

Our Beautiful Universe

Michael Mallary, 3/23/2026



See **Our Improbable Universe**, Thunder's Mouth Press, 2004, 2d Ed. 2017 available on Amazon. I will reply to an email request with an in color PDF attached. MikeMallary01@gmail.com . The price of the PDF is to send it to someone else if you like it.



Video of 4/2020, Concord Area Humanist zoom meeting (1 hour).
<https://youtu.be/7UfaMrnwe08> (See Chat for this link)

Our Universe Spontaneously Creates Beauty*



Wilson Bird of Paradise



Fluorescent
Rocks



* For me, an important aspect of beauty is harmoniously composed complexity.

13.7 Billion Year Cosmic Timeline

FROM THE DARK AGES ...

After the emission of the cosmic microwave background radiation (about 400,000 years after the big bang), the universe grew increasingly cold and dark. But cosmic structure gradually evolved from the density fluctuations left over from the big bang.

LHC Energy Can See Back at Trillionth of a Second to Here with Microwaves

Stars Make Carbon



We are in a Galaxy Like This

Raw Energy Spontaneously Created Our Collectivity of Our Minds that I call the Knowsphere

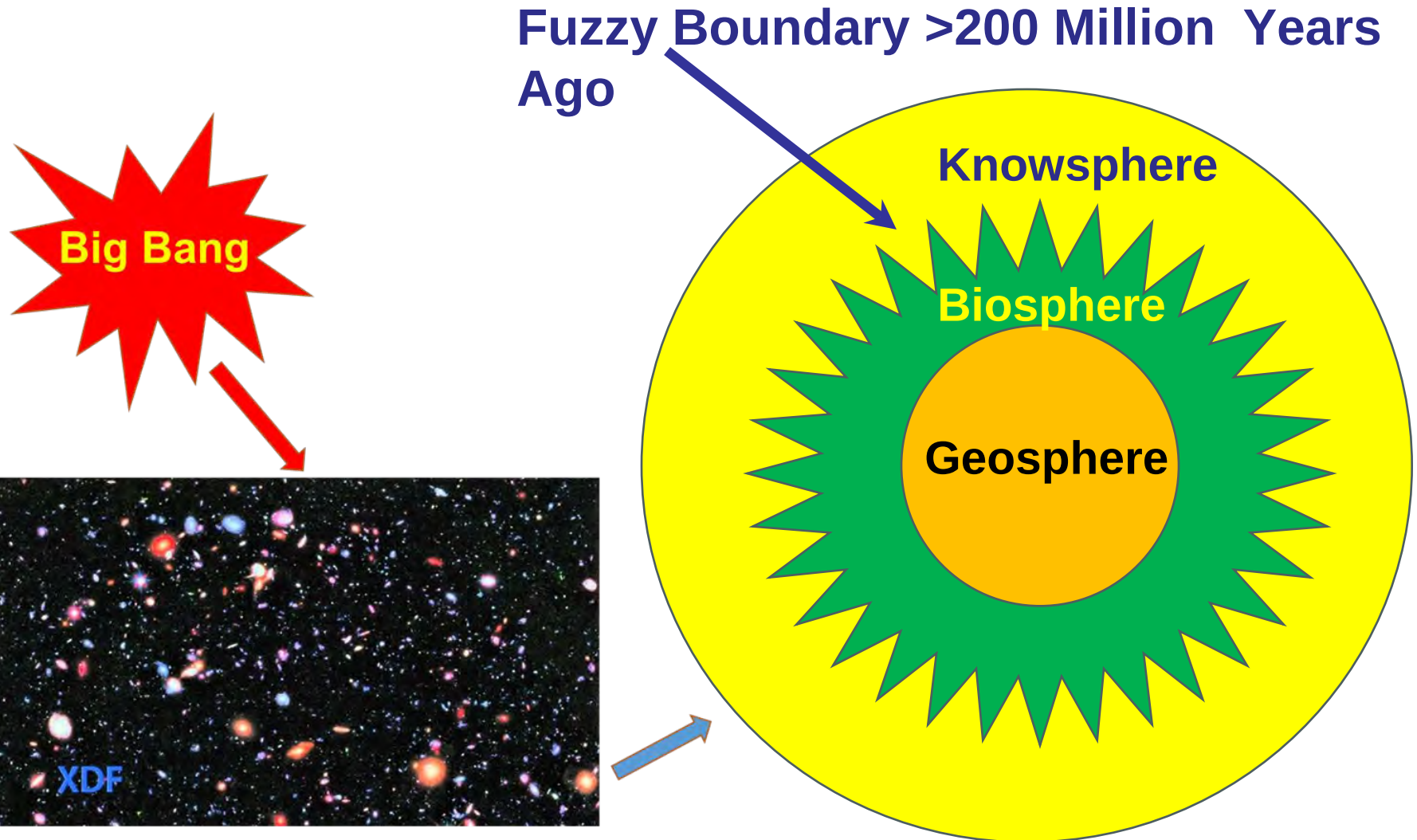


Figure Pr-1 The Big Bang birthed galaxies with solar systems. Here, our Knowsphere₄ evolved out of the Biosphere which evolved out of the Geosphere of our Earth.

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The Evolution of Primordial Energy into Connected Minds

**The evolutionary process that
produced us required:**

- Complex elements (carbon, oxygen, nitrogen, etc)
- A long-lived stable star like the Sun
- Multi-billion year environmental stability (>4 billion years)

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The Evolution of Primordial Energy into Connected Minds

For this to have happened anywhere in the universe, at least 17 physical phenomena (Stepping Stones) had to be.

- Energy evolved into simple matter in the first few minutes
- Stars fused simple matter into complex matter & exploded
- Single cell life evolved from a chemical soup somewhere
- Multi-cellular beings with brains evolved
- Individual intellect evolved & linked into collective intellect

***It's mindblogging how
complex and beautiful this
all is.***

17 Physical Necessities for Life to Evolve into Minds

- 1 Four forces – Gravity, Electro-Magnetic, Nuclear, Weak
- 2 Reality has 3 dimensions of space so orbits are stable
- 3 Expansion rate is exactly balanced by mass and Dark Energy
- 4 Just enough lumpiness in the distribution of matter
- 5 Six kinds of sub-nuclear particles (6 different Quarks)

17 Physical Necessities for Life to Evolve into Minds

- 6 Big Bang produced an excess of matter over antimatter
- 7 Just enough energy and matter to matter (at 1 part in 10^{60})
- 8 Protons are very stable (lifetime > trillion trillion trillion years)
- 9 Wave like matter causes chemistry and prevents stellar collapse
- 10 Two electrons can't be in the same state of spin & motion (Chem.)

17 Physical Necessities for Life to Evolve into Minds

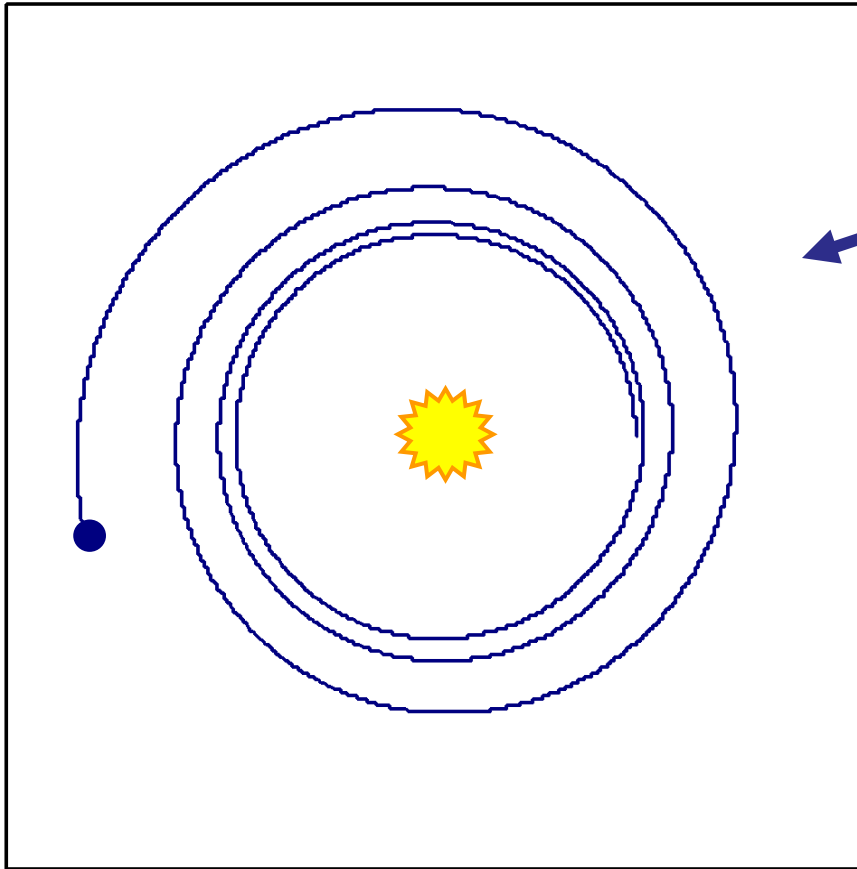
- 11 Neutrons are just a little heavier than protons) (Carbon, etc.)
- 12 Two protons stick together only very briefly (no stable He_2)
- 13 Two helium nuclei are even less sticky (no stable Be_8)
- 14 Carbon forms faster than it is converted into oxygen in stars
- 15 Big stars blow up to disperse complex matter (Super Nova explosion)

17 Physical Necessities for Life to Evolve into Minds

16 Dark matter helps to form early clumps for galaxies and stars

17 Higgs Field gives mass to particles (*The God Particle*)

Only 3D Reality Gives Stable Orbits and Minds* (#2)



In a 4 dimensional universe,
Earth's orbit would spiral out
if its velocity is too high
(0.1% too high here**)



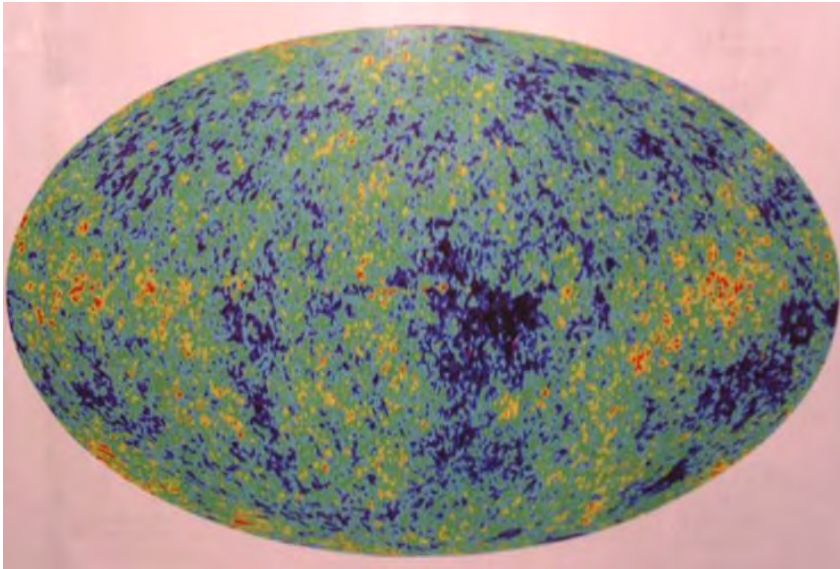
*Newton proved that stable orbits result if the strength of gravity obeyed the inverse square law (Force $\sim 1/r^2$). Immanuel Kant (19th century) connected this gravity law to the 3 dimensions of space. Four or more dimensions leads to unstable orbits. Two dimensions exclude neural networks (i.e. brains)



** After **3 ½** years, the distance from the sun increases 90% and temperature falls >200°F (even more when it becomes a snow ball). It would spiral in if the velocity is too low.

Just Enough Lumpiness and Dark Matter

Wilkinson Microwave Anisotropy Probe (WMAP, now Planck) (#4)



Fluctuations in the 3K° (-451°F) temperature of deep space.

- ☐ Light emitted by plasma at 300,000 years is red shifted $\times 1,000$
- ☐ 50 parts/million temperature fluctuations
- ☐ Descendants of the quantum fluctuations of inflation?
- ☐ **Seeded** stars, galaxies, galaxy clusters, super cluster, etc.

Cassiopeia Supernova Remnant (#15)

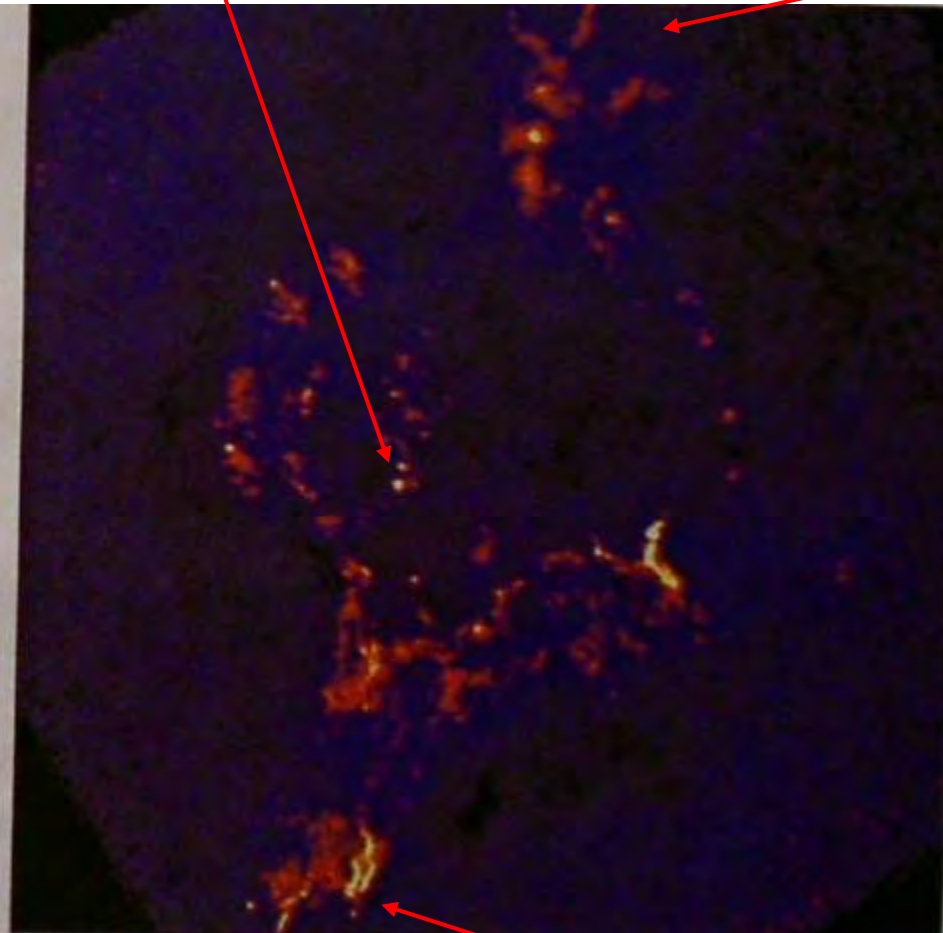
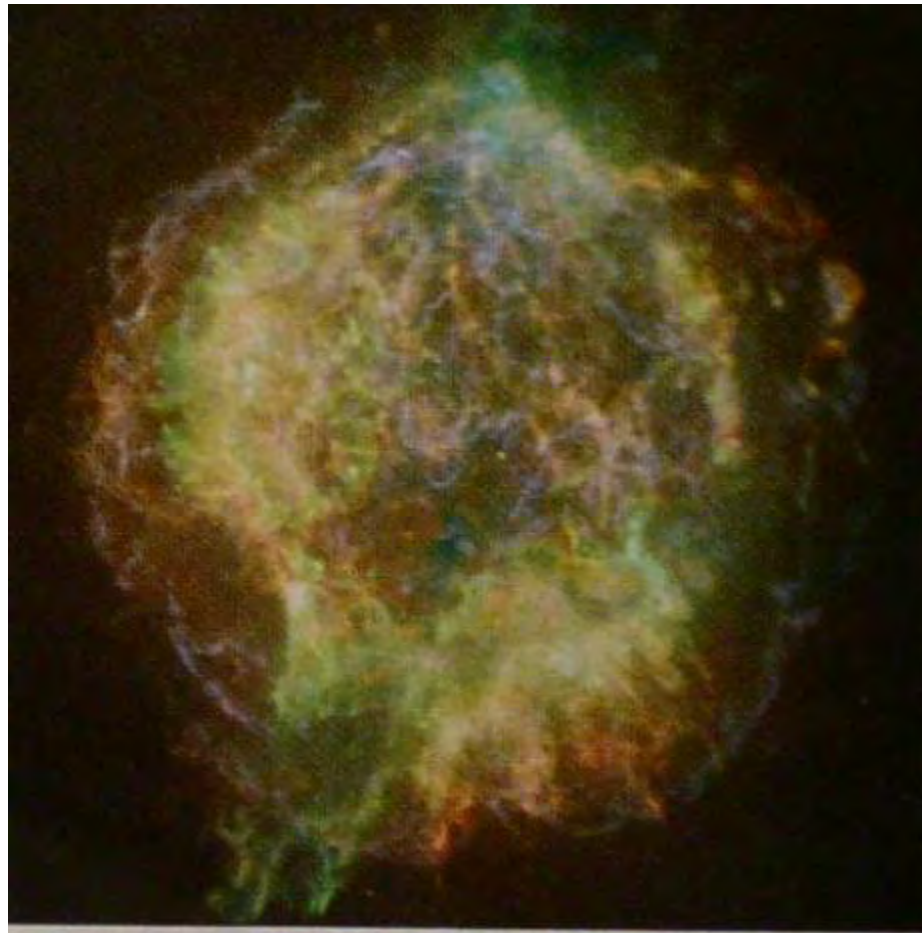
Tycho Brahe saw it blow up in 1572 (60,000 light years away)

Visible Light

Neutron star,
 $v=330$ km/s

X-ray Image

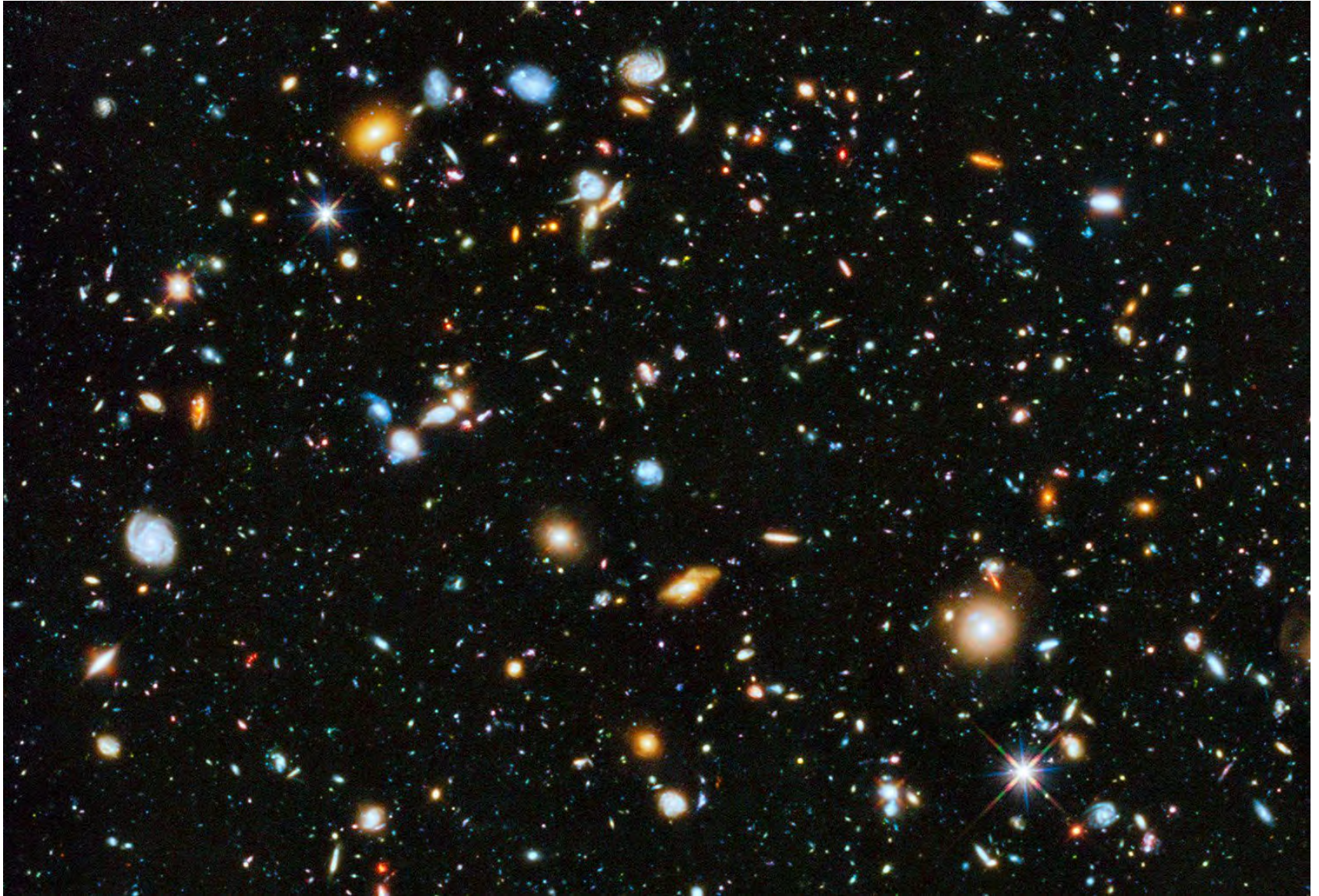
Silicon rich jet



0.13°

Silicon rich jet,
 $v \sim 10,000$ km/s = 3% of light, c

There are more than 100,000,000,000,000,000,000,000 stars and planets in **Our Beautiful Universe**



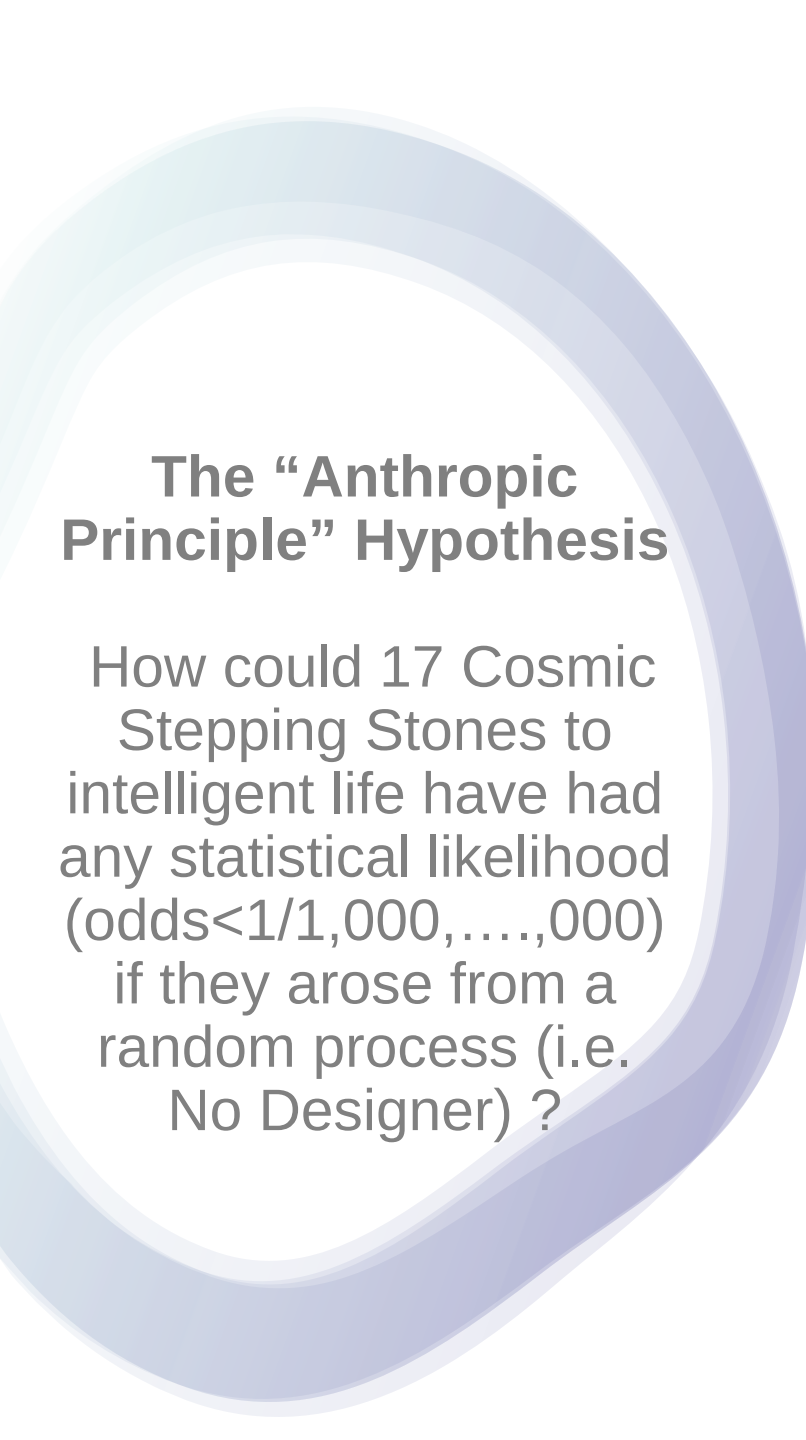
This is 0.000002% of the sky and shows 3,000 galaxies

The “Atomists” deduced that ETs must exist *

“When there is plenty of matter in readiness, when space is available and no cause or circumstance impedes, then surely things must be wrought and effected. You have a store of atoms that could not be reckoned in full by the whole succession of living creatures. You have the same natural force to congregate them in any place precisely as they have congregated here. You are bound therefore to acknowledge that in other regions there are other Earths and various tribes of men and breeds of beasts.”

Lucretius, 1st century

*The super high tech ETs that might get here are not to be feared as our science fiction assumes. They have lived with the bomb for thousands of years before they could get here so they must be very **peace loving beings**. “**Galactic Section**” was coined by Edward Harrison to label this conclusion (Chapter 12 of Cosmology,1980)



The “Anthropic Principle” Hypothesis

How could 17 Cosmic Stepping Stones to intelligent life have had any statistical likelihood (odds < 1/1,000,000,000) if they arose from a random process (i.e. No Designer) ?

The Anthropic Principle points out that even if the 17 Stepping Stones arose from a random process it had to look designed in order for us to be here to contemplate the improbability of it all

For this to have happened randomly:

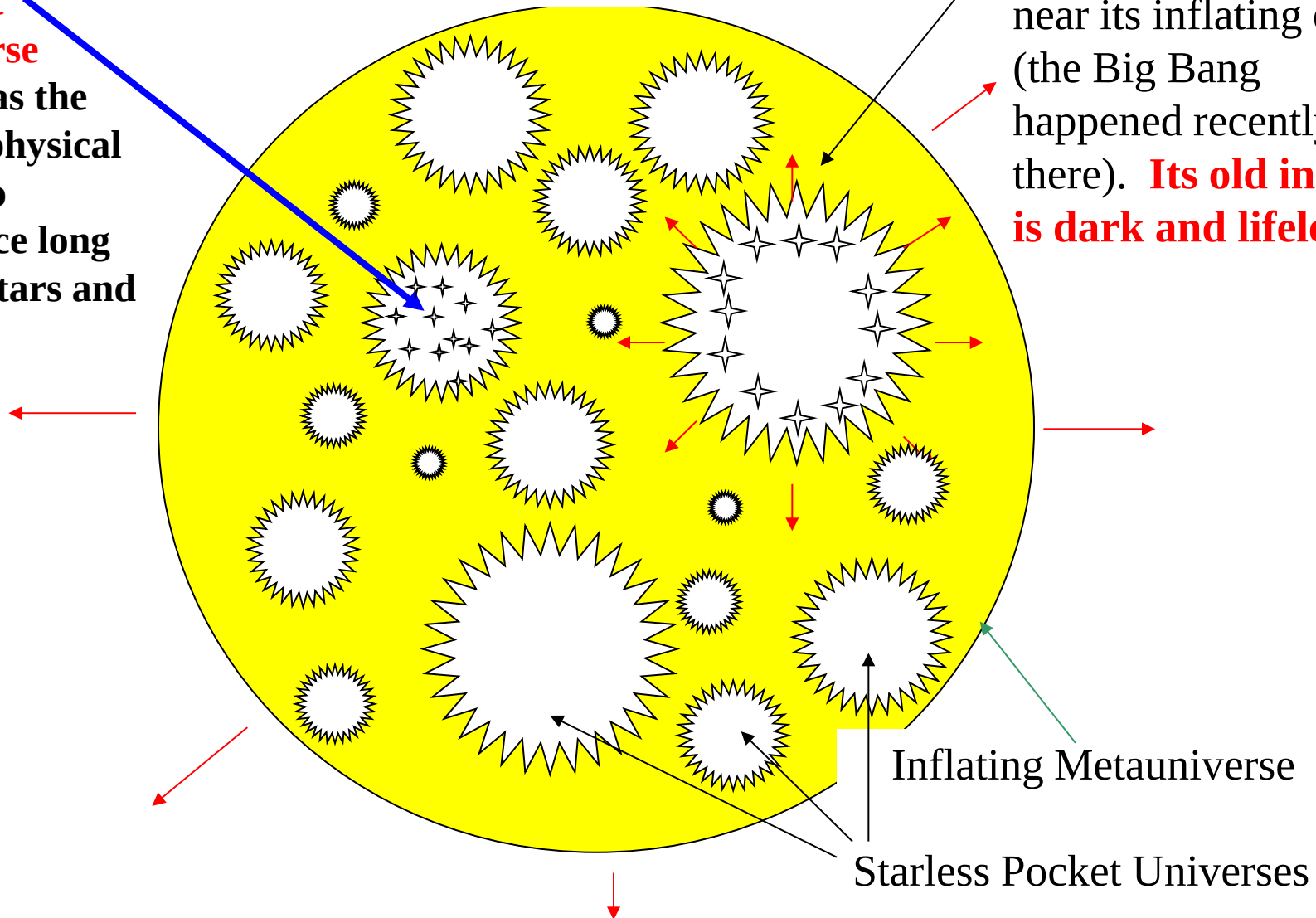
- Somehow there had to be **a zillion throws of the dice**
- Multi-universe with “**Pocket Universes**” with **different laws**
- Tiny minority (**rare gems**) have the right laws for witnesses
- We have one with incredible **spontaneous creativity**
- **Our Beautiful Universe** and its life has **Inherent Value**

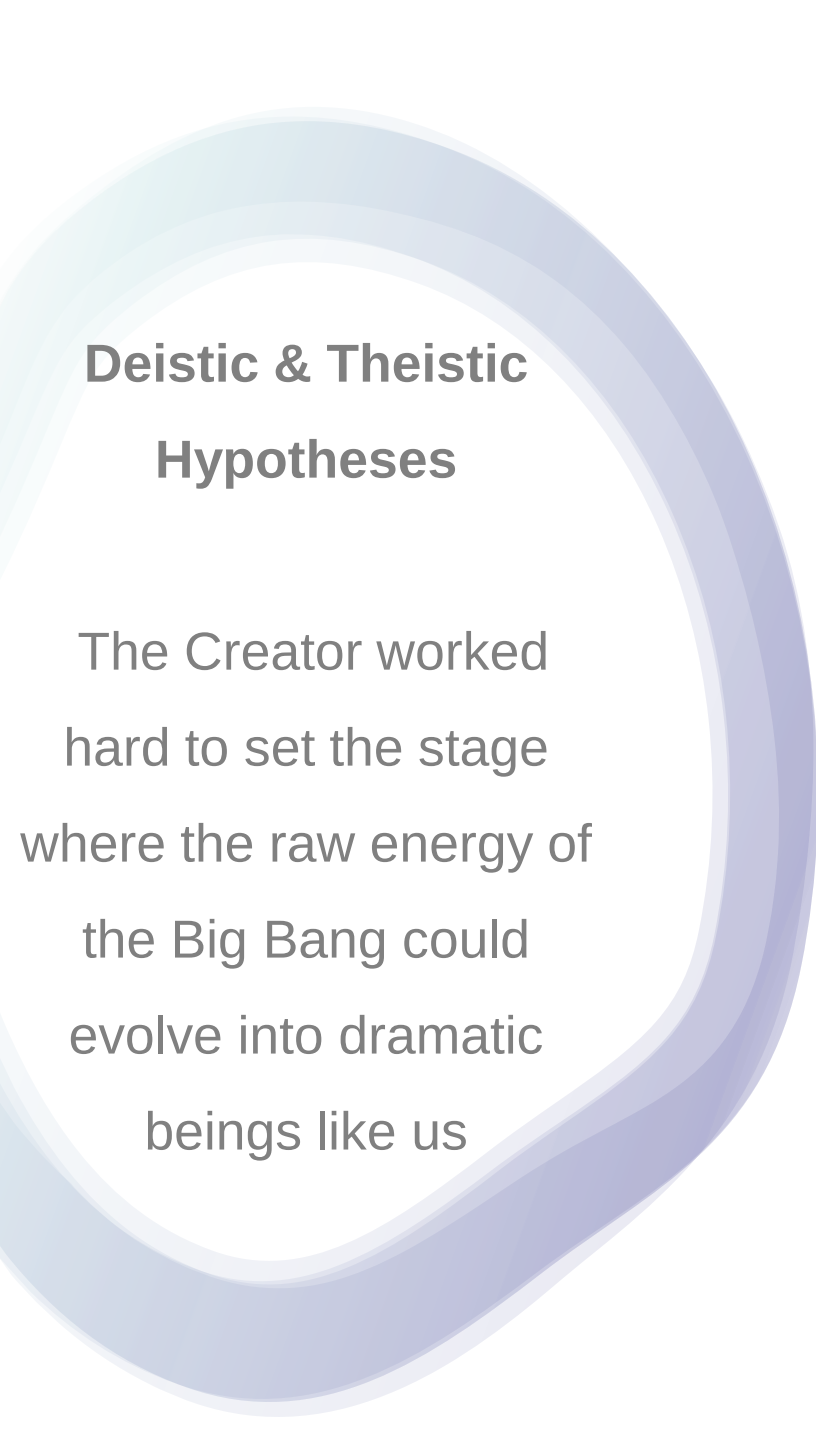
Multi-Universe Inflationary Hypothesis

You are about here in our **Pocket Universe** that has the right physical laws to produce long lived stars and us.

(Different laws of physics in each pocket universe)

Pocket Universe with giant short lived stars near its inflating edge (the Big Bang happened recently there). **Its old interior is dark and lifeless.**





Deistic & Theistic Hypotheses

The Creator worked hard to set the stage where the raw energy of the Big Bang could evolve into dramatic beings like us

Then life has derived value but what is its value or meaning?

- ☐ Ask a prophet? Which one?
(Ugly controversies)
- ☐ Is meaning for us to find & create?
- ☐ Was “Galactic Selection” part of the design?*
- ☐ To throw away this beautiful gift is the ultimate sin.

*Nuclear weapons could not be made if the charge on the electron were 1/3% higher than it is. Stars would still work for a much larger increase. So a Creator would have had a choice

The Conclusions of these two hypotheses Converge



Life is meaningful whether or not there was a Creator.



Life is beautiful & beauty is for us to create and enjoy.



We're pursuing this together in an ongoing creative process.



**Wilson's Bird of
Paradise**



**Fluorescent
Rocks**



Some Universe Based Philosophic Conclusions

- Due to the structural complexity that our existence required, reality is precious/sacred whether or not there was a creator.
- Beauty is at every level (Geo-Bio-Knowsphere).
- The ongoing creativity of our universe points to our role as creators of beauty. We start by creating ourselves.
- The existence of Uranium requires that we grow love and The Light for humanity to exist on a Cosmic Time scale.

Some Universe Based Philosophic Conclusions

- We are the primo creators in this corner of the Milky Way,
- Quantum Mechanics excludes predestination,
- Incomprehensible reality requires humility ,
- Animal communities have socially positive norms.

Go with the flow of the ongoing creativity of Our Beautiful Universe...Create Beauty



Wilson's Bird of Paradise



Some Ways to Create Beauty

Help a child grow
and thrive

Help beauty grow
in your mind and in
others

Create classic
beauty: art, music,
dance, literature,
etc

Make others
happy with help, a
smile, a thought, a
joke, etc.

Seek beautiful
experiences
(concert, museum,
games..)

Be kind to others

Be like Christ

Set up a beautiful
climb in a rock
climbing gym

Cook a beautiful
meal

Sing a song

Learn beauty from
animals



Please suggest more ways to
create beauty.

Repeats in the list are good.
They add emphasis.

End of
Talk

