

Alex's Heresies - embracing a physical reality

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Article: Science and Our Fall from Grace

July 24th, 2008 Alex McCullie

500 years ago most people believed that god created the universe with Earth at its centre and created all living things. Man and woman were made in god's image and endowed with non-physical souls that continued after death. This was the teaching of the Christian church. Using the bible, Archbishop Usher (Ireland) in 1654 calculated the age of Earth as 6,000 years old and even named the date and time of its creation.

Today science tells us that humans evolved through physical processes like all other living things over millions of years. Our planet is 4.6 billion years old and revolves around a sun that is situated in a remote part of a very large universe. Science explains our perceptions, thinking and emotions in physical terms without needing souls, separate 'minds' and after lives.

So what happened?

Three scientific developments have severely shaken beliefs in our special role in nature; in fact have lead to our "fall from grace". The *Copernican revolution* showed that the Earth is not the centre of the universe. *Theory of Evolution* proposed a strictly natural explanation for the development of all living things including humans. And, over the last 30 years, *Neuroscience* is providing physical explanations for our perceptions, feelings and thoughts - traditionally seen as part of a non-physical mind.

What is science?

There are many definitions of science.

"Science is the concerted human effort to understand or to understand better, the history of the natural world and how the natural world works, with observable physical evidence as the basis of that understanding" (Bruce Railsback, Professor, Department of Geology, University, of Georgia)

"The scientific method seeks to explain the events of nature in a reproducible way, and to use these reproductions to make useful predictions. It is done through observation of natural phenomena, and/or through experimentation that tries to simulate natural events under controlled conditions. It provides an objective process to find solutions to problems in a number of scientific and technological fields." (Rutherford & Ahlgren, Science for all Americans 1990)

These definitions and others show that science is empirically-based. Ultimately its knowledge is based on observations of the physical world from a third-person perspective. Scientific work - observations, experiments, hypotheses and theories - is conducted rigorously to reduce the effects of human wishful thinking and biases. Conclusions are open to criticism through peer review before being published in journals. The scientific community attempts to minimise deference to authority and not to rely on unchallenged texts and claims. Many writers refer to the methods of science as methodical materialism or methodical naturalism. Even scientists with strong religious beliefs conduct scientific research on this basis.

By using empirical methods, modern science has successfully replaced superstitions with reliable physical explanations in our world. Science generally takes a bottom-up approach when researching and explaining the world by examining the parts to understand the whole.

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Religions, on the other hand, usually provide edicts, rules and explanations from broad articles of faith and apply them to specific situations in a top-down fashion.

Science works with a number of widely-acknowledged assumptions, namely:

1. Nature is orderly, i.e., regularity, pattern, and structure. Laws of nature describe order.
2. We can know nature. Individuals are part of nature. Individuals and social exhibit order; may be studied same as nature.
3. All phenomena have natural causes. Scientific explanation of human behaviour opposes religious, spiritualistic, and magical explanations.
4. Nothing is self evident. Truth claims must be demonstrated objectively.
5. Knowledge is derived from acquisition of experience - empirically - through senses directly or indirectly.
6. Knowledge is superior to ignorance.

Assumptions are adapted from Chava Frankfort-Nachmias and David Nachmias, *Research Methods in the Social Sciences*. New York: St. Martin's Press. 1996

Finally we should say what science is not. Firstly science is not art with individual artistic expression. Nor is it technology, such as nuclear power plants, even though technology utilises scientific knowledge. And, finally, science isn't philosophy or religion. Science does not attempt to talk about human purpose or happiness even though scientific research may contribute to understanding our place in the world.

Copernican revolution

Between 1543 and 1633 Copernicus, Kepler and Galileo published theories and research that overturned people's traditional view of Earth at the centre of the universe. Their work replaced the traditional Ptolemaic Earth-centred view with a new heliocentric model. Not only did they challenge people's natural intuitions about Earth but also the church teachings about god and man's special place. Despite powerful church opposition like Galileo's conviction of "grave suspicion of heresy", the heliocentric model became the accepted view of Earth and the solar system.

So we were not at the geographical centre of god's creation after all.

Theory of Evolution

In 1859 Charles Darwin published *On the Origin of the Species* overturning the universal belief that we were the special product of creation. The theory of evolution saw humans as having evolved naturally like all other living things. Adaptation of organisms to local environments was proposed as the primary process driving the evolutionary development of living things.

Evolution directly contradicted the creation stories of most religious texts including the Genesis story of the Christian bible. In particular, evolution questioned notions of implicit human progress towards perfectibility as well as our natural superiority and dominion over other living things. The view that the world was populated with a hierarchy of fixed species became obsolete. Worse still, human beings were now seen as having evolved from the same ancestors as "lesser" animals and, under different circumstances, may not have evolved at all.

Evolution is almost universally accepted by the scientific community with overwhelming evidence from a variety of disciplines. However, not surprisingly, evolution continues to be seen as threat for many religious people and is regularly challenged by well-funded groups. Creationism and Intelligent Design movements are recent examples.

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So humans have evolved through natural and blind processes of chance and adaptation.

Neuroscience

Over the last 30 years the neuroscience has researched mental processing as physical brain activity. Specifically, neuroscience is effectively exorcising the "ghost in the machine" – the soul.

There are three areas of study. Firstly, *cognitive neuroscience* directly relates thoughts, perceptions and emotions to the functioning of the brain using advanced imaging techniques. *Behavioural genetics* links genetic information with behaviour through research programs such as with separated twins. And, finally, *evolutionary psychology* examines the mental capabilities as an evolved brain with a series of sub-systems that resulted from environmental adaptations.

Neuroscience research is new and ever-changing. However some conclusions seem clear. Firstly, our brain and its processing are more like a chaotic Chinese restaurant than a well-designed computer. Secondly, most of our mental processing is subconscious with very little reaching a conscious level. Thirdly, our brains are very creative at filling information gaps with explanations that may or may not be true. In most situations our folk theories and rule-of-thumb processing work satisfactorily as we evolved that way for survival. However our thoughts, feelings, attitudes and beliefs can also be very unreliable and self-deceiving. A final conclusion suggests that we need to rethink our understanding of free-will. Neuroscience suggests much less freedom than we intuitively believe.

Neuroscience tells us that our mental processing operates in a very approximate, self-fulfilling way and suggests the need to maintain a healthy scepticism regarding information and situations we come across. Finally don't forget that most cognitive processing is handled subconsciously by our brains.

Final Comments

Today's science provides better grounded and less mysterious explanations for the physical world than religions did some 500 years ago or even today. The results of scientific research with the reasoning of philosophy offer wonderful opportunities to explore the human condition and to lead to more fulfilling lives less reliant on wishful thinking, revelations, faith and superstition.

References

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