

Fine Tuning of Universe Evidence for (but not proof of) the Existence of God?

Walter L. Bradley, Ph.D.

Professor Emeritus of Mechanical Engineering
Texas A&M University & Baylor University

Why is “Fine Tuning” so Popular Today?

- It addresses one of the great mysteries of the universe....
- It may have significant meta-physical implications.
- Even atheists like Stephen Hawking note that
“It is difficult to discuss the beginning of the universe without mentioning the concept of God. My work on the origin of the universe is on the borderline between science and religion.....”

TIME

What Does
Science
Tell Us About
God?

Examples of many recent books on the fine tuning question

- *The Accidental Universe (2013)*, Lightman
- *The Cosmic Jackpot (2006)*, Davies
- *Just Six Numbers (2000)*, Rees
- *The Constants of Nature (2002)*, Barrow
- *A Fine Tuned Universe (2007)*, McGrath
- *Lucky Planet (2014)*, Waltham
- *Rare Earth (2000)*, Ward and Brownlee

Napoleon and Laplace

- Napoleon asked the wrong question. He was asking Laplace “where is God in your mechanism/model.” Laplace said that God was not in the “mechanism”.
- God was the creator of the “mechanism”, one that did not require further “tinkering” by God. Napoleon asked the wrong question. He confused

Mechanism and Agency¹

Fine Tuning

- Is it a God of the gaps argument?
- Some theists and non-theists say **NO!**
- Other theists and non-theists say **YES!**
- Are differences for philosophical (God of gaps) or scientific reasons (multi-verse)?

My Presuppositions

- God created and sustains the universe to provide a place for complex conscious life to exist.
- Laws of nature describe God's customary way of caring for his creation.
- Miracles are God's extraordinary (out of patterns) way of caring for his creations.

Abduction – a distinctive form of logical inference (Hanson/Peirce)

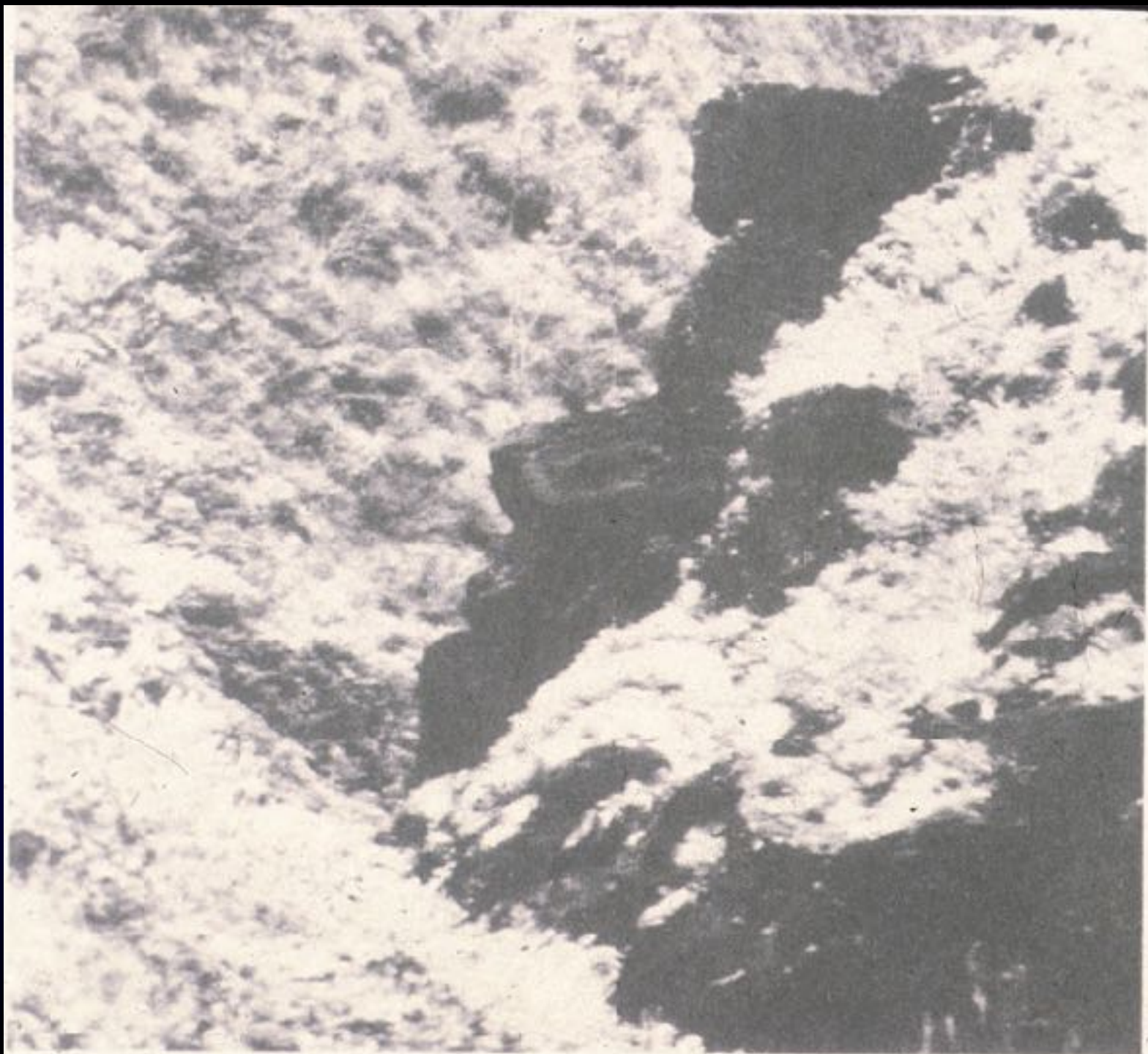
- Observation of some “surprising”, even “astonishing phenomena” which is anomalous to existing ways of thinking.
- Realization that these phenomena would not seem to be astonishing if a certain hypothesis H pertained.
- There is therefore good reason for proposing that H be considered to be correct.

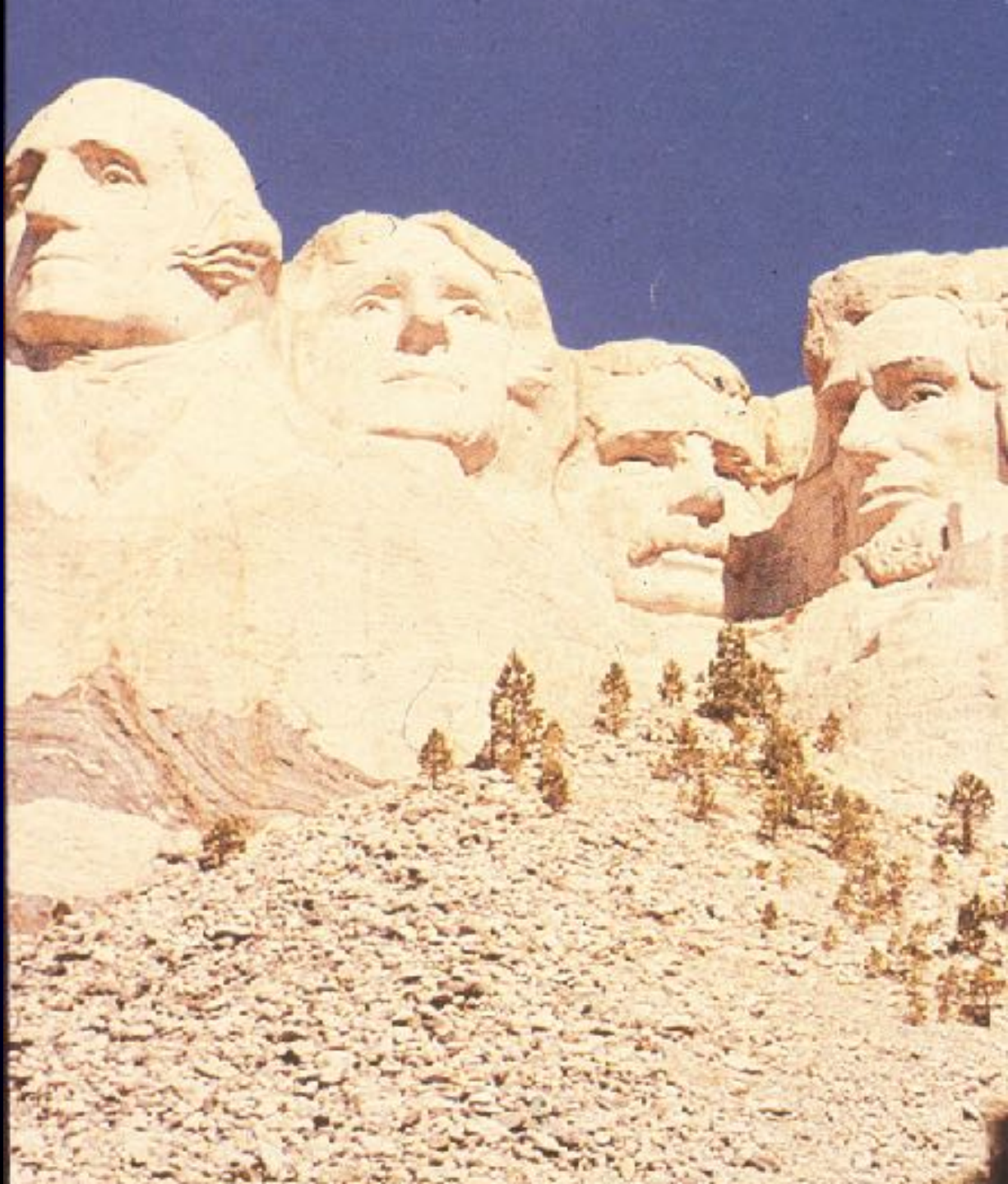
Inference to Best Explanation

- When induction-hypothesis-deduction isn't possible, “inference to the best explanation” (abduction) is an alternative way to propose a **possible** explanation.
- Note that “inference to the best explanation” gives answers that are not as authoritative as predictive science but is the only option when a unique events are being investigated.

Scientific Proof of the Existence of God is Impossible

- Scientific affirmation is always tentative based on CURRENT empirical data.
- God is not physical but spiritual and therefore cannot be CONFIRMED DIRECTLY by usual scientific approach.
- However, the nature of nature might give one evidence that it is more or less likely that the Universe was created by an intelligent and purposeful God.





Four Kinds of Fine Tuning

- Mathematical form that nature takes
- Values of the universal constants
- Initial conditions
- Rare (Lucky?) Earth

Fine Tuning 1. Mathematical form that nature takes

- Copernicus, Galileo, Kepler and Newton all believed that the universe is orderly and described by mathematics because God fashioned it that way.
- Albert Einstein famously said, “The most incomprehensible thing about the universe is its comprehensibility (its mathematical form).”

1. Mathematical form that nature takes

“You may find it strange that I consider the comprehensibility of the world as a miracle or as an eternal mystery. Well, a priori, one should expect a chaotic world, which cannot be grasped by the mind in any way...the kind of order created by Newton’s theory of gravitation, for example, is wholly different. Even if man proposes the axioms of the theory, the success of such a project presupposes a high degree of ordering of the objective world, and this could not be expected a priori. That is the miracle which is being constantly reinforced as our knowledge expands.” Albert Einstein

TABLE 1

Fundamental Laws of Nature

- Mechanics (Hamilton's Equations)

$$\dot{p} = -\frac{\partial H}{\partial q} \quad \dot{q} = \frac{\partial H}{\partial p}$$

- Electr

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Fundamental Laws of Nature

- Mechanics (Hamilton's Equations)

$$\dot{p} = -\frac{\partial H}{\partial q} \quad \dot{q} = \frac{\partial H}{\partial p}$$

- Statist

- Electrodynamics(Maxwell's Equations)

$$F^{\mu\nu} = \partial^\mu A^\nu - \partial^\nu A^\mu$$

$$\partial_\nu F^{\mu\nu} = j^\mu$$

- Quant

- Statistical Mechanics (Boltzmann equations)

$$S = -k \int f \log f dv$$

- Genera

$$\frac{dS}{dt} \geq 0$$

- Quantum Mechanics (Schrodinger's Equations)

$$I \hbar |\dot{\psi}\rangle = H |\psi\rangle$$

$$\Delta X \Delta P \geq \frac{\hbar}{2}$$

- General Relativity (Einstein's Equation)

$$G_{\mu\nu} = -8\pi G T_{\mu\nu}$$

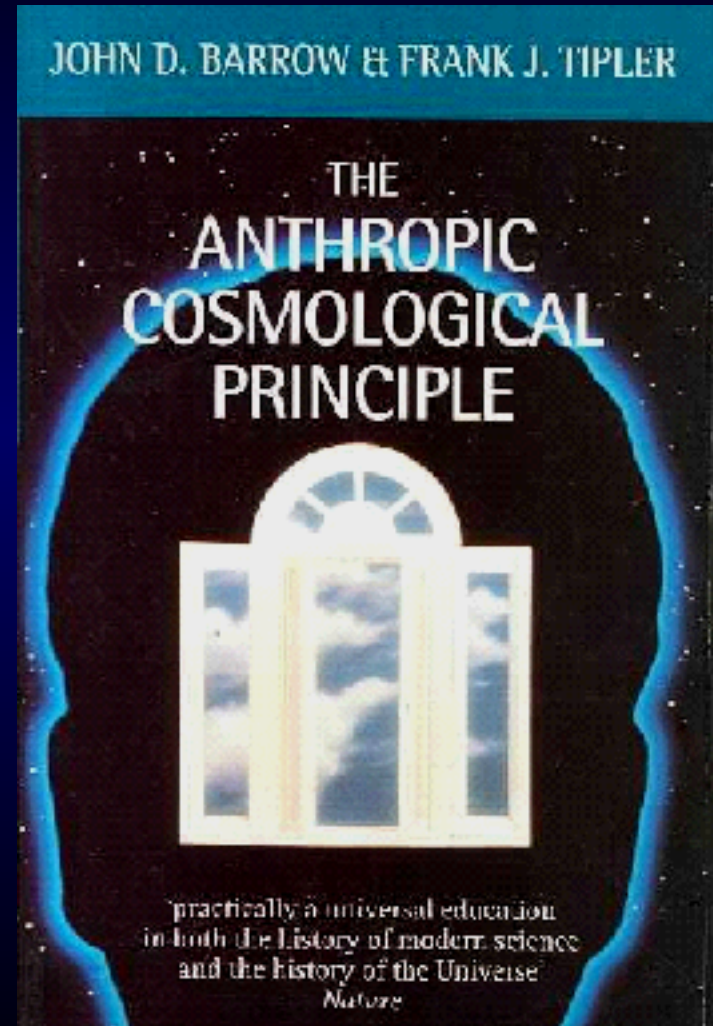
1. Fundamental laws of nature are exactly what then need to be!

All the evidence so far indicates that many complex structures depend most delicately on the existing forms of these laws. It is tempting to believe, therefore, that a complex universe will emerge only if the laws of physics are close to what they are... The laws seem to be the product of exceedingly ingenious design.

Dr. Paul Davies, cosmologist

2) The Design of the Universe

- Many of the parameters in the universe seem to be precisely tuned to allow humans to exist.
- *The Anthropic Cosmological Principle* (1986) by Frank Tipler and John Barrow lists over 100 such parameters



What about universal scaling constants? What do they imply about our universe?

- Speed of light $c = 3.0 \times 10^8$ m/s
- Planck's constant $h = 6.63 \times 10^{-34}$ J-s
- Boltzmann's constant $k = 1.38 \times 10^{-23}$ J/°K
- Unit charge $e = 1.6 \times 10^{-19}$ coulombs
- Gravity force constant $G = 6.67 \times 10^{-11}$ N-m/kg²
- Rest masses (in kg)
 - Neutron – 1.69×10^{-27}
 - Electron – 9.11×10^{-31}
 - Proton – 1.67×10^{-27}

**Partial list of ~ 30
universal constants**

Universal Constants: Requirements for universal constants to match photon (light) energy from sun to chemical bonding energies for organic chemistry.

- $6.3 m_p^2 G/[h c]_{>} \sim [6.3e^2/\{hc\}]^{12} [m_e/m_p]^4$

- Substituting for h, c, G, m_e , m_p , e

- $5.9 \times 10^{-39} > 2.0 \times 10^{-39}$

“[There] is for me powerful evidence that there is something going on behind it all.... It seems as though somebody has fine-tuned nature’s numbers to make the Universe.... The impression of design is overwhelming.”

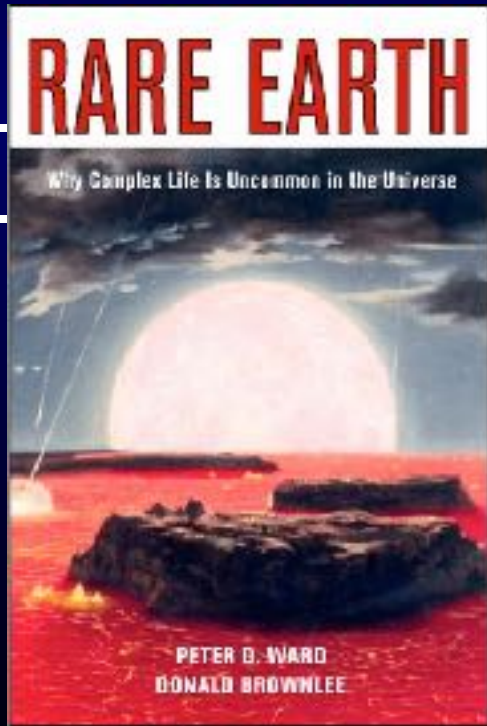


- Paul Davies, Physicist,
The Cosmic Blueprint, (1988)

3. Initial Conditions at Big Bang

- Hawking has indicated that the energy or velocity of the big bang shortly after it occurred is critical to have our universe. If different by 1 part in 10 trillion, universe would have collapsed on itself or never condensed into stars and planets.

If some god-like being could be given the opportunity to plan a sequence of events with the express purpose of duplicating our “Garden of Eden,” that power would face a formidable task. ...it is unlikely that Earth could ever be truly duplicated.”



Peter Ward, Geologist
Donald Brownlee, Astronomer
Rare Earth, (2000)

What do these four kinds of fine-tuning imply?

Abduction—Inference to the best explanation is appropriate.

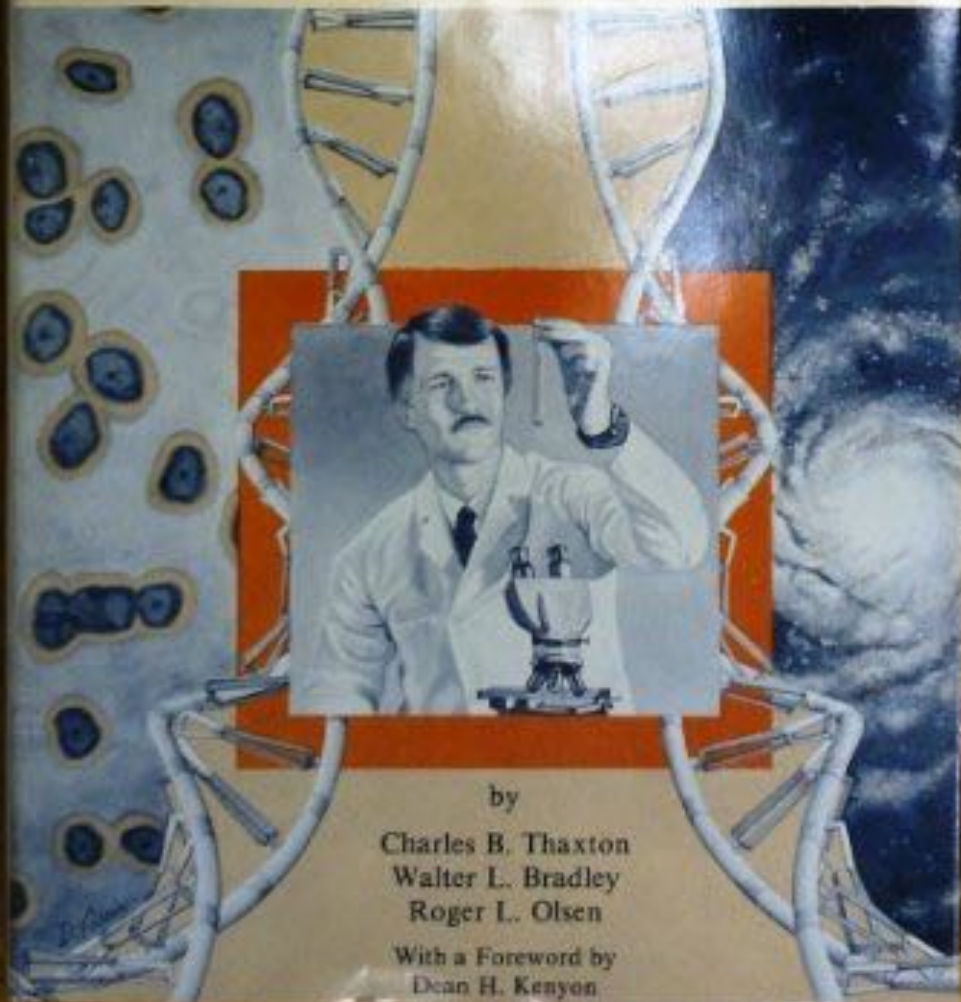
Note this is not proof and it is very **provisional**. It does not claim that a more predictive explanation will not be discovered later such as a “Theory of Everything” that will reduce universe to a simple equation(s) and constants that are necessary and not accidental.

Arno Penzias, Nobel Laureate

- “Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the right conditions required to permit life, and one which has an underlying (one might say) supernatural plan.”

The Mystery of Life's Origin:

Reassessing Current Theories



by

Charles B. Thaxton
Walter L. Bradley
Roger L. Olsen

With a Foreword by
Dean H. Kenyon

Other options for explaining this improbable universe



- An infinite number of universes (or multiverse)

- A transcendent, intelligent designer and creator



Two problems with resolving fine tuning with multiverse

- New York Times editorial page....
- “A Crisis at the Edge of Physics”
- June 5, 2015
- Science without experimental confirmation
- However one creates a multi-verse model, it involves **mathematical equations** and **specially chosen constants** to get the desired result. This looks like fine tuning at the next level to solve fine tuning at our level.

The choices are

- Created with a purpose by God.
- Multi-universe which might make a universe, solar system and planet earth with living systems feasible.
- Grand Theory of Everything that has been to date very illusive.

Accidental Universe (2013)
Alan Lightman, Prof. of Physics at MIT

- Criticizes multi-verse as having no empirical validation.
- Acknowledges it has the same problem that causes some scientist to not believe in God.
- Confesses that he believes in the multi-verse because he is an atheist and fines it to be the only alternative to theism.

Alister McGrath - A Fine Tuned Universe: The Quest for God in Science and Theology

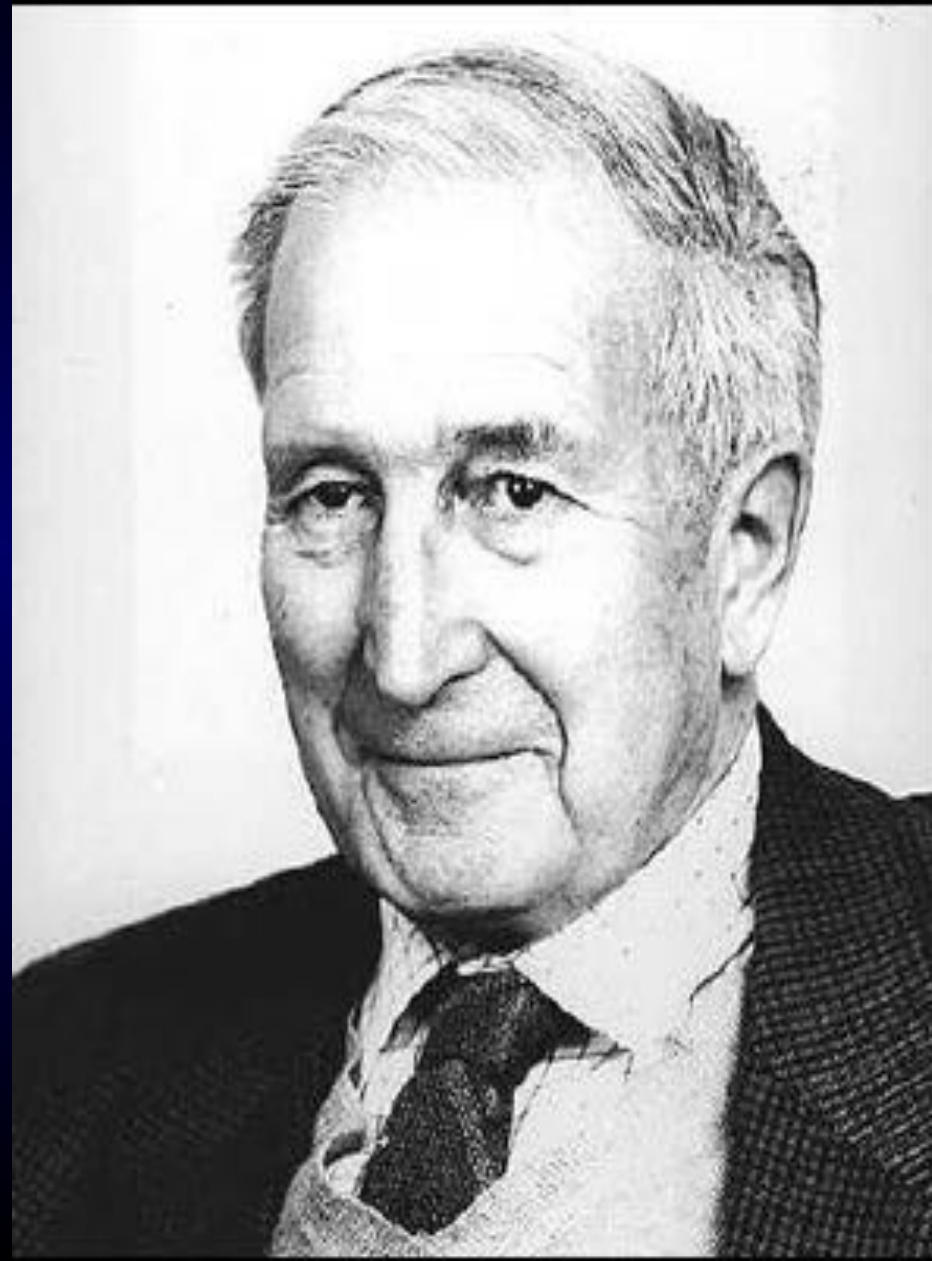
- “The facts are known but they are insulated and unconnected. The “pearls” are there but they will not hang together until some one provides the string.” William Whewell

“It was my science that drove me to the conclusion that the world is much more complicated than science... It is only through the supernatural that I can understand the mystery of existence.”

-Alan Sandage, Astronomer
Newsweek, (1998)



Exclusive Flew Interview



For the last half century, the world's most famous atheist was Antony Flew. Long before Richard Dawkins began taking swipes at religion, Flew was the preeminent spokesman for unbelief. But now Antony Flew is the world's most famous convert to belief in God. What turned his world right-side-up? "I must say...that the journey to my discovery of the Divine has thus far been a pilgrimage of reason. I have followed the argument where it has led me."

