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*Science and Faith - the Intersection*

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**Standing at the Intersection – A Personal Reflection**

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2009 celebrates Charles Darwin; it is also the International Year of Astronomy, celebrating the 400th anniversary of the first use of an astronomical telescope by Galileo.

### 1. My Personal Journey in brief

I am speaking to you today as a Christian and as a scientist. Though brought up to attend church, it was only during my third year at university, on hearing lectures by a missionary -a PhD in Classics- that Christian faith first began to make sense! Experiencing a momentary awareness of the presence of Christ, I passed from unbelief to belief. That was more than 50 years ago.

Throughout my graduate student days in Oxford, there were always three Christians out of five doctoral students in our lab! So much for the stereotype that scientists are atheists!

I believe that God exists, that the universe is His creation, and that to investigate the world is a valid Christian vocation requiring our God-given minds and rationality. John Polkinghorne says,

*"..since the world is God's creation, it is a fitting duty for religious people to study it'.*

I have neither sought nor found God in the laboratory, for God is not his creation. Nor is God an explanation for gaps in our knowledge, a point well made in 1954 by Coulson,

*"When we come to the scientifically unknown, our correct policy is not to rejoice because we have found God; it is to become better scientists."*

### 2. The nature and scope of science

Science is based on empirical observation, repeatable experiments, testing of hypotheses, and establishment of theories that have significant explanatory power. Scientific publications are peer reviewed. Not a perfect system, but it works!

Science explores what is the case, not what might have been. It interrogates a world that really exists and is highly regular. I see God's faithfulness in the regularity.

Richard Dawkins claims that science **is** the ultimate reality. Evidence from religious experience, justice, love, forgiveness, art and music seriously challenges that view.

### 3. Physics in a nutshell

By the end of the 19<sup>th</sup> Century, physics was thought to be more-or-less complete. The birth of quantum ideas in 1900 proved a watershed and physics has since dramatically changed the scientific landscape. Newton's laws of motion and gravitation, still important, are simply approximations to newer theories. Deterministic classical physics has yielded to new insights, more counter-intuitive, and fuzzy at the edges than we could ever have imagined.

- The mathematical nature of physics and subtle symmetries in nature point to an underlying structure in the universe.
- The 2<sup>nd</sup> Law of Thermodynamics explains how the universe increases in disorder and is running down. However, systems that receive energy from their surroundings may become more ordered. Otherwise we would not be here!!

- In the four-dimensional universe of relativity, time is the 4<sup>th</sup> dimension, while gravity is the curvature of space-time. Time is not absolute, but depends on the observer and what is being measured. Relativistic effects, significant for very rapidly moving bodies, or close to massive objects, don't affect our ordinary sense of time.
- The Heisenberg uncertainty principle in quantum mechanics means that we cannot simultaneously know the speed of an electron and its location.
- Information cannot be transmitted faster than the speed of light. Paradoxically, this appears to be violated by the principle of *non-locality*. Pairs of particles that once interacted retain a memory of their properties even when light signals cannot traverse the distance between them.

#### 4. The Universe in brief

Our universe is 13.7 billion years old, comprising 100-200 billion galaxies, each with ~100 billion stars. It exhibits an openness to new possibilities and fruitfulness. Earth, 4.5 billion years old, orbits the Sun, an ordinary star in the Milky Way Galaxy. It took some 10 billion years for the possibility of carbon-based life .

Big Bang Cosmology was confirmed in 1965 through the discovery of the microwave background radiation from the very early universe. Using general relativity, nuclear physics and quantum mechanics, the evolution of the universe from near time zero until now is well-understood.

#### 5. Principles concerning dialogue between science and Christian faith

The popular misconception is that science and faith are in conflict. The relationship is best explored through dialogue, not confrontation, recognizing that all truth is God's truth. Einstein's remark, *The most incomprehensible thing about the universe is its comprehensibility*, has deep significance since we are both participants and observers!

ISCAST, of which I am President, Christians in Science in the UK and countless other organisations are committed to dialogue between science and faith. So too are journals like *Theology and Science* [USA] and *Science and Christian Belief* [UK].

Christianity, like science, also depends on empirical data - e.g. revelations of God to Abraham, Moses and the prophets, and historical events - the Exodus and the birth, life, death and resurrection of Jesus Christ. I agree with Oxford theologian Alister McGrath when he argues for scientific theology.

The established long history of the universe should caution us against reading Genesis Chapter 1 as science or history. Its primary message is theological - without God our universe would not exist. Genesis goes on to explore our relationship to God, to each other and the world. The prologue to John's Gospel and Colossians 1:15-20 (read earlier), are also theological statements. Polkinghorne explains that the 'evolving world (is) to be understood theologically as a world allowed by the Creator to make itself to a large degree' (p43). Creation continues.

Our sun will die in ~5 billion years. Long before that, earth will be uninhabitable, raising questions for Christian eschatology and the meaning of life after death.

The Heisenberg uncertainty principle and unpredictability in chaos theory have been invoked to explore God's action in the world, assuming that God must have a temporal aspect.

There is much more that could be said!

#### 6. Conclusion:

In conclusion, people of faith have nothing to fear from scientific discoveries. From time to time science will challenge us to rethink aspects of our faith. That makes the journey for a follower of Jesus Christ exciting and worth living.