

Creation vs Evolution: here we go again. . .

Tyrone Genade
12860379
tgenade@freeshell.org

July 13, 2004

Now faith is being. . . certain of what we do not see
Hebrews 11:1

1 What are we still going on about?

This is a argument that does not go away. Regardless how simply the cases are presented and how clear the functional boundaries are laid out the remaining embattled parties will not let the issue die.

In camp one we have the Creationists who are frantically trying to cling to their faith while in the other camp we have the Evolutionists fretting over the paranoid delusion that the Church is about to burst in at any moment, drag them and all the books into the street and have a *in promptu* scientist burning.

Some where in all the arguing and case presenting the issues have got lost. To the scientists quietly working in the field there is no argument and there are no threats to their work.

What are the issues?

To the Creationist it is a battle for faith. They have worked into their faith the critical facet of creation as laid out in Genesis. In reality this is not solely a Christian problem. Many other religions also have problems with the paradigm of evolution.

In their minds it is essential that Genesis (or religious doctrine of choice) be absolutely true as it is written. Without this their souls and the souls of others cannot be saved and no redemption is possible.

These are people clinging to faith and they are not going to let go regardless how the argument is worded and how strongly it is backed up.

Adding to the confusion a branch sprang up claiming a scientific basis for creation. As will be explained later on this has really been their worst move.

To the Evolutionist things are just as desperate. There is this paranoid delusion that the Church (or religious institution of choice) is going to rush in and destroy all the work done and burn them at the stake (or what ever is most suitable for the task at hand). Their fears are not wholly unfounded. The Scopes trial clearly showed that funny things can happen.

While in reality the future of the evolution paradigm is secure the Evolutionists battle on. Somewhere along the line they have made claims they cannot back up and have themselves entered into the realm of faith. This will be addressed later on in the text. Evolutionists need not be scientists and should not be seen as evolutionary biologists as the latter are scientists and are busily testing the validity of the theories of evolution.

Essentially the problem is a faulty understanding of science. The Creationists have launched a circular argument built on a faulty premise and the Evolutionists are making claims science cannot back up. Both are believing in what they cannot see but are either right?

Section 2 will be used to explain the nature of science: just what it is and what it is not. I will tell you how it works and what its limitations are. I will begin by telling you that what you have read about the philosophy of science is largely impractical. However we define a "scientific theory" there will always be exceptions. I will lay down the crucial ideas on which science rest.

In section 3 I will define the argument. I will define the evolution paradigm as well as the core of the Creationist paradigm. Both will be discussed as to their implications for the world and humanity.

Lastly in section 4 I will deal with both arguments as based on the definitions in section 3 in reference to section 2. I will assess the accuracy of both models. All of this will take place away from the ideas of the Creationist and the Evolutionist. Only the ideas of Creation and Evolution will be dealt with.

I will then conclude with a short section on where we should be going.

Get a cup of coffee, sit down and clear your mind. This is going to be an intense 10 pages.

2 What is Science

This is not a simple question and there is no simple answer. Over the past years the boundary between science, medicine and engineering has become blurred. Today science is seen more as a collection of facts rather than what it actually is: a methodology. It is a methodology used to sift the truth from the fallacies and inaccurate assumptions that may prevail.

Underlying modern medicine and engineering is *scientific method* but it is not science! Science is about answering questions to gain understanding while medicine, like engineering, is about solving problems. Within both fields a lot of science is conducted as a lot of engineering is employed in modern science and medicine.

So if science is a methodology what is the method used? Science works by investigation, assumption and examination. The normal progression of the method is: observation, hypothesis, observation and experiment (testing the hypothesis), theory, observation and experiment, model, further observation and experiment. So a model is a well tested theory and a theory is a well tested hypothesis. A hypothesis is an assumed explanation of observations (and a good scientist will construct several testable hypotheses).

As modern science advanced the above layout became impractical as often a theory was able to explain the general picture but was unable to explain aspects of the observations. The model and theory worked fine up until a point but there was no need to dismiss the theory but more was needed. This is well illustrated with Newtonian physics and Einstein's relativity. Newtonian physics is a good explanation up until a point, then Einstein's theory performs better. Newtonian physics was not scrapped but instead became a sub part of the *paradigm* of General Relativity.

A *paradigm* is essentially a 'scientific workspace' wherein various related theories can be tested and expanded without the need to make major changes to theory and disrupt science. Of course a time comes for most theories and so also paradigms where the observations call for a complete revolution and a new paradigm.

So how is a paradigm built up? Through observation and testing. The observations have to be objective and the results repeatable. Furthermore any hypothesis drawn up must be testable. A hypothesis cannot be a truism nor can it be so broadly defined so as to defy testing. For an example lets draw up an hypothesis: There is no God. The reverse—the null hypothesis—would be their is a God. This is an example of an untestable and so invalid hypothesis. It is not science. Science has no test for 'God' and so can conclude nothing about God or related subjects.

Critical to the methodology of science is having the right tools. These tools are what you would use to measure, observe, control and the experimental design you employ. Any experiment must have controls wherein there is no interference by the experimenter. This is so that an accurate comparison can be made between experiment and the status quo.

Such experimental limitations are what hold science back. Some limitations can be overcome by theory and analysis but a great many are based in technology not being fit for the task at hand.

Returning to the example hypothesis: There is no God, let us apply the above. To do the test we need to have an apparatus with which we can observe God. We then have to conduct the experimental test in such a way that no location is excluded (otherwise one may end up with the conclusion the is or is not a God on Wall Street New York City, Earth). But we also need controls, that is a known environment where God does and does not exist. So to conclude that God does not exist one needs a positive test for God for comparison.

So what was simply an untestable hypothesis is actually a circular argument. A scientific hypothesis must lead to a conclusion. Circular arguments are not scientific.

As you read the next sections keep the following in mind:

- A scientific hypothesis must be testable.
- A scientific argument cannot be circular.
- Science cannot conclude anything about what it cannot test or observe.
- Scientific observation must be objective and reproducible.
- A valid scientific hypothesis is valid in all similarly defined environments.
- An accurate hypothesis will accurately explain all related phenomena as it is drawn up from similar observed phenomena.

Another important character of science is its self correcting nature. As long as a theory is being tested and researched any errors that were made along the way will be caught and the theory corrected accordingly. Einstein's relativity is a good example of this. It is accepted in science that man is fallible and mistakes can and will be made and it is assumed that eventually some smart-alec will pick up the error and make the corrections.

This history of scientific progress bears witness to the confidence of this latter assumption.

Lets begin the debate.

3 Defining the Debate

The paradigm of evolution and most of its theories rest on this simple definition:

Evolution can be defined as any change in the frequency of alleles within a gene pool from one generation to the next.

Curtis and Barnes, *Biology* 5th ed.

This definition cuts to the heart of the matter and is scientifically irrefutable based on the evidence we have (this does not mean it may not be refuted in the future) . If any evolution is to take place leading to a new species then it must take place by means of altering the genetic material. This can occur by introducing new alleles, duplicating alleles or major chromosome changes that will as the definition says, change the frequency of alleles in the environment. The definition also makes clear the fact that the process of evolution spans generations. This precludes idea that individuals can evolve. Evolution has to be a group effort. The gene frequencies in the population have to change in response to selective pressure.

Any change in the alleles (by mutation for example) will remain inconsequential to the gene pool and hence the species unless it confers a selective advantage. Deleterious mutations are only bad news to the individual unless it can be passed on to other generations but even then it will not be of significant impact to a large healthy population while there is selective pressure against the allele.

The definition of Creation is a lot more complicated. The definition will vary from religion to religion and interpretation to interpretation. Lets just summarize it as follows:

The universe and everything in it is a result of God.

Remember the last section where we discussed valid theory? Clearly this definition is unscientific as we have no test for God.

But this is not really the issue. Many evolutionists and scientists have a belief in a God and still accept evolution.

The issue is that of Scientific Creationism. This can be defined as follows:

The Universe and everything in it, including life, is the direct result of a God and there is sufficient scientific evidence to substantiate this and that excludes evolution.

So, is there sufficient scientific evidence?

4 Creation vs Evolution: the bare facts

The paradigms of Creationism and evolution will be weighed as follows. Firstly the issue of testing will be addressed. From section 2 it is clear what needs to be before a hypothesis can be regarded as scientific. Next the issue of experimentation and testing will be addressed. Remember that any valid hypothesis leads to further research opportunities. Lastly the respective models will be tested in regards to their accuracy. Do they make quality scientifically verifiable predictions (if in deed they make any predictions at all)?

4.1 What exactly can we test?

Can we test the hypotheses that fall within the paradigm of evolution? Do they lead to circular arguments? Do we have the tools to conduct the tests? Do the hypotheses lead to conclusions?

There are four main theories that make up the paradigm of evolution. These are: Common descent (and hence speciation and relation), change in gene pool composition over time, endosymbiosis, and the commonality of the chemistry of life.

All four are valid hypothesis with enough evidence to back them up and are hence valid theories.

The molecular biology techniques employed in phylogenetics and cladistics supply the tools and objective framework to test the hypothesis of common descent. While there is still some question regarding the limits of the technology employed to test interspecies relationships they do supply valid testing tools.

With the same molecular biological techniques we are also able to test for changes in the gene pool over time and hence test the core definition of evolution.

Again, using the a fore mentioned technology as well as basic biochemistry and genetics theory the last two hypothesis can be tested.

All the above hypotheses lead to definite conclusions: either the theory holds or it does not. There are no circular arguments.

One matter of concern is that there are few alternative hypotheses to explore and so be able to compare ideas better. However, the self-correcting nature of science is again shown to be true. For many years the endosymbiotic theory of organelles was dismissed but once investigation was begun with new tools it was shown to be of merit.

What about scientific Creationism? The first stumbling block is the 'God'. Which God? Can we prove God exists (which is rather crucial to the idea)? Do we have the tool to perform the tests? As outlined in section 2 we cannot answer this question and so already scientific Creationism cannot be considered as a valid scientific hypothesis.

Ignoring the latter the case for scientific Creationism does not get any better. We also cannot test for the hallmarks of creation: intelligent design. The intelligent design harped on about by Creationists is a simple form vs function argument. This argument is implied by the theory of evolution as well. Evolution is after all a process where by disfunctional forms are selected against. Like in art you do not have to have a clue what you are doing before you start painting to yield something that looks like the work of some intelligent force. (Many abstract artists make millions every year by randomly dripping paint onto a canvas. Chimpanzees can do that too...)

Sticking with the planning of God how can we ever come to understand the mind and plan of God whose thinking is beyond our comprehension as laid out in the Bible? The scientific Creationist argument does not lead to a definite conclusion or understanding of the subject of the hypothesis: creation.

The creationist argument is circular and inconclusive. It cannot be viewed as a scientific hypothesis or theory etc... It is also not the only alternative theory that can be dismissed by the lack of a scientific basis for analysis.

Ultimately the evolution paradigm is the only paradigm in which science can be conducted as laid out above.

Now lets assume that the last subsection is not there and carry on with the debate by looking at experiments and reproducible results.

4.2 Reproducibility

A valid scientific idea lends itself to evaluation and will yield valid data that is reproducible.

Evolution has problems here. There is no way for us to repeat the giant 3.5 billion year experiment that is evolution. We are still interpreting the

results of this experiment.

So how good are our observations up to date.

For the most part we use the fossil record for our study of yesteryear. Alas the fossil record is by nature inconclusive. We have only found fossils of a minute fraction of the species that ever lived. There are massive gaps in the data. Drawing conclusions as regards relationships are course at best. It is not possible to draw the nice linear charts showing the progressive evolution of *Australopithecus* to man.

Fossils of *Archaeopteryx* suggest that some/one of the arboreal dinosaurs or other reptiles of the day evolved feathers and took to the air. Unfortunately while it seems a good bet that this is the case the fossil record is too fragmented to draw any real definitive conclusions about the origin of birds and *Archaeopteryx*. Can the gene pool be isolated from which that and all other animal sprang be isolated?

As DNA only has a half life of about 40'000 years phylogenetics cannot be used to place *Archaeopteryx* but using the technologies phylogenies can be drawn up of the animals that exist today. If there is a common gene pool between birds and reptiles and mammals and reptiles it will be evident by tracing the progressive changes in the DNA.

As the observation obtained by phylogenetics is objective and highly reproducible the evolution paradigm survives this criteria for valid scientific theory.

But the theories of speciation and genetic divergence can be tested today.

The industrial revolution of England put the peppered moth in a bad spot. Its traditional home of lichen covered trees where disappearing. As consequence its pale mottled appearance was not serving as adequate camouflage and the predators were having a field day. In place of the lichen covered trees there were now soot stained building and posts. The peppered moth had one very good genetic asset. There was a dark morph of the moth. The selective pressure of habitat destruction favoured the dark moth because it could hide in the darker landscape. In a few generations the peppered moth had adapted to the new environment. Where the light coloured morph had been most abundant in the past now the dark was most abundant.

This isn't the only example. Our range of domesticated animals also serve as example of this. So here we have proof of the definition of the paradigm of evolution.

Using *Drosophila* experiments were carried out using a simple selective criteria: the ability to detect the scent of a food source. Those that could detect the food source were paired with others that could and those that

could not were paired with those that could not. Over the course of several generations the two lines were reintroduced to one another for mating purposes. The two lines were no longer sexually compatible. Through the selection process for only one phenotype enough of a barrier had evolved to reproductively isolate the two strains.

Is this enough to show speciation? Some will say yes while others will say no. Unfortunately there is still no single all encompassing definition of what exactly a species is.

The critical fact is that some of the processes of evolution can either be observed with controlled experiment or *in situ* to yield reproducible results that can be compared.

What about scientific creation? Well can we play the part of God? So far we have not been able to create life so the Creationist cannot show directed creation. We also cannot get God to repeat creation so we can have more data and make observations. Ultimately we get back to the fact that we cannot scientifically test for God or for the process of creation.

So no, scientific creationism does not yield any significantly different scientific data to that of evolution. It is not an alternative paradigm within we can conduct science.

4.3 Putting the Paradigms to the test

Lets begin with scientific creation for a change. If you take a literal interpretation of the Bible as in Genesis then we must accept the age of the Earth and universe to be only a few thousand years. The data does not confirm this.

The model is inaccurate in respect to the sequence of events confirmed through scientific investigation.

Because we cannot understand the mind of God let alone prove His existence scientific creation does not really provide any real testable hypotheses nor make any predictions.

Scientific creationism just does not hold water and is not a scientific idea.

What about the paradigm of evolution?

We can observe evolution. We can measure changes in the frequency of alleles in a population in response to selection. We can direct the evolution of animals towards a certain form and function (e.g. race horses, better milk producing cows, new breeds of dog).

We can even make predictions as regards which alleles will be favoured under certain selective conditions. We cannot really make predictions

about fossil discoveries as we do not know what exactly came before or after that fossil in the evolutionary line.

The evolution paradigm does make predictions as to where we (life) are going and is a plausible explanation of the vast variety of life on the planet.

Even if the evolution paradigm is false, it is the only real paradigm we have within to work. It is the best we have and whether we like it or not (in respect of our religious beliefs) it is the only paradigm to pursue. . . until we imagine a new scientific theory or have a conclusive test for God.

5 In Conclusion

Where to from here?

It is clear the debate is over. What remains is to educate people as to the outcome. While creationism is not science it does deserve a place in the biology class. The history of science is very important as it shows the progression of ideas away from 'fuzzy' untangible concepts towards testable fact and ideas.

Creationism should be given its due as an idea that is unscientific much like the ideas of panspermia. Along with the introduction of such ideas there must also be education on what exactly science is and how it works so that it can be clear why the ideas of creationism and panspermia are not scientific and why the only real alternative, evolution, must be pursued to its end.

Creationism is a religious belief to be interpreted as ones convictions allow. Its message has an eternal place in the realm of religious instruction and philosophy but not in the biology class.

It is expected that the debate will drag on as neither creationists nor evolutionists will be content till one or the other no longer exists. Those who see no problems with the way things are and who feel that both religion and science can coexist happily together will just have to carry on with the work of testing the theories and gathering the evidence in a scientific manner.

Ultimately the truth needs no champion. It is self evident to those who open their eyes and weigh matters objectively. Those who refuse to see the truth suffer for their own foolishness and no one can change their minds.

Don't try to talk sense to a fool; he can't appreciate it.
Proverbs 23:9