

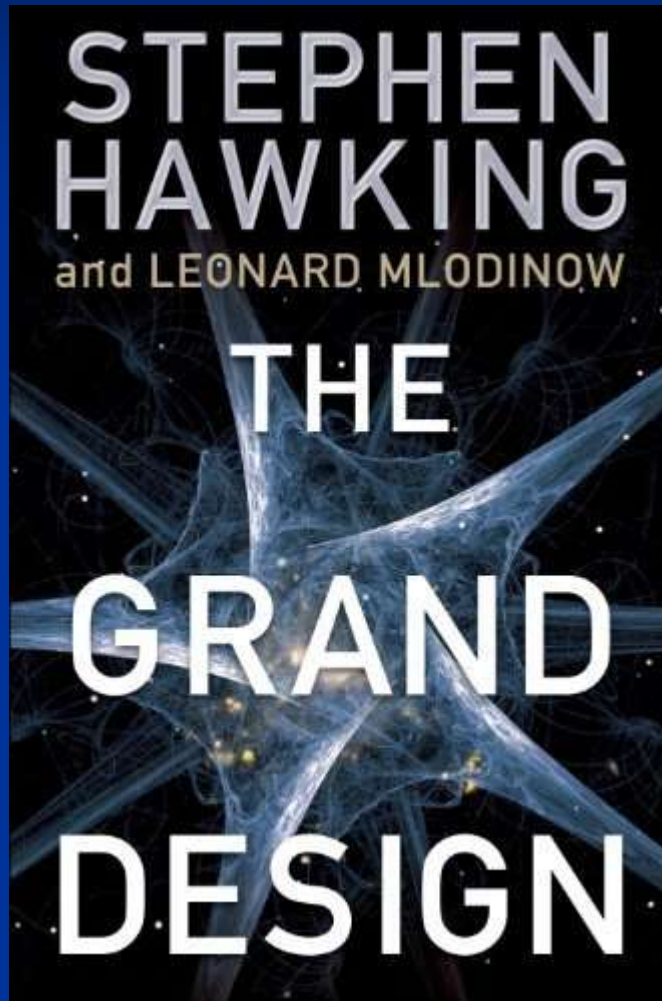
God and the Multiverse: A Response to Stephen Hawking

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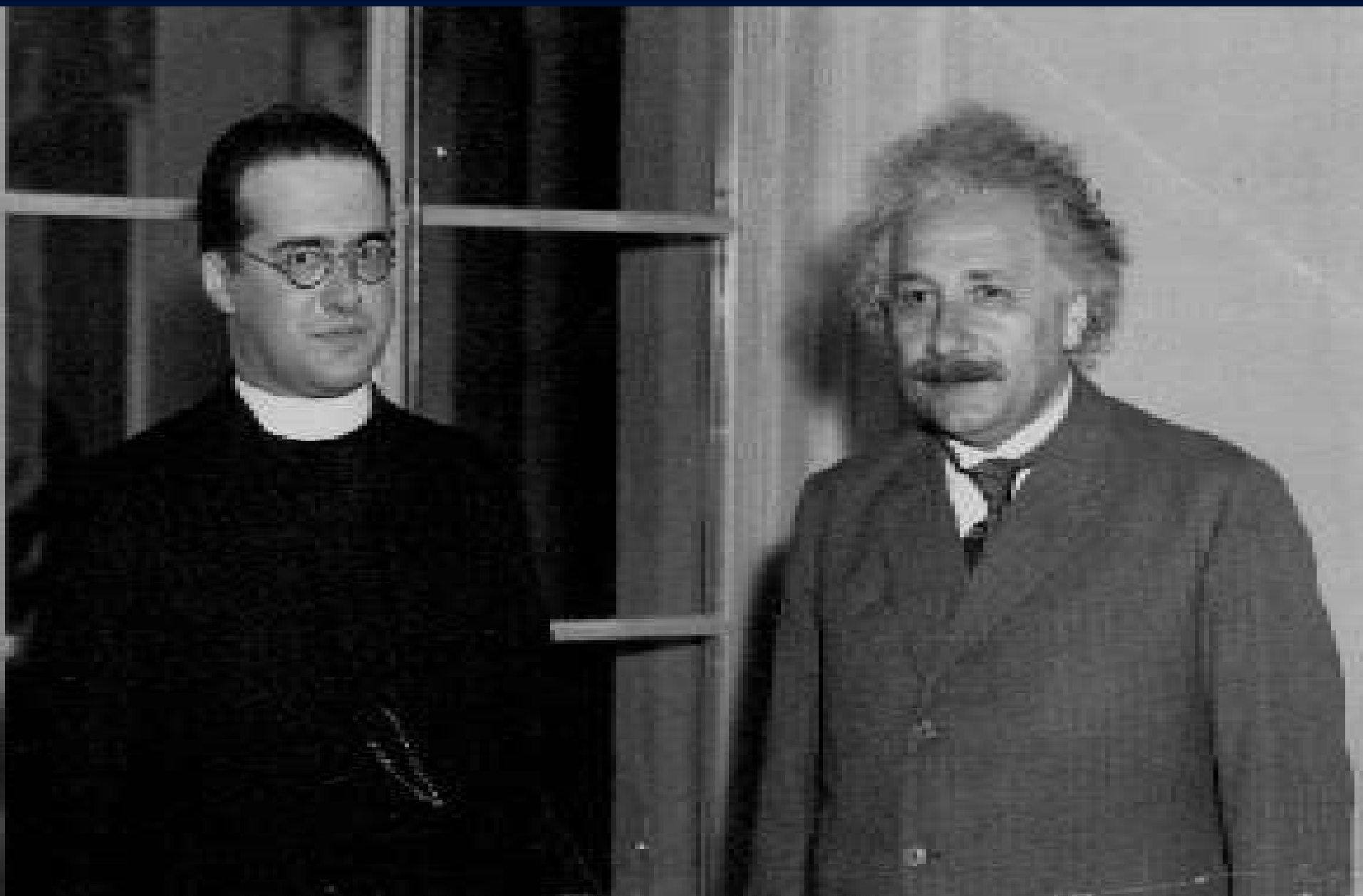
‘Hawking – God did not create Universe’ – *The Times*



- No need for God
- Philosophy is dead
- M-theory the ‘Theory of Everything’
- Universe creates itself out of nothing
- Multiverse explains the ‘fine-tuning’

God and the Multiverse: A Response to Stephen Hawking

- The Big Bang
- Specialness of the Big Bang: Cosmic Fine-Tuning
- Explanations: Why a Multiverse?
- Ultimate Explanations
- A Brief History of Cosmology
- Problems for Multiverses
- Comparing the Explanations



The Big Bang

- Predicted by Lemaître from Einstein's equations
- Extremely well-supported by evidence, especially:
 - Cosmic background radiation
 - Manufacture of light elements
 - More active galaxies at largest distances

Hawking on St Augustine



- time is ‘a property of the world that God created and time did not exist before the creation’ (50)
- ‘That is a possible model, which is favoured by those who maintain that the account given in Genesis is literally true’
- the big bang theory is more useful, even though neither model is more real than the other (50-51)

Clement of Alexandria



- And how could creation take place in time, seeing time was born along with things which exist?

St Augustine

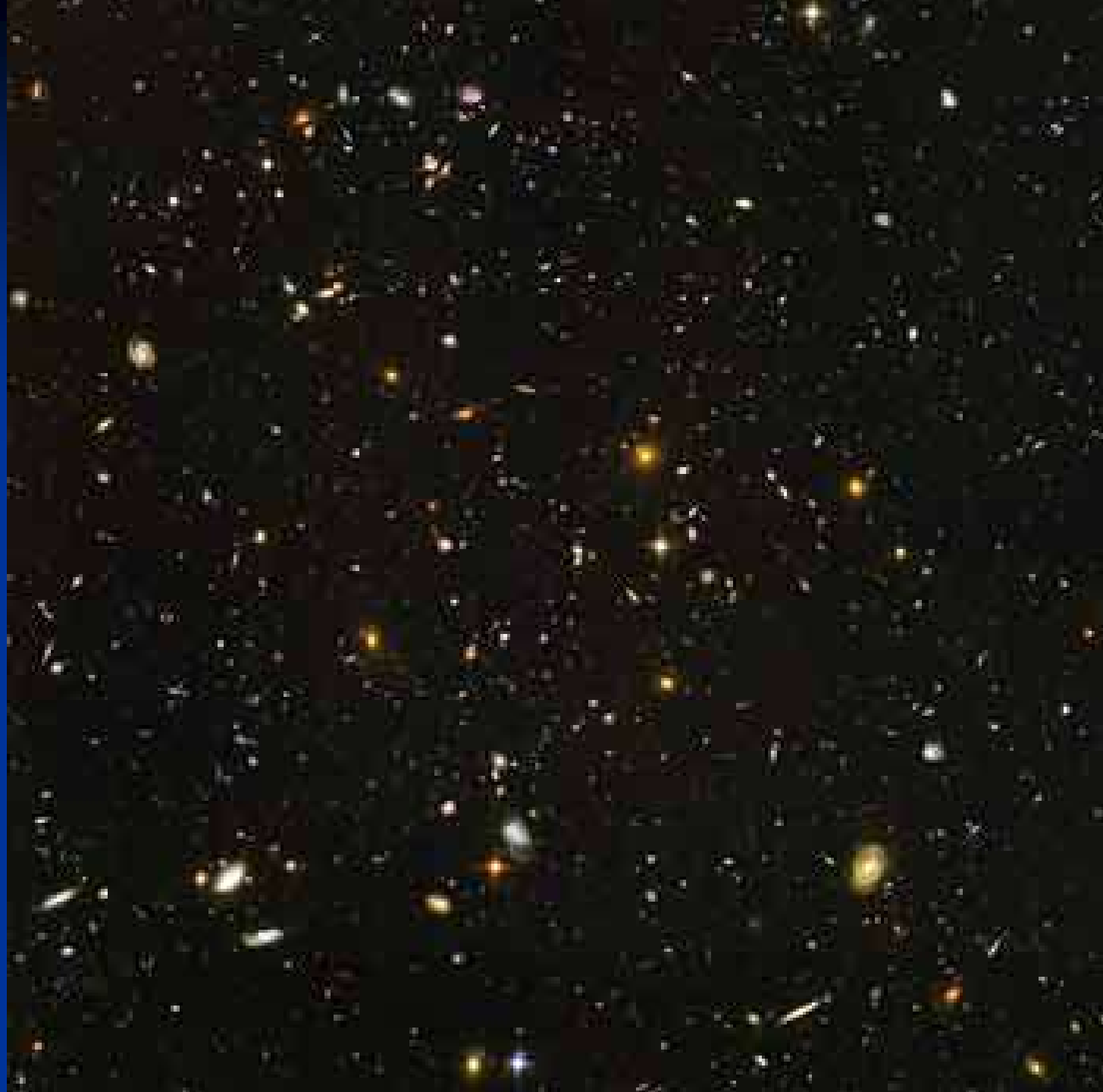


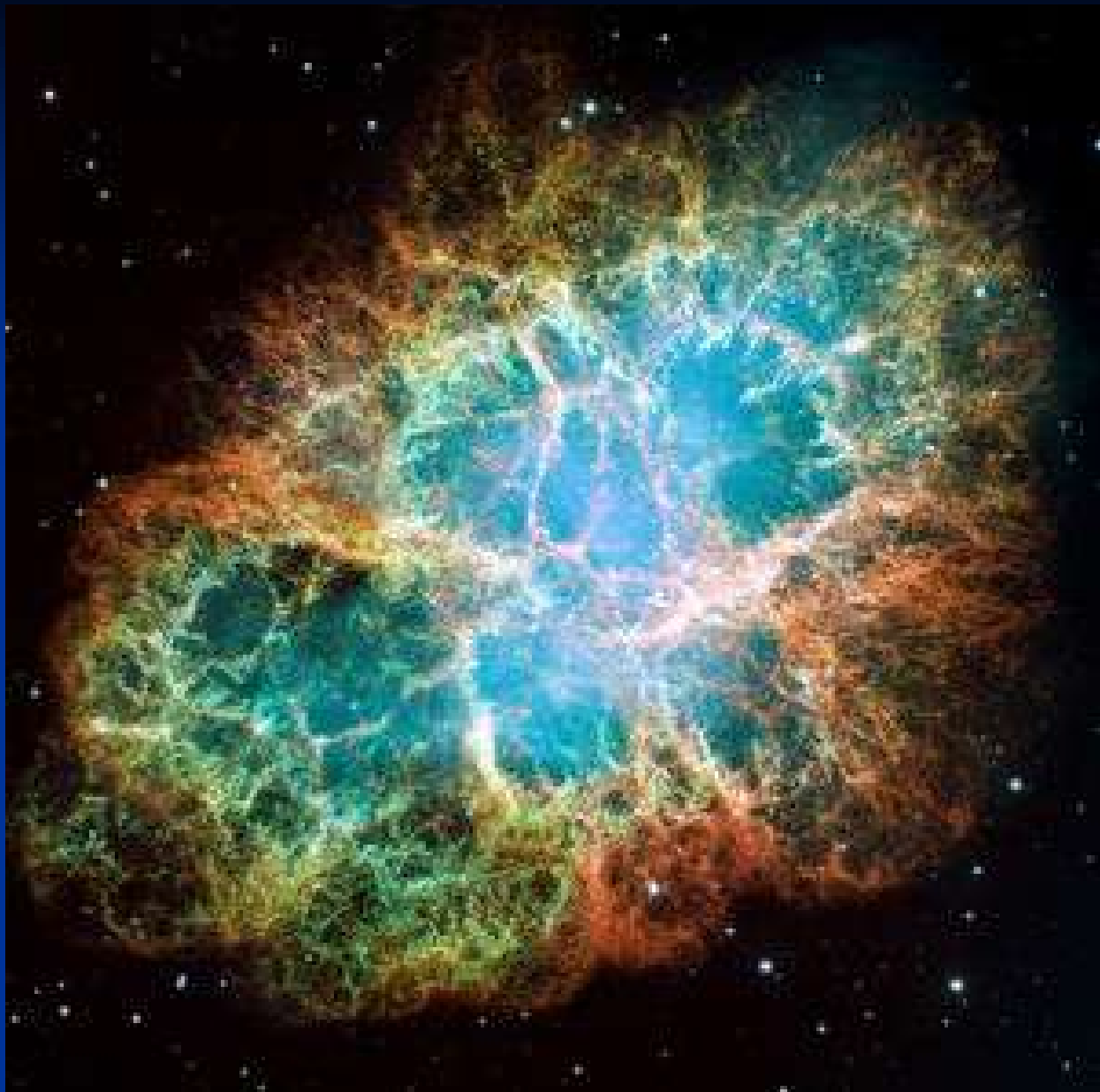
- There can be no doubt that the world was not created in time but *with* time.
- We should, therefore, say that time began with creation rather than that creation began with time. But both are from God. For from Him and through Him and in Him are all things.

Spiral Galaxy NGC 3370



Hubble
Heritage

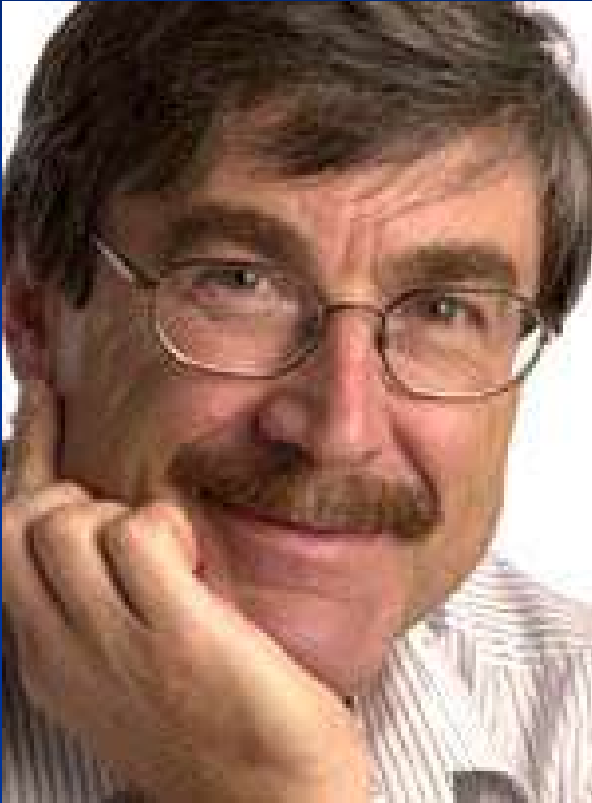




Specialness of the Big Bang

- Initial conditions
- Physical constants

Paul Davies



- ‘Like the porridge in the tale of Goldilocks and the three bears, the universe seems to be “just right” for life, in so many intriguing ways.’

Examples of Fine-Tuning

- Density at the beginning is right to 1 part in 10^{60}
- Ratio of forces is just right for carbon *and* oxygen to be manufactured in stars

Sir Fred Hoyle



- A superintellect has monkeyed with physics, as well as with chemistry and biology, and there are no blind forces worth speaking about in nature.

Explanations: Why a Multiverse?



- Design by God?

What are the Alternative Explanations to Design?

- Possible strategies for the atheist
 1. Only 1 set of laws possible
 2. A multiverse

Ultimate Explanations – Why is there Something rather than Nothing?



- We create the history of the universe by observing it.
- All possible histories of the universe occur.
- Negative gravitational energy cancels out positive matter energy.
- M-theory predicts a great many universes were created out of nothing.
- The no-boundary proposal - time becomes imaginary (space-like) in the earliest epoch.

Ultimate Explanations



- Only God can provide this
- God is necessary being
- Universe is contingent

Stephen Hawking



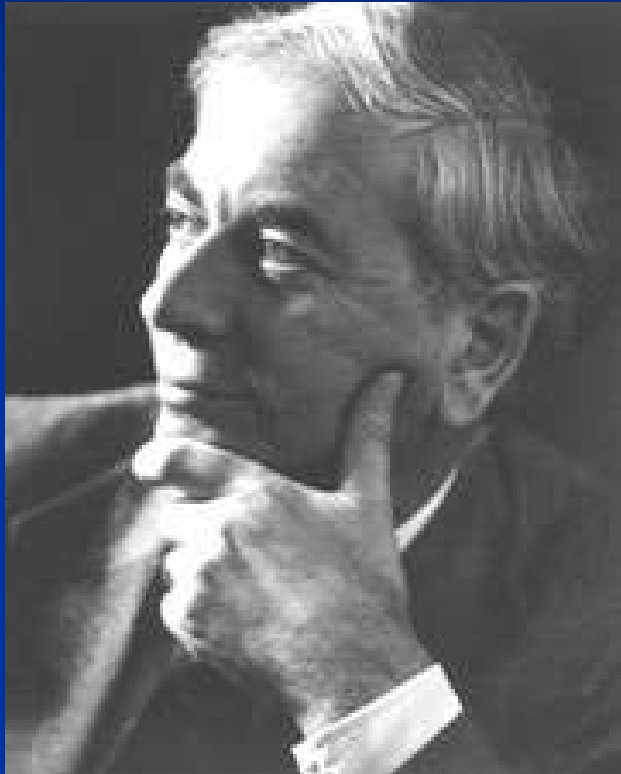
- ‘What is it that breathes fire into the equations and makes a universe for them to describe?’

Lord (Martin) Rees



- ‘Such questions lie beyond science; they are the province of philosophers and theologians.’

Dennis Sciama



- None of us can understand why there is a Universe at all, why anything should exist; that's the ultimate question.

For atheistic strategy 1 (only 1 set of laws possible)
& atheistic strategy 2 (multiverse):

Why is there something rather than nothing?

For 1 *Why does the only set of laws give rise to life?*

For 2 *Why this multiverse as opposed to another?*

A Brief History of Cosmology

- Chaotic cosmology
- Inflation
- String theory
- Conformal cyclic cosmology
- Ekpyrotic cosmology
- Cosmologists ‘often in error but seldom in doubt’!

Problems for Multiverses

- Physics speculative
- Problem about infinities
- Human identity
- Hypothesis not simple
- Lack of predictability
- The cosmological constant
- Fine-tuning still required
- Amount of order in the universe
- Fake universes

Comparing the Explanations

(1) Multiverse

- Not ultimate
- Complex
- Doesn't explain why there should be life
- This universe looks too special

Comparing the Explanations

(2) God

- Provides ultimate explanation
- Explains why there should be life
- Explains why the universe is so special

Georges Lemaître



- There were two ways of arriving at the truth. I decided to follow them both.