous and differentiable.
4. The functional form is one which is simple (a line, a polynomial, a trigonometric function)
5. The functional form is linear (this makes mathematical analysis easier)

In light of the above criteria we might optimistically hypothesize an orderly relationship between the value of X and the value of Y represented by the following line.



The hypothesis assumes a relationship between X and Y for an infinite number of points

where there is no data. The hypothesis cannot be completely verified because I could never process an infinite amount of data! For this reason even the most well attested models can not serve as a philosophical basis for truth.<sup>1</sup> It should also be pointed out that although the model I have chosen fits the observed data points, it is not the only model that fits the data points. The following figure shows a different curve (a sinusoid) which also fits the data equally well!



Likewise I am sure you realize that you could draw an infinite number of possible curves which would fit the data points equally well. One might even take this argument a step further in saying there is no need to restrict ourselves to curves, there could be a discontinuous relationship between the two variables of interest! This leaves us with a couple questions:

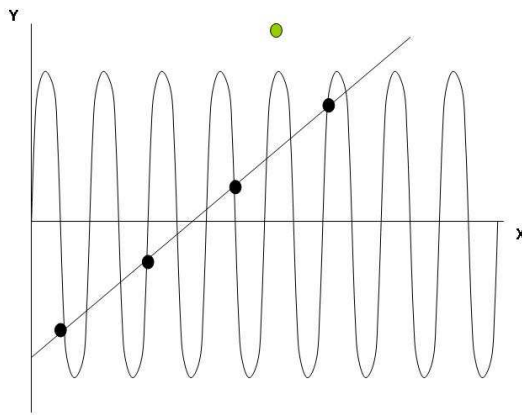
- 1) first should we even bother attempting to model anything? After all if there are an infinite number of possible relationships between the two variables that could be inferred from our finite set of data point then if they are all equally likely to be valid, our probability of picking the right one is effectively zero!
  - a. This is a very important observation. If only the first four presuppositions were made then we would have no real basis for practicing science. It would be a fool's errand to think that we could come up with a predictive model. However even though our models are typically proven to be false, they are often good approximations within certain limits and this is entirely more than we would expect if given the first four philosophical assumptions alone. However if the order in the universe tended to be fairly easily approximated and we had some innate predispositions to recognizing that order. Then it is reasonable to practice science.<sup>2</sup>

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<sup>1</sup> Science attempts to make unverifiable generalizations based upon a finite amount of data. This is called induction and is a logical fallacy. As we have pointed it out, verifying the generalization made would require collecting an infinite amount of data. Even if that was done, there is the assumption made that the relationship between the quantities of interest does not change with time or space. These are assumptions that are typically made and cannot be verified.

<sup>2</sup> Christian Philosophy of science is rooted in the Biblical mandate to subdue the earth in Genesis 1:28. For this reason Christian scientists expect that the earth was made to be subdued by man hence man would be able to recognize trends.

- 2) The second question “What curve or model should we use?” We would probably wish that the linear hypothesis be the correct one since it is easier to deal with mathematically, but our wishes do not determine reality so we must not assume that the linear model is more likely to be valid just because we would rather that be the case. To do this would be “wishful thinking”. Clearly the model which more accurately reflects the relationship between X and Y is the best model, but since both models accurately reflect the observed data it would be good to obtain more data points to determine which model is better. In the case of a laboratory science this might entail conducting an experiment to get additional data. In some cases we may not have the ability to construct an experiment which fixes the value of X and allow us to determine the value of Y. We should keep in mind that if we do get additional information it may tell us that both our models were wrong and then we would need to start the hypothesis process all over again. This case is illustrated in the following figure.



The above curve demonstrates what has happened over and over again in science. We make a generalization and collect more data only to find out our model was incorrect. Even our most tried and tested “laws” end up being refuted by the collection of more data. For example Newton’s laws seemed to hold up very well for quite some time but eventually even they needed to be scrapped in light of new data. Now this might seem discouraging to the science enthusiast, they may ask “why should I practice science if it doesn’t lead me to truth but merely to better and better approximations that ultimately end up being refuted by the collection of more data?” I think it is important to recognize that although science does not provide truth it does provide successively more useful approximations. We would do well to remember that Newton’s laws although not “true” are useful approximations for many situations and are still used for that reason today. It is also worth pointing out that although Newton’s law is not “truth” they did survive many tests before it was proven false. This again speaks of the importance of our fifth philosophical assumption! Since if we only assumed that the universe had order there would be an infinite number of orderings and as pointed out any attempt at predictive modeling would be a waste of time! Newton’s laws and other “laws” survive not because we have recognize an underlying truth about the universe, but because they have done a

good job of making a useful approximation of the order in the universe. Although we expect scientific laws to fail at some point in time we don't expect that time to be the very next instant otherwise we would not practice science. The fact that Newton's laws and various other models withstood the collection of new data does give some support for the assumption that there is order in the universe and that we are able to make models which in some way approximates that order at least on a local or limited basis! It should also be pointed out that Newton's laws are still used today even though we realize that they are flawed in certain cases we use them under conditions where they have worked well for us in the past. The fact that a generalization does not need to be true or even an accurate approximation in all cases has led some to state Science is never true but is often useful.

### 1.1.3 Scientific Models, Measurements, and Approximations

In the previous example we assumed that the value of X completely determined the value of Y. A weaker statement would be that the value of X is all that one needs to approximately determine the value of Y. We might write this as  $Y = f(X) + N$ , where N is a complicated function innumerable variables, often referred to as noise or the unmodeled portion of Y. Typically we make no effort to predict the explicit value of N, we do however seek to get a rough idea of the average magnitude of N.

#### 1.1.3.1 Example: Modeling and approximations

Assume that we are interested in predicting the earth's position in its orbit about the sun, the sun's mass,  $M_S$ , the earth's mass,  $M_E$  and the earth's position,  $P_0$  and velocity  $V_0$  with respect to the sun at a given time are the main factors we need to predict the orbit. If we used these factors we might have a model of the following form

$$y(t) = f_1(M_S, M_E, P_0, V_0, t) + N_1(t)$$

If we want to more accurately predict the orbit of the earth we might need to take into account things like the shape of earth (this would involve approximating the shape of the earth with a mathematical function such as an ellipsoid with a major axis of length A and a minor axis of length B). This will result in a much more complicated function model including the additional terms; however the average value of the noise term will be slightly decreased,

$$y(t) = f_2(M_S, M_E, P_0, V_0, a, b, t) + N_2(t)$$

The gravitational effect of the moon and other planets could also be figured into our model to do this we would need to include masses for each planet as well as some function expressing their initial positions and velocities. Again these additions would slightly reduce the average size of the noise term, but it would also make the model much

more complex. At some point we gain very little accuracy in exchange for increasing the complexity of the model, and as we have seen from Example 1.1.2 even if we do find a model that perfectly fits all data points, there is no guarantee that it will accurately approximate the next point we measure.

#### **1.1.4 Uncertainty in measurements or “data points” themselves**

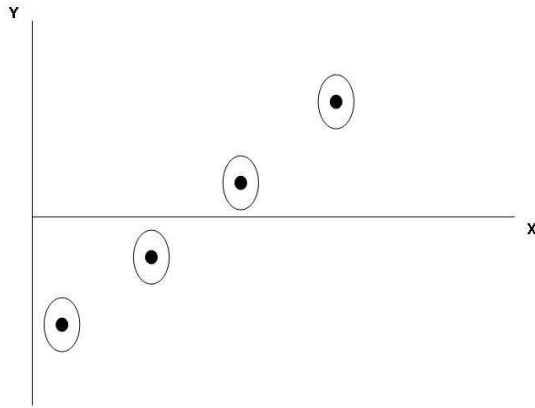
It should also be noted that some of the quantities which we might like to measure may not be precisely defined. For example let's say we are interested in the length of an object. Many objects expand and contract depending upon the change in temperature; consequently if we really wanted to characterize the length of the object precisely we might specify the length as a function of the temperature of the ambient environment. For most cases we probably don't care knowing the length of an object to such a precision as to worry about how it changes with temperature.

Even if an object's features did not change with its environment, there is the issue concerning the ability to precisely measure an object. One of the first things we are told to do in an elementary science class is to measure the length of an object with a meter stick. The meter stick has markings of centimeters and perhaps even millimeters but it is not useful for measuring to a precision beyond the nearest millimeter.

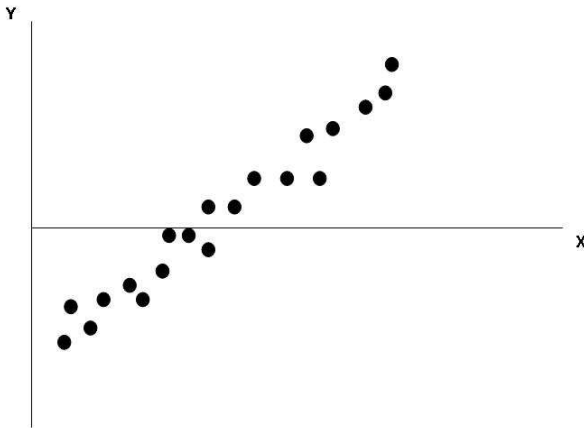
We can summarize above limitations by the following list

1. the quantities of interest may not lend themselves to being simplistically defined
2. We have not taken into account every factor that has an effect on the quantity of interest
3. We have measurement error in both the dependant variable (the quantity predicted by the model) and independent variable (the quantity used to predict).
4. The functional form which we have chosen to fit the data may not even be a good approximation for other data points collected in the future.

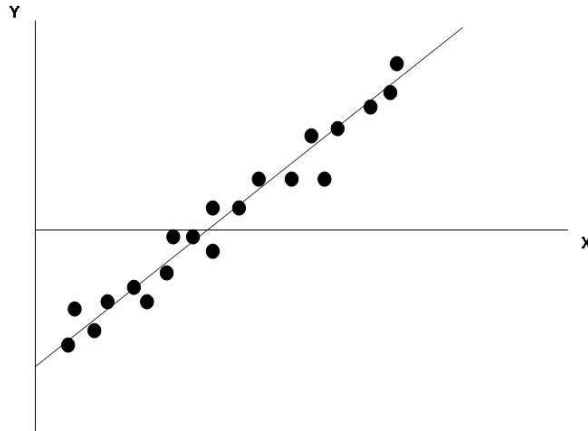
Because of the above limitations some people expand the data point to regions of uncertainty. Below is a picture of the set of data points given earlier but with ellipses around them the size of which are related to the uncertainty of the values of the dependant and independent variables.



Even if there was an approximately linear relationship between X and Y, given the limitations previously mentioned we would not expect all the data points to fall on a single line. Instead we might expect something like the following chart



In like manner if we have a data set like the one above where the points approximately follow a linear progression we would prefer to approximately fit the data points to a line than to exactly fit the data points to an extremely complex function. This preference is indicative of the fact that we believe there are some components of the measurements of Y, and perhaps Y itself, which are not related to the value of X. Requiring an exact fit for our model is in effect ignoring the limitations of our modeling process. This is often called over-fitting the data.



### 1.1.4.1 Notes Concerning the “Noise Term”

- 1) The noise term is a catch all term for all the known effects we don't want to include into the model, and all the unknown effects haven't included in the model.
- 2) The noise term is assumed to be a very complicated and unpredictable function. If even a portion of the noise term was easily described it would be included in the model.
- 3) An average value of the noise term is often measured by comparing measured and predicted values.
- 4) The noise term is often modeled a random function.
- 5) Example: Rolling a die is a very simple action but it is difficult to predict the outcome. On one hand we believe that the result of the roll is determined by the orientation and velocity it receives from the initial toss, the weight and the balance and shape of the die, and the friction from the air and the surface upon which it rolls and ultimately comes to rest. However because of the extreme difficulty we have in measuring and factoring in all this information if it is a “fair and balanced die” we just say that for a particular toss the die has an equal probability of taking on any one of the possible values. In stating this we are not saying that we believe that the outcome was determined by a random forcing function outside time space rather we have adopted a probabilistic model in light of the fact we don't have accurately measured values for all the quantities necessary to predict the outcome of the die, and even if we did we probably wouldn't want to spend the time needed to perform the calculations necessary to predict the outcome!
- 6) When we say things happen by Chance we are really saying we are ignorant of the causal relationship. You might say for example that you met someone by chance, what you mean by that is that you did not plan it. Typically one does not mean by that statement that there was a Chaos god outside of time space who caused all these things to happen, although some may believe that.

### 1.1.4.2 Quantum Mechanics, Randomness, and the Heisenberg Uncertainty Principle

It has been theorized on the basis of various laboratory measurements that energy is quantized meaning it cannot occur in less than certain amounts. The idea that energy is quantized has large implications, namely it affects our ability to measure quantities without disturbing them. In every system where something is measured there is some interaction of forces with the object of interest. For a large object this interaction of forces does not greatly impact the characteristics of the object because the energy used in the measurement process is quite small. However when we begin to look at very small objects and desire to measure some of their properties the existence of a minimum “quanta” of energy may have a significant effect upon the object because we can not use an arbitrarily small amount of energy in the measurement process. The Heisenberg uncertainty principle states that we can never simultaneously measure the velocity or momentum of a particle and its position. Thus according to the uncertainty principle we have limitations in our ability to measure and know certain things about the physical world. Because of our inescapable ignorance concerning some of these things, it is often useful to utilize probabilistic models, much as we did for other complex behaviors about which we didn’t have information. Again by using these models we are not necessarily implying that the underlying process is random, merely that we might as well model it that way because we lack access to important information.

### 1.1.5 Scientific “Laws”

The definition of the scientific method mentions the testing of hypotheses. If a hypothesis is a broad generalization which can not be tested for all cases then no amount of testing will prove the hypothesis true. The testing will however make us more confident of the hypothesis. When a hypothesis has been tested to a large extent and seems to hold in every known case, the hypothesis is then referred to as a “Scientific Law”. Scientific Laws are not always true in fact science has a history of repeatedly disproving its own laws and then refining them! We should always keep this in mind, there is a danger in this over time we can become so confident of a generalization or a “Scientific Law” that we consider it to be an unquestioned established fact. Even Newton’s laws, as useful as they are, were shown to be flawed and revised by Einstein. It should be noted that although science cannot give us certain truth it gives us very useful generalizations. Even generalizations which are known to be flawed can still be useful if they are approximately accurate for certain cases. Often much of what is required is not exact knowledge but approximate knowledge. A good scientist should understand the presumptions and the limitations of science and should not ascribe more value to it than is warranted, (and thereby inhibit its advance). But there have been cases where scientists have so loved a theory they clung desperately to it despite massive evidence to the contrary. A.E. Wilder-Smith in his book “The Scientific Alternative to Neo-Darwinian Evolutionary Theory”<sup>3</sup> gives just such an account of a scientist named

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<sup>3</sup> A. E. Wilder-Smith “The scientific alternative to neo-Darwinian evolutionary theory” The Word for Today Publishers, Costa Mesa, California 92704 forward pages i--iii.

The phlogiston theory believed that some substances such as metallic zinc contained a substance

Priestley. Priestly was an advocate of the phlogiston theory of combustion, who despite the ever increasing amount of evidence which suggested that the phlogiston theory was flawed, clung to the phlogiston theory up to his dying day. This is a good reminder to us that scientists are not infallible nor are they unbiased. Finally in our discussion of science I feel we should recognize a common problem know as scientism. Scientism is ignorantly ascribing to science or scientists authority well beyond the scope of the scientist's abilities or even the ability of science itself;

**sci•en•tism** \ noun

- 1: methods and attitudes typical of or attributed to the natural scientist
- 2: an exaggerated trust in the efficacy of the methods of natural science applied to all areas of investigation (as in philosophy, the social sciences, and the humanities)

### 1.1.6 Types of Scientists

**Laboratory Scientists** are involved in designing experiments to try to test hypotheses. This usually involves the construction of an environment related to the assumption concerning that environment. In many cases the experiments that laboratory scientists perform are repeatable and the associated hypotheses are time invariant.

**Theoretical Scientists** often examine the known measurements and concoct a hypothesis that fits the observed.

**Historical Scientists** look at data that is not repeatable and attempt to put together a general story which fits all the particular observations. It should be noted that there are many different scenarios that could possibly fit the data. They look to see if it is “likely” that “natural causes” could “reasonably” account for the observations. Science cannot be used to determine history but it can be used to show the reasonableness of a scenario given certain assumptions namely that there was no supernatural intervention, and that our understanding of science is accurate. Of course the application of a method cannot prove the presumptions it requires since it is quite possible that the method was wrongly applied. Hence one who attempts to dismiss miracles by saying they are outside of science has really said more about their presuppositions concerning miracles and the limitations of science than whether or not miracles happen.

## 1.2 What is Religion?

Webster offers the following definitions for the word religion<sup>4</sup>:

**re•li•gion** \ noun

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called phlogiston and after zinc was burned phlogiston was given off and a zinc calx remained. When the calx was measured it was found that it weighed more than the metallic zinc because rather than losing phlogiston it gained oxygen! Further experimentation seemed to support the oxygen hypothesis but no evidence seemed sufficient to dislodge the phlogiston theory from Priestly's head.

<sup>4</sup>Merriam-Webster, I. (1996, c1993). *Merriam-Webster's collegiate dictionary*. Includes index. (10th ed.). Springfield, Mass., U.S.A.: Merriam-Webster.

- 1 a:** the state of a religious  $\langle$  a nun in her 20th year of religion  $\rangle$
- 1 b** (1): the service and worship of God or the supernatural  
(2): commitment or devotion to religious faith or observance
- 2:** a personal set or institutionalized system of religious attitudes, beliefs, and practices
- 3** archaic: scrupulous conformity: conscientiousness
- 4:** a cause, principle, or system of beliefs held to with ardor and faith

In our discussion we will focus on the 4<sup>th</sup> definition. This choice is appropriate because as we shall see we will be examining a number of beliefs that are held with ardor and faith but may or may not involve the assumption of a personal God.

### **1.3 Presuppositions and their Effect on Science**

We have seen that empirical science, which we are calling science for short, rests upon certain presuppositions about the nature of the universe. We will now examine various foundational world views and their relation to the practice of science. We will ask ourselves a question. If I started with this foundational world view would I end up practicing science as a consequence? This is a deductive approach; we could equally do an inductive approach and say if I start with the presuppositions necessary for science what world view could be considered a generalization of those presuppositions.

#### **1.3.1 Does Atheism provide a basis for science?**

I will start with atheism, and see if we can deduce the four necessary presuppositions as a consequence of atheism. If I assume atheism as my starting point why would I expect there to be any real order in the universe to model in the first place? Some atheists have recognized this problem and have postulated an infinite number of universes all driven by random processes and then merely state that we just happen to be in the one where the random causal agent happens to act by accident in such a way that there appears to be trends. This explanation, although common, has a few problems first it assumes that we are in the one universe that is predictable; secondly it assumes that this universe is sufficiently ordered that we exist and can observe it! Let us examine the first problem by considering a few time intervals, we define the following times  $t_0 < t_1 < t_2$  since an infinite number of universes have been postulated then for every universe that seems to function predictably from time  $t_0$  to time  $t_2$  there are an infinite number of universes that function “predictably” from  $t_0$  to  $t_1$  and then behave wildly after  $t_1$ . While it is true that one might be able to look back on some random processes and fit a curve to sections of it reasonably well, one is an utter fool if they try to use that curve to tell them the future direction of a purely random process. In short why should someone ever assume that they are in a universe which will be predictable if they profess it is driven by a random process or a lack of intelligence? Even if there happened to be order, or apparent order, why would we assume that a component of an ordered system would be able to recognize that order? This question troubled Stephen Hawking in his book *A Brief History of Time*

“Now if the universe is not arbitrary, but is governed by definite laws, you ultimately have to combine partial theories into a complete unified theory that will describe everything in the universe. But there is a fundamental paradox in the search for such a complete theory. The ideas about scientific theories outlined above assume we are rational beings who are free to observe the universe as we want and to draw logical deductions from what we see. In such a scheme is it reasonable to suppose that we might progress ever closer toward the laws that govern the universe. Yet if there really is a complete unified theory, it would also presumably determine our actions. And so the theory itself would determine the outcome of our search for it! And why should it determine that we come to the right conclusions from the evidence? Might it not equally determine that we should draw the wrong conclusion or no conclusion at all?”<sup>5</sup>

Hawking basically points out that if we view man as merely as a portion of a completely ordered universe, man loses any notion of autonomy from “nature” and there is no reason to assume that man as a part of nature would converge upon an understanding of nature. I would add that one doesn’t really have a basis for presupposing the existence of concept information or thought either. Dr. Hawking goes on to attempt to explain<sup>6</sup>

“The only answer that I can give to this problem is based on Darwin's principle of natural selection. The idea is that in any population of self-reproducing organisms, there will be variations in the genetic material and upbringing that different individuals have. These differences will mean that some individuals are better able than others to draw the right conclusions about the world around them and to act accordingly. These individuals will be more likely to survive and reproduce and so their pattern of behavior and thought will come to dominate. It has certainly been true in the past that what we call intelligence and scientific discovery has conveyed a survival advantage. It is not so clear that this is still the case: our scientific discoveries may well destroy us all, and even if they don't, a complete unified theory may not make much difference to our chances of survival. However, provided the universe has evolved in a regular way, we might expect that the reasoning abilities that natural selection has given us would be valid also in our search for a complete unified theory, and so would not lead us to the wrong conclusions.”

Hawking attempts to address this problem by making a host of gratuitous assumptions. This whole argument is a bit like admitting I have no basis for assuming the existence of such a thing as breakfast cereal and then stating that the best argument that you can make for the existence of breakfast cereals is that you have assumed the existence of a particular kind of cereal called frosted flakes and if that exists well, then we know there is such a thing as breakfast cereal. In short he got around the problem by wishful thinking and assuming additional presuppositions which he hopes are able to generate the desired consequence the mere assumption of order did not supply. Let’s list the additional assumptions that Dr. Hawking has made in his explanation:

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<sup>5</sup> Stephen Hawking “A Brief History of Time from the big bang to black holes” Bantam Books p12

<sup>6</sup> Stephen Hawking “A Brief History of Time from the big bang to black holes” Bantam Books p12-13

1. The existence of a self-reproducing population of organisms
2. That these organisms have “genetic material” as a basis for life
3. That these organisms and persons to the extent that they can be called “individuals” and that they have thoughts about the world
4. The degree to which the thought processes of these “individuals” are correlated with the truth about the universe is related to their ability to survive and reproduce, for the ancestors of the individuals.
5. The principle of Darwinian natural selection

Notice that his presuppositions have amounted to presuming an entire history, none of which follows from his initial assumption of order in the universe, which itself is an unwarranted assumption for an atheist to make! Let us consider these presuppositions that atheists so often take for granted:

1. Why would one ever presume that there would be a self replicating species? Upon what basis would one ever expect that such an extremely complex kind of order would exist? In a later section of this report we will address the likelihood of the formation of the simplest self replicating organisms alive today and their components under the presumptions of the currently understood laws of chemistry, probability and a random causal agent as is so often put forth as an explanation for the existence of self replicating biological organisms.
2. If there were self replicating organisms why would we expect that their existence would be based on a “genetic material” or a code? Again this assumption is hardly a consequence of any prior assumptions.
3. The assumption that these self reproducing organisms have thoughts and can be called “individuals” is a huge assumption. Even if we make the previously mentioned gratuitous assumptions, it would in no way follow that there would be any thoughts in the universe, let alone that these thoughts would be localized to the self replicating organisms that are now elevated to the category of “individuals”. In discussing this matter, it is important for us to understand that simply put thought involves the procession of concept information. Having defined thought it is useful for us to examine and refute some common misconceptions concerning the nature of thought.
  - a. Concepts are not to be confused with the symbols that are used to represent them. The assignment of symbols to concepts is an arbitrary convention used for the sake of communication. The symbols themselves do not intrinsically possess the concepts they represent, if that were true we would not need to invest time to memorize the vocabulary of a foreign language because the meaning would be intrinsic to the symbol. A processing of symbols should not be confused with the processing of concepts. It is quite possible for something to process symbols without having any understanding of the concepts that someone has associated with them. Thinking should never be confused with symbol manipulation. A few illustrations should help clear this up in the mind of the reader. The graphite and the paper upon which a math problem is solved have no

understanding of the math problem or the solution, a book has no understanding of the concepts which we associate with the symbols on its pages.

- b. Similarly to the previous point we should recognize that a machine which outputs symbols what we associate with concepts does not possess concept information and does not think. For example a thermometer has no understanding of temperature; my computer doesn't associate any concept with the states of the internal components or with the images on the screen.
- c. Concept information is different from Shannon's "information" which dealt with the expected value of a group of symbols. Shannon's information metric considered a group of symbols to have a higher information content if it was a very uncommon grouping. His theories helped us make more efficient codes but it is totally unrelated to concept information. This can be clearly seen in examining the following two sequences: 1) "xwckrz" 2) "Heathen" according to Shannon's definition sequence 1 has a greater amount of information because it is a much more rare sequence and if you knew six of the seven letters of sequence 1 you would be hard pressed to guess the seventh. Sequence 2 has much less Shannon information since the sequence is quite common if one obscured one of the letters you would probably be able to guess the value of that letter. Yet in terms of concept information sequence 1 has no concept associated with it where as sequence 2 does.
- d. Because people think and they often do things that we do not expect, some consider unpredictability to be a characteristic of thought. But this conclusion is built on faulty reasoning, it is a categorical fallacy. It is treating perceived unpredictability from a human stand point with thinking. This bad reasoning is carried to an extreme by some who then propose that thought is by nature not determined. This conclusion compounds the initial flaws with the unwarranted assumption that if something is unpredictable to us that it must be undetermined. This flawed thinking is often "supported" by another categorical fallacy that goes something along the lines of "Machines are completely determined, and machines don't think, therefore things that are determined don't think" This statement wrongly equates the categories "not thinking" and "determined".
- e. Because people think and they change due grow in knowledge over time, some have wrongly equated the categories of "learning" and "thinking". This fallacy can be reduced to an absurdity by pointing out that under such a misguided equivocation, someone who was omniscient and thus incapable of learning would then be considered incapable of thought! Similarly some wrongly equate the categories of "changing" and "thinking". This can be shown to be absurd by considering that an immutable perfect being that possesses all knowledge under the previously stated false assumption would be considered incapable of thought! We have shown that "change" is not a necessary condition for thought it is

also worth pointing out that it is not a sufficient condition for thought. A finite state machine such as a coke machine, changes how it reacts depending upon external stimulus, but only a pantheist would consider a coke machine sentient.

- f. There is a misconception, possibly fueled by star trek the next generation, that neural networks are thinking machines. My work has provided me with an excellent example of this misconception. Because I have a background in neural networks, some years back I was asked to examine a new technology. Some people from a prominent national laboratory had created some mechanical objects that had a certain external resemblance to bugs. The machines had square “bodies” and 3 or 4 “legs” on the left and right sides of the body. The motors in the legs were controlled using a neural network; the network had a certain internal connections and inputs from the leg motors and a light sensor. The “bugs” were very proficient at walking over all kinds of terrain and they exhibited some very interesting behaviors that the designers did not expect. For this reason the designers started making claims that the “bugs” had a will of their own. And that they had created “mechanical life”. Well the “bugs” never stopped acting in accordance with their adaptive algorithm, since the adaptive algorithm was both nonlinear, received feedback signals from a fair amount of sensors and the environment was not simple to quantify, it is natural that the designer would not know all the implication of the environment would have on his design. The ignorance of the designer hardly constitutes evidence for a will of any kind let alone a will of its own. The designers went on to state that they had created “mechanical life”. I am not sure whether these outrageous claims were an outgrowth of an effort to obtain increased funding and notoriety or if they actually believed the preposterous claims they made. Unfortunately these types of claims are not isolated to the inventors of the mechanical bugs. Invariably the arguments usually given for neural networks or other adaptive algorithms being capable of thought have been refuted above and are: 1) Neural networks process symbols that we have associated with concepts. 2) Neural networks exhibit complicated behavior that the designers often did not expect. 3) Neural networks adjust how their internal state and outputs based upon the inputs it receives over time. (This popular misconception is in part fueled in part by the fact that the law by which the finite machine changes its state is called a "learning algorithm".) Since we have already refuted the basis of these types of claims, I won't bother doing so again here.
4. Why would one presuppose that the universe would be structured in such a way that the correctness of individual's thoughts makes them more capable of survival? Once someone has made the very gratuitous assumption that thoughts exist in an atheistic universe, why should one presuppose that those thoughts would have any correlation with reality? Certainly for every true thought one could have concerning reality there are an infinite number of false thoughts one could have. If one assumes there are such a thing as thoughts in the universe yet

doesn't presuppose an intelligent cause behind the universe why would one ever expect that the environment would reward the self replicating individual for possessing a right thought? Hawking defines the fittest as that which has more accurate thoughts concerning the universe, and then states that fittest is more likely to survive and produce offspring, which he assumes would share its thoughts. This is a gratuitous assumption, many an atheist has had a child become a Christian and vice versa in these cases the child and the parent possess a radically different view of the universe. The assumption that thoughts are hereditary seems somewhat unwarranted. The next problem comes in regard to the progression of thoughts, if we gratuitously assume the presence of thoughts and that they are propagated to offspring to some extent, how do modifications of thoughts come about? If the modification of thoughts is random then they are overwhelmingly likely to go in the direction of falsehood. Given that Hawking has assumed that correct thoughts only make the individual more likely to survive there is no guarantee that the progression of the thoughts of individuals will proceed in an upward manner. The fact that a random generation of new thoughts would be infinitely more likely to take one away from truth than towards it would instead cause a student of probability to believe that thought would not be likely to amount to much in the end.

5. With all of Hawking's assumptions he still hasn't presented a set of assumptions which would have the existence of human beings who practice of the scientific method as a consequence. There are a host of problems here for the atheist. If one assumes that self reproducing individuals did come to exist and were capable of thought we would also have to assume that they would be capable of sensing their environment? Again we are faced with the fact that without an intelligent designer, misconceptions would be infinitely more likely than sense perception, and again we do not have a reason to presume that the universe would be ordered in such a way as to reward these individuals for having correct sense perception. Even with these additional gratuitous assumptions we are not guaranteed the practice of the scientific method, we need to assume that the thought process is integrated with the senses, and that there is some kind of built in algorithm for generating new thoughts according to the scientific method.

In atheism we have no basis for assuming order, even if we did assume order, we would have no basis from that assumption to assume that man's thoughts were rational or would ever even converge to the truth without assuming some additional characteristics of the universe that in effect guided man's intellect. Why should one suppose such a condition? It doesn't follow from atheism? Why should the universe be set up to make a particular accident recognize apparent order? Atheism provides no philosophical framework for empirical science. If one starts with atheism none of the presuppositions necessary for the practice of science follows. In order to practice science an atheist has to assume they are fortunate enough to be in an apparently ordered universe, in addition they need to add a presupposition that some kind of god-like vehicle or principle or some particular apparent order just so happens to that guides human's apparent understanding, and grants men apparently reliable sense perception. None of this flows from the philosophical presumptions of atheism in fact they run counter to it. One can only reasonably

conclude that atheism is not an enabling philosophy for science. One of the things that scientists like to do is come up with generalizations that predict their observations; they then like to gather new data to test the generalizations prediction for those cases. In the case of atheism it is a generalization which does not predict the presumptions believed by the scientist with any level of certainty. Therefore a scientist who chooses atheism as a world view is operating in a fashion contrary to the typical inductive method of making generalizations practiced in science. Before ending this section I would also like to point out that the presuppositions necessary for science or empiricism are in no ways empirically verifiable. This may seem obvious to some but there is a large number of scientist who have adopted a philosophy called “logical positivism” which states that “A statement is only meaningful if it is empirically verifiable”. The problem for the logical positivist is that their principle itself is not empirically verifiable and would therefore have to be regarded as meaningless; hence “logical positivism” is positively inconsistent and illogical. Despite the fact that it has been shown to be an inconsistent ideology there are still many adherents to this view they often hold philosophy and theology in great disdain because according to their principle it is “meaningless” unfortunately many of them have not taken the time to check their own beliefs for self consistency.

### **1.3.1.1 Huxley’s Analogy – Monkeys typing Shakespeare**

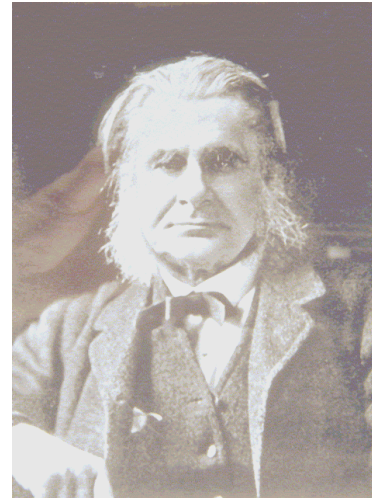
Thomas Henry Huxley was an English biologist and the chief proponent of Darwin’s theory of evolution. His aggressive defense of Darwin earned him the title “Darwin’s Bulldog”.

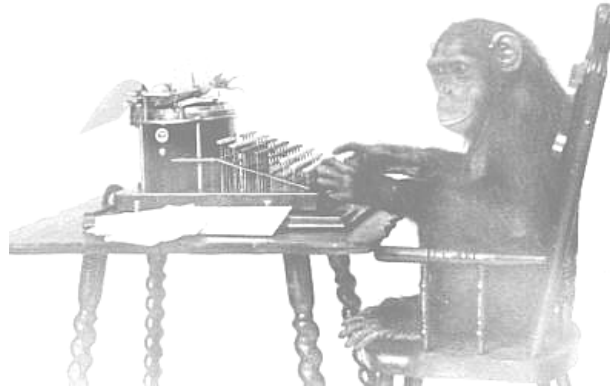
#### **What was his analogy?**

There was a debate between Huxley and Wilberforce (A British Mathematician), there is very little record of the debate, so little can be certain about actually happened. According to legend Huxley was asked to explain how all the apparent design in life could be the result of chance and responded with the following analogy:

If given an extremely long period of time, an infinite amount of ink, six monkeys who never die and six typewriters that never break. The monkeys would eventually type the complete works of Shakespeare.

According to legend Wilberforce did not have a good objection to the analogy and that marked a great turn in the public opinion concerning evolution.





### Understanding Huxley's Analogy

- The universe is the paper and the ink
- The monkeys are "random" external causal agents.
- The input of the random forces is restricted by the laws of the typewriter which would correspond with the laws of nature.
- The complete works of Shakespeare are supposed to be analogous to the complexity of life.

### Problems with the Analogy

- We don't have infinite time
- We don't have infinite matter
- In the end nobody within Huxley's "universe" understands what has been written! So Huxley has not explained the existence of concept information.
- The Typewriter is a one way ratchet mechanism; however the formation of the building blocks of life from primordial soup is a reversible process, the analogy would be more accurate if at any moment the ink of the characters that had been typed could spontaneously go back through the typewriter. Not only this but the decay rate would be faster than the rate of generation. Dr. Harold Blum comments on this in his book *time's arrow and evolution*.

"I should want to play down, still more, the importance of the great amount of time available for highly improbable events to occur. One may view that the greater the time elapsed the greater should be the approach to equilibrium, the most probable state, and it seems that this ought to take precedence in our thinking over the idea that time provides the possibility for the occurrence of the highly improbable."<sup>7</sup>

A.E. Wilder-Smith does an excellent job of explaining this in his book *Man's Origin, Mans Destiny*. First he points out the difference between the analogy and the chemistry it claims to represent.

"As he (Dr. Blum) points out, biological synthesis, and the probability

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<sup>7</sup> Harold F. Blum, *Times Arrow and Evolution*, Torchbook edition first edition 1962 p. 178A. The book was originally published in 1951 by Princeton University Press. The quote may not be in the earlier editions.

laws governing it, represents the result of many reversible reactions, all in equilibrium with one another, as far as we can see, since they are reactions governed by catalysis biogenetically. The monkeys strumming for millions of years on typewriters produce “compositions” which are “stable end products” as opposed to unstable biological end products in equilibrium with their precursors. The Shakespeare sonnet churned out by the monkey, once turned out, remains fixed on the paper and does not decompose, returning through the keyboard into its constituent words and letters conceived by the monkey’s brain.<sup>8</sup>

Wilder-Smith then goes on to state

“In a chain of equilibrium reactions such as those on which biogenesis and life depends, increasing time spans will not increase the attainment of an improbable end product (life) but will favor the attainment of true reaction equilibrium. And this reaction equilibrium will certainly not lie at the end of the chain of reaction where the highest degree of improbability will almost cas those on which biogenesis and life depends, increasing time spans will not increase the attainment of an improbable end product (life) but will favor the attainment of true reaction equilibrium. And this reaction equilibrium will certainly not lie at the end of the chain of reaction where the highest degree of improbability will almost certainly be found.”<sup>9</sup>

### **Huxley put to the test**

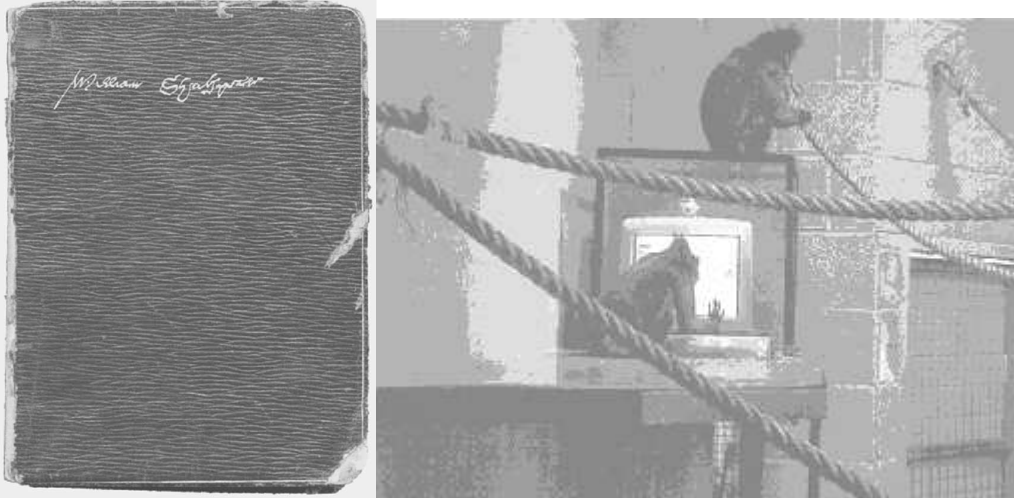
In an interesting little experiment, Huxley idea was put to the test (although only for a limited time). A Plymouth University research team left a computer in the monkey enclosure at Paignton Zoo in southwest England, home to six sulawesi crested macaques. named Elmo, Gum, Heather, Holly, Mistletoe and Rowan. Mike Phillips, who runs the university's Institute of Digital Arts and Technologies, had the following comments concerning the results:

1. “The lead male got a stone and started bashing the hell out of it.”
2. “Another thing they were interested in was in defecating and urinating all over the keyboard.”
3. The monkeys failed to produce a single word “They pressed a lot of S's, Obviously, English isn't their first language.”

I found points 1 and 2 to be particularly interesting in that it is indicative of how a “chance god” would interact with the “laws of nature”. If you are interested in learning more about this study, the results have been published in a book entitled “Notes Towards the Complete Works of Shakespeare” by Elmo, Gum, Heather, Holly, Mistletoe and Rowan

<sup>8</sup> A. E. Wilder-Smith, Man’s origin Man’s Destiny, The Word for Today, P.O. Box 8000 Costa Mesa, California 92628 p 47-48

<sup>9</sup> A. E. Wilder-Smith, Man’s origin Man’s Destiny, The Word for Today, P.O. Box 8000 Costa Mesa, California 92628 p48



The price of the book is 25 UK pounds, you can buy the publication online at: <http://www.kahve-house.com/society/shop/>. For more details regarding the experiment check out the following site: <http://www.vivaria.net/experiments/notes/documentation/>.

### 1.3.2 Does Polytheism provide a basis for science?

A polytheistic world view supposes that there are many finite gods who are in effect fighting over objective reality. Under these circumstances, one would not expect to find a lot of regularity in nature; we can understand why science was hindered in polytheistic regions.

### 1.3.3 Does Monotheism provide a philosophical basis for science

Monotheism is a broad category, how monotheism affects the practice of science depends greatly upon the belief concerning both the creator and the creation. In examining monotheism, I will restrict myself to the presumption of an infinite God possessing all knowledge and power the universe is his playground and such a God could do with it whatever He desired. Some have presupposed the existence of a single lesser god who is limited, but then the question needs to be asked what limits this god? Is there something out there in the universe that this god doesn't have power over? In that case it could also be classified as a god and we are back to polytheism. Is there something out there that this finite god doesn't know? Then that seems to me akin to assuming that there is some principle of knowledge that is higher than god, and you are either at polytheism or a new monotheistic deity that is over the previously assumed god. Likewise if one assumes that god is bound by time then one has assumed an additional "time god". Looking for regularity in creation would then be an attempt to find patterns to God's decrees. Some monotheists believed that god wound up the universe gave it laws and ceased to interact with it after setting the initial conditions and laws which governed it. Others believe that God continues to interact with His creation, although it is in a manner which He had ordained before time began. Monotheism itself is not sufficient to guarantee the practice

of science; it does not even mandate the existence of a world apart from a creator! Rather than examine every conceivable possible form of monotheism I will limit my discussion to the God and His creation as described in the Bible.

### 1.3.4 Does the Bible provide a philosophical basis for science?

#### 1.3.4.1 A note regarding falsifiable presumptions

Often times the presumption of an all powerful God such as the god of the Bible is criticized because it is not falsifiable. It should be noted that it is not alone in this respect. For example an atheistic view that everything is the outgrowth of chance is also not falsifiable, it does however carry with it certain consequences that the atheist typically doesn't desire, the impossibility of the practice of science being one of them. Chance renders all outcomes possible but science requires that some presumptions be certain. This has not rendered the chance hypothesis false but it has shown that it is incompatible with science and human knowledge in general. There is no shortage of people who have claimed to have revelations from God. Most of them profess some belief in some degree of reliability of sense perception otherwise they would not have a valid medium for gaining converts. Skeptics as well as the followers of these people invariably ask these "prophets" questions not only about the world beyond but also about regular principles regarding the behavior of creation or about what will happen in the future, and from their answers many would be "prophets" have been falsified. For examples of this one need only consult some of the works of Robert Morey on Islam<sup>10</sup>, or the Watchtower<sup>11</sup> or consider the failings of the so-called infallible Popes in regard to their beliefs concerning the motion of planets. The Biblical record contains a host of prophecies which would render it falsifiable or at least incompatible with the notion of a basic reliability of sense perception. In fact the Bible contains a challenge to all other belief systems regarding the prediction of future events.

"Thus says the Lord, the King of Israel and his Redeemer, the Lord of hosts:

'I am the first and I am the last, and there is no God besides Me. 'Who is like Me? Let him proclaim and declare it; yes, let him recount it to Me in order, from the time that I established the ancient nation and let them declare to them the things that are coming and the events that are going to take place.

'Do not tremble and do not be afraid; have I not long since announced it to you and declared it? And you are My witnesses. Is there any God besides Me, or is there any other Rock? I know of none.'"<sup>12</sup>

Another way in which ideas can be rendered false is to demonstrate inconsistency. This is one of the common approaches used by those who would seek to discredit the Bible. Given the large number of people who seek to discredit the Bible by some means I am

<sup>10</sup> R.A. Morey "The Islamic Invasion" Christian Scholars Press 1350 E. Flamingo Rd. Suite 97, Las Vegas, NV. 88119

<sup>11</sup> R. A. Morey "How to answer a Jehovah's Witness"

<sup>12</sup> Isaiah 44:6-8 *New American Standard Bible: 1995 update*. 1995 (Is 44:6). LaHabra, CA: The Lockman Foundation.

really surprised that the objections concerning falsifiability are raised, especially if it comes from people who have proposed a chaotic chance driven universe, in which no real knowledge is possible yet alone any concept falsifiable.

### 1.3.4.2 The Biblical Presuppositions and Science

The Bible tells us that there is an all powerful, all knowing God who made the universe. We are told that this God does not change in Malachi 3:6, hence it would be safe to say that God has a nature which He remains consistent with; Through out the scripture it is made clear that though God ordains all things yet maintains the validity of secondary causes. (This is clear from statements such as Genesis 1:14 where it states that the sun was made to give light to the earth). For this reason God is often referred to as the primary cause and the normal properties of components of his creation are called secondary causes. A Christian recognizes that God can intervene in His creation and perform Miracles since He is the primary cause and sovereign over secondary causes. The study of empirical science by the Christian is an examination of normal properties of secondary causes. The Bible recognizes “man” as a meaningful taxonomy and not just a random collection of chemical that changes with time. The Biblical view of man is that God made man and women in His image, Man is described in the Bible as a thinking being, whose thoughts are integrated into who he is (Proverbs 23:7 states “For as he thinks within himself, so he is”<sup>13</sup>.) The Bible also portrays man as being capable of sensory perception. Throughout the scripture there are appeals to the use of sense perception.

Proverbs 20:12 “The hearing ear and the seeing eye, The Lord has made both of them.”<sup>14</sup>

I Corinthians 12: 17 “If the whole body were an eye, where would the hearing be? If the whole were hearing, where would the sense of smell be?”<sup>9</sup>

Luke 24:39 “See My hands and My feet, that it is I Myself; touch Me and see, for a spirit does not have flesh and bones as you see that I have.”<sup>9</sup>

Prov 24:13 “My son, eat honey, for it is good, Yes, the honey from the comb is sweet to your taste;”<sup>9</sup>

It should be mentioned that the generalizations that one might make concerning the experience of sense perception are not always correct. This is clearly indicated in that Jacob was able to deceive his father in Genesis 27. So we see that the Bible gives us the necessary presuppositions for the practice of science. Jesus also acknowledged man’s ability to recognize the nature of secondary causes

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<sup>13</sup> *New American Standard Bible: 1995 update*. 1995 (Pr 23:7a). LaHabra, CA: The Lockman Foundation.

<sup>14</sup> *New American Standard Bible: 1995 update*. 1995 (Pr 20:12). LaHabra, CA: The Lockman Foundation.

Luke 12:54-56 “And He (Jesus) was also saying to the crowds, “When you see a cloud rising in the west, immediately you say, ‘A shower is coming,’ and so it turns out. And when *you see* a south wind blowing, you say, ‘It will be a hot day,’ and it turns out *that way*. You hypocrites! You know how to analyze the appearance of the earth and the sky, but why do you not analyze this present time?”<sup>9</sup>

Jesus chastised them for being smart enough to formulate simple scientific generalizations but not smart enough to recognize more basic things. It should be mentioned that the Bible does teach that because of Adam’s sin man kind fell from his initial state. The Bible indicates that we all inherited a sinful nature and outgrowth of which is that our life has been impacted negatively in every respect, physically, mentally, emotionally and spiritually. According to the Bible man retains enough of what God gave him initially to be referred to as being in the image of God (James 3:9), but man is portrayed as not wanting to acknowledge God as creator and Lord and as being willfully ignorant of Him.

Psalms 10:4 “The wicked, in the haughtiness of his countenance, does not seek *Him*. All his thoughts are, ‘There is no God’.”<sup>9</sup>

Proverbs 1:22 “How long, O naive ones, will you love being simple-minded? And scoffers delight themselves in scoffing and fools hate knowledge?”<sup>9</sup>

Romans 1:18-23 “For the wrath of God is revealed from heaven against all ungodliness and unrighteousness of men who suppress the truth in unrighteousness, because that which is known about God is evident within them; for God made it evident to them. For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse. For even though they knew God, they did not honor Him as God or give thanks, but they became futile in their speculations, and their foolish heart was darkened. Professing to be wise, they became fools, and changed the glory of the incorruptible God into an image made like corruptible man—and birds and four-footed animals and creeping things.”<sup>15</sup>

Romans 1:28 “And just as they did not see fit to acknowledge God any longer, God gave them over to a depraved mind, to do those things which are not proper.”<sup>16</sup>

Psalm 14:2--3 The LORD has looked down from heaven upon the sons of men To see if there are any who understand, who seek after God. They have all turned aside, together they have become corrupt; There is no one who does good, not even one.<sup>11</sup>

<sup>15</sup>*The New King James Version*. 1996, c1982 (Ro 1:23). Nashville: Thomas Nelson.

<sup>16</sup>*New American Standard Bible: 1995 update*. 1995 (Ro 1:28). LaHabra, CA: The Lockman Foundation.

Romans 8:7-8 “Because the mind set on the flesh is hostile toward God; for it does not subject itself to the law of God, for it is not even able *to do so*, and those who are in the flesh cannot please God.”<sup>11</sup>

2 Peter 3:3-7 “knowing this first: that scoffers will come in the last days, walking according to their own lusts, and saying, “Where is the promise of His coming? For since the fathers fell asleep, all things continue as *they were* from the beginning of creation.” For this they willfully forget: that by the word of God the heavens were of old, and the earth standing out of water and in the water, by which the world *that* then existed perished, being flooded with water. But the heavens and the earth *which* are now preserved by the same word, are reserved for fire until the day of judgment and perdition of ungodly men.”<sup>10</sup>

A common thread in all these scriptures is that mankind actively attempts to suppress the knowledge of God, and will even go so far as to deny His existence, and willfully forget historical events such as the flood or promises of judgment. This is consistent with Jesus’ comments about men in Luke 12:54-56, they were still capable of thought and could analyze the world around them but when it came to anything related to God, man has a propensity for spinning silly theories. Low and behold we see that men who are very capable as scientists can espouse the most bizarre philosophically ungrounded ideas in attempt to deny the existence of God. It is truly a mystery how someone can believe that they have a great mind, yet simultaneously profess that all their thoughts are accidental outgrowths of a random process. True God does take the wise in their own craftiness.

In short it should be recognized from logic that everything in the conclusion should be contained in the premise. As far as atheism goes you have nothing in the premise how can you have anything in the conclusion, let alone the presuppositions necessary for the practice of the scientific method? But for Christianity which starts with a premise of God and the revealed word of God, the Bible, we have a sufficient amount in our premise to allow us the practice of the scientific method as part of our conclusion.