

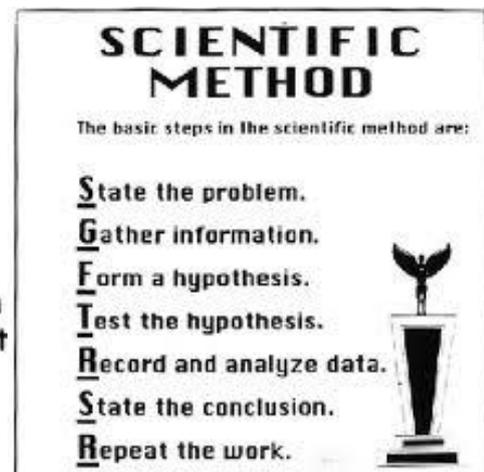
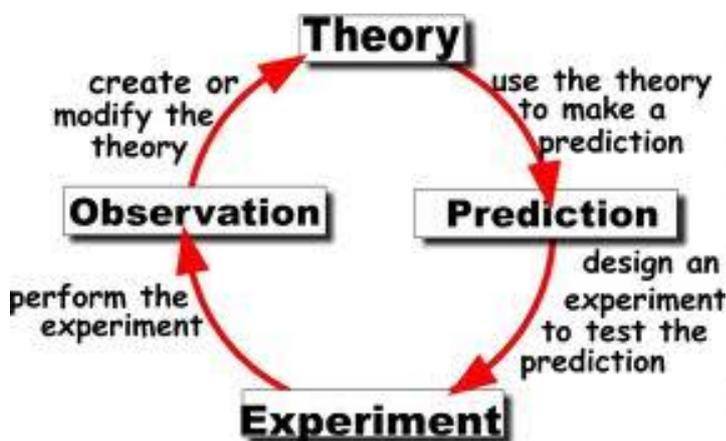
Scientific logic for belief in God

Dr Michael Jarvis

The Scientific method

The Oxford English Dictionary says that the Scientific Method is: 'A method or procedure that has characterised natural science since the 17th century, consisting in systematic observation, measurement and experiment and the formulation, testing and modification of hypotheses (theories)'.

We can summarise the main steps of the Scientific Method as shown in the diagrams.



An example

As an example of a problem to be investigated, we can take the **origin of the universe**.

The scientist will start from an **observation** that the universe does exist. The scientist may decide to examine questions that arise from this observation, for instance:

One relevant question:

Did the universe come into existence through the actions of a Designing Mind?

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Steps needed to investigate this question:

1. Formulate an initial theory (hypothesis)
2. Make a prediction
3. Design experiments
4. Make observations
5. Reach conclusions

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By using this Scientific Method approach we can add the following details:

1. The initial theory
The universe contains evidence for a Designing Mind
2. Make a prediction
A scientific analysis of the universe should reveal evidence of the Designing Mind.
3. Design experiments
Design a wide range of experiments and observations needed to help us understand how the universe functions.
4. Make observations
Look at a wide range of scientifically designed experimental results to enable us to classify observations into categories, such as the following:
 1. List fundamentals of the universe that had to be present for our universe to exist.
 2. List the calculated statistical probabilities of the various observed fundamentals all existing in one universe.
 3. List all other experimental results that may possibly suggest a Designing Mind.

This process of observation, experimentation and sorting through the results of scientific experiments will lead us to some preliminary conclusions. These preliminary conclusions may also lead us to formulate one or more new theories in order to further clarify the initial question.

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A scientist can now list some of the conclusions reached from experiments and observations relating to this theory:

The evidence can be sorted under several headings:

- A. 'Fine tuning' characteristics of our universe.
- B. The origin of life.
- C. Unlikely biological outcomes.
- D. Irreducible complexities.

A. Fine tuning characteristics of our universe

The well known physicist Stephen Hawking noted that the relationship between four fundamental forces in nature had to be very precise in order for our universe to exist. These four fundamental forces are:

1. The *strong interaction* that holds the nuclei of atoms together.
2. The *electromagnetic force* that acts between pieces of matter carrying electrical charge.
3. The *weak force* that controls radioactive decay and neutrino interactions.
4. The *gravitational force* that acts between any two pieces of matter.

Stephen Hawking pointed out that the relationship between these forces had to be so precisely 'fine tuned' that **even a slight change in the 55th decimal place would make our universe impossible**. To put it another way, if these relationships were the result of chance then **the statistical probability of our universe existing by chance is only about 1 in 10⁵⁵, an incredibly small probability!**

As an illustration, if we covered the whole of the USA with small coins, edge to edge and then piled other coins on this great area of coins until we reach the moon 400,000 km away, and if we were told that this vast mountain of coins contained just one coin that was different from the rest, the statistical probability of finding that one coin is about 1 in 10⁵⁵.

Another famous astrophysicist from Oxford University, Roger Penrose, calculated the odds that our present universe came into existence rather than

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a black hole universe where no life could exist, to be **1 in 10^{123}** . Clearly, although there are various ways of calculating these probabilities they all point to enormous statistical probabilities against chance.

B. The origin of life

On 26 June 2000 it was announced that scientists had produced a working draft of the human genome (genetic code of life). This demonstrated the awesome complexity of life. Humans have 23 pairs of chromosomes in each body cell. Of these 22 are identical in both males and females. Another pair are the sex chromosomes that differ between males and females. This gives 23 pairs but actually 24 different types. In addition there is a chromosome in tiny structures called mitochondria within each cell. **All of these cell contents are too small for the human eye to see, but contain 3.1 billion base pairs.**

The arrangement of these chemical 'base pairs' into a double strand of DNA represents the code of life or your genetic blueprint. The amount of data hidden inside your genetic blueprint is equivalent to the contents of 200 telephone directories each 500 pages long!

Since the year 2000, over 400 scientists have been working in 32 laboratories to refine our knowledge about the human genome. This has resulted in some dramatic and unexpected conclusions. In the year 2000 we knew that only about 1% of the DNA in our genetic code was located in 'genes'. These are sections of the DNA strand that are responsible for creating specific amino acids needed by the body. The remaining 99 % was thought to have no function and was labelled 'junk DNA'.

Imagine our surprise that now we have found at least 80 % of this formerly labelled 'junk DNA' actually plays vital functions relating to controlling how cells, organs and other tissues behave. In fact it is probable that we do not have any 'junk DNA'. (Results are just out in several papers the Journal Nature, Genome Research, and Genome Biology. Major results were summarised in the New York Times of 06/09/12 and New Scientist: 08/09/12).

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This research has revealed that the DNA is tightly wound up into what may be described as a 'hairball' and it is critical which part of the DNA strand lies next to another part. **The total length of the double DNA strand in humans totals about 2.5 meters. This is all so tightly wound up in the cell nucleus that it fits into a tiny space, so small it can only be seen through a powerful microscope!**



Diagrammatic representation of a small section of the DNA double strand, composed of various combinations of four different chemical 'base pairs'.

Even the simplest single cell bacteria so far discovered has about 600,000 DNA base pairs. The human genome is more than 3000 times larger than this!

This research helps to emphasise that even the most primitive life forms are in fact very complex. In addition to the complexity of the DNA code of life, a simple cell has to be surrounded by a semi-permeable membrane, have the ability to absorb nutrients and expel waste products and to reproduce itself!

The more we discover about the DNA code of life the more we realise that the statistical probability of life arising purely by chance is as small, if not smaller than the statistical probability of our universe resulting from chance alone.



The above information helps to clarify why the origin of life is still a mystery to science. A recent article in New Scientist Journal of 23 June 1012, highlights this question: 'Life: inevitable or fluke? The article makes interesting observations about the **origin of life being a very unlikely event.** For instance, the genetic evidence suggests that, once single celled life was on earth, these gave rise to more complex life only once in billions of years. The article notes, *If simple cells had slowly evolved into more complex ones over billions of years, all kinds of intermediary cells would have existed and some still should. But there are none. Instead there is a great gulf.*

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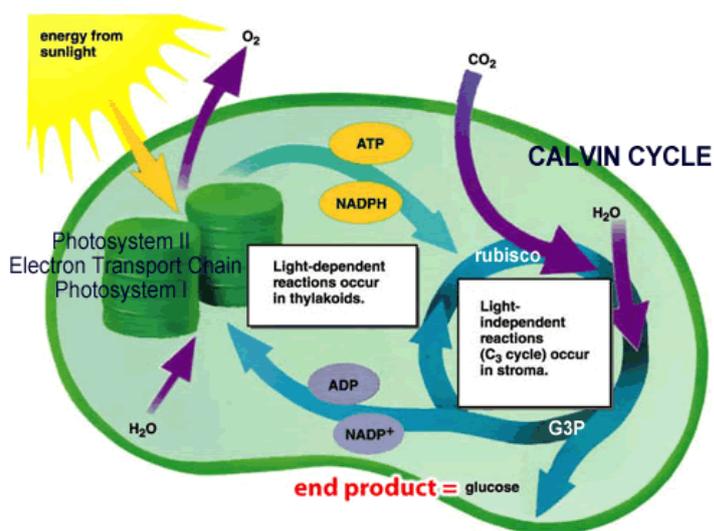
The article elaborates on this question and concludes, *Complex life is not at all inevitable. It arose here just once in four billion years thanks to a rare, random event. There's every reason to think that a similar **freak accident** would be needed anywhere else in the universe too.*

This New Scientist article is just one example illustrating the enormous statistical probability against chance as the reason for development of complex life from single celled life. The same probability against chance applies to the development of the first life from inorganic building blocks. The article appeals to a 'freak accident' as an explanation for multi-cellular life. **In fact such statements are an admission that the statistical probability that life arose by chance is overwhelmingly small.** Yes, science can analyse processes and events within living organisms but it cannot say whether there was and still is a guiding Mind in operation, guiding the events towards pre-ordained outcomes.

C. Unlikely biological outcomes

Once life was present on Earth, we can trace a long list of very 'unlikely' events. For instance, the appearance of photosynthesis in unicellular life appeared soon after the first unicellular life. If this had not taken place our atmosphere would never have obtained the oxygen needed to support higher life forms. However, biologists who have studied the photosynthesis process have discovered it to be a very complex process. Many biologists have

described it as **the most complex process known to biology!**



The statistical probability of this complexity appearing near the dawn of life is extremely small. It is another example of an event that suggests the action of a Designing Mind.

Was the appearance of photosynthesis part of the long-term plans of a Designing Mind, to prepare the earth for the eventual appearance of human beings? It could theoretically be one of the many 'unlikely flukes', but the statistical probability points powerfully against that possibility.

Time does not permit us, in a short article, to detail all of the many examples. If we look at existing life forms and biological structures, these reveal numerous examples of designs that are ideally suited to the needs of the various organisms. **Attempts to detail so-called 'poor designs' have backfired time after time.** For instance, the claim that the vertebrate eye, such as ours, is poorly designed has led to research that has actually shown the existing design produces far superior function than the theoretical 'better design' suggested by writers such as Richard Dawkins (1986) in his book 'The blind watchmaker'.

This evidence for the human eye is detailed in my web page article 'Human eye poorly designed?' In this I show how research, since the publication of Richard Dawkins book, has conclusively shown that our eyes are in fact much more efficient than they would have been if designed according to Richard Dawkins' suggestion.

D. Irreducible complexity

Richard Dawkins (1966). in his book 'Climbing Mount Improbable' admits that the chance of even one single enzyme consisting of some hundreds of amino acids coming together by chance gives the staggering statistical probability against chance of about 1 in 20^{100} . He then says that, although mutations are chance events, natural selection is not. Therefore, it is natural selection that accounts for all the steps in life's increasing complexity.

However, we should ask ourselves why sophisticated modern science cannot even duplicate the 'natural selection' processes that led from inorganic minerals to the first life, let alone the processes that resulted in the other examples of great complexity.

Behe (1998) in his book 'Darwin's Black Box', gives examples of very complex biological systems that he believes did not serve meaningful functions until they were close to being fully developed and so seem to demand more than chance events to explain their existence. Although some of his conclusions

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have been challenged the overall evidence still speaks strongly for a Designing Mind **guiding the biological, chemical and evolutionary processes.**

In other words, even if we accept that chemical reactions, mutations and selective forces played a major part in the origin and evolution of life, the fact remains that these were extremely unlikely outcomes, unless guided by a Designing Mind.

I am not suggesting that evolution is not involved. However, in order to achieve all the statistically improbable outcomes, this had to be God guided evolution.

Furthermore, if we try to place a 'statistical probability' to the creation of the first life through chance alone, we come up with a staggering probability against chance.

When we talk about evidence being stacked powerfully against 'chance' or 'just a lucky fluke', I personally believe it is very important to realise that science will continue to discover more about the circumstances and processes that led to the first single celled life forms, or to other complex systems. However, **science is not equipped to comment on whether or not there was the unseen guiding 'hand' that used these events and processes and directed them to pre-calculated outcomes.**

Scientific studies are revealing many of the processes involved in living things. The Designing Mind seems to use these laws and processes, but when we look at the statistical probability against life being the result purely of chance, this presents us with a strong case for saying that the evidence for a Designing Mind behind the processes is stronger than the evidence against a Designing Mind.

E. Reach conclusions

We can now give the conclusions reached in our Scientific Method investigation relating to our theory or hypothesis Remember our hypothesis was: **The universe contains evidence for a Designing Mind.**

In our investigation we have outlined just a small sample of the many scientific observations that point us to the conclusion that chance is not the most likely ultimate cause of these observations.

Our analysis of the scientific studies suggests that the universe only exists because of a long list of very unlikely events and interactions, referred to by some people as 'fine tuning co-incidences'. **This leads us to the preliminary conclusion that the statistical probability of all these 'fine tuning' characteristics and complex biological systems, all coming into existence in one universe, is incredibly small.**

In each of the above sections, such as the laws of physics, the evolution of the first life, unlikely biological outcomes and irreducible complexities, we have seen that the statistical probability against chance being the total explanation, is very strong in every case.

Although this does not prove the existence of the Designing Mind, it does show that the statistical probability is powerfully in favour of the existence of this reality.

Thus, if we combine all of these statistical probabilities, we reach the preliminary conclusion that it is far easier to believe in a Designing Mind than not to believe. Both positions cannot be scientifically proved and so both positions are taken by faith.

By 'faith' we mean 'reaching beyond what can be scientifically explained'. **It seems to be clearly demonstrated that less faith is needed for the conclusion that the Designing Mind does exist. An atheistic conclusion requires even more faith.**

If we add to our discussion the so-called **Kalam Cosmological Argument**, the case for the Designing Mind becomes even stronger. This argument states that everything we can observe in our universe, through scientific studies, shows that all things with beginnings have a cause of that beginning.

We can ask why this same principle should not apply to the origin and evolution of our universe? If It had a Big Bang beginning then logical reasoning indicates that there was a cause of this beginning. From our study of Statistical

Probabilities we can conclude that this cause was most probably the Designing Mind.

A much fuller discussion of the Kalam Cosmological Argument is given in the book, 'On Guard', by Dr William Lane Craig (2010). For more information on the author and many useful articles go to www.reasonablefaith.org

This sort of Scientific Method approach to our initial question can lead us to the conclusion that the evidence for a Designing Mind is very strong. **Some scientists who do not want to accept this conclusion have proposed another theory along the following lines:**

Theory 2 (For those who do not want to accept the conclusion reached from the first theory)

1. Initial Theory (hypothesis)

The Multiverse Theory.

This Multiverse Theory accepts that the existence of our universe depends on a long list of very finely tuned characteristics, all of which had to be present in order for us and our universe to exist. Therefore, in order to contest the preliminary conclusion reached from Theory 1, it is proposed that there are or were many other universes. If this is the case then, because we are in this one 'chance' universe that has led to complex life, we think that it was the result of a Designing Mind when in fact it was just the result of chance.

2. Make a prediction

This theory makes the prediction that we will find evidence that these other universes do exist or once existed. However, in order to overcome the 1 in 10^{55} probability against chance (explained in our Theory One) there will **have to be at least 10^{52} other universes.** If there are or were that many other universes then in order to overcome the statistical probability against a chance origin of our universe, we need to propose an almost infinite number of other possible universes.

It is admitted that science will find it hard to directly test this Multiverse Theory. Therefore, it is predicted that it will be revealed through indirect

methods and computer generated models. It is predicted that some evidence will come from experiments within the Particle Accelerators, such as the Hadron collider in Switzerland.

3. Design Experiments

Experiments within Particle Accelerators will theoretically enable us to test whether the 'building blocks' needed for a Multiverse Theory, are realities or not. In other words, the experiments in Particle Accelerators will enable us to test at least one fundamental group of building blocks for a Multiverse, called 'String Theories'. They will also enable us to test the foundational assumptions on which String Theory is based. For instance, String Theory is substantially based on Supersymmetry Theory. This states that, within the sub-atomic world of quantum 'particles', each sub-atomic particle has a mirror image particle that is heavier. The Hadron Particle Accelerator is capable of detecting Supersymmetry if it exists.

Observations from experiments will be analysed through very sophisticated computer programmes and computer generated models.

4. Make observations:.

So far the observations in Particle Accelerators such as the Hadron, have found no evidence for Supersymmetry and so String Theory remains purely a theory and likewise the Multiverse Theory does not yet have any observational or experimental support.

5. Reach Conclusions

Until such time that empirical evidence may be found for Supersymmetry and String Theory, **we are forced, as scientists, to conclude that, within our existing knowledge, the statistically most likely conclusion is that our Universe was designed and brought into existence through the operation of a Designing Mind.**

OVERALL CONCLUSION FROM Theory 1 and Theory 2

As a scientist, using scientifically designed steps outlined in the Scientific Method, the overall conclusion is that it is far easier to believe in the Designing Mind than not to believe. The statistical probabilities against chance are enormous.

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Most people will equate the Designing Mind with God. With this realisation that God is probably the ultimate explanation for our existence, the scientist can then look at other evidences for God. My own journey of discovery is outlined in the free download from my webpage www.factandfaith.co.za See: **'Personal journey of discovery'**.

If you are then motivated to see how acceptance of the scientific evidence for our ancient universe, containing evolutionary processes, can be reconciled with a legitimate understanding of the Bible and the Christian faith, then I suggest you read my free download called **'Big Bang Christianity'**.

If you are looking for a much more detailed examination I suggest my 600 page book with the provocative title **'God by Evolution'**. The book contents are listed at the end of this article.

Scientific discovery and the Scientific Method can lead us to a place where it is easier to believe in God. However, even with this intellectual foundation, many of us have found that **it is still necessary to reach out by faith, if we are to experience His reality in a personal way.**

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Below are listed the chapter headings in my book: God by Evolution

Book contents: 'God by Evolution' (Jarvis, M.J.F 2007. ISBN 978-0-9802770-0-5)

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