

On Science and Origins

Opening Discussion

Suggested Question

- Why do you think the common perception is that science and Christianity are opposed to each other?

Introduction – Science vs Christianity

1. Origins of the universe: How did something come from nothing?

- Cosmological argument
- The 'who made God?' response

2. Formation of the universe: How did a finely-tuned, life sustaining universe come about?

- Fine-tuning constants*
 1. $N (=1 \times 10^{36})$ To do with the electrical forces between atoms. If slightly smaller the universe would be short-lived, if larger no creatures larger than insects and not enough time for evolution.
 2. $\epsilon (=0.007)$ atomic nuclei binding. If it were 0.006 or 0.008 we could not exist.
 3. Ω measures amount of material in our universe, telling us the relative importance of gravity and expansion energy in the universe. If the ratio were slightly bigger the universe would have collapsed long ago, smaller no galaxies or stars would have formed.
 4. λ (is very small) a cosmic 'antigravity' which controls the expansion of the universe. If different by one part in 10^{12} , the universe would have collapsed before life could be sustainable.
 5. Q ($1/100,000$) represents the ratio of two fundamental energies which our universe depends on. If smaller the universe would be inert and structureless, larger and it would have created a violent place in which no stars or solar systems could exist because of dominance of black holes.
 6. $D (=3)$ is the number of special dimensions. If there were 2 or 4 life could not exist. Although time is a fourth dimension, we only move forward on this scale towards the future.

"The precision is as if one could throw a dart across the entire universe and hit a bullseye one millimetre in diameter on the other side."

Gerald Schroeder

- Multiverse theory response

Discussion 2

Suggested Questions

- What do you make of the cosmological argument given? Does Dawkins' counter argument (who made God?) have any weight?
- What do you make of the fine-tuning argument? Does the multiverse counter argument have any weight?

* Taken from Martin Rees, *Just Six Numbers: The Deep Forces That Shape the Universe* (London: Weidenfeld & Nicolson, 2000).