WORLDS WITHOUT NUMBER

Moses 1:4-5 - Worlds without end - Cannot behold all works unless behold all my glory.

Moses 1:75 - Moses sees the earth and man and the ends thereof

Moses 7:30 - Worlds without number
Moses 1:10 - "Man is nothing"

Moses 1:33-35 - Worlds without number - many have passed away.

D & C 88:5-13 - Light and power eminate for God.

D&C 88:36-38 - There is NO SPACE in which there is NO KINGDOM

ABRAHAM FACIMILE #2

Notes from. "EVOLUTION OF THE PHYSICAL UNIVERSE"
by CARLANT ATHAY
HIGH ALTITUDE OBSERVATORY, Boulder, Colorado

Men have placed gadgets between us and nature (ie.God) - we cannot determine time, dates and directions on our own.

Ancient man believed (MA) that the earth was the center of the universe.As it became apparent that man was not at the center it radically changed man's view of himself.

Then it was realized the SUN was not the center but a + - average member of a family of 100,000,000,000 (100 billion) stars that make up our Milky Way Galaxy.

Photons of light take time to reach us, consequently, the farther out in space we look, the further back in time we look. We then are able to look directly back into the past.

Some telescopes can look back over a billion years ago - we cannot observe what is happening at the PRESENT time. Therefore we cannot attempt to picture the universe or human drama as it now is unless we have a complete picture of how it evolved in time.

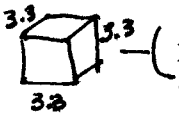
We must chart the past and future in order to picture the universe of human drama is it now is.

The light from the Sun is over 8 min.old. The stars in Orion we see as they were @ 3600 years ago. ~~The light~~ and radiation ~~from our own~~ other side ~~of our~~ galaxy, ~~that was~~ left over 50,000 years ago we now see.

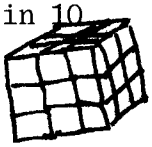
Unlike every one else we believe God is tangible and real and Abraham tells us by his vision Fac. #2, that not only is God MATERIAL but LOCATABLE.

Distances in space are now reasonably accurate to about 4 billion light years.

Alpha Centuri (~~newest~~ Nearest star ~~of~~ to the sun - reasonably= factor of 2) is @ 4.3 light years approximately 27 million million miles



(1 parsec)- 3.3 light 19 million million - approximately 1 star in 10 cubic parsecs. (National Geographic) May 83



Our sun is in one spiral arm. of our Galaxy

Our galaxy completes one revolution in @ 200 million years

The universe began expanding about 20 billion years ago 15/ ± 2Billion

The age of the moon and earth is @ 4.5 billion years

Planets around stars occur commonly rather than rarely. The question is are they habitable.

A STAR to support a planet with life must meet 3 major requirements

1. Must be a single rather than cluster 1+
2. Must be hot enough so radiation will sustain life.
3. Must have a long enough life STABLE to allow a planet to evolve.

The first limits the possible candidates to about ½
The second - about 1/5 of all stars would be hot enough and not too hot. and have the time required at a constant heat to sustain life.
1/10 of all stars ... is suitable for sustaining a planet with life 1/10= 10^{11} OR 10 to The Eleventh Power

For a planet to sustain life it must be:

1. Old enough for stable continents and breathable atmosphere.
2. It must be within a fixed distance where life as we know it it possible.
3. Orbit must be circular.
4. Night and day must be of reasonable length.
5. The spin ie. rotation must be such and angle the most of the total area must experience day and night.
6. Gravitation pull must be within certain bounds.

Of the stars that could maintain a habitable planet only 1 out of 100 could excpect to have 1 habitable planet.

So 1 star out of 1,000 could probably have 1 planet with life.

In our galaxy of 10^{11} stars, we would expect to find 10^{8} (100 million) planets like ours

If one over estimates by a factor of 2 there would be about 200,000 habitable planets in our galaxy.

# of galaxies in the Range of our Observation is 10^{10} . That makes the # of planets like earth in our observable universe and @ 10^{17} or 10^{18} if there was an error by a factor of 1000 there would be 10^{15}

10,000 000 000 000 000

Planets that could sustain Life HAVING Met ALL Requirements

Associated Press

rday. Two workers
was grounded for
ned.

ects call
y police

But he offered to have Par-
upervise it, along with the
g dissolution of its prede-

are widespread fears that
organization, which some
s say already exists, would
odeled version of the Stasi,
as disbanded after pro-de-
protests toppled East Ger-
Stalinist leadership in No-

dnesday, ADN, the govern-
ess service, reported that
ssociated with the new se-
rganization had uncovered
alled "an American security
ear an East German mili-
e near Karl-Marx-Stadt in
East Germany.

w also bowed to opposition
ts that the government had
paying former secret po-
ers who had not found other
se complaints led to factory
trikes in recent days, and
said such payments would
ided.

yesterday, Parliament re-
en. Wolfgang Schwanitz, the
ecurity chief. It also voted
is own ranks several old-
ommunists, such as former
member Guenther Scha-

Great attractor' glob of galaxies found pulling at our Milky Way

New York Times News Service

Astronomers yesterday reported that they had confirmed the existence of one of the largest concentrations of galaxies and matter ever found.

The finding could change the way astronomers think about the structure of the universe.

Called the "great attractor" and 150 million light-years from Earth, the huge structure exerts a steady gravitational pull on the Milky Way and millions of other galaxies.

Most of the galaxies are not actually moving toward the attractor, because its pull is not strong enough to overcome the basic tendency of all objects in the universe to move away from one another.

The discovery confirms theories discussed in astronomy for the last several years that the basic objects in the universe are far larger and more complicated than astronomers had imagined.

The objects are not simply galaxies or clusters of them, but huge "continents of galaxies" a hundred times larger.

Astronomers typically study small segments of the sky, and that is one reason they did not see the great attractor before.

"With this one, we could not see the forest for the trees," said Dr. Alan Dressler of the Carnegie Institution of Washington, a leader of the team that made the discovery.

"It was literally so big, covered so much of the sky, that no one looked for it."

Dressler presented the finding yesterday at the annual meeting of the American Astronomical Society in Crystal City, Va.

Experts called it the critical, convincing piece of evidence that such attractors exist.

And Dressler said he expected that there were many others.

Astronomers do not know what the great attractor is made of.

But they believe that it has much "dark matter," matter that cannot be seen because it gives off no light, as well as a very large, dense cluster of galaxies that can be seen.

The galaxies in the attractor do not expand away from one another as those in the rest of the universe do, but instead are "falling" together into a region that is hundreds of millions of light-years wide.

Parts of it can be viewed from Earth with telescopes but not with the unaided eye.

The region covers a third of the night sky in the Southern Hemisphere, from the constellation Centaurus on one side to Pavo and Indus on the other.

"This finding and ones related to it are very dramatic for the universe," said Dr. David Schramm, an astrophysicist at the University of Chicago.

"It says that the fundamental size of the objects in the universe is not galaxies or clusters, but is much bigger. It changes our whole view of how you make such huge objects."

The great attractor is one of a number of huge structures whose existence has been theorized in the past few years, including the "great wall," which is thought to be a great "sheet" of galaxies stretching for a billion light-years.

Such objects present great problems for the theories of the universe that were standard only 10 years ago.

Those theories depended on the idea that the great event of creation, the big bang, spewed out a uniform burst of matter in every direction; from that material, lumps formed by gravitational attraction eventually became the stars and galaxies.

Until recently, all the galaxies in the universe were believed to be racing apart from one another at the same rate.

But a decade ago it was discovered that the Milky Way and other nearby galaxies were accelerating in concert toward another region in the universe.

The speed of the movement, 400 miles a second, was also surprising.

It suggested that these galaxies were being drawn toward something.

Milky Way spins around oval, not spherical, core, new study demonstrates

Associated Press

WASHINGTON — The Milky Way galaxy, home of the sun and the Earth, has a core shaped like a football instead of a perfectly spherical center as many astronomers have long believed, according to a new study.

Astronomers at the University of Maryland and Princeton University yesterday announced the discovery of evidence that the spiral arms of the Milky Way actually rotate around an oval center, causing the sun to follow an elliptical path in its 200 million-year orbit of the galaxy center.

Leo Blitz of the University of Maryland said the discovery shows that the Milky Way is a so-called barred spiral galaxy. This means that the spiral arms, composed of stars, gas and other matter, flare out from a so-called bar structure of stars and gas at the center. In a normal spiral galaxy, the arms curve out like spokes from the very center.

"It has been something of a holy grail for astronomers to determine if the Milky Way is a barred spiral or a normal spiral galaxy," said Blitz. "This study shows it is barred."

The Milky Way galaxy is disk-shaped with a large bulge in the middle. Seen from above, arms flare out like curved spokes, creating a spiral appearance. The galaxy has a diameter of about 100,000 light-years and a thickness, seen from the edge, of about 4,000 light-years.

A light-year is the distance light will travel in a year, about 6 trillion miles.

The sun and its solar system, which inciudes the Earth, are located in one spoke, about midway out from the galaxy center. That spoke, along with the four other arms of the Milky Way, rotate about the galaxy core. Though the rotation rate of the arm at the sun's location is about 600,000 miles an hour, the galaxy is so large that it takes about 200 million years to complete one rotation, or orbit.

Because the sun is away from the middle of the galaxy — about 25,000 light-years from the center — the galaxy is seen edge-on from the Earth. This means that stars, clouds and dust obscure the view of most of the Milky Way. And this has blocked astronomers from being able to determine the shape of the galaxy center directly.

Blitz and David Spergel of Princeton overcame this problem by examining the movement of hydrogen gas clouds in the outer regions of the Milky Way, an area called the galactic halo that surrounds the Milky Way like a globe.

Spergel said the hydrogen movement was first studied about 15 years ago, but the motions were never well understood. He said the new study, developed with the help of a computer, showed that movement of the clouds, caused by gravitational influences, could be explained only if there is an ellipsoidal center to the galaxy.

"The center is like a football," said Blitz. "There is absolutely no question about the data on this."

Since, according to the study, the sun and its solar system move about the galaxy in an ellipse instead of a circle, the sun's distance from the galactic center will change regularly over time. Right now, Blitz and Spergel said the sun is about halfway between its closest approach to the center and the farthest point of its orbit.

The sun will reach its outermost point from the galactic center in 25 million years.

SAN DIEGO UNION JUNE 12, 1984

A physicist's dream not of this universe

'It's probably more likely than not that the laws of physics allow us to create a universe,' says Guth

By David Graham
Staff Writer

CAMBRIDGE, Mass. — It may take only 20 pounds of matter, and reliance on some seemingly magical properties of physics, to create a new universe in a laboratory, some scientists here believe.

In fact, the possibility that people could create universes raises the provocative question of whether our own universe was generated by someone at work in an obscure basement lab in some other universe.

"That's a possibility we can't rule out," said Alan Guth, a theoretical physicist at the Massachusetts Institute of Technology. "It's probably more likely than not that the laws of physics allow us to create a universe."

It may sound implausible, people creating what Guth calls "child" universes. And it might seem a risky or sensational question for scientists to pursue.

But Guth, 42, is one of the most respected theorists around. A decade ago, as a postdoctorate fellow, he advanced his "inflationary" theory to explain how the universe expanded at a tremendous speed within a fraction of a second after the big bang. The theory solves riddles about why the universe appears as it does.

Guth's curiosity about the early universe led him to consider universe creation.

There is something odd, seemingly magical, that happens in physics at the tiniest of scales, what physicists call the quantum scale. That is where Guth and his colleagues are looking for the source of a child universe. It is a study that defies intuition, a study where answers come from the counterintuitive properties of arcane geometry and mathematics.

"It doesn't seem to require very much energy to create a universe," Guth said.

In theory, the process would require something on the order of the following:

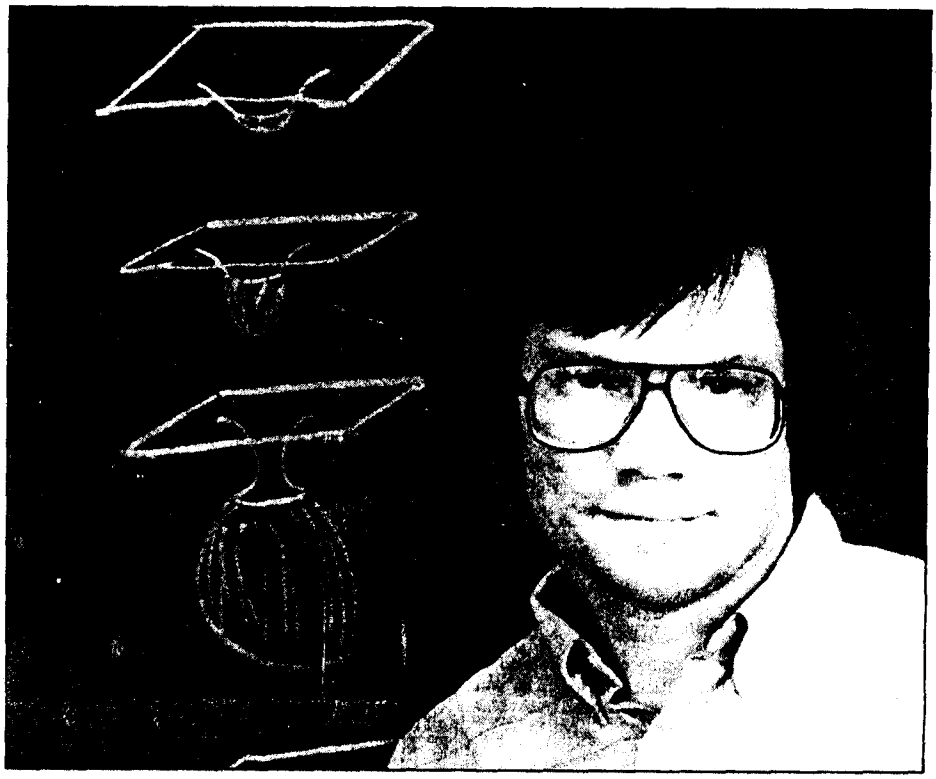
- Compress about 20 pounds of matter to an enormous density and pressure.
- Heat it to temperatures 10 to the 27th power degrees Fahrenheit, or millions of times hotter than the sun.
- Allow the material to cool quickly into what scientists call a "false vacuum" state, its size reduced to a tiny 10 to the minus 24 centimeters in diameter — smaller than the diameter of a proton of an atom.

In Guth's scenario, this supercooled false vacuum sometimes will expand and create a curved space that will inflate into a new universe, connected to ours only by a black hole, an intense vortex of gravity from which not even light can escape.

An instant later, the child universe would disconnect from its black hole umbilical connection, and the parent and child would part.

There could be no communication between the two.

"If it did appear, it essentially disconnects from the observable universe and produces an isolated and closed universe," Guth said. "Once they disconnect, there would be no contact."



Associated Press

Alan Guth at a blackboard showing a child universe separating from a parent one.

The child would exist outside this one, but it would not hit the parent as it expanded. It would exist in some space beyond, although the physicists are nebulous in describing such a region.

Thus far, Guth's research on how to mechanically create a universe is restricted to thought, calculations and conversations with colleagues Edward Farhi, an MIT physicist, and Jemal Guven, a graduate student.

"We want to be able to imagine a machine that could create a universe," Farhi said. He imagines the machines working in a sort of assembly line to produce the rarified conditions of intense heat and pressure scientists believe would be necessary.

Guth quickly cautions that the technology is difficult to conceive of now.

But someone, perhaps hundreds of years into the future, might try, Guth speculated. Such a feat might make fair claim to being the ultimate science experiment.

After its birth, the new universe would not be like the complex one in which we live.

As it expands at inception, the child universe would create its own matter, Farhi said. Its cooling energy would be translated into matter, according to Einstein's theory E=mc2, which explains how energy can be converted into matter.

Although the scientists do not know what the rules of physics might be in the child universe, they imagine they might be similar to those in this one and that the child's matter might one day give rise to galaxies and even life.

They still need to find the equations that they believe would establish that physics allows such cosmic parenting.

"We want to understand how far we can press the laws of physics," said Farhi.

The MIT collaborators have published one paper on their work, "An Obstacle to Creating a Universe in the Laboratory," in *Physics Letters*.

"Previously, before 10 years ago, it would have been impossible to ask the question of whether we could create a universe," Guth said, noting advances in the understanding of physics.

"I think there's a good chance we'll get this problem licked in the future," Guth said.

"I'm optimistic," said Farhi. "It may be in one of my notebooks. It may be buried there."

Guth acknowledges that while aspects of the research have interesting insights into fundamental physics, "It's certainly on the edge. I probably couldn't get away with this if I hadn't proven myself," he said.

The possibility of creating universes is "an extremely interesting question from a technical point of view," said Michael Turner, theoretical physicist at the University of Chicago.

"It has interesting implications for the early history of this universe and whether many baby universes may have been spawned off at this early time."

Temperatures would have been hot enough at the creation of our universe, so that child universes might have been spawned the way the MIT collaborators imagine might be possible, Turner said.

What could be done with a new universe?

"Nothing," Guth said. "There could be no contact."

Is it ethical to create a new universe which might give rise to life that might feel pain?

"That question at this point is purely hypothetical," Guth said. "I think we have eons to worry about it."

Added Farhi: "It's a technical problem. I hope it works. It would be amusing."

SAN DIEGO UNION JUNE 12, 1989

A physicist's dream not of this universe

'It's probably more likely than not that the laws of physics allow us to create a universe,' says Guth

By David Graham
Staff Writer

CAMBRIDGE, Mass. — It may take only 20 pounds of matter, and reliance on some seemingly magical properties of physics, to create a new universe in a laboratory, some scientists here believe.

In fact, the possibility that people could create universes raises the provocative question of whether our own universe was generated by someone at work in an obscure basement lab in some other universe.

"That's a possibility we can't rule out," said Alan Guth, a theoretical physicist at the Massachusetts Institute of Technology. "It's probably more likely than not that the laws of physics allow us to create a universe."

It may sound implausible, people creating what Guth calls "child" universes. And it might seem a risky or sensational question for scientists to pursue.

But Guth, 42, is one of the most respected theorists around. A decade ago, as a postdoctorate fellow, he advanced his "inflationary" theory to explain how the universe expanded at a tremendous speed within a fraction of a second after the big bang. The theory solves riddles about why the universe appears as it does.

Guth's curiosity about the early universe led him to consider universe creation.

There is something odd, seemingly magical, that happens in physics at the tiniest of scales, what physicists call the quantum scale. That is where Guth and his colleagues are looking for the source of a child universe. It is a study that defies intuition, a study where answers come from the counterintuitive properties of arcane geometry and mathematics.

"It doesn't seem to require very much energy to create a universe," Guth said.

In theory, the process would require something on the order of the following:

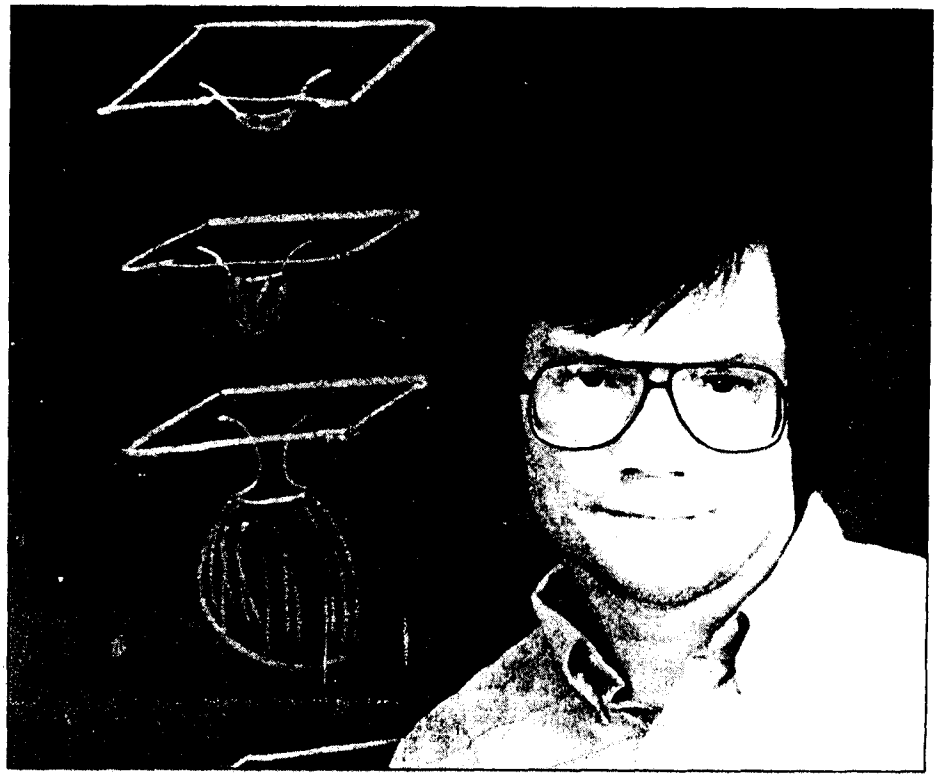
- Compress about 20 pounds of matter to an enormous density and pressure.
- Heat it to temperatures 10 to the 27th power degrees Fahrenheit, or millions of times hotter than the sun.
- Allow the material to cool quickly into what scientists call a "false vacuum" state, its size reduced to a tiny 10 to the minus 24 centimeters in diameter — smaller than the diameter of a proton of an atom.

In Guth's scenario, this supercooled false vacuum sometimes will expand and create a curved space that will inflate into a new universe, connected to ours only by a black hole, an intense vortex of gravity from which not even light can escape.

An instant later, the child universe would disconnect from its black hole umbilical connection, and the parent and child would part.

There could be no communication between the two.

"If it did appear, it essentially disconnects from the observable universe and produces an isolated and closed universe," Guth said. "Once they disconnect, there would be no contact."



Associated Press

Alan Guth at a blackboard showing a child universe separating from a parent one.

The child would exist outside this one, but it would not hit the parent as it expanded. It would exist in some space beyond, although the physicists are nebulous in describing such a region.

Thus far, Guth's research on how to mechanically create a universe is restricted to thought, calculations and conversations with colleagues Edward Farhi, an MIT physicist, and Jemal Guven, a graduate student.

"We want to be able to imagine a machine that could create a universe," Farhi said. He imagines the machines working in a sort of assembly line to produce the rarified conditions of intense heat and pressure scientists believe would be necessary.

Guth quickly cautions that the technology is difficult to conceive of now.

But someone, perhaps hundreds of years into the future, might try, Guth speculated. Such a feat might make fair claim to being the ultimate science experiment.

After its birth, the new universe would not be like the complex one in which we live.

As it expands at inception, the child universe would create its own matter, Farhi said. Its cooling energy would be translated into matter, according to Einstein's theory E=mc2, which explains how energy can be converted into matter.

Although the scientists do not know what the rules of physics might be in the child universe, they imagine they might be similar to those in this one and that the child's matter might one day give rise to galaxies and even life.

They still need to find the equations that they believe would establish that physics allows such cosmic parenting.

"We want to understand how far we can press the laws of physics," said Farhi.

The MIT collaborators have published one paper on their work, "An Obstacle to Creating a Universe in the Laboratory," in *Physics Letters*.

"Previously, before 10 years ago, it would have been impossible to ask the question of whether we could create a universe," Guth said, noting advances in the understanding of physics.

"I think there's a good chance we'll get this problem licked in the future," Guth said.

"I'm optimistic," said Farhi. "It may be in one of my notebooks. It may be buried there."

Guth acknowledges that while aspects of the research have interesting insights into fundamental physics, "It's certainly on the edge. I probably couldn't get away with this if I hadn't proven myself," he said.

The possibility of creating universes is "an extremely interesting question from a technical point of view," said Michael Turner, theoretical physicist at the University of Chicago.

"It has interesting implications for the early history of this universe and whether many baby universes may have been spawned off at this early time."

Temperatures would have been hot enough at the creation of our universe, so that child universes might have been spawned the way the MIT collaborators imagine might be possible, Turner said.

What could be done with a new universe?

"Nothing," Guth said. "There could be no contact."

Is it ethical to create a new universe which might give rise to life that might feel pain?

"That question at this point is purely hypothetical," Guth said. "I think we have eons to worry about it."

Added Farhi: "It's a technical problem. I hope it works. It would be amusing."