

THE KALAM COSMOLOGICAL ARGUMENT AND THE ANTHROPIC PRINCIPLE – A PERSONAL VIEW

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This article is based on a friendly exchange of views with a Christian at a meeting of the Dorset Humanists on 25th June 2025. References have been included to validate the points made by the writer during the discussion. A YouTube recording of the meeting can be viewed [here](#).

The Kalam Cosmological Argument [1] is a modern formulation of an ancient argument for the existence of a universe-creating deity. Originally proposed by the 11th-century Persian Muslim philosopher Al-Ghazali, the recent version of the chain of logical assertions leads to the proposal that

“An uncaused, personal Creator of our universe exists, who, without the universe, is beginningless, changeless, immaterial, timeless, spaceless and enormously powerful.”

This modern version of the Kalam Cosmological Argument was set out in a book by William Lane Craig in 1979. [2]

I argue here that some steps in the logical chain of assertions are not valid. Furthermore, the conclusion above is not on a par with scientific explanations of the origin of our universe because it makes no testable predictions nor explains why the universe is the way it is. Science progresses by posing hypotheses, using these to make predictions, testing those predictions by measurements, rejecting the hypotheses that don't work and developing those that do.

Typical questions that I would like to see supporters of Kalam answer include why the universe we inhabit is expanding, where has all the anti-matter gone, why the sub-atomic particles are made up of quarks of six different types, why is the speed of light 299,792,458 metres per second, and so on? These are all questions scientists would love to know. We don't get any answers from the Kalam argument or from Theists.

Scientists are working hard on getting answers.

Theists are not.

There are nine assumptions in the Kalam Argument. Each is claimed to follow logically from the previous arguments.

1. Everything that begins has a cause.

This has been the subject of long philosophical and scientific debates. In particular, Quantum Theory has been quoted as allowing particles to be created spontaneously from the all-pervading “Relativistic-quantum-field theoretical vacuum state”. Please don’t ask me to explain what that means – ChatGPT came up with that!

Quantum theory does not give a clear answer. There are two main interpretations of the quantum world. One is the Copenhagen Interpretation of Neils Bohr which insists that everything that happens in the universe on the atomic scale is random and cannot be predicted. [3]

If a radioactive atom is watched, it will eventually spontaneously change into a different type of atom. The Copenhagen Interpretation says that this occurs at a random time which cannot be predicted – it appears to be uncaused.

Einstein hated this theory and famously stated:

“God does not play dice with the universe!” [4]

He believed that everything that happens in the Quantum world is deterministic and has a physical cause – this is known as the Bohmian “hidden variables” version of quantum theory. [5] This would require every action to have a cause. However, we have no means of accessing any ‘hidden variables’ so cannot prove this deterministic version of Quantum Theory.

Although science cannot answer the question, the current consensus is that Quantum Theory does not forbid the proposition that everything that begins has a cause.

Let’s leave it there and let the philosophers, theologians and scientists scratch their heads over it.

The second assumption is

2. The universe began to exist.

This is a no-brainer as we observe an expanding universe and everyone agrees that there must have been a start to this expansion.

Moving on to the third and fourth assumptions which are

3. The universe has a cause.

4. The cause of the existence of our universe is uncaused otherwise there would be an infinite chain of causes.

This is what supporters of the Kalam Cosmological Argument accept.

This is not a logical conclusion. It all depends on what was present when our universe came into existence. Although the expansion of our universe, which is beyond doubt, must have had a start, our universe may not have had a cause because it may have been formed from the debris of a previous universe.

This is the 'Big Bounce' theory. [6] This predicts that there have been an infinite number of universes expanding, slowing down and collapsing into an unimaginably small volume before a new universe expands from the debris.

Theologians and philosophers have problems getting their heads around the concept of an infinite number of universes but mathematicians and scientists have no problem with infinities. When solving the equations of Quantum Theory, infinities pop up all over the place. For example, when sub-atomic particles such as electrons move from one place to another, they move like waves, not miniscule snooker balls. To calculate the consequences of an electron making a move, the quantum mechanical equations must be solved for all possible paths that the electron can take – which is an infinite number of paths. The Nobel Prize-winning genius Richard Feynmann worked out how to do this.

Calculations carried out by his method agree with experiments to an accuracy of one part in billions. In fact, Quantum Mechanics is the most accurately validated theory ever developed in the history of science. [7]

Einstein's theory of gravity also predicts infinities. Some are at the centres of Black Holes. Also, if it were possible to watch someone falling into a Black Hole it would appear to take them an infinite length of time to reach the event horizon.

We also have to deal with infinities in everyday life.

For example, let's say that the distance from me to the nearest toilet is sixteen metres. To get there I first have travel a distance of eight metres, followed by a journey of four metres, then a journey of two metres and so on – each journey being half the previous one.

Because I can only travel the full sixteen metres after an infinite number of journeys, it follows that I cannot reach the toilet – although I will eventually be close enough to use it with a high probability of not soiling the floor!

I know from experience that I can reach the toilet after an infinite number of journeys in a finite – and (hopefully) good time!

That is Zeno's Paradox of about 450 BCE. [8]

Embrace infinity!

The 'Big Bounce' theory is not much in favour currently as our universe is expanding at an increasing rate and may well continue to do so for an infinitely long time. As the trillions of years pass, the stars will die and cool to absolute zero (minus 273 Celsius). There is nothing to end this process and cosmologists are comfortable with predicting that this process of decay will last for an infinite time.

Infinity is not a problem to scientists and mathematicians. Only theologians and philosophers can't get their heads around it. Georg Cantor sorted it all out at the end of the 1800s– see his Wikipedia article. [9]

The Hilbert's Hotel thought experiment, which is often quoted in the Kalam literature, is a brain-frazzling adventure into the world of the infinite. Do read about it on its Wikipedia page. [10]

5. The cause of our universe must be timeless, spaceless, immaterial and enormously powerful to be able to create the universe.

Because our time and space are unique to our universe and both come into existence at the universe's start, it does at first sight seem that, whatever is not in our universe, may be in a timeless, immaterial void. However, it could be in a different time and space unrelated to our time and space. This option is not considered in the Kalam Argument and, as a result, assumption 5 falls apart.

Our universe could have originated in another universe's space and time. A theory published earlier this month – hot off the press! – gives a very convincing proposal that our universe is inside a Black Hole and that it came into being from the gravitational singularity at the core of the Black Hole. [11]

Thus, our universe may have originated within a space and time different and independent from our universe's space and time.

Sorry! No room for a spaceless, timeless deity there!

So, how would a universe creator set about making our universe? It would have to plan the universe, decide what Laws of Physics to incorporate, work out the values of the parameters needed to fine-tune the universe to allow sentient life to develop (if indeed that was the purpose of the universe), assemble the materials for the universe and set it going.

The scope of the task would have been incredible! Our universe contains one hundred million billion billion billion billion billion billion billion sub-atomic particles (quarks, neutrinos, Higgs particles, etc.). [12]

The internal energy of the baby universe was ten million billion billion billion billion billion billion Joules. [13]

This construction task must have been a conventional chain of caused, time-ordered events as any civil engineer knows. How could the creator entity do this in an immaterial timeless void where causeless events are the rule arbitrarily assumed by theologians to avoid an infinite chain of caused deities?

Whilst scientists come up with theories that make predictions that can be tested, theologians make no predictions, give no explanations and airily wave a hand saying, "God can do anything!".

6. The cause of the universe must be personal, possessing non-deterministic agency, in creating the universe from a timeless state.

There was much discussion in the West Dorset Humanist Group about what is meant by the word "personal." I took this as meaning an interventionalist deity who went on to manipulate the universe it had created. It went on to communicate and physically react with any sentient lifeforms within it.

The question of whether there is an interventionist god is outside the brief of this discussion. My search for evidence of such a deity has been unsuccessful since I gave up belief in gods in 1951. Maybe this could be the topic of a future discussion?

7. The cause of the universe must be singular, in the absence of good reasons to believe in one or more uncaused causes.

This step is illogical since it can be reversed to say:

“The cause of the universe must be multiple, in the absence of good reasons to believe in a singular uncaused cause.”

Surely the more gods the better?

“A job shared is a job done better” as my dear old grandmother used to say.

Is it a coincidence that, by arbitrarily choosing a monotheistic option, the supporters of the Kalam Argument are arguing for the monotheistic Abrahamic deity and dismissing the polytheistic religions such as Hinduism, and the ancient Roman, Greek, Viking, etc., religions?

Some commentators supporting the premise that there must be a singular deity cite Occam's Razor [14]

“When faced with a choice of explanations, choose the simplest.”

Occam's Razor is not a valid scientific nor logical philosophical tool for examining the validation of theories. These have to be judged on their predictive accuracy when applied to real situations. Many examples – which I can show in the discussion - can be cited to show where the more complicated option turns out to be the right one.

I'm going to read seven options for the way that our universe may have come into existence and I'm going to apply Occam's Razor to the options. Remember, we must choose the simplest option.

- The Big Bulk option, [15]
- The Big Bang option, [16]
- The Entropic Universe option, [17]
- The Multiverse option, [18]

- The Holographic Universe/String Theory option, [19]
- The Universe created in a Black Hole option, [20]
- God Did It.

So, Occam's Razor doesn't really work because it has come up with a simple option – "god did it" which makes no predictions, is untestable and not scientific in the Karl Popper sense. [21]

So, forget Occam's Razor.

8. If the universe has a cause, then an uncaused, personal Creator of the universe exists who, without the universe, is beginningless, changeless, immaterial, timeless, spaceless and enormously powerful.

Wow! A whole lot of assumptions have suddenly appeared from nowhere – just like our universe?

9. Therefore, an uncaused, personal Creator of our universe exists, who, without the universe, is beginningless, changeless, immaterial, timeless, spaceless and enormously powerful.

I believe, and you may not agree with me, that those conclusions do not follow from those Kalam assumptions that I have described earlier.

My summary is that the Kalam chain of propositions is flawed – for example in proposing an uncaused god engaging in a vastly complex caused manufacturing process to produce a material universe outside of space and time.

And all done as if by magic without explanation. Just like that!

The Kalam argument makes no testable predictions (unlike scientific theories) and so is a weak and flawed argument.

A better argument for the existence of a universe-creating deity-like entity is the Anthropic Principle – also known as the "Goldilocks Enigma". [22]

David Warden said in his publicity for this gathering that the 'Fine Tuning' argument would be explored – no doubt because I have given a talk on this topic to this audience a few years ago.

So, here we go...

The Anthropic Principle – also known as the “Goldilocks Enigma” asks

“Why is our universe so exquisitely tuned to allow life like ours to exist?”.

Note that the word “Anthropic” means human so the question is targeted at why the universe is so very finely tuned to support human lives.

There could be sentient lifeforms based on silicon rather than carbon although none have been detected so far in our universe.

How very anthropocentric and carbon chauvinistic!

In a paper published earlier this year it has been estimated that there are about 200 billion planets in our galaxy and about two trillion galaxies in our universe. [23]

Multiply those numbers together and we get a very large estimate of the number of planets – about 400 billion trillion. To get a grip on this number, imagine a pile of sand with one grain of sand for each planet in the universe. That pile of sand would cover the whole of Wales and reach 140 kms into space.

Can we really believe that our universe was carefully fine-tuned just for us humans rather than the near-certain billions – maybe trillions – of other sentient lifeforms?

This argument also applies to ideas – such as the Kalam Cosmological Argument - that a deity created our universe just for our benefit. This assertion has often been driven by the Biblical statement that

“God created man in his own image” [24, 25]

Earth has experienced five major mass extinction events in the last 500 million years. [26]

- **Ordovician-Silurian:** 440 million years ago. Approximately 86% of all species vanished.
- **Late Devonian:** 360 million years ago. Around 75% of all species died.
- **Permian-Triassic:** 250 million years ago. The "Great Dying" wiped out around 90% of all species, including 96% of marine species and 70% of terrestrial species.
- **Triassic-Jurassic:** 201 million years ago. About 70-75% of all species were lost.

- **Cretaceous-Paleogene:** 66 million years ago. 76% of all species, went extinct - the great dinosaur extinction event.

The latter catastrophic meteor strike 66 million years ago killed off the predators of our small shrew-like ancestors allowing them to survive the cataclysm hiding in their burrows to emerge and evolve into us.

Had that meteor been a little bit large our mammal ancestors would have been wiped out. Had the meteor been a little bit smaller, the dinosaurs might well have survived and developed into intelligent, sentient, technologically advanced lizards. [27]

Theists might argue that God selected a meteor of just the right size and steered it into Earth with just the right speed to wipe out our ancestral mammal's predators and allow the shrew-like creatures to thrive and evolve into us.

Quite a feat of a deity's cosmological dynamics!

At each of the above five events, our ancestors very nearly went extinct.

Humanity also nearly became extinct due to a climate disaster. About 900 thousand years ago in the ancestry of pre-Humans migrating from Africa. It is estimated that as few as 1,280 individuals survived to breed and eventually produce us. [28]

On a galactic scale, life is also very, very fragile.

Our universe is crammed with two trillion galaxies which collide. The Andromeda Galaxy, with its trillion-star systems, may collide with our galaxy in a few billion years. [29] It is unlikely that life on either galaxy will survive that cataclysmic encounter.

The universe is definitely NOT Human-friendly and was not created as a safe home for Humanity. Far from being friendly to the human race, the universe seems to be working towards wiping it out.

Never-the-less, it is a remarkable observation that our universe is indeed exquisitely tuned to favour life existing. Just a small change in any of two dozen physical parameters might have made our universe uninhabitable.

Take the force of gravity, for example. Had gravity been just a little stronger then our universe would not have been expanding for 13.79 billion years allowing stars, galaxies, planets and life to exist. Instead, our universe would have expanded to a very small size but then quickly collapsed back into a spectacular fireball.

Had gravity been slightly *less* strong than it is then the universe would have expanded too quickly for the primordial gas to condense into stars and planets. Our universe would have remained a rapidly expanding tenuous gas – no life and expanding for ever!

This is also true of many other physical parameters such as the Strong Nuclear Force – a few percentage points change and we would not have atoms. The universe would be just a thin soup of protons and electrons.

There are other remarkable coincidences that made life possible, one of which is the natural production of elementary DNA molecules from the atoms and molecules that were present on Earth in the Archean Era. [30]

Arch-Atheist Professor Fred Hoyle stated that

“The chance that higher life forms might have (naturally) emerged ... is comparable to the chance that a tornado sweeping through a junkyard might assemble a Boeing 747 from the materials therein.” [31,32]

His analogy has been broadly debunked as a result of recently developed theories of DNA production using, for example, crystals as a template for organising inorganic molecules into the correct structures. [33] However, Professor Fred Hoyle’s analogy is still quoted by theists in support of a Creationist argument.

So, was there a Deity finetuning the “Big Bang” to make our universe favourable to life? Where was this deity, claimed to be outside our space and time, twiddling all those knobs to tune the universe. Isn’t all that finetuning of a brand-new universe a caused sequence in time by a timeless deity just hopelessly muddled and irrational thinking?

A rather trite response is that we can only live in and observe the universe that suits us. However, if our universe is the only one then this implies, very possibly, that our universe was “created” for us and, this is a much more convincing case for a creator god than the Kalam Argument.

However, our state of knowledge is not yet developed enough to say whether we live in the only universe – implying it was created for us – or that there are an

unimaginable number of other universes. If the latter, then we could postulate many types of life-friendly universes and we occupy one that suits us.

The existence of multiverses – possibly as many as 10^{500} (one followed by five hundred zeroes) - is predicted by Quantum Gravity String Theory. [34]

This means that pretty much every type of universe can exist somewhere in the universe zoo and we just live in one that suits us.

Our ability to exist in our universe therefore does not mean that a god created it thus for our benefit.

Biographical Summary

Geoff Kirby was born in the late-1930s and graduated from London University with a First-Class Honours BSc in Physics. He is one of a small and rapidly diminishing group who have attended a lecture given by Neils Bohr. On retirement in 1992 he was the Head of the Royal Navy's Oceanographic Research Programme. He then spent four years studying for an Open University BSc in Environmental Studies with an extra year on the History of Mathematics - all just for fun. This paper is an example of his determination to keep his ancient brain active and gainfully employed as he proceeds through his life's ninth decade.

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