3. Why does anything at all exist?
4. Why did the universe begin?
5. Why is the universe fine-tuned for life?

Sunday, February 24, 2013, 10 to 10:50 am, in the Parlor
Leader: David Monyak

St. John in the Wilderness
“Always be ready to make your defense to anyone who demands from you an accounting for the hope that is in you; yet do it with gentleness and reverence.”

- 1 Peter 3:15-16 (NSRV)
Reference


Series Outline

On Guard. Defending Your Faith with Reason and Precision

- **Week 1: Feb 17**
  - 1. What is apologetics?
  - 2. What difference does it make if God exists?

- **Week 2: Feb 24**
  - 3. Why does anything at all exist?
  - 4. Why did the universe begin?
  - 5. Why is the universe fine-tuned for life?

- **Week 3: Mar 3**
  - 6. Can we be good without God?
Series Outline
On Guard. Defending Your Faith with Reason and Precision

- **Week 4:** Mar 10
  - 7. What about suffering?

- **Week 5:** Mar 17
  - 8. Who was Jesus?

- **Week 6:** Mar 24
  - 9. Did Jesus rise from the dead?

- **Not covered:**
  - 10. Is Jesus the only way to God?
O God, your immensity fills the earth and the whole universe, but the universe itself cannot contain you, much less the earth, and still less the world of my thoughts.

Logical Arguments
Logical Arguments

Logic

- **Logic** is an expression of the mind of God (John 1:1).
  - Logic describes how a supremely rational being reasons.

- In this series we will be looking at some **logical arguments** that support our Christian faith, presented as easily memorizable steps.
  - We will justify each step.
  - We will present common objections to each step, and answer those common objections.
Logical Arguments

Premises and Conclusions

Example of a logical argument:

**Premises:**
- 1. All men are mortal.
- 2. Socrates is a man.

**Conclusions. Therefore:**
- 3. Socrates is mortal.

If you obey the basic rules of logic (= you make a “valid” logical argument), and if your premises (steps 1 and 2 above) are true, then your conclusion (step 3 above) must also be true (= your conclusion “logically follows” from the premises).
Logical Arguments

**Argument Maps**

- We will summarize our logical arguments using an “argument map.”
- Arguments maps (and images from the book) can be downloaded for free as a PDF file from this link:
  - [http://davidccook.com/onguard](http://davidccook.com/onguard)

<table>
<thead>
<tr>
<th>Pro</th>
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</tr>
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Logical Arguments

Argument Maps

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Both Plato and Aristotle refer to Socrates as a real person.

Socrates was just a mythological figure.
Logical Arguments

Argument Maps

3. Therefore, Socrates is mortal.
Logical Arguments

Argument Maps

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Why Does Anything At All Exist?
“In the beginning was the Word, and the Word was with God, and the Word was God. ... All things came into being through him, and without him not one thing came into being.

- John 1:1, 3 NRSV
Why Does Anything At All Exist?
The First, Most Basic Question

- **Gottfried Wilhelm Leibniz** 1646-1716 was a German philosopher and mathematician, inventor (independently of Sir Issac Newton) of calculus.

- Leibniz wrote: “The first question which should rightly be asked is: *Why is there something rather than nothing?*”

- Leibniz concluded that the only reasonable answer was **God**.
  - **God** exists *necessarily* and is the explanation why anything else exists.
Why Does Anything At All Exist?

Leibniz’s Argument for God

**Premises:**

1. Everything that exists has an explanation of its existence.
2. If the universe has an explanation of its existence, that explanation is God.
3. The universe exists.

**Conclusions. Therefore:**

4. The universe has an explanation of its existence.
5. The explanation of the universe’s existence is God.
Why Does Anything At All Exist?

Objection to Premise 1

Premise 1. Everything that exists has an explanation of its existence.

- Common objection: If everything that exists has an explanation of its existence, then God must have an explanation of His existence!
- This seems out of the question. The explanation of God’s existence would have to be a being greater than God—right?
- But if we say God exists without explanation, the premise is false.
  - And the atheists will reply, “why not just say the universe exists without explanation?”
Why Does Anything At All Exist?

Necessary vs. Contingent Existence

Premise 1. Everything that exists has an explanation of its existence.

Leibniz asserted there are two kinds of things:

1. things that exist **necessarily**. They exist by a necessity of their own nature. *It belongs to their very nature to exist.*

2. things that exist **contingently**. They can fail to exist and so need an external cause to explain why they do in fact exist.
Why Does Anything At All Exist?

Necessary vs. Contingent Existence

Premise 1. Everything that exists has an explanation of its existence.

- Examples of things felt to exist \textit{necessarily} (it belongs to their very nature to exist):
  - Numbers, sets and other mathematical entities.
  - God.

- Examples of things that \textit{don’t} exist necessarily, that exist because something else has produced them:
  - People,
  - Planets and galaxies.
Why Does Anything At All Exist?

Premise 1

A more precise statement of Premise 1:

Premise 1. Everything that exists has an explanation of its existence, either in the necessity of its own nature or in an external cause.
Why Does Anything At All Exist?

Premise 1

Premise 1. Everything that exists has an explanation of its existence.

- Premise 1 seems self-evident.
- If you are hiking in the woods and come across a translucent ball on the forest floor, you would wonder how it got there.
- And if your hiking partner suggested “It just exists inexplicably! Don’t worry about it.” you would wonder about his / her sanity.
Why Does Anything At All Exist?

Premise 1

Premise 1. Everything that exists has an explanation of its existence.

- The size of the translucent ball should not matter. You would expect it to have an explanation whether it was the size of house, or a continent, or a planet – or the universe!

- If the atheist argues that Premise 1 is true for everything in the universe but not of the universe itself, they are guilty of the Taxicab Fallacy.
Why Does Anything At All Exist?

**Taxicab Fallacy**

Premise 1. Everything that exists has an explanation of its existence.

- **Taxicab Fallacy** – you ride along (as if in a taxi) with a line of reasoning as long as it suits your purpose, and then when it has gone as far as you want it to go, you “exit the taxi” and then deny the reasoning is valid any longer.
Premise 2. If the universe has an explanation of its existence, that explanation is God.

- The “universe” encompasses all space-time reality, all matter and energy.
- Therefore, if the universe has a cause, that cause must be:
  - beyond space-time
  - beyond mass-energy
  - capable of action, causation.
- That is: a cause of the universe must be a nonphysical, entity beyond space and time, capable of action and causation—an unembodied, transcendent “Mind” = “God”
Premise 2. If the universe has an explanation of its existence, that explanation is God.

- Atheists agree with this statement when they assert: “If God does not exist (= if atheism is true), the universe has no explanation.”
- Premise 2 and the atheist’s assertion are logically equivalent statements.
Premise 3

Premise 3. The universe exists.

- Most sane persons agree.
Why Does Anything At All Exist?

Leibniz’s Argument for God

**Premises:**

1. Everything that exists has an explanation of its existence.
2. If the universe has an explanation of its existence, that explanation is God.
3. The universe exists.

**Conclusions. Therefore:**

4. The universe has an explanation of its existence.
5. The explanation of the universe’s existence is God.
Why Does Anything At All Exist?

Summary Leibniz’s Argument

**LEIBNIZ’S COSMOLOGICAL ARGUMENT**

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<td>Then God must have a cause to explain Him.</td>
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<td>No, God exists by the necessity of His own nature.</td>
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<tr>
<td>This is a self-evident principle: try oscillating a ball in the woods.</td>
<td>The universe is an exception to this principle.</td>
</tr>
<tr>
<td>Making the universe an exception is arbitrary and commits the tacitum falacia.</td>
<td>It is not arbitrary, since it is impossible for the universe to have an explanation.</td>
</tr>
<tr>
<td>You’re assuming the universe is all there is, which begs the question in favor of all else.</td>
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**LEIBNIZ’S COSMOLOGICAL ARGUMENT (cont.)**

<table>
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<tr>
<td>2. If the universe has an explanation of its existence, that explanation is God.</td>
<td>This is logically equivalent to the atheist’s own statement that if God does not exist, the universe has no explanation.</td>
</tr>
<tr>
<td>The universe does not exist necessarily, since different elementary particles could have existed.</td>
<td>This follows from 1 and 3,</td>
</tr>
<tr>
<td>I withdraw the statement. The universe exists by a necessity of its own nature.</td>
<td>4. Therefore, the universe has an explanation of its existence.</td>
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<td>3. The universe exists.</td>
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<td>As the cause of space and time, this being must be an unembodied, transcendent Mind.</td>
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### Why Does Anything At All Exist?

**Summary Leibniz’s Argument**

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No, God exists by the necessity of His own nature.
Why Does Anything At All Exist?

Summary Leibniz's Argument

1. Everything that exists has an explanation of its existence, either in the necessity of its own nature or in an external cause.

This is a self-evident principle: story of finding a ball in the woods.

Making the universe an exception is arbitrary and commits the taxicab fallacy.

The universe is an exception to this principle.
Why Does Anything At All Exist?

Summary Leibniz’s Argument

2. If the universe has an explanation of its existence, that explanation is God.

- This is logically equivalent to the atheist’s own statement that if God does not exist, the universe has no explanation.

- As the cause of space and time, this being must be an unembodied, transcendent Mind.
Why Does Anything At All Exist?

Summary Leibniz’s Argument

3. The universe exists.

4. Therefore, the universe has an explanation of its existence.

This follows from 1 and 3.

5. Therefore, the explanation of the existence of the universe is God.

This follows from 2 and 4.
Why Did the Universe Begin?
“The heavens are telling the glory of God; and the firmament proclaims his handiwork.”

- Psalm 19:1 NRSV
Why Did the Universe Begin?

**Al-Ghazali’s *Kalam* Argument for God**

- **Al-Ghazali** (1058 to 1111):
  - Muslim theologian living in Persia.
  - Argued against the Greek idea of an eternal universe in his book *The Incoherence of the Philosophers*, arguing the idea of a beginningless universe was absurd.
Why Did the Universe Begin?

Al-Ghazali’s *Kalam* Argument for God

**Premises:**

1. Whatever begins to exist has a cause.
2. The universe began to exist.

**Conclusion. Therefore:**

3. The universe has a cause.
Why Did the Universe Begin?

Premise 1

Premise 1. Whatever begins to exist has a cause.

- **Something cannot come from nothing.**
  - To believe something can come into being *from nothing* is worse than believing in magic.

- A popular, commonly heard objection is that this is not true in quantum mechanics, the realm where subatomic particles can “come into being” out of the “vacuum.”
  - Answer: the “vacuum” in modern physics is *not* “nothing;” it is rather a sea of fluctuating energy fields governed by physical laws and having a physical structure.
If something could come from nothing, then why don’t we see today anything or everything coming into being from nothing?

Why should only “universes” come into being from nothing? Why not bicycles and root beer?

Nothingness cannot have any “properties” that favor universes over root beer: nothingness is nothing.

The assertion that only universes can pop into being from “nothing,” but not things in the universe, is to commit the Taxicab fallacy again.
Another common objection: So what is God’s cause?  

Ghazali would respond by reminding us that Premise 1 asserts only “whatever begins to exist has a cause.”

- God is eternal (= no beginning) and, lacking a beginning, does not need a cause for Ghazali’s kalam argument to work.
Why Did the Universe Begin?

Premise 1

Premise 1. Whatever begins to exist has a cause.

- Common experience and all scientific evidence supports the truth of Premise 1.
- Our everyday experience of the world strongly supports this premise. Things don’t happen without some cause.
Premise 2 asserts the universe must have had a beginning.

In the series God and the Multiverse we reviewed the strong scientific evidence that the universe must have had a beginning:

- The expansion of the universe leads us back to the **Big Bang** → the beginning of the observable universe.
- Considerations of thermodynamics, and the **Borde-Vilenkin-Guth Theorem** → require that any reasonable “Multiverse” must have had a beginning.
Here we will look at two *philosophical* reasons why the universe must have had a beginning.

**First Philosophical Argument: An Actually Infinite Number of Things Cannot Be Possible.**

Al-Ghazali’s argument:

- While mathematics tells us a *potentially* infinite number of things could exist (establishes a “universe of discourse”, a “universe of possibility”), an *actual* infinite number of things would lead to physical absurdities, and cannot be possible.
- In particular, there cannot be an infinite number of past events prior to today → so the universe must have *begun* to exist at some point.
Let’s visit Hilbert’s Hotel, brainchild of the German mathematician David Hilbert (1862-1943)

First imagine an ordinary hotel with a finite number of rooms, and all the rooms are full.

A new guest shows up at the desk. The manager must tell him. “Sorry, all the rooms are full.” End of story.
Now imagine Hilbert’s hotel, a hotel with an infinite number of rooms, and all the rooms are full.

A new guest shows up at the desk.

The manager can tell him. “No problem!”
The manager simply moves:
- Guests in room #1 to #2
- Guests in room #2 to #3
- Guests in room #3 to #4, and so on to infinity.

Room #1 is now available for the new guest.
Suppose an infinite number of new guests show up at the manager’s desk at Hilbert’s hotel?

No problem!

The manager moves:

- Guests in room #1 to #2
- Guests in room #2 to #4
- Guests in room #3 to #6
- Guests in room #4 to #8, and so on to infinity, opening up an infinite number of odd-numbered rooms.

Premise 2. The universe began to exist.
Suppose on Saturday all the guests in odd-number rooms check out.

- The hotel is now half empty, with an infinite number of empty rooms.
- The hotel still contains an infinite number of guests, the same as before an infinite number of guests checked out!
Why Did the Universe Begin?

Premise 2

Premise 2. The universe began to exist.

- A half-empty hotel looks bad for business, so the manager moves:
  - Guests in room #2 to #1
  - Guests in room #4 to #2
  - Guests in room #6 to #3
  - Guests in room #8 to #4, and so on to infinity.

- Now the hotel is packed full, no empty rooms, without having added any new guests!
Suppose on Sunday all the guests in room numbers greater than 3 check out.

- The number of guests leaving Sunday is *the same* as the number of guests who left on Saturday—an infinite number.
- But now there are only 3 guests remaining (rooms #1, 2, and 3), rather than an infinite number of guests.
Premise 2

Premise 2. The universe began to exist.

- **Hilbert’s Hotel** is bizarre, absurd.
- The absurdities that arise at Hilbert’s Hotel are due to the nature of infinities, not the nature of hotels. We must conclude an actual infinite number of things leads to absurdities that are not present in the reality we live in.
Common objection to the absurdities of Hilbert’s Hotel: absurdities arise because we don’t really understand the concept of infinity.

Answer: Not true. Infinite set theory is a highly developed and well-understand branch of modern mathematics.
Ghazali’s Second Philosophical Argument:

You Can’t Pass Through an Infinite Number of Elements, One at a Time.
Think of the series of past events as like a sequence of dominoes falling, one after another, until the last domino, today, is reached.

But if there are an infinite number of dominoes that must fall before the present is reached, than you can argue it is impossible to ever reach the present moment.

This is absurd, so the series of past events must be finite, must have a beginning.

Premise 2. The universe began to exist.
Why Did the Universe Begin?

**Premise 2**

Premise 2. The universe began to exist.

- **Common objection:** you can pick any point in the past, and the number of events between that past event and the present is finite, so the present is reachable!

- This objection commits the **Fallacy of Composition**.
Fallacy of Composition:
- Confusing a property of a part with a property of the whole.
- Every part of an elephant may be light in weight, but that does not mean the whole elephant is light in weight!
- Just because every finite part of a series can be crossed or counted down doesn’t mean the whole infinite series can be crossed or counted.
Why Did the Universe Begin?

Al-Ghazali’s *Kalam* Argument for God

**Premises:**
- 1. Whatever begins to exist has a cause.
- 2. The universe began to exist.

**Conclusion. Therefore:**
- 3. The universe has a cause.
Why Did the Universe Begin?  
Summary Al-Ghazali’s Kalam Argument

The Kalam Cosmological Argument

**Pre**  |  **Con**
---|---
1. Modern science could not be a cause. | Physical phenomena of things coming from nothing.
   - The universe is not infinite.
   - Things, nothing and everything would come from nothing.
   - Impassable continua the body.

2. The universe began, so it was not infinite. | Mathematics proves that it is.
   - Mathematics establishes an infinite duration of time.
   - Infinity is not measurable.
   - Time does not measure the duration.
   - After a finite number of past events, the universe cannot be infinite.

3. The universe began, so it was not infinite. | Mathematics proves that it is.
   - Mathematics establishes an infinite duration of time.
   - Infinity is not measurable.
   - Time does not measure the duration.
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   - After a finite number of past events, the universe cannot be infinite.

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Chapter 1

Chapter 2

Chapter 3

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Chapter 4
Why Did the Universe Begin?
Summary Al-Ghazali’s *Kalam* Argument

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<td>Physics gives examples of things coming from nothing.</td>
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- Something cannot come from nothing.
- The vacuum is not nothing.
- Otherwise, anything and everything could come from nothing.
- Experience confirms this truth.
Why Did the Universe Begin?

Summary Al-Ghazali’s *Kalam* Argument

2. The universe began to exist.

- An actually infinite number of past events cannot exist.
  - Mathematics establishes only a universe of discourse.
  - Infinity is mathematically well understood.

Mathematics proves that it can.

We don’t understand infinity.
Why Did the Universe Begin?
Summary Al-Ghazali’s *Kalam* Argument

2. The universe began to exist.

- A series formed successively cannot be actually infinite.
- This reply commits the fallacy of composition.
- If it could, absurdities would result.

From any past point we can reach the present.
Why Did the Universe Begin?

Summary Al-Ghazali’s *Kalam* Argument

2. The universe began to exist.

- Expansion of the universe.
- These models fail to avoid a beginning.

Nonstandard models of the origin of the universe exist.

Models aimed at avoiding a beginning exist.
Why Did the Universe Begin?

Summary Al-Ghazali’s *Kalam* Argument

3. Therefore, the universe has a cause.

This follows from 1 and 2.

Then the universe would have to exist before it came to exist.

This cause is an uncaused, timeless, spaceless, immaterial, powerful Personal Creator.

The universe caused itself.
Why Is The Universe Fine-Tuned for Life?
“Ever since the creation of the world his eternal power and divine nature, invisible though they are, have been understood and seen through the things he has made.

- Romans 1:20 NRSV
Why Fine-Tuned For Life?

The “Goldilocks” Universe

- Over the past 40 years, it has become increasingly apparent to astronomers and cosmologists that the:
  - Forms of the laws of physics and the values “constants of nature,” and
  - The initial conditions at the Big Bang (for example the amount of entropy),
- seem extremely “fine-tuned” to give rise to life.
- Very slight differences in the laws of physics, or the constants of nature, or the initial conditions at the Big Bang, would have resulted in a sterile, lifeless universe.
- *In other words*: the form of the law of physics, the values of the constants of nature, and the values of the initial conditions at the Big Bang are “just right” for the evolution of life.
- We live in a “Goldilocks” universe.
Why Fine-Tuned For Life?

The “Goldilocks” Universe

- What is the best explanation for the “Goldilocks” nature of the universe?
- There are only three possibilities:
  - 1. Physical Necessity. The assertion that it is physically impossible for the laws of physics, the constants of nature, and the initial conditions of the universe to have any value other than the values they do have.
  - 2. Chance. Everything is “just right” for life by pure chance. We were very, very, ... very lucky.
  - 3. Design. Everything is “just right” for life because it was designed by some entity beyond the universe, beyond all space-time, to be that way.
Why Fine-Tuned for Life?
The Design Argument for God

Premises:
1. The fine-tuning of the universe is due to either physical necessity, chance, or design.
2. The fine-tuning is not due to physical necessity or chance.

Conclusion. Therefore:
3. It is due to design.
Premise 1. The fine-tuning of the universe is due to either physical necessity, chance, or design.

- “Fine-tuning” (the “Goldilocks” nature of the universe) is an established scientific fact.
- No other options to explain this “fine-tuning” have been proposed other than:
  - Physical necessity, or
  - Chance, or
  - Design.
Why Fine-Tuned for Life?

Premise 2

Premise 2. The fine-tuning is not due to physical necessity or chance.

- Justifying this premise is the primary challenge.
Not Physical Necessity

Premise 2. The fine-tuning is not due to physical necessity or chance.

- *Not Physical Necessity*
- Very few scientists believe physical laws and the constants of nature *must* have the form and values they do because of some still unknown “physical necessity.”
  - It is possible to “simulate” simple “mini-universes” on a computer that are perfectly self-consistent and nothing like our universe.
- Furthermore, some unknown “physical necessity” that constrained the form of the laws of physics and the constants of nature to only their current form and values would still not explain the “fine-tuning” of the *initial or starting conditions* at the Big Bang.
**Not Physical Necessity**

Premise 2. The fine-tuning is not due to physical necessity or chance.

- **Not Physical Necessity**
- Although few scientists believe the “Goldilocks” nature of the universe is due to “physical necessity,” some “pop science” outlets claim someday a “Theory of Everything” (TOE) will explain all, including the “Goldilocks” nature of the universe.

- **“Theory of Everything” (TOE):** name informally given by physicists to a theory that unites the four forces of nature (electromagnetism, weak force, strong force, and gravity).
  - It will not explain “everything.”
  - There may not be a “Theory of Everything” (a unification of the 4 forces)
Not Chance

Premise 2. The fine-tuning is not due to physical necessity or chance.

- **Not Chance**

- One can imagine and simulate a vast array of possible universes that vary from our own by a tiny difference in some constant of nature or initial condition.

- The vast, vast majority of such possible universes are sterile, incapable of evolving life.

- How can it be that in this vast array of possible universes, we live – **by pure chance** – in the extremely rare exception, a universe capable of evolving life?
Why Fine-Tuned for Life?

Premise 2. The fine-tuning is not due to physical necessity or chance.

- Not Chance

- A frequent objection at this point is “Well Duh! If you didn’t live in a universe capable of evolving life, you wouldn’t be around to ask your question. Problem solved!”

- This answer does not solve anything.
Why Fine-Tuned for Life?

Not Chance

Premise 2. The fine-tuning is not due to physical necessity or chance.

- Not Chance
- Imagine you’ve been sentenced to death by firing squad.
- 500 of the country’s best marksmen aim their rifles at you.
Premise 2. The fine-tuning is not due to physical necessity or chance.

- **Not Chance**
- The rifles fire.
- You are still alive.
- You have to wonder:
  - Are you alive because by *pure chance* all 500 marksmen happened to miss you?
  - Are you alive because someone rigged it so they all missed you? (by design)
- Even though you know you would not be around to speculate if the most likely scenario (500 bullet holes in you) had actually happened.
Premise 2. The fine-tuning is not due to physical necessity or chance.

- *Not Chance*

- The extremely, extremely small chance that by pure chance we live in a “Goldilocks” universe fruitful of life (by pure chance “we survived the firing squad”) is such a glaring problem in modern cosmology that the common explanation now is that we must live in a “multiverse” (Multiverse or Many Worlds Hypothesis)
Premise 2. The fine-tuning is not due to physical necessity or chance.

- **Not Chance**

- **Multiverse or Many Worlds Hypothesis**: the hypothesis that an unimaginably enormous array of possible “universes” *actually exists*, the vast majority of these universes sterile and lifeless.
  - If there are gazillions upon gazillions of 500 marksmen firing squads, eventually we might find one where all 500 *do* miss their victim, *by pure chance.*
Why Fine-Tuned for Life?

Not Chance

Premise 2. The fine-tuning is not due to physical necessity or chance.

- Not Chance

- Problems with the Multiverse / Many Worlds Hypothesis:
  - 1. The “laws” governing the multiverse may still need “fine-tuning” for it to contain a “Goldilocks” universe like ours capable of evolving life.
  - 2. A Multiverse must have had a beginning (see the Kalam argument Premise 2) and may not have had sufficient time to spawn a “Goldilocks” universe with reasonable probability.
Not Chance

Premise 2. The fine-tuning is not due to physical necessity or chance.

Not Chance

Problems with the Multiverse / Many Worlds Hypothesis:

3. If “Goldilocks” worlds are products of pure chance variation within an ensemble of mostly sterile, lifeless worlds, than “fine-tuning” of the rules governing the Multiverse / Many Worlds may be necessary to prevent an “Invasion of the Boltzmann Brains.”
Why Fine-Tuned for Life?

Not Chance

Premise 2. The fine-tuning is not due to physical necessity or chance.

- Not Chance
- The problem of the "Invasion of the Boltzmann Brains." If pure chance variation drives everything, then:
  - our grand fine-tuned Goldilocks universe is less probable than:
  - a small "solar system" sized Goldilocks world whose inhabitants have the illusion of a wider, orderly universe, which (in turn) is less probable than:
  - a single brain** that pops into existence by a random fluctuation, with illusory perceptions of an orderly cosmos!

** first suggested by physicist Ludwig Boltzmann, 1844-1906
Why Fine-Tuned for Life?  
The Design Argument for God

**Premises:**

1. The fine-tuning of the universe is due to either physical necessity, chance, or design.
2. The fine-tuning is not due to physical necessity or chance.

**Conclusion. Therefore:**

3. It is due to design.
Why Fine-Tuned For Life?

Summary of Design Argument

The Design Argument

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The fine-tuning of the universe is due to either physical necessity, chance, or design.</td>
<td></td>
</tr>
<tr>
<td>Free-tuning is a scientific fact.</td>
<td></td>
</tr>
<tr>
<td>There are two alternatives for explaining fine-tuning.</td>
<td></td>
</tr>
<tr>
<td>2. It is not due to physical necessity or chance.</td>
<td></td>
</tr>
<tr>
<td>Not physical necessity.</td>
<td></td>
</tr>
<tr>
<td>The constants and quantities are independent of nature's laws.</td>
<td></td>
</tr>
<tr>
<td>A TOE doesn't explain everything.</td>
<td></td>
</tr>
<tr>
<td>M-theory fails to predict a life-permitting universe.</td>
<td></td>
</tr>
<tr>
<td>A TOE will explain them.</td>
<td></td>
</tr>
</tbody>
</table>

The Design Argument (cont.)

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not chance.</td>
<td></td>
</tr>
<tr>
<td>Not whatever someone needs, it will probably not be life-permitting.</td>
<td></td>
</tr>
<tr>
<td>This allows us to remove the need for an explanation.</td>
<td></td>
</tr>
<tr>
<td>MWI may still require fine-tuning.</td>
<td></td>
</tr>
<tr>
<td>There are good reasons to reject MWI.</td>
<td></td>
</tr>
<tr>
<td>The universe is finite.</td>
<td></td>
</tr>
<tr>
<td>Invasion of the BBT team claims.</td>
<td></td>
</tr>
<tr>
<td>Then, therefore, it is due to design.</td>
<td></td>
</tr>
<tr>
<td>This follows from 1 and 2.</td>
<td></td>
</tr>
<tr>
<td>To recognize an explanation as the best, you must need an explanation of the explanation.</td>
<td></td>
</tr>
<tr>
<td>None is simpler than the universe.</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 3
### Why Fine-Tuned For Life?

**Summary of Design Argument**

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The fine-tuning of the universe is due to either physical necessity, chance, or design.</td>
<td></td>
</tr>
<tr>
<td>Fine-tuning is a scientific fact.</td>
<td></td>
</tr>
<tr>
<td>These are the only alternatives for explaining fine-tuning.</td>
<td></td>
</tr>
</tbody>
</table>
Why Fine-Tuned For Life?

Summary of Design Argument

2. It is not due to physical necessity or chance.

- Not physical necessity.
  - The constants and quantities are independent of nature’s laws.
    - A TOE doesn’t explain everything.

A TOE will explain them.
Why Fine-Tuned For Life?
Summary of Design Argument

2. It is not due to physical necessity or chance.
   - Not chance.
     - whichever universe exists, it will probably not be life-permitting.
       - This truism does not remove the need for an explanation.

We can observe only life-permitting universes, so no explanation is needed.
Why Fine-Tuned For Life?
Summary of Design Argument

- Probably not be life-permitting.
- This truism does not remove the need for an explanation.
- MWH may still require fine-tuning.
- There are good reasons to reject MWH.
- We can observe only life-permitting universes, so no explanation is needed.
- Many worlds hypothesis
Why Fine-Tuned For Life?
Summary of Design Argument

- This truism does not remove the need for an explanation.
- MWH may still require fine-tuning.
- There are good reasons to reject MWH.
  - The multiverse is finite.
  - Invasion of the Boltzmann brains.

Many worlds hypothesis
Why Fine-Tuned For Life?

Summary of Design Argument

3. Therefore, it is due to design.

This follows from 1 and 2.
Discussion