

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info according to a new report scientists are now on the verge of deciphering the mystery of dark matter researchers working with the data from the Planck satellite have detected an intense form of radiation called synchrotron radiation from the center of the Milky Way galaxy scientists at the Niels Bohr Institute have interpreted these radiation emissions as evidence of dark matter

professor pavel new Celski says of the discovery we know from theoretical predictions that the concentration of dark matter particles around the center of galaxies is very high and we have a strong argument they can collide there and in the collision electrons and positrons are formed these electrons and positrons start to rotate around the magnetic field at the center of the galaxy and in doing so produced this very unusual synchrotron radiation but

is this really a plausible explanation
for synchrotron radiation in space
astrophysicists are far from observation
that various results that they that they
come up with demand that would be more
matter in galaxies
for example than they actually observe
and so they postulate Dark Matter to
allow their results to all be explained
by gravitation alone in a sense you
could say that before it was observed
Uranus was dark matter because its
position was postulated purely by
gravitational theory and then they find
it so before it was found it was in a
sense dark matter but that they're
taking this to ridiculous extremes now
but it's the same sort of argument that
they're using here we've got some
results we need more actual matter to
explain them so it must be there it's
just that we can't see it you can't see
dark matter dark matter is invisible and
it's invented to save theory so wherever
they see something that doesn't fit the
theory they can always put some dark

matter there and then they'll make the theory fit what they see so dark matter is kind of a blank check that they can write for it whenever the theory fails they can write a check for dark matter and then they'll say oh this this proves that there is there's a circularity to it that we prove the existence of dark matter because we assumed it was where it'd be emissions of synchrotron radiation have long posed an unsolved mystery for mainstream astrophysicists the mystery resides in the spectacular acceleration of charged particles beyond anything astronomers had anticipated in space synchrotron radiation is basically radiation that's given off by charged particles that are spiraling in a magnetic field and technically it refers to x-rays from products that are moving near the speed of light but if you have particles that are moving much less than the speed of light they still give off radiation it's just a de loarre energy level so it's radio instead of

sree the problem astrophysicists have is
that they have this to do against
electricity and space and so in order to
get the charged particles to spiral in
the magnetic fields they have to do it
with some mechanical means which is
usually collisions so they
metaphorically they bang rocks together
to get electricity if it were up to
them I guess they would light
streetlights with by falling rocks
astrophysicists mostly just ignore the
synchrotron radiation once in a while
they'll admit it like this time when oh
there's synchrotron radiation at the
core of the Milky Way wonder how many
rocks reacted banging together the
discovery of synchrotron radiation
fulfilled the prediction of plasma
physicist Hannes Alfvén as early as 1950
Alfvén claimed that electric currents
moving inward along the arms of the
Milky Way would generate stupendous
electric discharge and synchrotron
radiation would be its defining
signature Alfvén's

first insight back and I guess in the 20s was that plasma responds to magnetic fields and he had this idea that if you have a perfect conductor the magnetic field will become frozen into it and so astronomers assumed that any plasma in space will be a perfect conductor and the magnetic field is frozen in and any charge separation will be immediately canceled when the charges come back together so you can't have sustained electric fields in space well at first they repudiated that is further experiments showed that plasma isn't a perfect conductor and it has a small resistance and it does sustain electric fields the experiments since then and in space have shown that plasma is extensively electrically active if especially if you have two clouds of plasma moving relative to each other they will induce electric fields and the electric currents in each other so then you get all the Effects of electrified plasma like currents and filamentation magnetic

fields double layers and especially
acceleration of charged particles and
synchrotron radiation the
electromagnetic effects hip knee
universe have got to be brought to the
forefront in the researches of all
astrophysicists they've got to be
alongside gravitation if you like
they've got to realized that yes
gravitation that counts for a lot and
tells us a lot but what about these
electromagnetic forces these ideas have
been around we've got the work of
berkland followed up by our plane and
then again in more modern times by
Antony perhaps where they've got all
this theory they've got all these
experiments to back it up not
mathematical theory just they've got
experience to back it up this stuff has
to come through
I'm not saying gravitation doesn't have
a role to play but they're not going to
explain things if they don't bring in
the electromagnetic force for continuous
updates on space news from the electric

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Welcome to Space News from
the Electric Universe,
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In recent years, one of the
great shocks in space science
has been the discovery of just how
incredible the electromagnetic energies are
at the gas giant Jupiter.

Astronomers had long known that Jupiter possesses
an extensive and powerful magnetic field,
as well as tremendous X-ray
aurorae, super-fast winds,
and a mysterious, enduring anticyclonic storm
in the region called the Great Red Spot.

However, NASA's Juno mission has
shattered all conventional ideas
about the mechanisms
behind these phenomena.

NASA scientists have acknowledged
that the accepted model of a dynamo
deep within the planet,
producing its magnetic field,
cannot explain what they've
actually discovered.

Likewise, according to the Juno
papers, the data on Juno's atmosphere,
ionosphere, and interior has
provided nothing but surprises.
Today, in part two of his 10-part
series Eye of the Storm,
author Andrew Hall
explores the question,
what does the electrical
Jovian environment tell us
about the atmospheric and weather
phenomena throughout the solar system,
including on Earth?
Jupiter is our largest neighbor
and generates the biggest electromagnetic
field in the solar system except for the Sun.
It has a thick,
turbulent atmosphere
with swirling storms producing
winds of supersonic speed,
and lightning arcs that dwarf
the puny sparks we have on Earth.
So right off the bat, we see
attributes of electrical processes
like the processes we are exploring
in Earth's primordial past.

Nothing exemplifies the electrical nature of Jupiter more than its bands of counter-flowing winds and the giant swirl known as The Great Red Spot.

Electric winds occur when an electric field potential exists that motivates ionic species in the air to move.

Positive ionic species are drawn in one direction, and negative ions and free electrons are drawn in the opposite direction, as dictated by the polarity of the electric field.

The ions may be only a small percentage of the bulk mass of air, but electrically they form a current — moving charge that will drag neutral molecules with it.

The result of these opposing motions are unipolar winds.

A positive wind from one direction and a negative wind from the other attracted to or pushed away from the "electrodes" in the circuit.

If the wind occurs in the
atmosphere surrounding a planet,
the winds will circumnavigate
the globe in alternating bands
in a direction transverse to the
magnetic polarity of the planet.

This is the effect on display
in Jupiter's atmosphere
as well as other planets in our solar
system with strong electric fields.

The "electrodes"
are nodal regions
where current flows through the
planet's atmospheric sheath and crust.

That's why they appear
at certain latitudes.

As these electrodes' unipolar
winds mix in whirlwinds,
the mixing of ions
results in a plasma,
where, with much condensation,
violent arcing, and swirling,
they electrically adhere to form
molecular bonds and precipitate.

This is what we
know as a storm.

The primary electrodes in a planetary circuit are around the magnetic poles, and the evidence of the electric field strength is in the glow-mode currents called aurora.

Another type of "electrode" is an accumulation of charge density from volcanic eruption, where discharges internal to the crust expel huge volumes of charged pyroclastic dust into the atmosphere and spread hot magma across the land.

Another "electrode" is where the planet's electromagnetic field produces regions of high flux from cosmic rays, driven by stellar winds or perhaps some other motivating force.

Charged particles spiral down magnetic lines of flux and charge the crustal surface creating electrode spots.

In every case, discharge follows the geometry of a plasmoid Earth,

for the "Blue Marble" we
live on is just a bubble,
or drop of matter encapsulated
in an electric circuit.

The plasmoid circuit is what matters
— it's what controls everything —
and it flows through the atmosphere
and crust to create the capacitance
that motivates weather,
earthquakes, and volcanoes.

Uni-polar winds are drawn to the electrode
spots like water flows to an open drain.

Only a solid crustal surface
provides no hole to sink into.

The winds are constrained
by the vacuum of space above
and the solid crust
(or ocean) below.

They circulate in induced vortex
currents to mix in a plasma storm,
recombining charged species into neutral
matter that rains to the surface.

Storms are evidence of
currents induced by capacitance
in the layers of atmosphere
and crust of the planet.

It doesn't matter if it's Earth, Jupiter,
or an exoplanet yet to be discovered.

A planet with an active
electromagnetic field
will form a spherical layer of
capacitance in its atmosphere and crust
through which loops of magnetic flux
will induce ring currents to flow
transversely through
those layers.

A ring current is the
simplest form of circuit.

In Nature, where there are no
insulating layers to guide current flow,
ring currents form naturally.

Unlike a Birkeland
current in space,
where current flows from one body to another
along the electric field between them,
a ring current simply
circulates on itself.

Ring currents rule the
universe, not gravity.

It's because magnetic
fields are closed fields
— they form closed

loops between poles,
and the magnetic flux induces
current to flow along these loops.

The induced current follows
to form ring currents.

Nature can't stop itself
forming ring currents.

They exist at the atomic
level, the molecular level,
the planetary level, the stellar level,
and the Galactic level of our cosmos.

Because Earth's ring
currents have no end,
they are infinitely long conductors
that induce current from the solar wind.

Because they are infinitely long, there
is no limit to the current they can induce.

The currents form a winding
that, like a transformer inside the
Earth, raises potential in the circuit.

The result is an internal electric
field that's in opposition
to the ambient electric
field of the solar system.

Earth's crust and atmosphere is
the 'almost' neutral boundary

— the dielectric plates between
the internal and external fields
that seek a charge balance.

Any change in the external field
causes a response internally,
because the internal electric field acts like
a mirror, reflecting a feedback response.

The mirroring effect is
caused by capacitance
because if charge builds on
one plate of a capacitor,
the other plate responds by building
an equal and opposite charge.

So change takes place both
internally and externally,
and the neutral balance
between — where we live —
is disrupted, until the internal and
external fields come back to equilibrium.

Of course, there's
never an equilibrium.

Because Earth is a sphere,
each capacitor plate of the sphere has
a bigger area, as a function of radius,
so there can never be two layers with
equal charge density across equal areas.

Layers of Earth and atmosphere are
always building charge and discharging.

It's physically
impossible not to.

This is the wisdom of the ancients,
which today we confuse with mysticism:

"As above, so below"

has a simple, classical
scientific meaning.

It refers to the capacitance in Earth's
circuit and the feedback (or reflection)
inside the Earth caused by whatever
is going on in the solar system.

To see this in action,
one need only look at the extremely
intense current loops that form on the Sun.

These are called coronal loops
and are produced by the same kind
of capacitance in the circuitry
that causes weather
on Jupiter and Earth.

The difference isn't
in the circuitry,
the difference is in the plasma
state the atmospheres are in.

The Sun is almost

completely ionized,
whereas Earth and Jupiter have
partial plasma atmospheres.

The ionized atmosphere of the Sun
produces ray-gun like currents,
whereas partial plasma
atmospheres like Earth and Jupiter
produce more diffuse hydrodynamic
currents we see as wind and clouds.

The ring currents are currents of excess
charge the solar circuit is shedding.

As in the Sun, the interior
Earth layers have less area,
so as charge accumulates by induction,
it develops greater charge density
in the ground and must shed current
outward through the atmosphere.

In a storm on Earth, the
ambient electric field reverses,
from a 200 kilovolt "clear
weather" current flowing outward,
to a 500 Megavolt current
aimed at the ground.

The Earth beneath a storm becomes
positive to a negative sky,
as accumulated charge

finds a path to discharge.

Ring currents also produce
a magnetic field inside them
that is stronger than the
magnetic field outside.

Basically, it's because the geometry
of a ring causes magnetic flux
to disperse in a greater area
outside the ring than inside.

Therefore, there is such stronger
magnetic flux inside the loop
that induces a
secondary current flow,
perpendicular to
the coronal loop.

Current flows through the atmosphere and crust
both in the vertical columns of the loops
and horizontally in current
induced by the loops.

These currents travel through layers
of atmosphere and Earth's crust.

Another property of ring currents is
very strange and counter-intuitive.

When we look at a ring current generated
in a looped wire with a battery
— generating, say, one amp,

any two points in the loop will
measure a current of 1 amp.

But if we generate the same amount
of current in the wire by induction,
by passing a magnet
through the ring,
the current at any two
points may be different,
even though the sum of all current
in the wire still adds to one amp.

The induced current
may be different
where the wire's contact with
magnetic field is weaker,
but elsewhere in the ring the magnetic
field would be diametrically stronger
and generate current that
makes up the difference.

The result is that current density may form
in one part of the ring and not in another,
or in one part of the ring
it may even flow backwards
— a current of
opposite polarity.

Coronal loops on the
Sun display this.

NASA imagery shows plasma bolides
shooting through rings at varying speeds
and sometimes even
reversing direction.

On Earth, current rings formed
by the geomagnetic field
also display this
inductive behavior,
developing a severe storm at one leg
while doing nothing at the other.

It also allows direct current inputs from
induction to become alternating currents,
as currents in a ring will oscillate
as charge stores and discharges
in the capacitance
of the system.

Weather forms where currents pass
through the atmosphere and crust.

A whirlpool of mixing
plasma forms storms
where current draws up channels of
air and positively charged ions.

Coronal loops generate winds as
ionic matter follows electric fields,
dragging bulk air mass with it.

Ultimately, the winds form jet streams

and must thread in three dimensions
through the inflow and outflow,
updraft and downdraft regions
formed by coronal loops,
like rope wound into a knot.

If you look at the last image of an
electromagnetic wave in a double layer,
you can see, first how a double
layer of charge — a capacitor —
will produce waves of
electromagnetic peak and trough,
like rogue waves on the ocean.

If one also includes spherical geometry, as
in the capacitance of planetary circuits,
then it becomes simple deduction
that the geometry results
in higher charge concentration
inside Earth than outside
and will produce
these kinds of waves.

It cannot "physics-wise" be otherwise.

So waves like this form naturally,
consistently, and unavoidably.

And that results
in ring currents
— coronal loops, magnetic

field lines inducing current —

call it what you like.

It's electric.

In part three we'll see how ring currents

produce storms on Jupiter and Earth

and how they progress in fractal

elements from a common thunderstorm

to a storm like the Great

Red Spot on Jupiter.

Thank you!

Stay tuned for part 3

Welcome to the
Electricity of Life
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As bees drink sugary nectar and collect
pollen for its nutrients and fat,
these interactions between
pollinator and plant
include evolutionary adaptations
to electrical science.

A high school student
from the future
would surely mention at least
two electrical interactions
when describing how bees
interact with flowers.

As a bee flies it
sheds electrons,
accumulating a positive charge
or electron receiving state.

A voltage gradient in the air of
about 100 volts for every meter up
causes the petals of many flowers
to accumulate a negative charge
in relation to the

air around them.

In a manner familiar to any human who has
felt static electricity on their hair,
the tiny hairs on a bees' body
bend slightly towards the flower.

These body hairs on bees
are connected to neurons
especially sensitive
to this interaction.

When bees land, this static
effect from their hairs
also attracts pollen
like a swiffer pad.

The bee will comb her body to
store this pollen more securely
on regions of the back legs called
the corbicula or pollen basket.

The flower will still have a lower
charge of electrons after this visit,
for about 100 seconds
for example.

This decreased charge may
serve as another indicator
that bees use to determine which
flowers have just been visited.

On a different note, these tiny

creatures see our shared world
painted with a slightly different
range of colors than we do.

The vibration we perceive as red
is simply too slow and wide of a
waveform for their eyes to perceive.

Meanwhile, they can see much faster
and tighter wavelengths of vibration
than most humans, which
we call ultraviolet.

Consider this when you see flowers that
appear to our eyes to look rather simple.

They may have additional features
that our eyes simply do not see.

Some flowers are more predominantly red
because evolutionary relationships
have led them to
become more adapted
to attracting hummingbirds
or butterflies for instance.

Bees are likely just
one of many insects
which use electrically sensitive
hairs for different purposes.

We simply may not allocate money and time
towards the scientific study of such things.

Thanks for watching.

And next time you see bees in your
garden or among wild flowers,
consider how these creatures see the world
and how they feel the electricity of life.

This “Playing with thinking” story arc about playing with larger and faster thinking, was prompted by the realization that a Universe of electricity and plasma is more energetic and powerful than one of gravity and gas.

I’ll continue with a further insight, a Universe composed of plasma is also more intricate.

By that, I refer to theories of complexity that have been developed in recent decades.

Complex evokes connotations of being complicated, of parts so interrelated as to be difficult to understand. Plasma phenomena go a step beyond

complicated. The parts are so interlaced as to be impossible to understand separately.

Intricate evokes that connotation, so I’ll use that term. In this episode, we’ll be playing with intricacy thinking. Plasma systems, in the sense of plasma physics, are not the only intricate systems. Biological systems are also intricate.

The similarities are why Irving Langmuir, an early investigator of what had been called radiant matter, changed the name to plasma.

So it shouldn't be a surprise that a changing worldview in physics would be

accompanied by a changing worldview in biology.

One arena of this change is the theories of evolution.

The evidence gathered for Darwinian

evolution has never fit well with that

theory. Gradual emergence of species by way of

natural selection of random mutations of genes.

The fossil record, which is built

uneasily on the world view of

uniformitarianism, is nonetheless one of

species emerging suddenly, being abundant

over their existence without much

variation, and suddenly becoming extinct.

There are no intermediate species as

uniformitarian metaphysics expects.

Until complexity theory appeared, there were

few terms to describe this at a theoretical level.

Now, in reflection of plasma phenomena, we

can talk of discontinuities, attractor states,

emergent orders, and irreversibility. We

know much more about systems that are

open and far from equilibrium. They are driven, as

distinguished from inertial, and subject to threshold

discontinuities. For example, the state of a

plasma discharge will jump from dark mode to

glow mode, to arc mode as voltage and current density

increase. As those values decrease, the jumps may

occur at lower values, introducing

hysteresis into the equation of state.

The instabilities that Tony Peratt, who

is a plasma physicist at Los Alamos

National Laboratory, has described in

pulse power experiments, undergo

sequences of quasi-stable steps. They

evolve by suddenly changing their

morphology, often from simpler forms to

more complex forms with greater order.

The sequences are irreversible, like

frying an egg - the egg can't be unfried.

That describes not only the fossil record,

but recent observations that have been

ignored for lack of a theoretical framework.

Here are a few examples. In the early 1700s,

William Sharon, the British consul to

Turkey, brought some ragwort plants from

Mount Aetna back to the Oxford biological

garden. The seeds escaped and the plant,

now called Oxford ragwort, spread throughout

the city. The railroad came to Oxford in 1844 and

provided a bed of Mount Aetna-like

gravel that ran throughout Britain.

Trains provided an efficient suction mechanism

to carry the seeds. The plants spread. In some

cities the ragwort crossed with the local groundsel species, despite having only 20 chromosomes to the groundsel's 40. Hybrids bred true, but were often sterile with respect to the parents, the definition of a species. Voila, instantaneous widespread speciation.

In York, the Oxford ragwort hooked up with local groundsel species and produced Yorkwort.

In North Wales, the meetup produced Welsh groundsel with 60 chromosomes. A species appeared in Edinburgh for a while, but died out.

There are many similar stories with other plant species, which are known to be rather promiscuous, but also with animal species.

Chris Thomas, a Professor of Conservation Biology at the University of York, UK, has documented many instances of modern speciation in his book, "Inheritors of the Earth." He claims that the rate of speciation may be keeping pace with that of extinction.

Much of the increase in both seems to be adaptations to the increased mobility of humans. As in the case of the Oxford ragwort, that mobility both deliberate and inadvertent, is introducing species to

other species and habitats that they would otherwise not encounter.

The interactions between species and habitats lead to jumps in preferred states, or resonances in their relationships producing sudden and adaptive rearrangements of genes.

The evidence to support any theory of speciation, the fossil record, is that of stepwise appearance with subsequent fixity. This doesn't fit well with

uniformitarian assumptions. In 1940

Goldschmidt, the fruit fly guy,

after years of mutating the flies and getting no new species, said it out loud.

He was, in today's lingo, "cancelled".

In 1950 Schindewolf, a respected paleontologist, said it, he was cancelled.

In 1972, Gould and Eldridge said it,

called it "punctuated equilibrium",

and insisted it was still Darwinian,

because "microevolution". They

barely escaped being cancelled.

The evolution wars are not really about biology.

They're about faith, and fervency, and fire

for heretics. From the beginning Darwin's

supporters had misgivings about his theory.

Thomas Huxley, called "Darwin's Bulldog" for his passionate defense of the theory, deplored the many faults with it. He nevertheless defended it as the only scientific or naturalist proposal.

Religious passions immediately dominated the controversy and alternative ideas were sidelined. But there were alternative ideas that better fit the evidence. In 1879 Samuel Butler proposed that species undergo a self-directed development. In 1887 E.D. Cope proposed that species design themselves.

This idea was dismissed as ridiculous, apparently because it was assumed to require conscious choice. Imagine bacteria voting to rearrange their DNA.

But now we've become aware that complex systems reflexively organize in series of discontinuous forms. The evolution of plasma discharge instabilities for example. It's called emergent order, an intrinsic property of complex systems distinct from ideas of extrinsic, or imposed order such as creationism or intelligent design.

The order emerges from the interaction of relationships that have preferred

states, similar to the emergence of nodes

in systems of interacting waves, or

flower blossoms from tiny seeds.

No god or intelligent designer or

reified natural law for that matter,

which mistakes an abstraction for a

physical entity, imposes it from out-

side the system of relationships.

An ensemble of bodies will exhibit properties that

aren't present in the individual body and that can't be

reduced to simpler conditions. This

has been called "irreducible complexity".

Intrinsic attractor states and resonances will

appear in the interaction of the relationships as

islands of organization. In biological words,

species. In retrospect, the systems will appear to

have been designed with purpose, but

in prospect they will not be predictable.

A theoretical example of this is the NK

model of fitness landscapes, developed by

Stuart A. Kaufman and described in "The Origins

of Order". Instead of thinking of genes as static

building blocks of species, intricacy thinking will

think of them dynamically in relation to other factors,

epigenetic relationships and habitat interactions,

for example. These relationships are far from

equilibrium and are driven from one quasi-stable state to another. In view of the behavior of intricate plasma systems, we should expect attractor states in the relationships and threshold events.

In biological words, stepwise adaptive speciation, where it appears that species design themselves.

At the genetic level, the distinctions between species become ambiguous.

In more cases than in the outright appearance of new species, hybridization results in gene mixing. The hybrid will have some characteristics of both species and it may still be fertile, or have reduced fertility with the parents. It will be classified as the variety instead of a new species. Still, the characteristics exhibited will be specific, not intermediate or random.

The critical difference lies in the difference of thinking between gene mixing and relationship interactions.

Nor is stepwise speciation itself a uniform process. There apparently have been several episodes of mass extinction followed by mass speciation.

Although here, one must keep in mind the likely scrambling of the conventional

fossil record, once global electrical disruptions are introduced. Species that live side by side and died en masse in a global tsunami, could be sorted in flowing sediment into separate strata, along with radiometric-altered minerals, and after deposition uniformitarian presumptions would place them millions of years apart. A more detailed description of such a process was covered in the previous episode of this story arc, "Playing with Power Thinking".

The actual sequence of events could be quite different. Possibly all conforming geological strata were deposited in a short time during one global cataclysm.

An unconformity would mark the beginning of the next cataclysm.

Instead of millions of years of gradual horizontal accumulation of strata, followed by millions of years of tectonic distortion, geological formations could represent sudden transient disruptions between longer periods of relative tranquility that would leave few traces.

Uniformitarian presumptions may be interpreting the geological and fossil record exactly in the opposite way it formed.

This kind of wholesale replacement of fundamental assumptions when a worldview changes, is characteristic. Remember how the conceptual landscape was overturned when Newtonian dynamics replaced Ptolemaic kinematics. Previously accepted knowledge is discarded and no longer considered to be knowledge. Intricacy thinking is not just added on to previous thinking, it replaces much of it. Just as the Electric Universe model of cosmology replaces the standard model, larger, faster and more intricate thinking will replace the standard thinking in other scientific disciplines.

Welcome to Space News from
the Electric Universe,
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What lies at the
center of our galaxy?

For many decades, astrophysicists have
told us that at the core of the Milky Way
and 98% of all galaxies is
a supermassive black hole,
a hypothetical "region of space-time" whose
gravitational effects are so colossal
that nothing, not even
light can escape.

Scientists believe that supermassive
black holes explain the stupendous
energies and mass measured
at galactic cores
and many fantastic
electromagnetic phenomena
including powerful galactic
jets and X-ray emissions
are attributed to black
holes' influences.

In fact, for many years scientific

and educational literature
have presented the existence of black
holes as a matter of settled science
and science media routinely
report truly amazing claims
about black holes
with no skepticism.

Of course, a recent example in
2016, was the media firestorm
resulting from the pronounced
detection of gravitational waves
which was supposedly produced by two
colliding black holes a billion years ago.
Subsequent, such claims have been met
with an equal absence of media scrutiny.

However, we note that a recent
scientific paper entitled
"On the Signal Processing
Operations in LIGO signals"
should raise serious questions about the
validity of the gravitational waves claims.

The abstract of the paper authored
by UC Berkeley's Akhila Raman
states that the first five reported
gravitational waves events are,
"...very weak signals whose amplitude

does not rise significantly
during the gravitational
waves event,
and they are indistinguishable from
non-stationary detector noise."

A link to the article may be found in
the description box of this video.

Unfortunately, this paper has not received
a fraction of the media attention
that the claimed gravitational
waves discoveries have garnered.

Paradoxically, these same media
also routinely report discoveries
that would challenge the very
existence of black holes,
if astronomers and astrophysicists were
willing to entertain such a possibility.

But rather than forcing any
reassessment of foundational theory,
the discoveries are simply presented as
exciting puzzles for working scientists.

A good example is found in a recent paper on
scientists' observation of star formation
that is occurring impossibly close to the
Milky Way's hypothetical black hole.

A phys.org report introduces

the conundrum as follows,

"At the center of our galaxy, in the immediate vicinity of its supermassive black hole, is a region wracked by powerful tidal forces and bathed in intense ultraviolet light and X-ray radiation.

These harsh conditions, astronomers surmise, do not favor star formation, especially low-mass stars like our Sun.

Surprisingly, new observations... suggest otherwise."

Scientists using the ALMA telescope discovered evidence of a total of 11 low-mass stars forming within just three light years to the hypothetical black hole.

As the phys.org report notes,

"At this distance, tidal forces driven by the supermassive black hole should be energetic enough to rip apart clouds of dust and gas before they can form stars."

The lead author of the new paper says,

"Despite all odds, we see the best evidence yet that low-mass stars are forming

startlingly close to the supermassive black hole at the center of the Milky Way.

This is a genuinely surprising result and one that demonstrates just how robust star formation can be, even in the most unlikely of places."

But of course, this is not the first time that our galaxy's hypothetical black hole has mystified astronomers with its behavior.

For several years, scientists around the world eagerly awaited the approach of the gas cloud G2 to the supposed black hole.

The standard expectation was that the cloud would undoubtedly be, "devoured" as it entered the black hole's domain.

Apparently, the black hole was not feeling hungry as the gas cloud was left intact to the amazement of astronomers around the world.

Hopelessly problematic black hole behavior has been observed at all scales throughout the cosmos.

In 2012, we reported on scientists' observations of two bright radio spots in the globular cluster M22, which they interpret as two small black holes.

But Standard Theory dictates that only one black hole at most, can exist in the cluster of tightly packed stars.

The National Radio Astronomy Observatory reported of the findings,

"Simulations have indicated that these black holes would fall toward the center of the cluster, then begin a violent gravitational dance with each other, in which all of them or perhaps all but a single one would be thrown completely out of the cluster."

The author of a paper on the findings stated,

"We didn't find what we were looking for, but instead found something very surprising -- two smaller black holes.

That's surprising

because most theorists said there should
be at most one black hole in the cluster."

At a much vaster scale at the farthest
reaches of the observable universe,
we see in ever greater detail,
stupendous electromagnetic phenomena
that are not predicted nor
explained by black hole theory.

As we've reported
several times, in 2016
a Royal Astronomical Society press
release reported the discovery that,
"...supermassive black holes in a
region of the distant universe
are all spinning out radio
jets in the same direction..."

A lead investigator, professor
Romeel Dave said of the findings,
"This is not obviously expected based on
our current understanding of cosmology.
It's a bizarre finding."

As noted by Professor
Andrew Russ Taylor,
"...these black holes don't know about
each other, or have any way of exchanging
information or influencing each other

directly over such vast scales..."

In the Electric Universe,
such cosmic alignments,
completely unexpected by standard
cosmology, are both predicted and required
if the dominant organizational
force is electromagnetism.

The Electric Universe theory proposes
that space across cosmic distances
has a substructure of
twisted-pair current filaments
with stars and galaxies forming
along them like pearls on a string,
and having their spin axes
aligned along their filaments.

Space discovery continues
to confirm this prediction
including the Herschel Space
Observatory's imaging
of vast networks of
star-forming filaments.

In fact, the phenomenon of
spectacular cosmic jets,
sometimes hundreds of thousands
of light years long,
dramatically reveals the tunnel

vision of gravito-centric cosmology.

Radio astronomers who have measured the electric current in an extra galactic jet, have proposed that the black hole creates a powerful magnetic field which then produces the jet's electric current.

But mysterious magnetism will never explain the tremendous electromagnetic emissions that are now routinely detected throughout the cosmos.

As we've outlined in dozens of episodes, the concepts of Plasma Cosmology and the Electric Universe offer very different predictions and explanations for the phenomena astronomers attribute to black holes.

At the center of galaxies is not a black hole but an ultra-high density energy storage phenomenon called a plasmoid, a kind of load in the galactic electrical circuit.

In a galactic circuit, electrical power flows inward along the spiral arms lighting the stars as it goes and is

concentrated and stored in the central plasmoid.

When the plasmoid reaches

a threshold density

it discharges, usually along

the galaxy's spin axis.

The Electric Universe proposes this is in fact

the source of the stupendous cosmic jets.

Indeed, a recent scientific paper

reveals that nature is confounding

all of cosmologists' predictions about

black holes' magnetic properties.

A phys.org report on

the finding states,

"Black holes are famous

for their muscle:

an intense gravitational pull

known to gobble up entire stars

and launch streams of matter into

space at almost the speed of light.

It turns out the reality may

not live up to the hype...

University of Florida scientists have discovered

these tears in the fabric of the universe

have significantly weaker magnetic

fields than previously thought."

The unsolved mystery that

the report acknowledges is,

"...how 'jets' of particles traveling

at nearly the speed of light

shoot out of black

holes' magnetic field."

The study co-author states,

"The question is,

how do you do that?

Our surprisingly low measurements will force

new constraints on theoretical models

that previously focused

on strong magnetic fields

accelerating and

directing the jet flows.

We weren't expecting this, so it changes

much of what we thought we knew."

As noted in a public comment by

Thunderbolts colleague Chris Reeve,

"The picture which is emerging is of

the black hole as non-falsifiable.

It really does not seem to matter

how many null results accumulate;

since theorists need

them to be there,

they will continue to insist

that they ARE there."

In fact, we have noted a fundamental challenge to the very question of whether Einstein's mathematics predict black holes.

As explained by physicist Wal Thornhill

in his Space News interview on gravitational waves,

"It's a self-serving myth that Einstein's mathematics predicts black holes.

The originators of black hole theory in 1965, including Thorne, chose not to mention that Einstein's October 1939 paper which they refer to, concludes with,

"The 'Schwarzschild singularity'",

the term black hole had

not been introduced then,

"does not appear for the reason that matter cannot be concentrated arbitrarily and this is due to the fact that otherwise

the constituting particles would reach the velocity of light."

Einstein showed mathematically that black holes cannot form gravitationally

for the same reason that

stars and planets cannot.

Because the infalling matter begins

to circle the center of mass

until the centrifugal force

balances the gravitational force.

The observational evidence now

shows that stars and planets

are formed by the powerful

electromagnetic force

produced in electromagnetic pinches

along cosmic lightning filaments

in molecular clouds.

Gravitational collapse theory is now

discredited by direct observation.

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

Wow! Does a year

pass by quickly.

Last time I stood up here

we were showing you pre-models,

computer-aided design models of SAFIRE,

where we thought we were going to go.

And tonight, we're going to show you

where we've come and how we got there.

So, I'm not sure how fast I'll

go through the presentation;

I think I have what 600 slides.

No, not that many, but there's lots of

colorful ones. We're going to get into some

of the hard core engineering that goes

into designing a machine of this nature

and some of the questions that the team had

to address for us to get where we are.

So SAFIRE: Stellar Atmospheric

Function in Regulation Experiment.

It's a test of the Electric

Sun Model and this model,

we see here are we going...

OK, this is the overview...

Here we go.

The Electric Sun Model.

I was asked back in 2011

[I'm just going to give you a really quick overview for some of you that are new] by the EU and by individuals to examine this model.

And what I did is I compared it to the contemporary model and I discovered that there is a lot of disparities with the contemporary model and came to the conclusion that, at least at this time here, it's not testable.

But during this, I used a statistical evaluation tool called Design of Experiments, which you can apply to filter through hypotheses or different models to determine whether they can be tested or not.

So that's really the first couple of years, and I came to the conclusion that I think that the Electric Universe Model is based on the principle of charged plasma affecting matter of a different electrical potential.

And I came to that conclusion finally after Scott Mainwaring had given me a book, written by Crookes, where he had a cathode at one end of a small jar

and an anode at the other end

and had rubies in the center.

And when he lit it up, the

ruby started to fluoresce

and radiate, is what he called it,

what we call plasma discharge.

But the rubies themselves were not part of

the circuit they were just in the plasma

and what it indicates is that there's

certain elements that we know now

do not want to climb or fall to the

electric potential of its environment,

when that happens that's when you

end up with a plasma discharge.

And it was based on that that I came to

conclusion that we may be able to test this.

So Phase 1 was a proof of concept,

and it was really just to see

if we could shake it out

and see if it worked.

Can we go in and recreate

these things and can we

introduce some instrumentation

to do some measurements?

Because the data and instrumentation

to measure what's going on in plasmas is

extremely weak. There's not much information about it, and we're going to get into that.

And we did test it.

And we discovered

that it would work.

(video Clip Narrator) * We

adjust pressure, voltage,

but I'm gonna introduce some more helium

right now first, just a little bit more,

* current, and time.

* Time is also a key element.

* When the proper combination

of these factors is arrived at,

the plasma

spontaneously ignites.

* A glow discharge

forms in the chamber

Look, look! Look at the emissions

coming off. Look how bright it becomes.

* We adjust the various parameters to

obtain a variety of plasma regimes.

Look, Look, Look, Look,

Look, Look, Look

* What we are observing

has no clear precedent.

* We are seeing things

we did not expect.

Look at the pressure changes!

Nice, nice. Look at the spin!

And that was just the initial...

Afterwards, we were able to control
the plasma, and these are some of the
plasma phenomena that we observed,
and we were starting to measure.

And these double layers, we
ended up finding that we had 2, 3, 4, 20...

These aren't disks.

These are spherical discharges.

Plasma has a unique characteristic where it is
translucent as you look through the center of it.

And it looks like it's a
disk, but in fact it's not.

What you're looking at
actually are spheres.

And then we end up looking at things
that had certain types of perturbations,
but what we thought and looked at the
geometry here was quite remarkable
with the hexagonal-type formation,
and this is all moving.

This is not static.

Further to this, as

some of you know,
we saw a dark or an extremely intense
ion cloud build up around the core,
this is very common for what
we see happening in SAFIRE.
And when it did, it would
blow off into the chamber.
And when that happened, it would often release
power surges of over 10 million watts.
Now what we did is we limited the power to
1800 watts, and we don't understand this,
but these are the things that we are going
to now investigate in Phase 2, and...
this is what you're going to
be introduced to tonight.
This is kind of a panoramic
shot of the lab.
What you're looking at in the center
there is the chamber, which can, uh,
it's about 3 cubic meters.
It's about 7 feet long, and
it's about 4 feet in diameter.
And we're going to go and explore the
engineering that went behind this.
But what's behind this?
This is SAFCON.

Everybody in the team, we
have to come up with a name,
let's call it the control
room, and nobody liked that.
So we said okay, well let's really...
they came up with the name SAFCON.
So, this is SAFCON.

And this is kind of a again a panoramic view
here; it's not complete in this picture of
where the main control for gas, vacuum,
data acquisition, and in real time
we get to monitor what's going on
with all the systems in the chamber.

Now there are two things that we're
going to talk about tonight.

One of them is systems, which is the
chamber itself to maintain its stability
so that it's a stable
experimental environment.

And the other is the data that we get back
from the instruments like the Langmuir probe,
optical spectroscopy, mass
spectroscopy, and other things.

So, you're not
looking at the Sun.

This is the result of the first

discharge from SAFIRE PHASE 2.

And this is what happened.

And so, we believe now

that it is scalable.

Well, we know it's scalable.

So the SAFIRE environment: we know that

the plasma itself is extremely intense.

We know that it's extremely hot.

And one of the things that

happen in a plasma discharge,

one of the characteristics of a plasma

is what we call radiation emissions.

And radiation emissions is the thing

that you feel when you walk outside,

and you feel the hot Phoenix sun

after if you've been in the shade.

And those emissions in SAFIRE, they

travel at the speed of light,

and they impinge on the

surface of the chamber.

Now, I didn't think that this would be

a big deal when we first started out

because it's such a big chamber; it weighs

almost 2,000 pounds; it's stainless steel;

and I found out that was

actually was not the case.

This is just a small graph to show you the different types of radiation.

The complete spectrum, you go right from what they call non-thermal, thermal, optical, broken bands, gamma rays, x-rays, and ultraviolet.

The stuff that we feel predominately are within the kind of the infrared to ultraviolet range when we walk out in the Sun.

But SAFIRE'S going to experience many of these because it's an ionizing plasma.

And this is what happens to the chamber.

So when this radiation hits the surface of the chamber, some of it is reflected back.

But in our case, because we have a certain type of finish, a lot of this energy is absorbed into that material, and there's transmitted radiation that comes off the outside.

So, if you think about your engine, it's got gas burning on the inside, and you feel the heat migrating through the engine; it gets extremely hot.

And so you have this thermal conductance within the material itself.

So in engineering: we had to take a look at what we call potential failure modes-- the melting of o-rings (is it going to get too hot?), thermal stresses on viewports, thermal expansion of materials causing stress, thermal effect on cameras, electrical discharge, erosion of materials, deposition of materials.

When you have a plasma, an ionizing plasma, we watch things get vaporized.

And when we say vaporized, these are like happening in seconds.

So, you can have something that's metal, and it's no longer there.

So you've got to be careful about how much energy is in this chamber, and you've got to have, you know, good control over it.

So potential failure modes: what temperatures are we dealing with; how long will it take to reach these temperatures; how do we limit thermal heating in the chamber;

what are the thermal
limitations of the gaskets;
how do we limit the thermal
heating of the viewports;
what are the effects of
thermal expansion...

Potential failure
modes, and it goes on.

And the list becomes endless because
once you have this radiation in here
it's like putting a very hot, let's say,
tungsten light bulb inside a shoe box,
and that heat and that energy's got nowhere
to go, and it will cause a fire.

Molecular solubility: well,
we're using hydrogen.

What about the polymer
hoses that we're using?

Well, they're designed
to handle the hydrogen.

Well, what happens if the
polymer hose starts to heat up?

Well,, it opens up the molecular
structure of the polymer holes,
the hydrogen starts to migrate through, and
maybe you get hydrogen embrittlement,

and then you, you break a hose.

It doesn't sound like a big deal, but if you've got pressurized hydrogen moving into the chamber, and you've got a very hot anode, it might cause some consternation amongst the team.

Lowell said, ah, I said "Can we expect an explosion?"

And he said, "Well, if we do, it won't be very big."

Now you have to understand with Lowell, what his background is, because he used to work at Los Alamos and Lawrence Livermore Labs, and nuclear weapons, So...

So I asked him, I said, "Are we talking about one megaton or 70 megatons?

You know, or are we just gonna become like cosmic dust?"

So, we have what we call a system, it's called Open Issues and Project Tracking.

And that means that every single person on the team has a responsibility to, if you think that it's a problem, it's a problem unless we know that it isn't.

It's broken unless we know that it's fixed.

It's not gonna work unless

we know that it does.

It's kind of a, you might

consider it a negative approach,

but in the automotive industry we would do the

same thing with your braking system on your car.

As an engineer, we would say, would you be

happy if your brakes worked most of the time?

Or do you, because I got accused

of being a perfectionist one time,

and that's the way I

answered them back.

And I said well, you know, if I'm

designing your braking system,

do you want them to work most of the

time, 90% of the time, 99% of the time?

And what I discovered is that people want

their brakes to work even if the pads are gone.

So, we look at where a system is going to fail,

and if we can eliminate the failure modes,

then we have a reasonable

confidence that it's going to work.

So, there are

thousands of issues.

And each person on the team is

assigned, they're a champion.

We identify what the

task or the issue is.

The team discusses it

amongst ourselves.

We come up with recommendations.

The person can pursue it

and then come back maybe a day

or two later a week or a month

and say OK, this is what I found,

and maybe they are stuck on it.

But, the approach is that if any

member of the team has an issue,

the whole team has an issue

because if they're

stuck, we're all stuck.

So, we tracked through every single

issue that we can think of.

And that brings us to

Computational Fluid Dynamics.

And it's a big word, and it's a

science and engineering that is used

from designs of kettles,

to rockets, fighter aircraft.

And it covers a wide range

of things in thermodynamics,

and it includes radiation

emissions, that's light emissions.

It means fluids

as well as gases.

So, gases fall under the same kinds of laws and principles in our calculations as what liquids do.

So, CFD is a

software solid modeler.

It uses proven applied

mathematical equations,

algorithms to evaluate the

effects of various interacting

and non-interacting factors affecting

fluids, gases, and materials.

So think about when they designed

the radiator of your car,

they know that, as a radiator

heats up, it's going to expand.

And if it didn't let it expand,

it's gonna break; it's gonna leak.

So, you want to understand the materials and the

effects of the heat on these kinds of materials.

And the same thing

happens in SAFIRE.

And you can do all these

calculations at once

with some of the most

advanced solid modelers.

So as I said before,

at the beginning,

I didn't think that thermal radiation

was going to be too much of an effect,

cause the thing weighs

about 2,000 pounds.

It's a lot of steel there, and I

thought okay we can fire it up,

and that's not going to

be like a small bell jar.

We can run it for maybe, you

know, a number of hours.

But what I discovered in my

initial calculations is that,

even at 30 kilowatts, because you need

more power it's a bigger chamber,

we would get maybe half an hour out of the

chamber before things started to melt.

And if we allow the chamber and

the energy to go beyond that,

maybe up to 80 kilowatts,

or even 165 kilowatts,

which it has the capability of

doing because it's a big chamber,

we might get half an hour before it

heats up to 500 degrees Celsius.

And when you see something

that's red hot,

that would be in the range of

around 5-600 degrees Celsius,

and that's where

things start to melt.

And that's a big problem. We can't

run, you can't run an experiment.

So what you're looking at here is a

calculation is called "total heat flux,"

and you're going to kind of get a kind of a

basic 101 engineering thing on, on this.

And I discovered

something that EU might find

very useful on the heating of

the cores of planets and moons,

but this here is showing you the

anode in the center of the chamber,

and as time goes on, how

radiation emissions

impinge on the surfaces of the

materials and the chamber itself.

Now, the core plasma, remember the core

plasma we figure is around 3,000 degrees,

but the radiation is leaving

at the speed of light
and is traveling through the atmosphere
in the chamber because it's in a vacuum
even faster than it travels
through our atmosphere on earth.

So there's nothing to slow it
down; there's nothing to stop it.

So, the static results,
that was Dr. Lowell

Morgan's calculations.

So he came out and he said, "Well, it looks like it's
going to heat up to about 521 degrees Celsius,"

and I was coming up with numbers
of around 535 degrees Celsius,

then I contacted some friends that
we're doing some work with NASA

and some aerospace

down in the Carolinas

and they were saying maybe

550 degrees Celsius.

So we have a problem.

So what this is is some
of the calculations.

This is just really a return graph,

I'm going to show you some other

more graphical representations of the results

that the calculations came out with,
but it meant we
have a big problem.

And it meant that I had to
make a telephone call to Scott
and say that if we ran the chamber,
we could run it for about 10 minutes
before you see kind of a
melting thing on the floor,
and that's the end of SAFIRE.

What this is here, you have
static results, which means
this is going to be the maximum temperature the
chamber will come to, and it will stabilize.

The next as you see right here
it's kind of migrating along,
you see the graph drops
down, it comes back up,
that's giving us the time domain and how
long it will take the chamber to heat.

And we came up with approximately
the same number, about 30 minutes.

So then I thought, okay well, I don't
want to call Scott yet and say

"It's over!"

So, I thought, well,

maybe we can cool it.

So, we'll wrap some

water around it,

OK, some hoses or whatever we need

to do so we can cool the chamber.

But as you can see here the analysis is showing us

that well where the hoses are it's nice and cool,

but right where the

center of the chamber is,

which is where the

most of the heat is,

it's going to be too complicated for

us to get anything effective in there.

And what you're looking at from the green to

the red is what we call a thermal gradient,

and it's too steep. You just

don't do that to materials

without causing a lot

of stress and problems.

So I'm thinking, "Well, how do

we cool engines?

What if we blew some air on it?"

So, I started to do

some analysis, and

I thought, "Well, what

if we put a fan on it,

and we suck the air down through
a shroud along the surface,
and we got some sort
of laminar flow?"

And laminar flow falls under
Computational Fluid Dynamics,
and this is the kind of math that they
use to do wing design on aircraft.
You know, how much laminar flow, how
well will the air actually stick
to the surface to
lift the aircraft up.

And air's a very effective
way to get rid of heat;
you use it in your
radiators in your car.

So, it looked promising.

And I thought okay,
what we could also work out here is
the flow of air over the surfaces.
So, we can effectively predict how the
winds or the air is going to flow
over the surfaces to be more effective in
cooling it -- more effective, more efficient.
And this is some of the thermal
distribution, and it's a lot more even.

So, we're not getting

500 degrees now.

Now, if I can get a fan to pull

air over the surface,

we can bring the chamber into stability

of around 100 degrees Celsius.

Now that's something

we can work with.

It's still going to boil water,

but the worst case scenario

is about 100 degrees Celsius.

It's not going to melt gaskets; yes, you

could fry eggs on it, but it's workable.

So then I thought,

"Well, I need a fan."

And that big blue thing is the

fan that we came up with.

I told Scott that, yes

we have a solution,

but what I didn't tell him at the

time is just how big a fan we needed.

And so he thought okay, this is good,

so we're going to keep moving ahead.

And the fan actually will suck

about 14,000 cubic feet per minute

at a pressure of about 2 inches of 2

atmospheres, oh uh, not 2 atmospheres,
but 2 inches of water, which basically
would suck the air out of this room,
all the air out of this room here, oh,
I would say approximately 30 seconds.

So keep your hands and feet in
at all times.

I mean that's me standing there, I don't what
I'm doing, I'm looking at something, I guess.

So then we looked at the
outside, that looked good,
so let's take a
look at the inside,
because that's where the
real nasty environment is.

And what we can model now, very
accurately, is what these conditions are.

And the conditions is showing you with
the little arrows, it's showing you,
those arrows are showing the effects of
buoyancy so as hot air heats it rises.

And so effectively what those arrow are
showing you that it's going to rise,
and it's giving you a velocity
of how fast is the gas rising.

And so this is gas, this is

not radiation emissions.

The radiation emissions are passing through the gas at the speed of light, but then there's the gas in the chamber, and how fast is it moving?

OK, do we have any kind of convection motion happening in here?

And it's actually quite stable, if you look at it.

The velocity is actually not that high.

So what we're looking at here, I took a cross-section, and we're just kind of moving down through the chamber to the core, which is where the anode is.

And it looks like a heck of a fire that's in there, and it is, but the velocity is very, very low.

We're talking .0005 meters per second.

So, it means the gas is not moving very quickly, which is good for us, because it means that, you know, gravity is going to have a

limited effect on the plasma discharge,
if that makes any sense.

OK, the gas is very
stable inside.

And this is just actually
looking down into the core.

So, this here is the effect of
what's called "total heat flux."

It's how you can heat up a
body using electricity.

So, I'm just going to digress here from
SAFIRE just to talk about a possibility
that the EU might want to consider, because
in the course of doing this analysis,
it occurred to me that we
use this tool all the time,
and it means that the center
of the anode might be around,
let's say, 2500 degrees Celsius,
but the surface temperature of the anode
was almost one order of magnitude cooler.

I thought, "Well now
what is going on?"

Like, you know, I'm going to heat it up,
it should be just kind of uniform heat."

But in the analysis what it showed

is that the radiation emissions
leaving the surface of the anode
are leaving at the speed of light,
but it takes a lot more time for
the heat to migrate from the core
through that very dense material
that we call the anode.

So if you think about it, you don't need
gravity to heat the core of a planet or a moon,
and this is very effective
mechanism to do this.

And it does answer for why you can
have hot cores in planets or moons,
that really by now, in my opinion, if
the result is as they say they are,
should be frozen rocks,
and they're not.

And even with bodies that are
even smaller than our own moon
might have hot cores
and volcanic activity.

Just a consideration for the
EU, but it's something that
appears to me that
might have some legs.

So, it's just another kind of a

3-D view of the core.

It's fun doing this work

because its really pretty.

This is stuff you could put on

t-shirts, you know.

So this again, what we're

looking at is the radiation

and the effects of the radiation

on components like the cathodes,

because we're like we have large

cathods, and you'll see them tonight.

They are 3 feet in diameter.

They're very thick copper, and

what we have to identify now is

whether or not they're going to

melt, or they're going to expand,

and what kind of changes can

we see occur in the chamber

without it going

into a failure mode.

And this is really

what it's showing you.

The green means that its

cool, the red mean it's hot,

and the little arrows

show you the direction

that the air is moving or the
gas moving in the chamber.

This here is the results.

So the maximum

temperature that we got

from radiation is about

600° Celsius for the copper,

and that's well within

copper's ability to handle.

It's going to get hot, but

it's not going to melt.

But when things heat

up they expand.

And if you're holding

something too rigid,

and it's wanting to expand, well,

that's when you start to break things.

So, we can take the

information that we've got,

and the results that we got from

the Computational Fluid Dynamics,

and read that directly into what's

called Finite Element Analysis.

And that really deals with the structure,

of the strength of materials.

It's used in building buildings and

cars and virtually every kind of thing

you can think of that

undergoes any kind of stress.

So, if you take your hand on

your desk tonight,

and you just put your fingers on the

edge, and you push your hand down,

you're going to get what's

called "displacement."

If you feel your muscles stretching,

this is what we would call "stress."

So things can displace like the wings on an aircraft,

but the stresses are within its

limits so they don't break off.

And this is basically

what FEA does.

And you can apply

thermal forces.

And what this is showing us is the effects of the

radiation emissions on the SAFIRE viewports.

OK now, if I was paying for this,

where, these are SAFIRE viewports.

Now if anyone knows anything

about vacuum chambers,

these are really are not

cheap viewports, OK.

And you don't wanna be blowing
them out of your chamber
because you've subjecting
them to extremely high stresses.

And what this is saying in effect as long as
we've got air moving over top of the surface,
we can keep it cool down to a point
where we can effectively use them
without blowing the
the viewports out of the chamber.

But what about the cathode?

Well, you come up with some ideas.

You want a nice flat disk.

The team we all agreed that a nice flat disk
could be the most effective way to do this,
but you gotta hold
that disk up somehow.

And this was the first concept.

And this here what you're looking
at is kind of a pie shape section
out of that round, that cathode
that you'll see very soon.

And what it's showing you is the
stresses due to thermal forces.

And you can see...

OK, you see right in this area here, the

stresses are 370, 372.9 megapascals.

Now that may not mean

much to most of you,

but what it does say is that it's about

400% beyond what copper can handle.

It means that the copper is

going to, because the expansion

due to the deformation

that we see here,

that cathode under these temperatures

is going to grow about half an inch.

So how do we how do we let it

grow half an inch without,

you know, the support

structure breaking,

because it can't

hold it anymore?

OK, so what we say, well look,

let's, let's think of some concepts

that come out of aircraft.

Well if there, if the, if the wings on an

aircraft are stiff, actually they break off.

And when you take off in a big airliner

nowadays you can see the wings moving up.

If they didn't, all those

stresses would be so severe,

they would actually crack and fracture, and
break off, and that's not a good thing.

So, what we're going to do with
SAFIRE, or what we did, is
we want to let it grow.

Let it grow.

So, in this case here, you know,
we just put a small joint in here.

I don't know how well you can
see it on the big screen,
but there's a joint in here, and
it's gonna let the cathode grow.

And it's not going to put stresses
on the structure in here,
but the stresses that you can see here
were actually supporting the cathode
are 77 megapascals, which is about
300% below what copper can handle.

So, we're in good shape.

And I have enough experience with this
to know that it's going to work.

OK.

OK. So Systems.

Systems Design and Engineering.

If you have a computer, you
have a computer system.

You have chips, and you
have wires, you have fans,
and you have cooling systems
within that computer.

And that system itself is hooked into a network
called the Internet, and we have systems.

And with this particular machine, we
have to start breaking those systems out
into something that's actually going
to work for us in a laboratory.

So the main control panel, data feedback and
capture, this is in SAFCON, video feedback.

OK, we need to see what's going on
in the chamber. We have a couple,
you know, we have one wide angle camera;
we've got a high-resolution video camera
that you're going to see some
of the results from tonight.

A main data vacuum, and controls raceway,
so we got to bring all the controls
and other things across from the
chamber into the control room,
and the main power supply.

And we have deionized
water cooling system;
the reason why we use deionized

water is due to its resistivity,
and we'll talk about
that a little bit.

And then of course you
have the main chamber.

This is just a quick
kind of overview
of what SAFIRE was modeled
an engineered to be,
and the pictures you're going
to see is really a replica
of what has been modeled here
over the course of the year.

So, we have the gimbal.

You saw that last year in the model; you're
going to see the real thing tonight.

The chamber door, mass spectrometer, and
remote data data acquisition junction,
that's kind of uh, you'll see
some interesting things there.

Anode isolation chamber.

Actually, that was Scott

Mainwaring's idea.

He says, "Monty, so what if we just--
'cause that chamber's so big it's going
to take you days to suck it down

and get the vacuum that you want--

if we want to change the anode out, we're going to lose three days every time we do that."

And so we designed

an isolation chamber

where we could pull the

anode back, close the gate valve,

save the chamber, and switch out

the anode. And this happened,

I don't know how long it took us,

because we did this, maybe 20 minutes,

and put a new one in and brought

it back into the chamber.

Recirculation Recirculation pumps, air cooling,

cryogenic vacuum, and a lot of other systems.

What you're looking at here is the

main gas and vacuum control systems.

And the point of the

presentation tonight

is not just to show you SAFIRE

and some of the results

but the effort and the amount of work

involved with the whole SAFIRE team

to get to what you're

going to see tonight.

And what you're looking at here is really

the mains gas and vacuum schematic.

And everybody on the team
contributes to this.

The questions: well,

where's it going to fail?

What kind of gas we're using?

What direction is the gas

going through the valve?

Is the valve designed

to go one way?

Is it more effective if

it goes the other way?

What about an emergency stop?

What if Lowell's right, you know,

and we need the big red button?

What happens? How do

we deal with that?

Do we need to have nitrogen

flood into the chamber

to assure that in fact we've got

a safe and secure shut down?

We would like to be on the

evening news, but not for,

because we've all become cosmic dust.

So, we start to model

these things up.

So, we take the schematic and we say, okay

what's it gotta to look like in real life?

And we have new members on our

team this year, Jason Lickver,

and he was my engineering manager

with another company that I had.

And so we start to

design these systems.

We take the schematic, which

is really the engineering,

and that's going to translate into

drawings and parts and bills of materials,

and with SAFIRE we figure there's at least

over 40,000 components, give or take.

That doesn't even include the

parts inside the computers.

So this is a model, these are

3-D models.

And we're not at the Iron Man stage

where we're talking to the computer,

but it's really getting

quite advanced.

We can take materials like this here;

we can know what the stresses are,

read that data into an analysis software

and determine whether or not it's

strong enough, its properties.

So, what you're looking at is

a 3-D model,

but it understands all the mass

properties of every single component

that are in this model.

This isn't just a rendering.

This is where

engineering is today.

So now, we're going

to create drawings.

Things that people could actually use

to buy materials and start to build,

and this is, uh, just a drawing

of the control panel itself,

the typical balloons. And then, we get

into things like bills of materials,

and all the parts and components, and

fittings and ferrules, and nuts and bolts.

And each part has to be ordered.

And you have to

identify a vendor.

And you have to

identify the lead time

so we get the parts on the floor

in time so we can build it.

So, what you're looking
at here is purchasing.
And I asked Jano last year if
he'd be interested in helping out in
the purchasing side of things,
and he's never done it before.
I have a lot of experience
in this with my other companies,
and he thought well maybe, maybe it's calling the
company up saying. "I'd like to buy this part."
What he discovered was, what I didn't
tell him is, there's this many pieces,
and you're going to have to identify who
the vendor is, lead times, pricing,
you gotta to get quotes, and just follow up
at when are the parts going to hit the floor,
and you really kind of have to
have the view that the vendor's
not really going to tell you the
truth about the price or delivery,
and they're not gonna
deliver on time,
and when they do, it may not
even be the right part.
So, this is the Jano's creation.
And he had worked

on MRP systems,
but we all agreed that that probably
wasn't necessary for SAFIRE,
little did I say anything, we
have a very limited budget,
but it really did deserve a full-blown,
you know, materials purchasing system.

There's a lot of components.

So, there were times

that when, Jano,

I'd call him up and I could see his
eyes were like two little black dots,
but he hadn't run out the door yet, so I
knew there was still hope, and he survived.

So there he is, Jano's our control,
science, data acquisition guy.

He's the guy that is going to be
responsible and is responsible
for collecting all the data from
all the different instruments
and bringing them in and
coalescing, you might say,
and synchronizing the data
from all the instruments.

And so here we are at a lab, and
he's probably looking at...

So, we have to wire it up.

And we have to do checks, and
vacuum checks, and leak tests.

And then, we have fabrication.

Now, some say, well you know the
panel had to be fabricated,
and I didn't know how to split the
presentation up into different,
into the different

aspects, so, you know,

the panel did have to be fabricated,

but when we think of a fabrication,

we're thinking more on the lines of, you

know, machining and building and welding.

That's really cool to see

how things are made.

So, when we go to fabricate things,

ultimately you have to

get the raw materials,

and you have to get the parts,

and they have to be machined,

and they go on big boring mills, and they

go, you have to drill holes in them,

and you have to prepare the holes for

the feed through and the flanges

and the glass and all the different

parts, and this is what it takes to,

just in the fabrication level.

And there's a lot of parts.

And they all have to fit

together, the first time.

So, what we're doing

here right now,

we're welding the

flanges into the chamber,

and we're checking the welds.

I'll just like the audio

carry out here for a second.

If you have one pin hole,

you no longer have a stable

vacuum in your chamber.

And normally when you

build a machine this complex,

you're going to

have vacuum leaks.

And we do, at this stage.

We've got some work to do.

We may have to go

and discover,

we may discover that there's a pin

hole someplace in one of these welds.

And we'll have to come back and we'll have

to plug that weld.

And then we take delivery.

It's welded up.

And this is at Venture

Machine and DMI Precision.

We have moved SAFIRE from a laboratory in

Mississauga to another lab in Mississauga,

because basically

we ran out of room.

And this is the power supply.

It's a big boy, but it's DC, we have

extremely low for the electrical people,

we have extremely low ripple, which

means that the DC power is very clean,

which is a requirement of the

Electric Universe Model,

because nature expresses

electricity in DC form not AC,

although it may be that

there's responses.

I'm digressing here, but we take

delivery, and we're making preparations.

And part of the

preparations of course is,

well, if we've got a scratch on

the surface that's got a gasket,

it's got to be polished out.

And the surface, well, this is Scott, and he offered his assistance, free of charge.

And he asked me,

"Do you got a job for me?"

And I just had the job, and I said,

"Here's a stone; it's a very fine stone.

You see this big lip

across the chamber here?

Well, if you see any imperfections, see

if you can you can pull those out,

because every imperfection means that's

where we're going to have a gas leak."

I just let you know Scott, we don't

have any leaks in the chamber door.

And this is Leighton MacMillan. He's

on the team as well. He's not with us,

but everything has to be

cleaned with alcohol and

prepared before you start putting the

gaskets and the copper rings together.

This here is the new anode base.

What you're looking at is the

bulkhead, services through the anode,

because at this time around we

want to be able to bring other,

we want to cool the anode, ok,

we want to be able to

make sure that we didn't

see some of the failures

that we saw in Phase 1.

So, what you're seeing here is a heat

exchanger, and we have water coming up,

and we actually can, using a particular

taper, we can take a new anode

and shove it in there like

you do in a drill press,

and with a small screw

retain the anode.

We know from the Computational Fluid

Dynamics, the thermodynamics,

that the temperatures are going to

reach about 1,600 degrees Celsius.

So, you've got composites that are in

there, those plastics are going to melt.

So, we have to get

that heat away.

So, we're starting to

assemble the anode.

Actually the anode base,

the receiving base.

And this is the anode

isolation chamber

with it pulled back where we
can actually put the anode in.

And what you're looking at
here, actually, is this good?

Yeah. This is the
big gate valve.

So right now, the chamber can be in
vacuum, we close this gate valve,
and well we close it first,
we pull the anode first, we
better pull the anode out first.

OK, then we close the gate valve, and then
we open up the isolation chamber here,
so that we can get to the anode and replace
it, or do whatever kind of work that we want.

Then we close it back up,
open up the gate valve,
and we can bring the anode
back into the chamber.

And it works pretty slick.

This is a cathode.

This is one cathode.

There's a coffee cup, but
kinda give you some scale.

I didn't mean to leave the coffee cup

there, but I see that it's there, and
it's 3 feet in diameter, and the
copper's about 3/8 of an inch thick.

And the rings on the
back are for support,
because you get that kind of heat as you
know, with metals it'll start to warp.

So, we have to have structural
integrity as well.

And this is the
inside of SAFIRE.

We have a cathodes, the
anode, instrumentation ports,
and we're going to be looking
at some other things,
and just take you for a tour.

So Systems.

We're going to go
back to systems here.

And systems is how you get everything
to talk and work together.

Electrical, vacuum, water cooling
systems, there are a lot of systems.

There are primary vacuum systems;
there are secondary vacuum systems;
there's low vacuum and high vacuum;

there is high voltage systems,
medium voltage systems, and low
voltage systems used for controls.

There are data
acquisition systems,
computer numerically controlled-servo systems, air cooling systems.

Yes! And there are primary pneumatic
systems, secondary pneumatic systems,
gate valves switches, normally open,
normally closed, indicators lights,
red lights, green lights, pumps, valves, sensors,
burst systems, exhaust systems, compressors,
gas systems, diffusing
systems, gas analyzing system,
and an emergency stop big red button
in case one of the systems fails.

And I think that's it.

So it's complex.

This is the main vacuum pump, and it
sucks, big time.

It will It will take the chamber
down to 10 minus 3 or 2...3,
10 minus 2 in about 15 minutes.

OK, if anybody knows about,
anything about vacuum pumps,
this is from Oerlikon;

it's a particular pump.

The nice thing about this pump is
that all you have to cool is water,
because you got your
water cooling system,
but you've got nitrogen cooling and
diffusion line, what's that all about?

Well, what that's about, is if
you take a look at the middle,
it says nitrogen cooling
and diffusion line,
it allows us to run hydrogen in the
chamber, evacuate the hydrogen out,
and it allows us to introduce nitrogen
into the exhaust so that it's not dangerous.

You see?

So part of that, is part of the
mass spectrometers measuring
what the hydrogen content
is in the exhaust,
so we don't end up with dangerous fumes
coming out the exhaust system of the chamber.

Nice pump, expensive pump, it's
a really good pump.

It's a dry pump by the way.

Now, that's important because we don't

want any hydrocarbons in the chamber
other than what we
want to put in there.

We don't want oil bleeding back
through the pump into the chamber,
which we think we may have
had a problem Phase 1.

So, we're not gonna look
at the cryogenic pump.

We hear the word "cryogenic"
and really what it means
is you bring things down to
a very cold temperature,
just a few degrees above absolute
zero, and it condenses the gas,
and by doing that we can bring the chamber pressure down even lower.

Down, theoretically we should be
able to get down to 10 minus 7,
but I think operationally in order for us to
evacuate all the impurities that are in the chamber,
because we need to do that if we're
going to do good mass and optical
and spectral analysis, we need to
make sure the chamber's clean.

And there's really not many things
in the way of moving parts,

it basically uses helium to bring

the the the cryo-pump down.

I mean the temperature of the pump

down to a place where it condenses the gas.

We have, if you can see here,

part of what's going on here,

we also need to measure...

In the system, when we talk

about systems we have one,

what we call a thermal

vac pressure sensor,

because we need to monitor the pressure of

this system before we actually turn it on.

So, this is the feedback

that goes back to SAFCON.

This is just one.

We got the cooling

system, of course,

and we have to make sure that the

water that's going into the center of

SAFIRE is deionized water.

It doesn't have any

minerals in it

because the plasma, the anode

is charged at 5,000 volts.

So, we can use water

as long as it.....um.....

So, we have to deionize the water. And the temperatures, we need to keep them low; so, we use a re-circulation system, because we can't afford to just bring fresh water in and deionize it.

Deionized water will not conduct electricity.

So, you can use water to cool things down as long as it doesn't have any mineral content in it.

And so, we have a high pressure pump and manifold system to distribute the cooled water out to the various characteristics, or you might say parts of the chamber, to keep them cool.

And we have a deionizer that actually monitors the resistivity of the water as well.

This will give you an indication of the complexities of SAFIRE, to make something like this work.

Primary Plasma

Measurement Instruments

Well, we've covered this before.

This is showing the equipment that we have either on the floor or it's on route.

So Langmuir probe.

It took us about eight months to work out with a Langmuir probe manufacturer to get the right kind of probe manufactured for SAFIRE.

These probes are approximately 6 feet tall, and they're very, very sensitive.

The section here is

made of alumina,

which is like a very

fragile material,

but it's extremely good when it comes to extremely nasty, hot environments.

And of course in the past, you've

seen the optical

spectrometer that we've been using to

get some of the signatures that we got,

and of course the mass

spectrometer itself.

Now, the mass spec is probably one of the more important pieces of equipment in SAFIRE

because it tells us what we've got as

a constituent gas inside the chamber.

And it'll measure all the

elements, every 500 milliseconds,

and return that

information back to us.

So, we know that when the chamber has got

hydrogen in it, or if it's got argon,

or some other gas, or if we end up

with some strange species, as some,

we indicated at last

year's conference.

But what we did this time

is we said look, you know,

we want to measure in different

regions in the chamber;

we want to measure right down near the

anode; we want to measure the exhaust gas;

and so we have a system by which

with just a flip of a switch

we can sample any area

of SAFIRE at any time.

And this is what

goes on in SAFCON.

This is what goes on

in the control room.

Data Acquisition and

Systems Control.

And no scientific experiment would really be complete unless you had a rats nest of wires, and communication, and pressure systems, and pressure and data acquisition, I mean.

So, this is Leighton, and

he is building, the,

I guess really might say, the nervous system of SAFIRE.

And diagnostics, we

have to troubleshoot.

And all this information

comes back to SAFCON.

So, we know if there's

something getting in trouble;

we know if we got a pressure

leak, over pressure.

So, the main power supply,

as I said before,

it has a capability of delivering

200 kilowatts now, DC, clean.

We can control the voltage, and

we can control the current.

And you'll see what happens when

we didn't control the current.

I think this is Joel giving me a lecture;

Jano's listening intently.

And this is just before we
start to do the fire up of SAFIRE,
which you are going to see
in just a few minutes here.

Now for the EU, Don Scott and I've
talked back and forth a little bit
about the low energy discharges.

We can go from 0
up to 5,000 volts,
and we can go from 0 up to
35 amps or better actually,
but we have some work to
do to get it refined.

We have a lot of work to do.

We just fired up SAFIRE for
the first time last week.

The Gimbal,

As some of you know, it's a
primary instrument to use
to move a variety of instruments
freely through the SAFIRE chamber.

It's CNC computer
numerically controlled;
we have position accuracy to
almost a thousandth of an inch,

which means we can move
the Langmuir probe
through some of the double
layers that we've seen,
and start to examine
possibly Birkeland Currents,
and diagnose what's
actually going on there.

Maybe we get some answers as to
why there is charge separation.

Optical spectroscopy,
Langmuir probe measurements,
and other instruments can be
added and put into the gimbal.

And here it is here.

So, last year was a model, and
now you see the real thing.

And this will give an indication here,
I think it should start the movie,
yes, how smoothly
the gimbal works.

So, it's like a long needle and we can
bring the needle down into the plasma;
we can move it anywhere we want.

And we can use it
using a joystick,

or we can pre-program different
types of motions that are in there,
or different motions
that we can move.

If we wanted to move a comet around,
let's say the anode itself,
we wanted to move out towards the cathode
and measure at the anode at the same time.

There are two gimbals on SAFIRE,
and the patent was just filed
on Friday, yesterday actually.

So, that's pretty cool.

And this is all within the year.

So, we've been busy.

It's pretty tall.

The gimbal standing
would be right now,

I guess from where it's mounted, it'd
probably be close to 7 feet.

And now we're going to start up.

Ben [Ged Low] was kind enough to edit this
next video we're going to see
because there are certain
things that occurred,
and this is the startup
of SAFIRE Phase 2.

Take the voltage down!

Kill it! Kill it!

OK, so that was the first day.

And what I had forgot

was a little thing

that Don Scott and a couple

of us had talked about.

Instead of limiting the current on the

first discharge, I was limiting the voltage.

So, I was thinking, "OK, well, we just want

to get enough voltage to get it ignited."

But I should have actually

limited the current.

Now, what's missing out of this film here,

well actually, what I should say is

what you actually saw at the very end was

what we call a "plasma flow discharge"

and it resembles something like

the Death Star out of Star Wars.

OK, and what it does is an extremely intense ion

discharge to wherever it's going and its focus.

Well, what you don't know,

what you didn't hear,

was actually the power supply

was maxing out of 200 kilowatts

and the amount of energy

was impinging on a,
I thought the chamber of the time,
but it was a screw this big.
And what happened was I started,
you didn't see it in the video,
but I started to see all
the stuff flying off, OK.
And it was actually
vaporizing the screw.
I thought it was drilling a hole
in the side of the chamber.
So, Ben was kind enough to remove some
of the colloquialisms I was using
prior to him saying "shut it off" because
it was about 30 seconds in there that Joel
because we didn't actually
have you know the main control
actually hooked up inside
SAFCON at the time.
It was Joel sitting out and
standing out by the power supply
listening to us to please
turn it up or down,
and we're all screaming inside because
we're freaking out because we thought
we were just going to smoke a new hole in

SAFIRE, and we haven't even got it started yet.

So, Day 2, we learned

a few things.

We're going to see if we can control the

current this time and not let it eat

as much power as it would like. And so

what you're going to see next was Day 2.

And that was Day 2.

So, we thought that

was pretty cool too.

We thought okay we've got some good news. And

now we can go to the conference and

tell everyone actually

it works, which is great.

Capabilities

Should we stop to talk now?

Should we talk about

capabilities?

I'm going to fly through these

quickly because I'm getting that

OK I've been up here long enough

and I might be boring you guys.

You're good?

OK, OK.

Well, because now that

we've got SAFIRE fired up,

the real work, hard work, science work,
elucidating cause and effect, starts.

That's when the Design
of Experiments starts.

And we can start to ask some of the
questions that we have been longing
to get some answers to
for a very long time.

So the capabilities.

So it has the ability to form a variety
of spherical plasma discharges.

And what I will say now I can't
get into some of the details
but we do have full control over all
aspects of the plasma discharge
according to Paschen's Law.

If you look into that, we can control
everything now as a variable for us.

Now, that's never been
done before, ever.

It can move instruments freely
through the plasma atmosphere.

It can do synchronous and
simultaneous measurements.

We're down to
picoseconds, by the way.

So, we can synchronize all the measurements that we're taking into picoseconds. That should be really important for us because, as we move forward, there are certain events that happen very quickly, and we can capture those events. And we can synchronize all the rest of the instruments and do graphical overlay, and we can see the history or what what was occurring in the chamber before it actually led up to that event. This is very important for us to do the kind of diagnostics that we need to. High-resolution video, materials testing, material deposition, erosion test, Langmuir probe analysis, optical spectroscopy, mass spectroscopy, near-ultraviolet light measurements, infrared measurements, polarimetry, Design of Experiments methodology. And Questions, questions that we have: Why do ions and electrons not recombine in a double layer?

Why does ionized hydrogen not go
back to a stable hydrogen atom
when it's in a double layer?

What is the mechanism, what's the
process, why is it staying like this?

Why are double layers
in SAFIRE quasi-stable?

So, why do we form these spheres,
and they're quite stable?

We don't know. We don't
know why they form;
we have some ideas but we don't
know the mechanisms and processes.

We can recreate them because we
understand what leads up to them
but we don't understand
the physics.

Why do we get the huge energy
surges over 10 megawatts?

Maybe it has to do with
the paper that Lowell...

my name is on the paper too,

I edited some of the things

but Lowell really is the

master of that paper

on ion-electron trapping

in these double layers.

And this may be an answer to why the

Sun's photosphere is so intense;

maybe why, that's why, there appears to be

fusion occurring in the Sun's photosphere.

Are we getting transformation of elements?

Good question.

Are we getting more

energy out than in?

We could ask that

question all the time.

We think now we may be able to

answer some of these things.

What does the voltage gradient

look like before SAFIRE fires?

We can confirm right now that there is a

voltage gradient in SAFIRE in Phase 2

before it actually ignites.

But we can now go and

measure that gradient.

We may even be able to, we may even be

able to measure the voltage gradient

before it actually does an intense stream

plasma discharge to a particular point.

This is the thing that leads

up to lightning bolts.

What's actually the
environment around there,
that lightning bolt, before you actually
see a lightning bolt or plasma discharge.
So, is the voltage gradient, as an example,
it is uniform throughout the chamber?

We can measure these things now:

x-rays, neutrons, gamma
rays, and much more.

And that's really it
for this presentation.

So, we will leave you with this.

What I'm going to do
right now is invite
some of the like, really the people
that have been involved in SAFIRE.

People that you don't really hear about
up to the stage, introduce you to them,
and then I guess we're going to do a
question-and-answer with just the core team.

So, thank you! It's
been a privilege.

Welcome to Space News from the Electric Universe,
brought to you by the Thunderbolts
Project™ at Thunderbolts. info

Hi, this is Andy Hall with Space News.

I am presenting Part 9 of my series
Eye of the Storm, where we look at
electrical scarring on the Colorado Plateau.

The Caribbean sea floor displays deep
trenches aligned with island arcs, which
run parallel to each other - even around
bends. Volcanic island chains and
oceanic trenches are magnetic
expressions of a subsurface current.

Volcanic islands appear to one side of the
current, and deep trenches appear on the other.

The subsurface current does not
produce trench and volcano chains
directly. They are formed by eddy
currents in the solenoid-like, coaxial
magnetic fields surrounding the current.

Think of a subsurface Birkeland current,
with the added effect of iron in the ground
magnifying the magnetic field and its eddy currents.

The effect is described by Lenz' Law, which is
a special case of Faraday's Law of Induction.

To induce eddy currents, according to Lenz' Law

the conductor itself had to be in motion across Earth's magnetic field, generating helical eddy currents in the coaxial magnetic field around the moving conductor.

Eddy currents generate heat due to resistance in the material where the currents form. Eddy currents form around the moving conductor, melting the surrounding rock and creating magma chambers.

Lorentz Force, or the drag effect of a moving conductor through a magnetic field, which is a magnetic reaction in the opposing direction, pushes volcanoes up on one side and depresses the crust into the molten chamber on the other, creating a trench at the trailing edge of the moving conductor. There is no actual conductor, like a copper wire, but it's the movement of a filament current, which is moving in reaction to electromagnetic forces, that burns and melts its way through the crust. Given that islands are to the inside of the trench, the right hand rule indicates the Caribbean loop current ran counterclockwise during formation of the Caribbean plate. The movement of the current also dredges seafloor, piling into non-volcanic

islands along its path, aided by
incomprehensible tsunamis. The violence of this
event cannot be overstated. Similar current
loops can be found at the horn of South
America and the Indonesian archipelago.
Evidence the current moved is also displayed in
the sinuous curves of the trench and island chains.
Note the image, where the filament dragged south, its
momentum amplified the eddy currents, heating the
crust to build the Cuban island chain along
an "S"-shaped curve, before locking its
position in a straight line at Jamaica.
One of the likely reasons current loops
make these lateral moves is because the
sides of the loop flow in opposite directions,
and the magnetic polarity of the
coaxial eddy currents are opposite
and attract, narrowing the loop like a hangman's
noose. The magnetic field attraction eventually
meets electric field repulsion from the opposing
current vectors, which snaps the current into
balance in parallel lines. The
tip of the loop accumulates the
highest charge density, so even though
it's the region that moves the least,
its high potential burns neat little arcs of

volcanoes. The sinuous pattern shows how charge density spread in longitudinal waves through the moving filament as it met resistance.

It's similar to how tension and compression travels in waves through a sealed spring.

It forms a sine curve, with the greatest demand of volcanism, trenching and dredging at the inflections, where momentum changed greatest, amplifying the magnetic induction of eddy currents. The deepest trenches show where the current came to rest, and momentum suddenly decelerated to zero, as an electromagnetic balance was achieved across the loop structure.

Lateral current movements of this type can be found all over the world.

The momentum change in the current produces distinctive arcs of deep depressions and volcanic island chains in the oceans.

On land, telltale lakes, mountain chains, rivers, volcanoes and maar craters align themselves in the same patterns. Where the Caribbean Loop joins the Ring of Fire, the juncture is called a "triple junction." Triple junctions occur at the plate boundaries. For instance, the Rivera

Triple Junction is where the Rivera Plate meets the Eastern Pacific Rise. Triple junctions are known hot spots for volcanic and seismic activity and magnetic anomalies. Since there are triple junctions along the North American plate, it begs the question: are there current loops connected to these junctions beneath the continental plate? Let's examine North America. The Ring of Fire is the obvious path of a subsurface current because it forms a lineament of volcanoes from Alaska to Central America. There are three other major lineaments in North America's interior. Yellowstone super-volcano is one end of a curving lineament of volcanoes in a trend that forms a part of the Snake River valley across southern Idaho. To the south is a string of volcanic fields called the Jemez lineament. The Jemez lineament extends diagonally from the Pinacate Volcanic field in Sonora, Mexico, northeast across Arizona, to the border between Colorado and New Mexico. It's bisected by a northwest-to- southwest lineament of volcanoes that include the San Francisco peaks and the Uinkaret volcanoes on the North Rim of Grand Canyon. With all of these plotted together on

one map, a pattern begins to emerge
that implies there's a current
loop beneath North America.

Plotted, the Jemez and San Francisco peak
volcanic lineaments produce an almost
perpendicular cross pattern,
juxtaposed symmetrically across the
Colorado Plateau from the volcanoes
of the Yellowstone complex
and aligned with the Ring of Fire. The Jemez
lineament aims directly to the Guadalupe
Micro-plate to the southwest and to the
arc of the Great Lakes to the Northeast.

The loop appears to circle the Great
Lakes and points back to the Black Hills
in South Dakota, which appears to be an inflection
point. From there it points to the Juan de Fuca
plate in a direct line through Yellowstone.

It has a similar shape and size to the
Caribbean current loop, with the
base of the loop wider than the
tip. Similar to the Caribbean Loop, there
is a significant depression at the tip.

In this case it's the Great Lakes, but they
reside on the inside of the loop, whereas
ocean trenches are outside of the Caribbean

Loop. And where the Caribbean Loop has volcanic islands inside the curve of the loop, the North American Loop has maar craters, which is a type of volcanic action forming a series of circular lakes outside the arc of the Great Lakes. Maars are volcanoes created by steam and other gases exploding instead of spewing ash and lava. Smaller such expressions are known as karsts and breccia pipes. They are all forms of diatremes and are often mined for uranium and precious metals, which the eruption leaves behind in the throat of the tube. The surface result is a crater instead of a cinder cone and is typically filled with water. The implication is that the loop current lies below aquifers that erupted in steam, creating the maars. And that the volcanic expression is to the outside of the loop, depressions to the inside, so current circulates north to south in this loop, opposite to the Caribbean Loop. The shape of the Great Lakes, especially Lake Superior, shows the sinuous shape of ground current movement. It appears the loop narrowed or swung to the

south until the southern leg aligned to the Jemez Lineament. The Yellowstone volcano lineament is a half-circle and also appears to be from ground current movement. In this case, the movement appears to be north from the Monterey Micro-plate to the Juan de Fuca triple junction.

If so, this widened the base of the loop, with the pivot point of the shift at the Black Hills of South Dakota. Now, if I'm not telling you anything new here, try this!

The electrical structure of these small loop currents and the junctions with large polar loops like the Ring of Fire, forms a circuit called an Operational Amplifier, commonly called an Op-Amp. An Op-Amp is a type of current loop. But there is one key ingredient to an Op-Amp that makes it special: and that's a direct current or DC connection to the loop, which amplifies the gain of output to input current by as much as one hundred thousand. It can then be manipulated with additional circuitry - resistance, inductance and capacitance in various configurations - to perform all kinds of tricks.

They can be made to oscillate,
amplify, or invert. Op-Amps are at
the heart of circuitry such as the old
Hewlett Packard calculator I used in college to
perform complex math. Op-Amps did the adding,
subtracting, multiplying, and dividing of my
inputs to give me outputs I needed to get a grade.
So, how does Nature insert this DC current
into the loop? With lightning. Lightning
strikes DC pulses into the ground, and
in the environment we're exploring
lightning struck continuously. Long
enough and powerful enough to draw
supersonic winds and matter to build
mountains, like the Black Hills of South Dakota
which is an inflection point in this
loop. From that inflection point, the
Yellowstone volcano aligns with
lightning-generated mountains as Sacajawea Peak
and the Black Hills along this sub-surface
current path. If the Op-Amp needs a shot
of DC current, Nature organizes itself to provide
by stirring a storm that spits lightning in
the appropriate place, thereby fulfilling
its fractal pattern requirements.
It's Escher's hands. I won't go into detail

about how Op-Amps work. There are plenty of books about them. But one attribute certain Op-Amps have I want to point out. Properly configured, the bridge between triple junctions experiences a low, almost zero current relative to the current outside the junctions and in the loop. This corresponds to the “bridge” region of the Ring of Fire between the Mendocino Triple Junction and the Guadalupe Micro-plate, where there is but a few sparsely spread volcanoes. Compared to the Cascades and Olympics, or the profusion of large volcanoes in Mexico, only Mt. Shasta, Lassen, Mammoth and a few anemic lava flows fill out this bridge section. The relatively low density and magnitude of volcanoes is evidence that current was restricted along this bridge, just like in an Op-Amp. But the bigger take on all this is that the Earth is a damn computer. There's no other conclusion to draw when there are Op-Amps all over the circuit, clicking and switching currents around. The Earth works as a coherent circuit. It is a circuit within a bigger circuit centered on the Sun. And it has circuits within

it, shaping the continents and weather. There is no "butterfly effect". A butterfly does not stir 300 mph tornadoes. It is one of the fallacies of modern science that leads to accepting abstract and frivolous ideas. There are fluctuations in signal strength Earth receives from the solar system. Earth is a ball of energy and matter and when it gets extra energy, it stores some in the matter. As Earth's balance with the solar system oscillates, as it must, skin effects take place as Earth's matter absorbs and releases energy. Those skin effects are geology and weather, and they are driven by capacitance as energy flows between Earth's layers of matter. Ionization and induced currents are the natural result. We've been looking at the physical evidence. There is nothing described in these chapters that is implausible or unscientific. In fact, it is what's expected to see on a planet. It's what physics predicts if the inquiry begins with the proper framework. The next chapter will be the final one

for the Eye of the Storm project.

We'll summarize then and
draw some final conclusions.

Thank you.

[Music]

You've just entered the
theater of an alien sky.

If the words and images
seem strange to you,
there's a reason for this.

Our world was once a
vastly different place.

To experience this
won't hurt you
and there is nothing to fear.

Rituals of Remembering
and Forgetting

In these Discourses we
propose that our Earth
was formerly joined in a close
congregation of planets,
unlike anything observed today.

Based on converging
evidence globally,
we can name the gathered bodies and
identify an extraordinary correspondence
between celestial events
as seen from Earth
and a massive outpouring
of myths and symbols,
all inseparably linked to the rapid

rise of the ancient civilizations.

In the final analysis, the only reason to accept or even to consider the reconstruction presented here is predictive ability.

If the claimed events occurred, would we reasonably expect the unique narratives and sacred forms coming down to us as worldwide or archetypal content.

Our overriding advantage in this respect is specificity.

It's none of the concrete patterns revealed to us are predictable under today's common assumptions, not a single one.

And yet all are concretely and specifically predictable in the light of the reconstructed polar configuration.

With this episode we will begin enumerating the polar configuration's predictive ability in broader terms to lay the groundwork for the episodes to follow.

The history of recorded human thought
began with the myth-making epoch.

Enigmatic symbols and magical
practices told a story of creation,
catastrophe and
regeneration of the world.

Of course the greatest
mystery of all
is the very existence of the mythic
archetypes or common themes.

We can count them
by the hundreds.

Why did every ancient culture
declare that the sky changed
or that towering gods once ruled
the world, then went away?

Such mysteries invariably
direct our attention to deeper
and progressively more
specific questions;

Why did the world's
first astronomers
so consistently name the
great gods as planets?

What was the meaning of the so-called great
conjunction or perfect conjunction of planets,

said to have marked the

beginning of time?

And not only that, the planet

Saturn as a primeval Sun?

How did the planet Venus earn its

worldwide identity as the mother goddess?

Or the planet Mars its global

reputation as a great warrior?

And what was the nature of the

world altering catastrophe,

said to have ended

this celebrated epoch?

Like hundreds of other

mythic archetypes,

such themes never make sense when

referred to our present sky.

Always they speak for things

not seen in our own time.

How did this

disconnection occur?

We can follow the archetypes

across all of human history

as associated art

and mythic imagery,

sacred narratives and

countless magical practices

take us back to a lost

age of gods and wonders.

What was the human experience that
provoked this ground floor human memory?

Reconstructing the ancient experience requires
systematic cross-cultural comparison.

That is how we come to recognize
different myths and symbols
pointing back to the same events, all
occurring in the earliest remembered time.

Within this framework it's only to be
expected that an urgent collective memory
would grow fragmented and
confused across the centuries.

Towering forms in the sky progressively
lost their cosmic dimensions
to become legendary ancestors
of those telling the stories.

Even the most powerful memories
slowly gave way to localization,
every tribal community on earth declaring
its possession of the original story.

In this way each regional culture
could cling to a proclaimed lineage
of divinely ordained kings,
of world-conquering warriors

and radiant mother figures.

Competitive claims of this sort lie at the heart of all localized mythic rhetoric, one effect amongst many was the incessant drive towards regional expansion through wars of conquest, always the so-called "holy war" was animated by a perceived divine mission descending from the gods themselves.

This universal fact will become a key in our analysis of the warrior hero theme.

But there's more to this historic pattern.

All of the broadly distributed archetypes bear identifiable relationships to remembered cosmic events.

To appreciate the impact on humanity, the events themselves must be brought fully into the light of day.

In our own time, historians and comparative students of religion can only explain world mythology as a carnival of pre-scientific ignorance.

The specialists just assume

that they understand
what our early ancestors
did not understand.

But that explanation ignores
hundreds of global patterns
that would not even be possible in the
absence of extraordinary natural events.

The truth is that expertise will lead
nowhere in the absence of understanding.

The great myths arose in an age of
planetary instability and cosmic violence,
including close
approaches of planets
and earth-shaking electrical
exchanges between planets.

The conclusion in these Discourses
is that our world, our sky,
has not always been the stable
referent we experience today.

The events that inspired a transformation
of human consciousness were cosmic.

These events are
not occurring now.

Hence it is futile to look for answers
in the appearance of the sky today.

The present is not

the key to the past.

Allow for another vantage point

and everything will make sense.

But of course, a new vantage point requires

that common assumptions be suspended

to allow the test

of predictability.

Of the hundreds of archetypes

we've previously named,

how many would be expected

under today's assumptions?

Not a single one!

Would you expect the ancient stories of a

former central luminary or primeval sun

different from the body

we call sun today?

Would you expect the preposterous location

of that body at the celestial pole

or expect the ludicrous

identity of that very luminary

with the remote planet Saturn?

Our advantage is that every

tenet in this reconstruction

carries explicit testable and

inescapable implications.

Once named, the

archetypes leap out at us
and as the archetypes are named
so are the implied relationships
to other named archetypes.

This fundamental unity, the ground
floor of the human experience,
is for us the acid test, drawing us into a
critical examination of the causative events
without which no archetypes
could even exist.

The goal is to identify the unified
substructure of human memory.

The process starts by naming
the cross-cultural themes
and allowing the implications
to shine through.

If indeed a common memory lurks
within the historical record,
the historical detective
must first distinguish
between the archetype and
its localized expressions.

Always keep in mind that the
ancient tools of remembering
invariably became agents
of forgetfulness as well.

That's because no local symbol, no
mythic fragment, no magical reenactment,
could even begin to capture the full
integrity of the original experience.

No particular myth could possibly
lead to any reliable conclusions
as to things actually
seen in the sky.

The truth is that
regional storytelling
always fostered more
forgetfulness than remembering.

And yet, through systematic
cross-cultural comparison,
something deeper will reveal
itself, a dependable integrity
hidden in the underlying
points of agreement
for an astonishing archetypal
accord begins to shine through.

In fact, every logical conclusion
to be discussed in these Discourses
will follow simply and directly
from three indisputable facts:

Firstly, no archetype follows logically
from any natural events observed today.

Secondly, all archetypes are
provably connected to each other,
no isolated archetypes exist.

And thirdly, a unified
explanation is available to us
if we allow the archetypes to speak for
natural events not occurring today.

We have named the celestial provocation
as the polar configuration.

By giving attention to the impact of these
gathered planets on human imagination,
all of the recurrent themes become
witnesses to a story told around the world
and that means hundreds of
archetypes hiding in plain sight.

Always look for the
underlying form!

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

42 years ago, on separate dates more
than two weeks apart, two spacecraft were
launched at Cape Canaveral, Florida with
the potential to rewrite our
understanding of the solar system
and the interstellar environment.

In the 1970s, the Voyager 1 and Voyager 2
spacecraft were designed with the
intention of studying the
environments of Jupiter and
Saturn, as well as the gas
giants' respective moons.

In 2012, scientists announced
that Voyager 1 had
apparently become the first man-made
object ever to reach interstellar space.
But what the spacecraft told us, about
the behaviors of the solar wind and the
conditions at the
interstellar boundary, did not
match space scientists'

theoretical predictions.

In 2013, the lead author of a paper in the journal Science told wired.com of the Voyager 1 data, "The models that have been thought to predict what should happen are all incorrect....We essentially have absolutely no reliable roadmap of what to expect at this point."

And today, scientists have reported that Voyager 2 has now also recently crossed the boundary into interstellar space and again, the theoretical predictions based on standard solar physics do not match discovery.

Don Gurnett, the corresponding author of a study published in the journal Nature Astronomy, said to phys.org, "In a historical sense, the old idea that the solar wind will just be gradually whittled away as you go further into interstellar space is simply not true. We show with Voyager 2--and previously with Voyager 1--that there's a distinct boundary out there. It's

just astonishing how
fluids, including plasmas,
form boundaries."

Of course, the predictions of the
Electric Universe theory about the
interstellar environment
and behavior of the
solar wind, differ
dramatically from convention.

The Electric Universe has always
proposed that a vast Birkeland
current enters our solar system
and, in fact, powers the Sun.

We asked retired professor
of electrical engineering, Dr.
Donald Scott to offer his overview
of the Voyager 2 findings to date.

Well, a few days ago, researchers at the
University of Iowa announced that space
probe Voyager 2 left the Sun's
heliosphere in late 2018 and entered
what they think is the
interstellar medium.

Its sister probe, Voyager 1 did
that earlier, that was back in 2012,
and they announced that this latest

transition was signaled definitely by a,
and they emphasized, the strong increase in
the plasma density measured by the probe.

In other words, that probe
essentially went through
what they refer to as "a
wall", a boundary there
between the heliosphere and
the interstellar medium.

Well, these guys, astrophysics
in general is still in the
mindset of fluid dynamics and gravity
only, so continuously hear words like
winds and shocks and bow
waves and in fact, one
typical astronomer commented
on this latest release.

He said, "In a historic
sense, the old idea that the
solar wind will just be gradually
whittled away as you go further into the
interstellar space is simply not true.

No kidding. We show with Voyager 2--and
previously with Voyager 1--that there is
a distinct boundary out there. It's
just astonishing how fluids,

including plasmas, form boundaries."

Well yes, in a sense, plasmas are fluid but fluids are not plasmas, so...

And do they form boundaries, yes, you betcha.

Again, they seem to be surprised when they shouldn't be surprised.

We, in the Electric Universe, realize that the discovery of an increase in the plasma density is completely consistent with the electric Bessel function model of a Birkeland current.

So we're not surprised at all, the Electric Universe model of star formation, that is how the Sun formed, is that it results from a z-pinch in a Birkeland current filament inside our galaxy, and in our model, in the EU model, matter: that's to say ions, electrons, neutral atoms, molecules, etc, form in concentric cylinders.

So it's quite probable that the outer cylindrical layer of the Birkeland current is a region of

increased density and so, that's what the EU would have expected in that, we don't look at it as a surprise or a discovery and it would be something we would be looking for.

It's also true in the classical plasma lab experiment; Alfven did them, Langmuir did them; there is often a double layer of charge just outside the cathode, just above the cathode.

It's called a cathode drop and in the case of the heliosphere, the heliosphere in the Electric Universe model is the outer layer of the heliopause, serves as a virtual cathode.

And so, thinking of it that way, we would expect to see an increased density of matter just at the cathode, and, in our model, the heliopause is the cathode, so that again is what we would expect to see.

Z-pinches have been long observed in plasma labs throughout the world, and there's nothing exciting to us

about them, but it's very nice to see our
ideas born true and see that,
that's what they're seeing.

At the risk of boring people,
I think, I'll point out yet
again that when both mechanical and
fluid processes occur in a region where
there's also electrical forces involved,
those electrical forces are 10 to the
36th power times stronger than anything
gravity by itself can produce, so
electricity is very important and
these folks have got to learn that.

There's a slide there that says The Sun's
Environment, and on the left of the image
there is a sketch showing how the
twisting current density and magnetic
field tend to flatten out into
a disc, as you get closer
and closer to the actual
location of the z-pinch.

We're looking sideways at what the Electric
Universe thinks is the Birkeland current
that serves the Sun, and that
oval there in the middle
is the, what we would say

would be the heliosphere.

There in the center of that

diagram, you see sort of an X-Ray

photograph of that

Birkeland current and

the heliosphere,

the outer edges,

is defined by the words

edge of the z-pinch,

a filament cylinder on both sides there,

and so that's, that sort of yellow

cloudiness is those increased ions and

electrons and that sort of thing

that demark the extent of

the Birkeland current, and in

the center is the heliosphere, the Sun, a

very tiny dot right in the middle of that.

That is a reasonable, sort of a

schematic of what the Electric Universe

thinks is the heliosphere and the way

the Sun is situated.

But actually a better image, the

hourglass shaped nebula M-29 and it's, I

think it's perhaps the canonical

example of a cosmic z-pinch.

You can see many of the aspects

of what I just said in that
image, and you can see there's at
least two visible layers outward along
the Birkeland current,
and the locations of two
possible double layers
easily seen there...

The M-29 is a visible plasma entity
and such it has to be, of course,
in plasma that's in arc mode or at least
glow mode, in order for us to see it.

If you look at the top of that image and the
very bottom, you can see that the plasma
is beginning to disappear, it's beginning
to turn into dark mode, because the
electrical current density
is lower, the farther
you get away
from the z-pinch.

Clearly, our Birkeland current is in dark
mode, because otherwise you would see it.

Well, if you take a closer look,
again a schematic of, looks
like there's some black lines that show
the shape of the Birkeland current on
either side of the z-pinch,

you notice that where those lines form together, that I'm suggesting that it looks as though the heliosphere itself is more of a sort of a, I hate to use the word flying saucer, but that's what it looks like, it's like, it's a sort of a squished sphere and point a is inside of it, and if those two probes followed the path a to b or a to c, they would have left the heliosphere but, however, not left the Birkeland current.

Had the Voyagers gone from a to d, that is straight out, they would have left both the heliosphere and the Birkeland current and gone out into the truly interstellar space.

And you notice on there, there's a notation about the electrons combined here with solar ions to form ENAs.

The IBEX mission and the satellite on which the mission depended was a product of the Lockheed Martin corporation, and the division of that Lockheed Martin was headed up by the late Dr. Jim Ryder.

He's a valued Electric Universe scientist engineer, and I will say, a good

friend to many of us.

We miss him.

A report of the mission's

initial results by the

mainstream said, "...the interstellar

environment has far more influence on

structuring the heliosphere than anyone

previously believed... No one knows what is

creating the ENA (the energetic

neutral atoms) ribbon..."

Now, this is what IBEX

discovered, that there were these

energetic and neutral

atoms that they hadn't

expected to find, just

outside the heliosphere.

Well, see a picture there of

what a classic plasma experiment would

look like in the laboratory, with the anode

on the left and the cathode on the right,

and of course you put a

higher voltage on the

anode and ground the

cathode and what happens?

Well, if you do it right, in the

middle of the tube there are, round

somewhere where it says positive column,
neutral atoms are ionized by like
electrons coming from the
cathode and so you get an ion.

Ions are produced in there,
and the positive ion, that is to
say, what's left of the atom minus the
electron that's popped off of it, it
starts to move toward the right, where
it'll be attracted, its positive charge
attracted by the cathode
and repulsed by the anode.

So eventually we get the stream
of positive ions heading toward
the right, heading toward the
cathode and flooding out from
the cathode are a stream of
electrons and what happens?

Well, they recombine, there's no such
thing as a positive ion traveling in the
wire that goes out of the
cathode, you can't do that.

So, where the positive
ions end up are being neutralized by
those electrons coming out of the
cathode and what's the result?

An electrically neutral atom, again, and so that's, there's nothing magic about these electrically neutral atoms, these ENAs are formed simply by recombination, and I interject my friends, it's an electrical process of the recombination of the negatively charged electron with positively charged ion and that's how you get the electrically neutral atom out there at point d.

One of the most, I think, most interesting things to come out of this experience is that on October 29th, in 2015, the NASA, the Jet Propulsion Laboratory issued another press release and they said, Voyager 1 has now helped to solve the interstellar medium mystery.

I'm not sure what they were referring to by the interstellar medium mystery but anyway, the quote from the release that I find extremely interesting is, "Now researchers have found that the direction of the magnetic field has been slowly turning ever since the

spacecraft crossed into

interstellar space."

OK, let's say that again, they have discovered that the direction of the magnetic field, that the spacecraft observes, has been slowly turning, rotating ever since the spacecraft crossed into interstellar space.

They should have said it is ever since the spacecraft left the heliosphere but because, as we saw in that previous diagram with the three way pass; a to b, a to c, and a to d, they left the heliosphere but stayed inside the Birkeland current.

That's exactly what they would have observed because, as you travel through a Birkeland current, the magnetic field slowly rotates and slowly changes its direction as you proceed farther and farther away from the central axis of the current.

One of the most important properties of the Bessel function model

of the Birkeland current is that
inside the current structure,
the direction of the magnetic
field continually increases.

Therefore, this announcement is a
supremely importantly in agreement with
this inherent property of the EU, and my
conclusion is that the two spacecraft, or
at least any one that measures
that continually rotating
magnetic field, followed a
path like a to b and a to c.

That means they have not really entered
the interstellar space, they're still
inside the Birkeland current, they've left
the heliosphere, that's true, but until
that magnetic field stops
rotating the farther out
they get, they're still
inside the Birkeland current.

There's several different points of
confirmation of our model and not theirs.

These astrophysicists
have got to stop talking
about fluid flows,
shocks, and bow waves,

and they have to learn that real entities such as Birkeland currents and double layers are important, and until they do, their research will stagnate, just as their fruitless search for dark matter has.

These people have to begin to learn about electricity in the cosmos.

the comet 67p churyumov-gerasimenko perhaps the strangest solar system object ever observed up close in the course of the Space Age it was the target of the Rosetta probe whose ten-year journey began in march two thousand four under the sponsorship of the european space agency the probe is now orbiting the nucleus of 67p and investigators hoped to confirm the Comets link to the very origins of our solar system it has long been claimed that comet secreted from a primordial disk of ice and dust out of which the Sun and planets evolved billions of years ago 67p is a short-period comet which means a comet taking less than 20 years to complete an orbit of the Sun the orbit is apparently changed recently due to interactions with Jupiter its current orbital period is just under six and a half years the Rosetta mission was designed to answer critical questions what is the material composition of the nucleus what forces have acted on the nucleus to produce its unique shape how

have its surface features evolved and what is its dynamic relationship to the Sun and the solar wind a particular interest will be the analysis of readily vaporized materials volatile such as water ice or carbon dioxide ice the popular model of comets today requires detectable volatile zzzzzz because it assumes that comets become active due to warming by the Sun absence of such volatile either on the surface or exploding from beneath the surface would bring an end to a theory that has dominated comet science for more than 60 years

thought to resemble a dirty snowball but does this theoretical assumption actually hold what would it mean for example if the Rosetta mission brought comet theorists face to face with a dry rock in space for decades comet investigation has been punctuated largely by surprises but there is a well-supported alternative it does not forbid water ice on comets but doesn't require ice either it is the electric

comet hypothesis and it anticipates some profound surprises in the appearance and the behavior of comet 67p it predicts that we will see electrical activity and that this activity will amount to an electro chemical factory creating chemical byproducts that are not native to the nucleus including water as the probe drew close to the nucleus of 67p the shock to mission scientists could not be contained to roughly hewn lobes joined by a thin neck cavernous depressions sharp peaks inspires projecting into space sandy dunes and other bizarre configurations of sand and dust all in the absence of an atmosphere to create them and across the entire surface a field of sharp edged rock like rubble in the vacuum and deep freeze of remote space how could a dirty snowball or an icy dirt ball have slowly accreted into such a profoundly irregular object all from a primitive cloud of ice particles and dust 67p looks like a jumble of fused rock but comet theorists say that appearances

could be deceiving us as the Rosetta
probe accompanies 67p over the next year
it will likely answer that question and
a lot more the space sciences as a whole
and comet theory in particular are
inseparably entwined is it possible that
our understanding of comets is mistaken
at the theoretical ground floor if so
the effects will reach far beyond our
ideas about comets and that's a very
good reason to follow the evidence
wherever it leads
you

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the Electric Universe,
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It's an iconic image symbolizing
the sum of Mankind's deepest fears,
the specter of an enormous rocky
body impacting our planet.

In popular fiction, including
best-selling books and
blockbuster movies, the notion of a
planet-destroying asteroid on a
trajectory to Earth's orbit is routinely
presented as not just possible,
but ultimately inevitable.

Planetary scientists have
told us for many decades
that a giant meteoritic impact caused
the extinction of the dinosaurs and
should be regarded, along with
anthropogenic global warming, as the
greatest threat to the futurity
of our planet and species.

In fact, in recent months,
numerous science headlines have

emphasized the urgency with which many scientists perceive this threat.

June 30th of this year marked the annual celebration of Asteroid Day, and science websites marked the occasion by arguing the need for greater funding for planetary defense.

It appears that this posture has greatly impacted public opinion.

According to a recent poll by

The Associated Press and the NORC

Center for Public Affairs Research,

Americans now say that the number one priority for the U.S. space program should be defense against asteroids, comets, and meteors.

However, behind the perceived

threat that asteroids and

other cosmic intruders pose, are numerous

beliefs that have remained unchallenged,

since even prior to the Space Age, the

notion of an enormous Rock slamming into

our planet is indeed very frightening.

After all, the surfaces of rocky planets

and moons in our solar system are

absolutely riddled with craters, which,

according to mainstream science are the result of countless kinetic impacts over eons of time.

However, as we will see, for decades science discovery has demanded an entirely new way of seeing so-called 'impact craters' as well as the origin and nature of comets, asteroids, and meteoroids, and the history and future of our own planet.

Let us consider first what we should actually expect if an object such as an asteroid or comet closely encounters a planet.

On only two occasions in modern times, scientists have had the opportunity to anticipate such an event.

In 1994, when the comet Shoemaker-Levy 9 approached the planet Jupiter, and again in 2014, when the comet Siding Spring approached Mars.

In both instances, the actual observed interactions between the comet and planet were so unexpected, they should have forced a reassessment of the very

foundations of Comet theory.

Prior to Shoemaker-Levy 9's encounter with Jupiter, some astronomers predicted that the fragments of the comet were too small to have any significant effect when they hit the gas giant planet.

The Comet's co-discoverer, the late Eugene Shoemaker stated, "There's a chance we will see very little."

Likewise, the renowned astronomer Brian Marsden stated, "It's going to be tough to see much.

I don't think there's going to be a very large explosion."

But as we have repeatedly outlined on this series, the comet's apparent electromagnetic influence on the Jovian environment was vastly more dramatic than Standard Theory can ever explain.

The anomalies included unusual and energetic auroral activity, immediately after the "impact of the largest comet fragment" as well as the disruption and amazing brightening of radiation belts and

unexpected X-ray emissions.

As Michael Klein of JPL

stated in an analysis of

the event, "Never in

23 years of Jupiter

observations have we seen such a rapid

and intense increase in radio emission...

Extra electrons were supplied by a

source which is a mystery."

In contrast, what planetary

scientists had actually

expected was that dust debris from the

comet would cause the radiation belts to dim.

Satellites tracking the comet

fragments unveiled yet another mystery.

Some so-called collisions that

were projected to occur

just beyond Jupiter's limb, which should

have been invisible to all but the

Galileo spacecraft, were seen by

telescopes on our own planet.

As NASA's Dr. Andrew Ingersoll

stated at the time,

"In effect we are apparently seeing

something we didn't think we had any

right to see."

In other words, the electric comet theory would predict dramatic discharge activity high in Jupiter's ionosphere prior to the comet fragments striking the upper atmosphere.

And this is exactly what was observed.

The electrical nature of the event was confirmed by the 3,000 kilometer high vertical jets seen above Jupiter's clouds, which then fell back to the planet to form these mysterious crescent-shaped dark features.

Simply put, the error is to view both the planet Jupiter and approaching comet fragments as electrically inert.

The electrical nature of the event is at least partly affirmed by the data from NASA's Juno mission to the gas giant, including the discovery of electrical potentials in the millions of electron volts which drive Jupiter's aurorae, and a vastly more

powerful magnetosphere than standard theory had ever imagined.

The Electric Universe theory

has always stated that

most comet activity comes from the comet

which acquires a "negative charge

with respect to its environment in its

outer reaches of the solar system,

discharging electrically as it enters a

more positively charged domain."

In the case of Shoemaker-Levy 9, when it

encountered the incredible magnetosphere

of the planet Jupiter, the discharges

were unusually catastrophic.

Similar lessons can be gleaned

from comet Siding

Spring's encounter with Mars.

NASA's MAVEN spacecraft

measured the effects of the

comet on the Martian atmosphere.

According to a NASA report, "Debris

from the comet added a temporary and

very strong layer of ions to the

ionosphere, the electrically charged

layer high above Mars."

MAVEN team member Jared Espley

said of the comet's stunning influence, "We think the encounter blew away part of Mars's upper atmosphere, much like a strong solar storm would... The main action took place during the comet's closest approach, but the planet's magnetosphere began to feel some effects as soon as it entered the outer edge of the comet's coma."

In fact, the Electric Universe prediction of a negatively charged comet dust tail was recently confirmed.

In late 2018, scientists studying the "weird striations" in the dust tail of comet Mcnaught, were amazed to conclude that the dust is "electrically charged," and its motion is dramatically affected by the solar wind.

Of course, even though some asteroids have occasionally, and to the complete surprise of space scientists, produced cometary displays including collimated jets, they are not typically nearly as electrically dynamic as comets, nor does our own planet have nearly the

electromagnetic energies seen at a gas giant such as Jupiter.

Yet in our electric universe, any intruding body that enters our planet's atmosphere from far away will be differently charged and can thus discharge electrically.

Testimony to this fact can be seen in the dramatic flaring and explosion of a meteor.

In fact, in recent years mainstream science has begun to recognize the electromagnetic phenomena intrinsic to meteoritic displays.

This includes the unusual radiophonic noise that eye witnesses have reported for many centuries in association with meteor sightings.

While mainstream science still imagines that a meteor's bright glare, flaring, and disintegration is the result of chemical ablation and atmospheric pressure and heating, abundant evidence suggests these phenomena also involve electrical discharge activity.

As argued in a 2005 Thunderbolts article by Michael Armstrong and Jim Payette, on the famous Peekskill meteor, "One proposed

explanation, with which the Electric Universe would agree, is that meteors trigger the formation of instabilities in plasma layers. The energy of the flickering and flaring, as well as of the low-frequency radiation, comes more from the ionospheric plasma than from the meteoroid. The meteors that we've come to think of as 'burning up in the atmosphere' may instead be the targets of mini-thunderbolts from the ionosphere."

In fact, this viewpoint finds support in the most renowned meteor explosion in modern times.

In 1908, in a remote region of Central Siberia, a blue-white fireball, which some described as brighter than the Sun, exploded with the force of a 10 to 15 Megaton hydrogen bomb.

The explosion felled some 60 million trees across an area of 2,000 square kilometers; yet some trees near the blast center

were not burnt and a ring of burnt trees
circling the epicenter was left standing.
The thunderous sounds were accompanied
by a shock wave to knock people off
their feet and broke windows
hundreds of kilometers away.

The explosion registered on seismic
stations across Europe and
Asia, and as far away as Britain
meteorologists registered fluctuations
in atmospheric pressure.

The resulting pulse of air
pressure circled the Earth
twice, and astronomers observed for
several nights afterwards a glowing red
haze in the upper atmosphere, but they
were not aware of the cause at the time.

Curiously, as noted in the Australian
Journal of Astronomy in 1993, the Sir
Douglas Mawson expedition in Antarctica
reported an extensive auroral display a
few hours before the Tunguska event.

Many historical accounts also exist of
strange weather including lightning and
thunder and even seismic activity well
before the devastating explosion.

Despite occasional claims to the contrary,
no impact crater for the intruding body has
ever been found nor the remains of an
impactor, though some have occasionally
claimed to have discovered
Tunguska meteorite fragments.

Nevertheless, Tunguska remains
officially classified
as the largest impact event
ever recorded on Earth.

In our Electric Universe, the
energy released from an
intruding comet, asteroid or meteor, is
not limited by its mass and kinetic
energy but also the electrical energy
due to its charge differential with Earth.

This viewpoint also finds support
in the largest meteor explosion to have
happened on Earth since Tunguska.

In 2013, in Russia, initial
estimates coming from the
Russian Academy of Sciences stated that
the space rock weighed only about 10 tons.
However, based on infrasound data
from as far away as Greenland and Africa,
the rock's estimated size

increased by about 1000 times.

In other words, the actual energies produced in the event were exponentially higher than the visual evidence would have suggested.

Although the explosion shattered windows and produced other structural damage, and many hundreds of human beings were injured, not a single person was killed in the event.

From the Electric Universe perspective, intruding comets and asteroids do indeed pose a threat to human life, but the havoc these bodies might wreak will likely be limited to localized disasters, perhaps a series of Tunguska-like events producing regional devastation with falls of sand and dust.

Perhaps electrical craters, fires, and earthquakes, but not necessarily any single impact crater at all.

Indeed, we cannot overemphasize the need for planetary scientists to completely reassess the theory of planetary cratering.

The craters we see on planetary surfaces routinely defy impact theory. Instead, we see unique forms that have been reproduced in decades of laboratory experiments with electrical discharge; including crater chains, weird hexagonal craters, craters with concentric circles, impossibly huge craters, aligned craters, and so-called bull's-eye craters.

The massively cratered surfaces we see on rocky bodies like the Moon, Mercury, and the dwarf planet Ceres, were not the result of periodic impacts over eons of time. We have proposed they were the result of interplanetary electrical discharges in a relatively recent epoch of planetary instability.

Ironically, it was these catastrophic events recorded in prehistory which embedded in human consciousness the fear of Doomsday's inevitable reoccurrence.

But in our Electric Universe, the utterly hopeless projections of Standard

Cosmology,

from our Sun's nuclear fuel extinguishing
and the Sun collapsing, to the ultimate
fate of the Universe, ending in a big
freeze or heat death, to a giant space
rock smashing into our planet and
obliterating human life; are not only not
inevitable, they have little to no
scientific foundation at all.

In our Electric Universe, doomsday is a
traumatic memory in need of healing, and
the future of Mankind, planet Earth, and
indeed the entire Universe, remains
unwritten.

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Today, we continue our exploration
of the early scientific data from NASA's
historic Parker Solar Probe
mission to the Sun.

In part one, Dr. Donald Scott
began his analysis of some of the most
intriguing early findings, including the
probe's "unexpected" detection of
magnetic reversals as it moved in
the plasma solar environment.

As one new report describes,
"Unexpectedly, the probe
also detected a series of flips in the
Sun's magnetic fields -- dubbed "switchbacks"
-- as streaming winds of plasma
flowed past the spacecraft. During these
periods, the magnetic field suddenly
reversed itself by 180 degrees and then,
seconds to hours later, flipped back."

As Dr. Scott continues, he explains why the
so-called "switchbacks" could be the

telltale signs of the Birkeland currents
hypothesized by the Electric Sun model.
In describing the switchbacks, or
magnetic reversals the Parker Probe has
seen, press release stated, "These
reversals happen at a high rate of
occurrence. That high rate
is surprising. In fact
the nature of these
structures remains unknown.
Well, we can help them with that,
I think, but anyway, we know
that the Parker Probe is traveling at a speed
of approximately 430 thousand miles an hour.
That's fast, it's in fact, it's
a hundred ninety kilometers per second.
And so, in a couple of minutes, the probe
travels about 15,000 kilometers, so that
distance could very well be the
thickness of one of the layers in the
Birkeland current which would be the
cause of those magnetic reversals, as it
goes through the Birkeland current.
The press release also announced that, close
to the Sun the solar wind seems to get
sped up by powerful "rogue waves"

that move through the magnetic field.

The quote from the press release states,

"We'd suddenly see a spike in the

flow, where in just a couple of seconds

the solar wind would start flowing at

300,000 miles an hour faster."

That's about a hundred and thirty-four

kilometers per second increase in the

speed of the solar wind that they're

observing, and if the velocity of the

wind is about 400 kilometers a second,

the press release said they were

doubling the speed, it's not quite

doubling, also they quote, they said there

are jets of plasma in these streamers.

Well, I maintain, the

increases in the solar wind

speed may indeed be

caused by double layers.

Now, in the past, our

viewers have seen this image that I've

included here, of what

a double layer looks like.

So just to refresh the viewer,

there are three plots there.

The top graph is the voltage that we would

measure as a function of radius distance out from the Sun, so you can see that the voltage is dropping rather precipitously from point c to d to e, and that results in the middle plot which is the electric field that is produced by that sharp drop in voltage.

Now, there's nothing mysterious about that electric field. It's just the force on a positive ion and if the electric field is positive, as you see it, there it is, that means that the force on that positive ion is outward, in the positive direction.

Outward from the Sun, is the positive direction.

So, the bottom plot there is the plot of the charge distribution that would be there to cause what those other two plots look like.

That's from Maxwell's equations, but if we look at the charge distribution there, you can see that there are two spherical shells, one of positive ions

and then right on top of that, a shell of negative charges, mostly probably electrons.

And that's why it's called a double layer, the plus and the minus layer are right there together.

And there are two different spherical shells in that double layer, the inner half, the inner one is positive, and the outer half is negative.

And in between, in the center of that, that the layer is at, is an extremely strong electric field.

Now, that electric field, if it's strong enough, can actually rip apart any charged intruder into the double layer.

So the SAFIRE experiment, that everybody has been hearing about, it has worked out so

well for us, that experiment produced an image of a whole series of these double layers surrounding the anode, the Sun, and the most powerful one is right there

above the, or actually on the surface of
the anode, and that's completely
consistent with Juergens' Electric Sun
model, because that's the photosphere,
that's where the sunspots
all happen and in that
double layer there, all
sorts of things occur.

And then, as you go out
from that layer outward from
the Sun, the double layers get dimmer and
weaker, you can see them finally
disappear off in the distance.

And we don't see any of those double layers
around the Sun with our eyes or with
telescopes now, simply because they're, if
they're there, they're in the dark mode
of plasma operation, they're in the same
mode of plasma operation that surrounds
the North Pole of the Earth and it's
dark mode, we don't see that either.

Unless, of course, there's an Aurora
at which time the plasma jumps into the
glow mode, and as it did in that
photograph that Monty so kindly sent us.

But normally, it's not visible,

it's a dark mode plasma and so are those
double layers around the Sun.
Also, and things are
happening very quickly these
days, in a new paper
entitled "Probing the
energetic particle environment near the
Sun," the authors seem to acknowledge that
magnetic reconnection
can't actually explain
some of the effects
they're observing.

I was waiting, predicting that
we would hear about magnetic
reconnection but I'm very
pleased that they have
essentially written that
off, at least in this paper.

And they said instead,
"We find a variety of energetic
particle events accelerated
both locally and remotely including by
co-rotating interaction regions, and
impulsive events driven by acceleration
near the Sun, and an event related to a
coronal mass ejection."

But so, they used the word co-rotating and I wonder if, by using the word co-rotating, did they actually mean counter-rotating? Nothing more was said and so, we'll have to wait to see what they have discovered, but they've discovered, everything that they have discovered is certainly explainable by Birkeland currents.

Also, incidentally, regarding the question of how all those other elements get onto the face of the Sun, that we discussed earlier, one of the most important results of the SAFIRE team was their discovery that in their electrical plasma discharge, and we remember that was in a hydrogen atmosphere, just like the Sun, it's hydrogen.

The transmutation of elements occurs, that's the kind of process that the old prehistoric alchemists were looking, they wanted to change lead into gold or something like that.

They've actually, SAFIRE has done it in microscopic amounts, but they've done it.

So that in a plasma discharge, hydrogen

apparently can give birth to a long list
of other elements, not just water, that
were not there before the discharge started.

So that may well be how those
other elements got onto the
Sun and get onto the Sun as we speak.

And the point is, fairy dust
has nothing to do with it.

We begin with a brief history of geometry.

Why is it that within every great philosopher astronomer, or scientist, there lies a great geometer? It seems that the geometer turns astronomer, or astronomer turns geometer, and vice versa. The classic definition of geometer is a mathematician whose area of study is geometry.

Now think about it. You have Plato and the Platonic solids; the sound of the spheres or *Musica Universalis*; and the theory of first-principle-geometry being taught that all atoms and material is formed out of nested Platonic solids spinning.

You have Archimedes and Archimedean solids as well as the Archimedean spirals. There are others, such as the pre-Socratic philosopher Anaxagoras from around 467 BCE who theorized his vortex motion of the Universe in his book, "The Nature of Things". Johannes Kepler was a strong believer in geometry and tried to prove the five platonic solids must be related to the structure of the Universe.

This idea was announced in his cosmographic mystery published in 1596. The mathematical study of vortices continues with James Clark Maxwell's vortex analogy of the electromagnetic field and Lord Kelvin's theory that

atoms were vortex rings in an all-pervading ether.

There are so many more examples like

Pythagoras, Euclid and the father

of geometry, Apollonius of Perga.

It seems that the spiral shape is at the

core of the structure of the Universe.

The whirlpool or the water spiral is a

part of worldwide folklore and it is a

magical and religious symbol for the origins of life

and energy. Whirlpools are considered gates to the

netherworlds. Ancient lore has it that whirlwinds

provide circuitry for gods, demons and witches.

In the old testament, whirlwinds are

described as a direct connection to us,

mere mortals. For example, "Then the Lord

answered Job out of the whirlwind."

And "Elijah went up by a whirlwind into heaven."

In 1835, here we have Eugenio Beltrami and

the Beltrami vortex. This is the geometry of what we in

the Electric Universe refer to as Birkeland Currents.

Also what Don Scott did the math of a

force-free field-aligned current and the

same exact behavior as Marklund convection, as well

as the German concept of the ether "zitterbewegung".

In physics the zitterbewegung, jittery

motion in German, is the predicted rapid

oscillatory motion of elementary particles.

Speaking of electromagnetism being the primal organizer of elements along cylindrical coaxial filaments, will hop directly into artist Dr. Walter Russell's work.

You can see the same, or similar things, as Birkeland Currents, and the multiple vortex of tornadic winds that Andy Hall describes in his "Eye of the Storm" series.

We also have Viktor Schauberger's work, here showing longitudinal vortexes. What's more is it's showing the double spiral longitudinal vortexes here.

Now observe the similarities of the Doherty set, even down to the toroidal construction of the double helical minimal energy filament itself. So, what exactly is the Doherty set?

The Doherty set is an emergent, first principle, magnetohydrodynamic geometry.

Magnetohydrodynamics is the study of the magnetic properties and behavior of electrically conducting fluids. Examples of such magnetofluids include plasmas, liquid metals, salt water and electrolytes.

How can we validate what the Doherty set is?

Easy, by using the inverse square law.

The inverse square law shows that light,

electromagnetic radiation, gravity, and electricity, all obey the same scaling rule.

The Doherty set is, among other things, a series of cascading spherical pressure gradients.

The projective super geometry is a simplex.

But it is nonetheless doing only one thing,

which is repeating the initial Bessel

function, iteratively, over and over again,

like a beating drum, recursively building

up progressive geometry, along an

interconnected chain-like so-called space-

time or more accurately, a plasma fractal.

Yes, Birkeland Currents are fractal.

A fractal is a curve or geometric figure,

each part of which has the same statistical character

as the whole. Fractals are useful in modeling

structures, such as eroded coastlines, or

snowflakes in which similar patterns recur at

progressively smaller scales, and in

describing partly random, or chaotic

phenomena, such as crystal growth,

fluid turbulence, and galaxy formation.

The Doherty set can be thought of like

the Mandelbrot set, but instead of

exploring the complex and imaginary fields and

fractions, this scalable geometry exposes plasma, or

ether, or what mainstream cosmologists refer to as the just mentioned space time, to be fractal. Speaking of fractals, let's look at the Mueller set. The Mueller fractal is the basis of global scaling developed by Hartmut Mueller. We can observe the similarities here and how octaves as well as harmonies of sound also abide by similar scaling laws. So one might intuitively assume that fundamentally, on every scale there must exist this wave-nested-within-wave behavior and indeed, that is exactly what the Doherty set is. Is it possible, that in a Universe of electromagnetic induction, the Doherty set is the master key of electromagnetism itself? And in the big picture, perhaps the geometry of the Electric Universe model? I met professor Donald E. Scott at the Thunderbolts EU 2017 conference, for the sole purpose of showing him my cartographs and geometry. Don was baffled and exclaimed that I discovered it before him, which we will find out. Many people were on to this idea before us, so I then gave my whole body of work to Don Scott for a review and he said quote, "Buddy, I have examined (I believe all) the

links and YouTube videos you sent me.

They are quite impressive because you are clearly able to include the wild complexity of what the interior structure of a Birkeland (force-free, field-aligned current) would look like, if we were able to get inside one."

"Nice work. I see that you are aware of the complex structure that my model says is inside a Birkeland Current.

But, in another sense the overall property is quite simple: it is a set of concentric spirals whose pitch angle increases smoothly and continuously with radial distance."

It is important to understand that the words 'helix' and 'vortex' are not the same. They are not synonymous.

A helix is a twisting spiral path, wrapped around a cylinder. Example. A rope wound around an infinitely long pipe. That is the shape of a Birkeland Current. On the other hand, a vortex is also a twisting spiral path, but it is like a rope wound around a cone. It is a finite length, not infinitely long. All vortices come to a point. They are not like a Birkeland Current, many of which are light years in length.

Marklund convection is a physical process

that goes on in a certain class of Birkeland Current.

It depends on there being actual charged particles and electric fields present to interact with each other. A process is very different from a shape, but a shape can also be many processes.

Now, let's compare all of this to the spiral Periodic Table of Elements. Here's Walter Russell's Periodic Table of Elements.

And here is the Doherty Periodic Table of Elements.

Have a look-see at the meandering of the wave crest and wave trough.

"We are all electric creatures floating in the electric sea of this electric universe. In more simple words, we might say everything in the Universe is trying to become every other thing; and every condition of everything is trying to become every other condition." The Universe indeed seems to be mimicry on all scales, everything becoming everything else. Lest we forget James Clark Maxwell himself was a great geometer. Just look at the skills of this cartographer. He is a map maker and an excellent one at that. We are all mapping it out in one way or another. Ah yes, hopf fibrations, spinors, and twistor theory which fundamentally use Maxwell's equations.

Look at the similarities there. We have to do a brief on British physicist Tony Skyrme, or at least his work on skyrmions which are theorized to be the structure of ball lightning.

"These objects are quite intricate from a geometric point of view," said Dr. Sugic.

"They resemble a complex system of interlocking rings, with the hole forming a particle-like structure.

What's particularly interesting is the skyrmion's topological properties - they can be distorted, stretched or squeezed, but will not come apart.

This robustness is one of the properties that scientists are most interested in exploiting."

If this is true, and these structures are inherent in the Doherty set, this gives more credence to the predictive power of the set to show off the inner and outer interactions of skyrmion behavior, and a seemingly infinite amount of applied combinatorics.

What these examples show, is magnetic and electromagnetic behavior exhibiting precise geometries.

We can even think of it as a toroidal node, a filamental Universe.

It is all double helical, but it is helical because of its toroidal construction,

and this idea is true on all scales. "Most of the so-called laws of nature are habits."

Idea and memory is constructed within the self-descriptive circuit, along with being and form.

The field creates the form. Higher order magnitudes of this integrated information system build up cascading morphic resonance, or morphogenetic fields. These are quaternion, just like the construction of baryonic matter and cell growth, as well as multiplicity in living systems.

In mathematics, the Cayley-Dickson construction named after Arthur Cayley and Leonard Dixon, produces a sequence of algebras over a field of real numbers, each with twice the dimension of the previous one.

The number of filaments, nested inside of filaments, nested inside of filaments, is a Cayley-Dickson construction. This nesting behavior is indicative of coaxial cables and filaments as well. Getting back into it, we have Benoit Mandelbrot and the fractal revolution which directly led to the telecommunication and computing age with the introduction of fractal antennas.

Nature is fractal, communication is fractal, electricity is fractal. Think fractals, filaments, frequencies – $f f f$. In music,

three f's is a fortissimo, meaning very, very loud. I find it very pertinent, because this is indeed a very loud message to the world.

There is a fractality to everything. We are the break in the symmetry. Iterative, constructive and destructive feedback loops integrate coherent harmonic circuitry. Worded differently, coherence or consciousness in the ether is geometric and is composed of a series of fractal feedback loops.

As self-organizing systems, our integrated information circuitry is inter-scalar.

This is a gestalt-type of thinking - the parts are related to the whole and the whole is related to the parts type of ideation.

Geometry, and especially the Doherty set play an interdisciplinary role in our lives, everyday phenomena, and the progression of human knowledge.

It is self-evident that geometry is a critical component of the Electric Universe model of cosmology.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info a new scientific paper describes an ongoing mystery astronomers are facing in the atmosphere of Venus in 2006 the European Space Agency's satellite Venus Express arrived at Venus and recorded the astonishing images of a twin cyclone above the planets South Pole for reasons that mainstream astronomers have yet to explain the structure of the so-called super storm constantly evolves and the vortex itself is thought to be a permanent feature however this puzzle may not be the greatest challenge the extraordinary Venusian atmosphere poses to planetary scientists scientists have found from spacecraft orbiting Venus for the last six years that there is an unexplained twin cyclone at the planet South Pole and various headlines are given to this Venus cyclone constantly changes in planets bizarre atmosphere scientists find Venus vortices go for chaotic multi-story strolls around the

poles says another and a third says
whirl winds wander around Venus's South
Pole now there's a mystery that's been
known for many years now about Venus's
atmosphere and that is that it rotates
60 times faster than the planet and
there is no known driving mechanism that
can perform this amazing feat now in the
electric universe model of the solar
system there is an input to all of the
planets which it goes unrecognized by
atmospheric scientists and that is the
electrical input from the sun's circuit
and when you have electricity being fed
into a circuit it can drive motors and
it can cause rotation now in the case of
Venus it's obvious that something is
driving that atmosphere 60 times faster
than the planet and it's not coming from
inside the planet even though it is
super hot and it's not coming from the
Sun because if you look at the outermost
planets of the solar system you will
find that the fastest winds in the solar
system are on the outermost planet
Neptune where winds have been clocked at

a thousand kilometres an hour so there's obviously a driving mechanism that just doesn't feature in any theory or model of how planets atmospheres work and this has significance also for the earth and the discussions about climate change there's an energy input which isn't being factored in to the climate change argument the report states the vortex is never destroyed but it evolves continuously between morphologies or shapes the cause for the constant evolution remains a puzzle that the team still hopes to solve well the thing is that the fact that the morphology changes but the basic vortex is never destroyed is primary evidence for the fact that it is a twin filament electric current that is impinging on the Polar's of Venus the same type of phenomenon seen at Venus's South Pole is found elsewhere in the solar system and is a predictable feature of the electric universe in 2005 when scientists using the Keck Observatory discovered a warm vortex at the South Pole of Saturn

Thornhill made a prediction that could only seemed preposterous from a conventional viewpoint he wrote the electric universe predicts experiment and Cruces that both poles should be hot not one hot and the other cold in 2008 NASA's Cassini scientists were astonished to discover a mysterious hotspot at Saturn's North Pole this was astonishing because the freezing North Pole had been deprived of sunlight for over 12 years the interesting thing about the form of the tornadoes at both poles because earlier such a twin tornado was discovered at the north pole of Venus in 2005 I wrote about Saturn saying that the hot South Pole would be found to be mirrored by the northern pole which had been in darkness for 14 years and that that would be a crucial test of the electrical power input model you see the power or the electrical connection of the Sun to the planets occurs generally at the poles in the Earth's case we see that in the form of Aurora's

and when the Sun is particularly active
you will see powerful Aurora's which
extend down to lower latitudes also you
will notice in Aurora's that the
movement is remarkably changeable and
sudden now this is the one of the
features of the twinging cyclones at the
poles of Venus now the other thing I
pointed out in the earlier article was
that when the twin vortex was discovered
at the North Pole of Venus it had the
same shape as would be expected from an
electrical current connection to the
pole of Venus now the reason I say that
is that plasma cosmologists and plasma
scientists know that electric currents
flow in a plasma that is the thin
conducting medium that occupies the
entire solar system and the entire
universe for that matter it is the
conducting medium when an electric
current flows through that medium you
will get filaments formed and you've all
seen that kind of thing in the novelty
plasma balls and one of the things you
notice about the plasma balls is that

the current inside those spheres flows
in filaments and that those filaments if
you look closely at the ends of them
appear to be twisting not only that they
move about as if they're almost alive
and this is one of the features
mentioned in the report about the south
polar vortexes on Venus because with six
years of looking at the south polar
vortex it's been shown that the movement
is always of two centers two cyclones
moving around and often connected by
some
kind of filament between the two and
that that motion is chaotic so it has
all the features of that you'd expect
from the kinds of filaments you see in a
globally plasma ball for continuous
updates on space news from the electric
universe stay tuned to Thunderbolts dot
info

You just entered the
theater of an alien sky.

If the words and images seem strange
to you, there's a reason for this,
our world was once a
vastly different place.

To experience this, won't hurt
you, and there is nothing to fear.

The Lovely and Terrible Goddess

In all of the discourses in this
series, one question has dominated.

The question concerns the monumental
civilizations that emerged
so suddenly and unpredictably,
just a few thousand years ago.

As scientists and historians
delve into the early cultures
from ancient Egypt
and Mesopotamia,

to China and the Americas,

the greatest challenge is
almost never addressed,

how do we explain the mythic
archetypes, the global patterns?

As we've noted repeatedly in this series,
not one of the early civilizations

was free from this remarkable
sub structure of human thought.

A profound sense of connection
to the earliest remembered time,
called the first time.

A time of celestial splendor when
visible gods ruled the heavens.

A lost paradise or
golden age on Earth.

A towering temple or city
or kingdom in the sky.

A celestial Heliopolis,
Sumer, or Jerusalem.

A model in heaven to inspire construction
of sacred dwellings on Earth.

A cosmic mountain rising
along the world axis
as if to support the luminous
dwelling of the Gods.

A primeval Sun God at the summit,
not the body we call Sun today,
but a power claimed to have ruled the sky
in a former age of gods and wonders.

Why did Greek chroniclers so consistently
identify the celestial founder of the golden age
as Kronos, the Latin

planet god Saturn?

And for what unearthly reason

would Greek astronomers

have also named this very

power as Helios, the Sun?

It is all preposterous,

and yet the collective memories still

tug at us, calling us to remember,

pointing to patterns

of historical fact

that challenge every common

opinion today about the past.

The archetypes are the permanent

backdrop to every civilization on Earth.

We know that all of the early cultures

obsessively feared a fiery serpent, or dragon

whose attack on the World brought

humanity to the edge of extinction.

And how strange that story tellers

everywhere knew also the story

of a cosmic warrior rising

to subdue that very monster.

These are not just loosely defined

expressions of human anxiety.

As we've seen: the details are concrete

and the parallels are worldwide.

The pervasive theme of the attacking serpent
or dragon must have an explanation.

Mere accident of human thought
could never have achieved the global
influence of this human memory.

No intellectual mistake
could be greater
than ignoring this convergence
of human memories.

The remembered events are not
occurring in our own time.

Today's world, today's sky, could not have
provoked a single mythic or symbolic archetype.

And that's the heart
of a profound mystery.

The archetypal sub
structure exists
and has been documented across
hundreds of global themes.

This can only mean that
something fundamental
and indispensable to scientific
understanding, has been overlooked.

To follow this question into the
heart of the ancient world,
it's well worth considering

one archetype in particular,
taking us back to the first stirrings
of the great civilizations.

I'm referring here to the
aged mother goddess.

In particular the polar opposites expressed
in the goddess's underlying identity.

How did a mythic archetype,
a goddess revered as the source of
life and light and feminine charm,
come to display a darker aspect
as a world threatening monster,
the prototype of
the wicked queen?

A goddess originally celebrated
as the exemplary star,
the beautiful Queen of Heaven?

What could account for the
transformation of that very goddess
into a shrieking witch or hag,
whose wildly disordered streaming
hair stretched across the sky?

Cross-cultural comparison
has answered the question.

The paradoxical opposites take us back to
one and the same power in the heavens.

The Love Goddess and
the Terrible Goddess
turn out to be not just one
and the same mythic figure,
but one and the same
planet, the planet Venus.

In fact, the only planet among five visible
planets to be given a feminine identity.

Don't believe in accidents;
that paradox has never been
resolved and will not go away.

It requires something
yet to be recognized
in standard treatments
of the mother goddess.

Just consider,
the horrifying Medusa figure was
a classic symbol of terror,
but Greek historians
and poets knew
that Medusa was originally
a form of stunning beauty.

That's the paradox
in a nutshell,
and it traces to the very
beginnings of civilization,

where in ancient Mesopotamia,
we observed the transformation
of the Sumerian
love goddess Inanna
into a shrieking dragon
attacking the world.

The same transformation occurs in
ancient Egypt in the story titled
"The Destruction of Mankind."

Here we see the beautiful
goddess Sekhmet
transformed into the fiery
world-threatening Uraeus serpent.

How are we to explain
this ancient paradox?

Such unsolved mysteries invite
us to question our assumptions.

And one assumption in particular has
held students of planetary history
in its grip for well
over a hundred years.

That assumption
began as a guess,
and it remains just a guess across the
20th century and into the 21st century.

The theoretical

assumption proclaims:

“As today, so before. The present
is the key to the past.”

Call it the

Uniformity Principle:

nothing to see here.

It just assumes that the positions
and relative motions of the planets
have remained constant
for millions of years,
even billions of years
some would say.

Today, this uniformity principle is
the greatest obstacle to discovery.

It systematically precludes any
understanding of our more ancient past.

Even in the face of overwhelming
evidence to the contrary,
the Uniformity Principle deflects our
attention away from the collective memories
that drove the emergence of
the early civilizations.

No mistake could be more costly than
to ignore the global consensus,
the archetypal substructure beneath the
surface details and contradictions

of the archaic cultures.

This substructure is a bedrock
of cross-cultural agreement,
and it requires us to consider
events that are not occurring today.

The Uniformity Principle cannot be valid
in approaches to ancient history.

Our purpose in this series is to show
that every known mythic archetype
finds its place in the emergence
and catastrophic evolution
of a gathering of planets
close to the Earth.

No selective
perception required.

We've called this ancient planetary
assembly the Polar Configuration.

This gathering of planets
was the centerpiece
of the anciently remembered
Age of Gods and Wonders.

Within this framework, the global
imagery of the mother goddess
connects us directly to the
origins, the dynamic activity,
and the ultimate fate

of the Venus goddess.

One planet alone

meets the acid test,

drawing our attention to the

electrically discharging sphere

seen visually in front of and close to

the center of a much larger sphere,

named in the astronomical

traditions as the planet Saturn.

And within the very same

context the Venus goddess

stood in a profound alignment with the

smaller, darker and reddish sphere,

named globally as the planet Mars,

the prototype of the warrior hero.

That's the mother goddess paradox that we

will explore in the two episodes to follow.

Always look for the

underlying form!

Welcome to Space News from
the Electric Universe,
brought to you by The
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Scientists today are expressing their
surprise over the detection of water deposits
on an asteroid that is
thought to be pure metal.

The asteroid is
called 16 Psyche,
and it's described as a largest
metallic asteroid in the solar system.

The co-author of a new paper on the
asteroid says of the discovery:

"We did not expect a metallic asteroid like
Psyche to be covered by water and/or hydroxyl.

Metal-rich asteroids like Psyche
are thought to have formed
under dry conditions without the
presence of water or hydroxyl,
so we were puzzled by our
observations at first."

The authors of the paper have suggested
that the water was delivered by impacts
from other asteroids

in 16 Psyche's past.

However, they have also considered the possibility that the water was formed by solar wind interactions with silicates on the asteroid's surface.

In previous Space News episodes, Dr. Franklin Anariba, a specialist in electrochemistry, has proposed that a similar mechanism may be responsible for the detection of water molecules at Comet 67P.

Today, we asked Dr. Anariba for his analysis of this new discovery.

[Dr. Franklin Anariba] Observations indicate that comets and even asteroids appear to us to behave unexpectedly.

This is partly due to the lack of complete understanding of cometary phenomena due to its complexity.

I've previously proposed the presence of 3 competing mechanisms in action in cometary bodies for the identification of water and other organic volatiles.

These are: 1. Sublimation of volatiles

from the nucleus due to solar radiation.

This option applies once their presence on the surface of the nucleus has been confirmed.

2. Water formation on the surface of refractory materials, such as silicates, due to proton implantation through the solar wind.

3. Water and organic material formation driven electrochemically.

This is realistic since charge separation, voltage differentials, the presence of electric fields, and ion re-concentration due to the electric fields, have been reported, which allows for a serious consideration of the mechanism.

Recently, it was published that asteroid 16 Psyche, which consists of mostly Fe-Ni metal and is thought to be the largest metallic asteroid in the solar system, may have traces of water molecules on its surface.

The authors find that near infrared absorption features in the proximity of 3,000 nanometers, can be attributed to the presence

of water or hydroxyl ion.

This is particularly relevant

because a similar phenomenon

was reported to be present

on the surface of the Moon:

"The Deep Impact

observations of the Moon

not only unequivocally confirm the presence

of OH or H₂O on the lunar surface,

but also reveal that the entire

lunar surface is hydrated

during at least some

portions of the lunar day."

Therefore, it is reasonable to assume that this

phenomenon is also hydrating asteroid 16 Psyche.

Within the framework

of a neutral medium,

the corresponding reactions can be

thought of as gas/gas reactions

if they occur above the surface

and gas/solid interface reactions

if they occur on the surface, which is

nominally called proton implantation.

Collision theory can

explain both reactions,

mostly driven by kinetic energy gained by the

particles from the solar wind or solar radiation.

The authors state:

"... the detection of a three-micrometer absorption band suggests that Psyche may not be metallic core, or it could be metallic core that has been impacted by carbonaceous material over the past 4.5 billion years."

The infrared data is not clear-cut in term of the definite presence of impacts over such a long period of time, but it's likely that such a statement is a reflection of the current dominant paradigm.

In a non-neutral medium, one where there is the existence of a dynamic voltage differential giving rise to non-zero electric fields, charged particles such as hydroxyl (OH-) and proton (H+) can gain kinetic energy from electric fields, resulting in the re-concentration of ions along the electric fields.

Due to opposite polarities, these charged particles will be attracted to one another, and if their guiding electric fields cross paths,

one can imagine a rapid and turbulent
gas/gas reaction taking place,
which could lead to large quantities
of instantaneous water formation.

In the absence of solar radiation or
heat, these water molecules can migrate,
redistribute and
condensate on surfaces.

Nonetheless, of particular importance
is that the surface of comet 67P
contains both the presence of small amount of
water on its surface and carbonaceous materials.

These are facts.

And perhaps the same mechanism
is at action on both bodies;
asteroid 16 Psyche
and Comet 67P.

For continuous updates on Space
News from the Electric Universe
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Welcome to Space News from
the Electric Universe,
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For the last 5 years on this series we
have presented a vast library of evidence
for the role of electromagnetism
throughout the cosmos.

Though institutional science still
insists that gravity is king,
gravity-centric cosmology has
faced an ever-growing crisis
in light of countless
baffling discoveries.

With no explanation for the
origins of cosmic magnetic fields,
cosmologists have little left but
to resort to random collisions,
explosions and
gravitational collapse.

But if gravity is not king,
what is the best evidence
for the dominant role of electromagnetism
in the astrophysical phenomena?

In commemoration of the 5 year

anniversary of this series,
we begin our summation of arguably
the top 10 points of evidence
which most clearly point
to an electric universe.

Cosmic magnetic fields

It's a fact known to every
high school physics student,
electric currents
produce magnetic fields.

But this law of physics
is almost nowhere evident
in the standard

Astrophysical literature.

In fact with ever finer
technological data
the influence of pervasive powerful magnetic
fields at all scales throughout the cosmos
has been one of the great
surprises of the Space Age.

Although astronomers
have had no choice
but to acknowledge the existence
of magnetic fields in space,
it's important to keep
an historical context

and remember the predictions of the
standard gravity centric cosmology.

Consider the following excerpt

from the early online NASA feature

Dr. Magneto's

questions and answers,

archived in the

official NASA website.

On the question, do magnetic

fields exist throughout space,

the answer reads as follows:

"On the cosmological scale, there is no data

to suggest that magnetic fields are present.

They certainly are not important

in the dynamics of the universe

for any reasonable range of field strengths

consistent with present observational constraints."

But fast-forward to 2011

and the undeniable conundrum is

acknowledged in the Universe Today article.

It states,

"The mention of cosmic-scale magnetic

fields is still likely to be met

with an uncomfortable silence

in some astronomical circles --

and after a bit of foot-

shuffling and throat clearing,

the discussion will be

moved on to safer topics.

But look, they're out there.

They probably do play a role in galaxy

evolution, if not galaxy formation --

and are certainly a feature of the interstellar

medium and the intergalactic medium."

But what causes these

magnetic fields

which astronomers and astrophysicists

had long believed to be

"not important"?

To answer this question, let us consider

some of the scientific discoveries

which clearly affirm the electrical

interpretation of cosmic scale magnetic fields.

A great shock for

scientists came in 2008

with the detection of an astonishingly powerful

magnetic field in a so-called young galaxy.

A Phys.org report

on the discovery reads,

"Astronomers have made the first direct measurement

of the magnetic field in a young distant galaxy,

and the result is

a big surprise.

Looking at a faraway proto galaxy
seen as it was 6.5 billion years ago,
the scientists measured a magnetic field at least
10 times stronger than that of our own Milky Way.
They had expected
just the opposite."

And of course, ever finer data across
the entire electromagnetic spectrum
only deepens the
so-called mysteries.

In 2014, a comprehensive study was published
on the, so called, supermassive black holes
that are believed to exist
at the centers of galaxies.

Scientists made the unexpected discovery
that powerful magnetic fields
play a significant role in
the dynamics of the systems.

A Phys.org report
on the study states,
"The magnetic field strength was
confirmed by evidence from jets of gas
that shoot away from
supermassive black holes.

Formed by magnetic fields, these

jets produce a radio emission...

the new results mean theorists must re-evaluate their understanding of black hole behavior."

A contributor to the

research stated,

"The magnetic fields are strong enough to dramatically alter how gas falls into black holes and how gas produces outflows that we do observe, much stronger than what has usually been assumed...

We need to go back and look at our models once again."

However, as we will explain as we continue with this list, the standard assumptions about the sources of cosmic jets are also severely challenged by science discovery.

The real problem astronomers and astrophysicists face is succinctly summarized in a Scholarpedia page on the origins of galactic magnetic fields.

It states,

"The origin of the first magnetic fields of the Universe is still a mystery...

It calls for a mechanism to sustain
and organize the magnetic field."

At a smaller scale in our
own celestial neighborhood,
scientists call on
mysterious internal dynamos
to explain the magnetic
fields of planets and the Sun.

Dynamos are also now
proposed inside of galaxies
to explain the galactic
magnetic fields.

But plasma cosmologists have shown
theoretically and experimentally
that the magnetic fields in galaxies
are due to electric currents
flowing into the centers along
the spiral arms of the galaxies.

It's proposed that, when the current
reaches the center of the galaxy,
it's twisted into an
object called a plasmoid
where all of the electromagnetic
energy is stored
until the plasmoid
becomes unstable

and ejects matter in jets along the galaxy axis as observed in deep space.

Many of these concepts were published in understandable terms in the book, *The Big Bang Never Happened*.

In plasma physics, the plasmoid is the most concentrated form of electromagnetic energy known.

As proven experimentally, a plasmoid can store the energy of a room full of capacitors, in its tiny doughnut shaped form only a few millimeters across.

To contain that energy, that plasmoid has an intense magnetic field, self generated by electric currents twisting themselves together.

In our own solar system the electric universe predicts and explains many of the ongoing surprises for scientists investigating planetary magnetic fields.

In the last year, scientists reporting the findings of two major NASA missions to the gas giants, Jupiter and Saturn respectively, have shattered all assumptions

about the powerful magnetic fields
and those planets' highly
electrified environments.

The predictions of the theory that an
internal dynamo deep inside of Jupiter
produces the planet's magnetic field, have
been falsified by NASA's Juno mission.

Instead, the magnetic field is
both much more powerful and
"irregular than scientists
had ever imagined."

If such an invisible dynamo does
exist then, as Juno scientists admit,
it would have to be much closer to the
planet's surface than theory can explain.

As Juno principal investigator

Scott Bolton stated,

"I didn't expect all the
theories to be wrong,
but there's motion going on in
the planet we did not anticipate."

Saturn's magnetic field has proved equally
perplexing to scientists on the Cassini mission.

A major shock was the discovery
that the planet's magnetic field
appears to have no

discernable tilt.

As reported by Imperial

College London,

"Based on data collected by

Cassini's magnetometer instrument,

Saturn's magnetic field appears to be surprisingly

well aligned with the planet's rotation axis.

Previously, mission scientists

thought that 0.06 degrees

would be the lower limit of tilt that could

generate the observed magnetic field.

However, the results show the

tilt may be much less than this.

Scientists currently think

that planetary magnetic fields

require some degree of tilt

in order to sustain currents

flowing through the liquid

metal deep inside the planets.

With no tilt, the currents would eventually

subside and the field would disappear."

The leader of Cassini's magnetometer, professor

Michele Dougherty, said of the discovery,

"The tilt seems to be much smaller

than we had previously estimated

and quite challenging

to explain."

So if, like Jupiter, Saturn's magnetic field is not generated by an internal dynamo, what causes and maintains the magnetic fields?

In the Electric Universe, both gas giants are electrically charged bodies that are part of the larger electrical circuits connecting them to the Sun.

In fact, in 2016, scientists reported their first observation of so-called magnetic ropes traversing the vast distance between the Sun and Saturn and connecting the two bodies.

The lead author of a paper in the *Geophysical Research Letters* says of the finding,

"Contrary to previous ideas about Saturn's magnetosphere being unlike its

terrestrial counterpart,

these findings reveal that Saturn at times behaves and interacts with the Sun in much the same way as Earth."

But how can the fluid dynamics the NASA envisions explain,

"rope-like structures that

twist and change dynamically"

and extend to nearly 900 million

miles from the Sun to Saturn?

The phrase "magnetic ropes" is used to

describe twisted filamentary pathways

traversed by charged particles.

But, to electrical engineers, such

terminology reveals the inappropriateness

of concepts that came to dominate astronomy

and astrophysics in the 20th century.

As Professor Donald Scott, author

of the Electric Sky, states;

"Ropes, of course, have beginnings

and ends. Magnetic fields do not...

(T)his use of language from NASA

fails to explain anything,

and is conceptually wrong

as well as misleading."

The "ropes" to which the

investigators refer

are commonly described in plasma science

as electrical Birkeland Currents.

The rope-like structure

is not merely a curiosity.

It's the structure,

taken by current flow,

due to the long-range attraction and short-range repulsion between current filaments.

The "twisted magnetic fields" are simply the signature of the electric current flow.

In plasma cosmology these entwined plasma filaments act as transmission lines carrying "field aligned currents" across interplanetary and interstellar space.

In recent years, professor Donald Scott has published his own mathematical modeling of the structure of a Birkeland Current which can be visually identified as counter rotating cylinders.

Critically, this counter rotation is clearly seen at the north poles of both Saturn and Jupiter.

In our next episode, the question of the true source of cosmic magnetic fields will be further explored as we investigate the pervasiveness of filamentary structures throughout the universe:

the second of our ten reasons

why the universe is electric.

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Welcome to the
Electricity of Life,
brought to you by The
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Here is some footage
of a tadpole embryo
from Tufts University's Levin
Lab for regenerative medicine.

Electrical gradients
have been made visible
and we can see that they
precede the development
features of the
tadpole's face and body.

The relevance of electric frontiers
in biology is no small matter.

Planaria regenerate their
tail end into a second head.

Tadpole is bioelectrically modified to
grow additional eyes, genetically altered,
so that a particular
frequency of blue light
would stimulate ion regulators
in their cell walls.

This allowed electric gradients in

their body to be precisely changed

to match the electrical

characteristics

that cue the body to grow all

the tissues required for an eye.

This is the leading edge of knowledge in

the science of how life forms on Earth.

Use electricity to shape or

instruct the tissues of their body.

The significance of these

bioelectric principles

can be understood from fellow scientists

who have been amazed by their implications.

Some animals are known for the

regeneration of whole appendages.

The scientists who come to take part

in explorations at the Levin Lab,

use experiments and

computer modeling

to learn what conditions are

needed for natural regeneration.

Their experiments touch on several

paths for future medicine

all informed by how a body's infrastructure

of bioelectricity makes executive decisions.

Change the voltage exerted

upon cell membranes
and you can modify genetic
expression in the cell
so that a group of cells carry out
a very different plan of growth.

Electrical managing forces inform cell
development and response to injury
as a holistic system of
physiological decision-making
integrated with the body's
biochemical and genetic instructions.

A couple of years ago the Levin Lab
showed the tumor type abnormal growth,
administered to
developing tadpoles,
could be remitted with
a 30% success rate
by way of changing cellular
electrical behavior.

Back then, this was once again entailed
by genetically altering the organisms
to have light-controllable
cell membrane potential.

In the beginning of their
abstract they noted,

"It has long been known that the

resting potential of tumor cells
is depolarized relative to
their normal counterparts."

Later on, the authors put forth
that this bioelectric signature
could be used to
locate tumorous cells
and it appears to be functionally
required for tumors to form,
according to these experiments.

This year, dr. Michael
Levin and his colleagues
have discovered a practical new means
of readjusting electric gradients
that might soon become medicine.

Prozac, which is a selective serotonin
reuptake inhibitor or SSRI,
was recently used to reform the electrical
behavior of laboratory cancer cells
specifically administered
to change voltage gradients.

The authors declared this work
a successful proof-of-concept.

They said that existing and novel
drugs could be used as an alternative
to highly toxic chemotherapy.

The authors of this study redefined cancer as a network disorder affecting the ability of cells to properly interact with a morphodynamic field of instructive signals that keeps proliferation and migration orchestrated towards the anatomical needs of the host organism.

In other words, a failure to communicate or regulate.

Thanks for watching this episode of the Electricity of Life.

Check out the other innovations and insights covered previously and keep on the lookout for the next episode currently in the works.

Electric Universe, 2013 Conference

THE TIPPING POINT

Rupert Sheldrake

Science Set Free

Part 1

I'm talking about

"Science Set Free".

And what science is being set free
from, is the science delusion.

The science delusion is the belief
that science has already understood,
the nature of reality in principle
leaving only the details to be filled in.

This is very widely believed in our
society it is one of the reasons
for the dogmatism that all of us
encounter which is so annoying,
but it's because people think
they already know the truth.

They sincerely believe that and this is
probably one of the most widespread delusions.

In our society we have now exported
it to the rest of the world.

There is a conflict in the heart of Science
between science as a method of inquiry,
about the testing of hypotheses,

looking at the evidence, finding out
what's really going on, open-minded
subject to correction and so forth.

The ideal of science which many people
think of is, what science is.

As what science ought to be
and I agree with that ideal.

The reality, as many of us have encountered
through bitter experience, is rather different.

For many people science has become
a belief system, a worldview.

This is sometimes called scientism where
people take the dogmas of science
to be a kind of religious belief system
or quasi religious belief system.

And it's this dogmatic belief system
which I think is now constricting
and holding science back
in a very serious way.

In almost every branch of science we
see the lore of diminishing returns,
more expensive research yields
fewer and fewer really new results.

And the reason for all that is
this dogmatic belief system.

If science could be set free

from it, new experiments

and new possibilities

open up in every area.

What I do in my book

'Science Set Free'

is take the 10 dogmas of institutional

sciences which are part

of the scientific worldview and

turn these dogmas into questions.

Treat them not as

beliefs or truths,

but as hypotheses that can be

tested against the evidence.

I then look at them scientifically

to see how well they stack up

when you take into account the

evidence, none of them do.

And in every case new

possibilities open up,

science would become regenerated

when we undergo this process.

I don't have time to discuss

all 10 dogmas today,

but what I do first is

just say what they are.

And first and foremost dogma:

1) Is the belief that nature
is mechanical or machine like.

This has been the foundational
principle of science since
at the beginning of modern
science in the 17th century.

Mechanistic science is based
on machine metaphor,
nature is a machine, stars are machines,
animals and plants are machines
that is why you can have industrial
agriculture, genetic engineering,
factory farming and so on.

They are just machines.

And we are machines too, lumbering robots
in Richard Dawkins favorite phrase,
with brains that are genetically
programmed computers.

The second dogma is the total amount of
matter and energy is always the same,
except at the moment of the Big Bang
when it all appeared from nowhere.

That is so, then the third dogma is
similar to that, the laws of nature are fixed.

The laws and constants of the world are same
today as they were at the moment of the

Big Bang, when they all suddenly appeared
like a kind of cosmic Napoleonic code.

As Terence McKenna used to say, modern
science is based on the principle,
give us one free miracle
and we'll explain the rest.

And the one free miracle is the appearance
of all the matter and energy in the
universe and all the laws that govern it
from nothing in a single instant.

The fourth dogma is that
matter is unconscious,
the universe is made up of
totally unconscious matter.

Fifth, nature is purposeless,
there are no purposes in nature
and the evolutionary process
has no purpose or direction.

Sixth, biological inheritance is material,
it's genetic in the genetic material,
DNA or possibly in epigenetic modifications
of the DNA, which are also chemical,
or in cytoplasmic inheritance,
but at any rate it is all material.

Seven, memories are stored as
material traces inside the brain,

everything you remember is
somewhere inside your head,
as a stored memory either in phosphorylate
proteins modified synapses
or some material form which has
not yet been fully identified.

As they say, the
details are very vague,
attempts to find these traces have failed
over and over again, but nevertheless it
is universally believed within neuroscience
that they're all inside the brain.

Dogma 8, the mind is inside the head,
mental activity is brain activity,
your mind is nothing but
what goes on in your brain.

Dogma 9, follows from dogma 8,
psychic phenomena are illusory.

Things like telepathy can not really happen
because they would imply the mind can
work to distance from the body and it can't
do that because it's all inside the head.

And dogma 10, mechanistic medicine
is the only kind really works,
alternative and complementary therapies
may appear to work, but that is only

because people would have got better anyway or it's all the placebo effect. But the real kind, the only kind that really works is mechanistic medicine which is why at most parts of the world it is the only kind taught in medical schools, is the only kind funded by government funding agencies, and so on.

Well these are the 10 beliefs which are more or less the default belief system of most scientists and most educated people today.

Wherever they are in the world in India or China or wherever this is the belief system which is predominant.

Now, within science itself of course, people at the leading edge of research in many ways have moved beyond this belief system.

Research scientists are not necessarily committed to this in every detail, but they are usually only at the frontier of one region.

A physicist might be at the frontiers of cosmology

and have gone beyond some of
these dogmas of physics,
but they wouldn't question the
dogmas of psychology or biology,
those would remain
more or less intact.

So, there are various people who
question bits of it,
but there is very little that has
been done to question the whole thing.

This is essentially the
materialist worldview,
and it became the dominant view
of science in the 19th century.

Science was as it were hijacked
by materialist philosophy and
since then has been wholly owned
subsidiary of materialism.

There is no reason why
science has to be materialistic, it
wasn't materialistic before the 19th
century it was dualistic as I'll say soon.

And I think we can go beyond
that to a new, more inclusive,
more organic, organismic
paradigm for science.

What I'm going to do first is
look at the dogma that the
total amount of matter and
energy is always the same.

This got built into the foundations of
Science in the 17th century,
it was not brought about by incredibly
detailed observations using nanogram balances
and so forth, it came about for purely
philosophical or rather theological reasons.

The founding fathers of modern
science were all Christians who
believed that the world was a machine,
that God was a machine maker,
an engineering mathematically minded,
god who created the world machine,
and he'd started off the world machine in the
first place by creating the matter that's in it.

Which he created in the form of atoms,
taking the idea from Greek atomism,
and these atoms by definition couldn't
be destroyed, they couldn't be broken up.

So, once god had created it, the
total amount of atoms or matter
must automatically
remain the same forever.

And god also endowed the universe with
a certain quantum of movement or force
which started it in motion and
thereafter because this god-given force
couldn't be changed by anything
else, the amount remained the same.

So the principles of conservation
of matter and energy were built into
science from the outset, not on the
basis of detailed measurements.

They've served as useful
accountancy principles ever since,
but they were formulated more rigorously in
the mid-nineteenth century in the law of
conservation of matter and energy and
in the first law of thermodynamics.

So it was assumed that that was the end of the
matter and that they were fixed forever
and most people take that for granted
today they've learned it in high school
and they never see any
reason to question it.

This was the dogma of science
which I myself didn't
question until quite recently.

I questioned all the others,

but it was only when I was writing this book
that I thought I should look at this one
and I actually rather wanted it to turn
out to be true because I thought if I
said that all 10 dogmas of science
were false it might sound a bit biased.
So I thought it would be quite nice if one of them held
up and I thought this was the best candidate.
But when I thought about it turned
out to be a shambles.

First of all well,
physicists are above the law
and they found themselves quite
free to invent or to hypothesize
forms of matter and energy that we
shouldn't ever have thought of before.

One of them is of
course dark matter,
observations of galaxies and the
way that stars moved within them
and also the ways that galaxies interact
with each other suggested that the
galaxies, if they were to be explained in
terms of gravitation, simply wouldn't work!

The, the whole thing
simply didn't work.

So, in order to make it work they
hypothesized there was extra matter,
which you can see, hence
the name dark matter,
that accounted for all the phenomena
of galaxies and their interactions.

Well how much dark
matter was there?

Well, simple, just invent the exact amount
you need to explain the observed phenomena.

You can tight rate the amount
of dark matter at will
to explain the phenomena
you're trying to explain,
if you find new phenomena peculiar
bulges in galaxies or something that a
one-size-fits-all dark matter weren't to explain,
then you add a bit more where it's needed.

The system works perfectly and you can
explain everything with complete accuracy,
because you can change
the amount at will.

The only trouble is, no one knows what it is
and there is no independent evidence for it,
people've been speculating about its nature
ever since it was first postulated.

Having created all this extra matter
in the universe then this meant
there should be more gravitation, and
physicists expected in the nineteen nineties
that the universal expansion, from
the Big Bang, would slow down,
the Universe would stop expanding,
then begin to contract
under the influence of all this gravitational
matter until it ended in tears
and the reverse of the Big Bang known
in the trade is the Big Crunch.

So, when in the late nineteen nineties
people observed that the universe appeared
to be accelerating because of redshifts
in distant quasars and so on in galaxies.

Then, there was a problem how do
you explain this acceleration.

Well, the answer was ready to
hand, a new form of energy not
known about before which
cause the universe to expand.

How much is that? well, just the
right amount to explain the facts.

So, we now have dark matter and dark
energy as huge amount to the universe,

they currently make up

about 96% of reality.

Physicists invented something

like 20 times more energy and

mass than anyone could ever heard of

until the 1980s, and no one has said,

no you can't do that, it's defying the law

of conservation of matter and energy.

And if you ask, is all this matter and energy

conserved?

Is the total amount always the same?

Well, for dark matter nobody knows,

for dark energy the most usual theory is

that actually the amounts're increasing

as the universe expands there's

more dark energy.

The universe is now a

perpetual motion machine.

So, the idea it's all rigorously conserved,

doesn't really make much sense in those terms.

There's also within the quantum physics

a zero point energy, a form of energy

which is supposed to be there underlying

the world we live in which is like

waves on an ocean of energy.

And there is huge amounts of it,

the amount in a teaspoon would be enough
to power the United States for years.

Not surprisingly some people claim that
they can tap this energy and have devices
which tap unconventional, unknown forms
of energy including zero point energy.

If you go online, you will find there are many
people who claim to have above unity
devices, machines that produce more
energy than you put into them.

Well these were immediately banned from regular
science because they violate the first
of sciences taboos established by
Galileo in the early 17th century,
the taboo against perpetual
motion machines.

This taboo long predated
the laws of thermodynamics,
and it's one of the most
deep-seated taboos in science.

So things like Cold Fusion or above
unity devices or free energy devices,
whether they're based on zero point energy
or peculiar electromagnetic effects
or parametric resonance
or various other theories

that we use to explain them, are
totally beyond the pale.

Nevertheless people claim they've
got them and they exist.

If they do exist, of course, it
would totally transform
the world economy and the
world energy situation.

So do they really work?

Well right now it's very very hard to find
out because these claims that may or may
not be substantiated, there's a universal rejection
within orthodox science with this.

A few people within the Department
of Defense, a few people
who are kind of maverick
investors are interested in this.

The Japanese government's
interested but basically
they're not part of the
normal discourse of sciences.

I myself think the best way forward
here would be to have a prize,
say a million dollar prize for
the best above unity device,
and those who came to have them

could then have them tested.

This is not an attempt to debunk them,
it's an attempt to see what really works.

They'd be tested under
fair agreed conditions
and if any of them do indeed produce more
energy than it's put into them
which can't be explained in terms of any
known energy source, they'd win the prize.

If the several do then the
best one'd win the prize.

I think this would be the best
way of bringing this whole thing
out into the open and finding
out what's really going on.

And I think that commercial betting
companies could open a book on this
as well and people could bet on
whether the prize will be awarded.

Then all the skeptics who say it's
impossible could put their money where
their mouth is and bet a million
dollars that no one would win the prize.

How much would they actually be prepared to bet,
that would be a very interesting question.

I'd be prepared to bet at least a thousand

dollars that someone would win it.

So I think this would put this thing
totally into the public domain, the media
would love it, everyone would be
discussing it
and if someone won it I think it
would completely change the climate.

I think investors would get
interested, governments,
how it works and the
situation could move on.

Right now we've been at a stalemate
for years with these things.

It turns out that in biology the whole
question of energy conservation is
much much more questionable
than most people assume.

We all assume that the total
amount of energy that
we produce can be explained
by the food we take in.

And this was assumed in the
1850s by Hermann Von Helmholtz who
was eager to prove that living
organisms were nothing but machines.

He didn't prove it, he assumed it, and since

then it's been a basic dogma in biology.

It wasn't tested in humans until

1899 by two American researchers,

called Atwater and Benedict, and they were

determined to prove that we're nothing but

machines, they were mechanists and they

started from the assumption this was true

and they did the experiments

not to find out if it's

true or not but as they

put it, to demonstrate it.

In order to further the cause of science.

They had people in calorimeters

and measured all the heat

produced, the carbon dioxide,

the oxygen taken in, feces,

urine, food consumed and so on.

Did a complete energy

balance sheet.

When they did it the results came out

wrong, so they changed the correction

factors for the value of food until

they got the expected result.

And this then became built into the

foundations of biology as a certain fact.

It wasn't reexamined till a independent-minded

American nutritionist Paul Webb

redid their experiments in the nineteen
seventies, he found huge discrepancies.

People who were overweight, overreaching
in doing very little exercise,
seem to have 25% or so of
the energy just vanish.

People who are not eating and doing
exercise gained about 25%, too much energy.

Where was it coming from?

Nobody knows, he called it X,
the unexplained amount of energy that
could either be disappear or appear.

He then reexamined Atwater and Benedict's results
and found that they got similar discrepancies,
but they'd made sure to adjust as many
people who had too much and too little
so that when they averaged them it canceled
out to give the expected result.

There are people who claim there
are other forms of energy,
'Chi', Prana, vital
energies and so on.

And this is usually treated as metaphoric,
but they may be much more literal
than we usually think and this

is a huge unexplored area.

It's not as if nutrition science is the
most successful branch of modern biology

And I think that this is something
which bears reexamination, in my book

I suggest several quite radical
experiments that could
be done quite simply and
cheaply to look at this.

Well, now let me turn briefly to the idea that
the laws and constants of nature are fixed.

The idea that laws are fixed is a
hangover from Greek philosophy,
Plato and Pythagoras thought that the world
was governed by mathematical principles
beyond space and time, eternal ideas.

In the 17th century people thought these
were ideas in the mind of a mathematical god
and that God had these mathematical
ideas and that scientists were actually
finding out about the mind of god by
finding out maths of nature.

People thought Newton's laws of gravitation
we're not just human hypotheses,
mere guesses or mere working principles,
they thought this was a direct insight

into the Divine Mind, superior to that of religion, much more precise, much less disputable.

And this was really the basis for an enlightenment ideology of science and reason they thought science and reason transcended religion in giving a direct insight into the divine nature.

Now you don't hear much about that today, but there's still this strong enlightenment tradition and the idea the laws of nature are fixed is a hangover from that point of view.

But in a radically evolutionary universe, which the Big Bang postulates, why shouldn't the laws of nature themselves evolve?

In fact, why should it be laws at all?

Law is a very human metaphor, only humans have laws and only civilized societies.

Why should we project this anthropocentric metaphor onto the whole of nature?

I myself think that the idea of habits of nature makes much better sense.

This is the basis of my own idea of morphic resonance which is a memory principle in nature,

but I'm not the first

to propose habits.

The American philosopher C.S. Peirce, at

the beginning of the 20th century,

suggested that in an

evolutionary universe

the irregularities could be

thought of as evolving habits.

I think it's a much better way to think

of it, and it's a testable hypothesis.

The theory of morphic resonance predicts, for example,

that if you crystallize a new chemical

compound for the first time it may be

very difficult to crystallize because it

hasn't yet got a habit to crystallize

in, with a particular lattice structure.

But if you crystallize it again

somewhere else, there'll be a resonance

from the first crystals across space

and time, morphic resonance,

that will make it easier to

crystallize and the third time,

it'll be easier still because of the resonance

from the first and the second crystals,

it'll get easier and easier to

crystallize around the world.

There's a lot of evidence

that that really happens.

Chemists explain it by saying there must have

been, fragments of previous crystals

must've been buffeted around

the world as dust particles.

But I'm predicting the same will happen even

if you filter dust particles out of the air.

The theory also predicts that if you train

animals, say rats, to learn a new trick.

If you train rats in Albuquerque to

learn the new trick then all over the world,

rats in New York and London

and Tokyo should learn the

same trick quicker, just

because rats learned it here.

Surprisingly there's already evidence

from experiments with a long series of

experiments with rats done at

Harvard, the University of Edinburgh,

University of Melbourne, Australia,

that this actually happens.

The same applies to people,

it should be getting easier

to learn things that others

have already learned.

Well I'm not going to go into detail on this because this is the theme of my own theory of morphic resonance and my purpose in this lecture and in my book is not really so much to push my own ideas as to show how questionable the standard ones are and how much we can, the field is open for different answers.

But I'll turn just briefly to the constants of nature because this affects the Electric Universe, or any model of the universe.

It's assumed that the constants of nature are constant, the fundamental constants like Newton's gravitational constant, big G, or the speed of light, c.

Well, I began to wonder whether they really were constant when I got into the habit view of nature and so I tried to find what their actual values were.

I started off by getting handbooks of physical constants, and looking at old editions, most people only look at the latest edition and they usually throw the old ones away but I, in the patent office library in London,

I found they kept them all, and so I
got them all out of the reserve stock,
at 10-year intervals, they wheeled in a
trolley handbooks of physical constants,
dusting them off, and I looked through
these things to see how they've changed.

To my amazement I found that the speed of light
dropped by 20 km/s between 1928 and 1945.

I then looked up the data in more detail
and found that all over the world
people have been getting this much lower
figure, with very small error bars,
the original figure is up there with
little error bars and it goes down much
lower, little error bars it wasn't that
the error bars were 20 km/s, no, they were
point decimal places of km/s.

And I checked in the primary literature
and found this indeed seemed to be the case
and then they went up again after 1945.

I couldn't understand what was going on, so I
asked the head of the Metrology Department,
metrologist are people who measure
constants, at the British National
Physical Laboratory if I could go
and see him and I went to visit him.

He was very friendly, and

I said to him: Dr. Petley

I'd like to know how you explain this drop

in the speed of light between 1928 in 1945?

He said: "Oh, dear",

I said: "What?!",

he said: "you've uncovered one of the most embarrassing incidents in the history of our subject."

So I said, well could it mean that the speed of

light really did drop at least as measured

on earth during that period,

he said: "Of course not!"

I said: "Why not?", he said:

"Because, it's a constant!"

So, I said well then, I can't see

any other explanation than that

people around the world they're

sort of fudging their results.

To get what they thought everyone else

would expect them to get and then

discarding outliers and stuff

and coming up with these

very narrow error bars that

agreed with everyone else.

And so, it then must have been produced

by some kind of fudging process.

He said: "We don't like

to use the word fudge."

OK, so I said: "What

do you prefer?"

Yep, he said: "We prefer to call

it, 'intellectual phase locking'."

So, I said to him: "It was happening then,

how do we know it's not happening now?"

He said: "We know it's not happening

now.", and I said: "Why?"

He said: "Because we fixed the speed

of light by definition in 1972."

- "So, said I it might still vary?" and

he leaned back looking very smug

and said: "But if it did,

no one would ever find out,

because we've defined the meter

in terms of the speed of light.

So the units would vary with it."

I said: "Ok, you fix that one, but what

about the gravitational constant,

I saw that's been very widely, and

even actually in the last 3 or 4 years

it has varied by more than 1.3% as

measured in different laboratories?"

The usual assumption

is, this is just error
and it's experimental error, it's
hard to measure, it's error.
So, labs all over the world
get quite different results
and the International Committee
on metrology fixes the results
every few years by averaging
ones from different labs,
weighting ones they think are more reliable,
discarding ones they think are not.
Indeed, when I left Dr Petley, thanking
him for his time he reached down
to a cardboard box beside his desk
full of pamphlets and said:
"By the way, these have just come
from the printers, you might like one."
He handed me this pamphlet 'The latest
values of the physical constants'
I looked to these data from different
labs on 'G', big 'G' and in 1 or 2,
the question that I was wondering
is, there's always big errors,
could it be that they're actually
changing together in different labs
as the earth rotates around the

Sun, as it rotates during the day
and as the whole solar system moves through
different astronomical environments.

To find that out, one would look at
the day by day measurements from
different labs and see if the errors or
so called errors are correlated.

I spent more than 10
years trying to persuade
metrologists to do this and
they simply will not,
because they say it's a constant so
there's no point of looking for variations.

And I say, you got these huge differences,
they say they're just errors, it's hard
to measure, but they simply won't do it.

An exercise in open science would be if
they put their raw data with the dates online
and then anyone could try and look for
patterns and they could be a website
where they're discussed, I think it would cost
nothing and we might find something out.

We'll find out nothing
by pretending it's fixed!

There are in fact already
papers that suggest diurnal

variations in accordance

with the sidereal day.

A group at MIT recently found a daily variation and there's some evidence of annual variations, but there may be other wider fluctuations that happen in concert.

I myself think the so-called physical constants may vary from time to time and possibly even chaotically within certain limits.

But I think the day may come when in scientific periodicals like Nature there will be a page, a bit like the stock market reports you know.

This week's value of the constants, you know.

This week the 'G' went slightly up the charge on the electron held steady there was a drop in the fine structure constant.

And if that were the case then they would give varying qualities of time when different things could happen.

The idea they're all rigidly fixed is a hangover

from old Platonic point of,
way of thinking.

So there, right in the
heart of Physics is,
I think, a really open
and interesting question.

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project at Thunderbolts.info.

A groundbreaking new scientific report provides dramatic confirmation of our planet's dynamic electrical environment and the Earth-Sun connection.

Phys.org recently reported that the European Space Agency SWARM mission has discovered, "Supersonic plasma jets high up in our atmosphere" that can push temperatures up to almost 10,000 degrees Celsius. Attempting to provide historical context for the discovery, the report states, "The theory that there are huge electric currents, powered by solar wind and guided through the ionosphere by Earth's magnetic field, was postulated more than a century ago by Norwegian scientist Kristian Birkeland. While much is known about these current systems, recent observations... have revealed that they are associated with large electrical fields." In fact, in recent years the term "Birkeland current" has appeared with increasing regularity in

mainstream scientific literature. Today, professor Donald Scott discusses his own original modeling of a Birkeland current structure and he explores the significance of this new discovery from the Electric Universe perspective. SWARM is a constellation of three satellites designed to look at the geomagnetic field of Earth. They wanted to put some decent sensors, better sensors than had ever been flown before, I guess, up, and to investigate what exactly the properties of the of the Earth's geomagnetic field were. It's encouraging that this recent article about SWARM not only mentions the phrase Birkeland current several times but it also talks about electric fields. Well that's a word that almost never gets mentioned in the establishment literature but it's getting to be fairly well-known that electrical energy does indeed come from the sun to Earth in large tube-like conduits that have, over the years, become known as Birkeland currents.

The establishment usually only talks

about magnetic and gravitational fields
but the all-important term "Electric
Current" usually has been missing. This
latest SWARM article makes it appear that
the establishment may have been quietly
listening to our ideas. Now of course,
they're never going to give us credit
for it, they will now claim that they discovered
everything and they will try to ignore the
existence of our prior claims but I
think it's our duty, to ourselves and
that actually to posterity, to stake out
those claims and say exactly what we
have said, in the past, about things
like Birkeland currents. I will say that
my model, which I hasten to say, is an
extension of the work of some other
folks such as Hannes Alfvén, who won the
Nobel Prize in physics, and Anthony Peratt
and a fellow with a name Stig Lundquist, who
actually started the work on this
model back in 1950. That model
predicts most, if not all, of what the
SWARM release refers to as their
discoveries. It makes me a little bit
worried about whether they have ever

heard of some of the people. Certainly they had never heard of me but, you think, they might have heard of Hannes Alfven and Tony Peratt and of course Kristian Birkeland. But anyway, in 2015, the scientific journal "Progress In Physics" published an article of mine in which I included the quantitative derivation of this model. I finished it off, where Lundquist started it, and then I ended up developing the equations that describe the physical structure of the Birkeland Current. Those equations must be interpreted to follow, they follow up on what those equations predict about what the model must look like. Lundquist, in spite of my giving him credit for coming up with some of those equations; he never, like I guess most mathematicians don't, interpreted what those equations predicted for what the Birkeland current would look like and how it would act. But the model, as I developed it, shows the presence of electrical currents that flow in spiral paths in opposite directions, those things were in that

SWARM article. Oppositely directed currents, yes, and the Birkeland current itself is made up of a set of and this is, I think, the important point. The Birkeland Current is a set of concentric counter-rotating cylinders of electrical current and magnetic fields. And the currents and the fields are at all points in those Birkeland currents parallel, they're aligned. When you align the currents with the magnetic fields, the internal stresses on the Birkeland current relax and go to zero and that's what, that's the single property that makes those Birkeland currents able to go over tremendous distances, mean, we know they go from the Sun to the Earth, and that's 93 million miles. Well that's, that's nothing, that's a, that's a child's foot-step for, compared to the astronomical distances in light years. Some of these, so-called, jets from galaxies and they extend over and those currents don't come apart, they don't spread out like that, like a garden hose will end up in a bunch of droplets sprinkling over your lawn. They

hang right together in collinear alignment and that's, that's the reason they do. The formal name for a Birkeland Current, really, is a field-aligned current. It's a force free current because the fields are aligned. Anyhow, the SWARM article says, "Each satellite has an (electrical) electric field instrument positioned at the front to measure plasma density, drift and velocity." Well if that's indeed the truth, then I would think they should have measured some kind of concentric counter-rotation because the counter rotation is the prime property, as far as I'm concerned, on the Birkeland current. But either they haven't observed it or, if they did observe it, they neglected to mention it. Maybe because they don't know why it occurs. It's well known that the Earth has a geomagnetic field. It's less well known, but it's equally true, that the Earth and many of the planets also have their own electric field and the electric field that emanates either to or from Earth is a very

powerful electric field. The Earth is, and most of the planets I think are, also electrically charged. If you sit down and analyze what that phrase means, supersonic plasma jets, plasma is a word that defines a cloud-like collection of charges, you know, plus ions, negative electrons, all going along and they're traveling along in a cloud-like formation and a jet is a moving stream. It's a flow. So a flow of charge. Well that's the definition of an electric current but we already knew this. That's, that's what Birkeland himself, back in the early nineteen hundreds, said was going on. That's what they laughed at him for saying. For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

[Music]

[Music]

he titled why so surprising is basically an answer to the previous presentation I gave about surprising solar system it had had that described a number of things that were found immediately after the Space Age started that were all announced by surprise or unexpected or some types of words of astonishment and this is our sort of to explain why that is and it turns out that a lot of times people have a paradigm and they only see what fits that paradigm they don't look at other things their paradigm was based on the quorum consensus that basically we know everything nothing ever happened and a lot of times the quorums are quite fine but as they pointed out here sometimes it means you get the answer spectacularly wrong and in 1950 that's exactly what happened and here they say they didn't look at things in a different way she tried to get the astronomers to look at things differently and this is wave after 1950

after all of the surprises and she pointed out it didn't work they didn't want to do that and the problem was in 1950 these things were assumed and widely believed basically myth was pure fiction no global catastrophe has ever occurred

electromagnetic fields don't have anything to do with a solar system or the universe and as dr. Scott pointed out earlier a lot of people still say okay so they're out there but they don't do anything and he said that the solar system was formed in its current configuration billions of years ago and nothing ever changed

well somebody you wasn't in the club came along and wrote a book and said all of those things are not true so immediately the accepted theory people started jumping on him because if those assumptions were true then obviously they had a point he didn't know what he was talking about but the old saying is if you start with a bad assumption you can prove anything you want and they

started with a bad assumption but years of data indicated that it was a bad assumption so we'll go through those four things the first one was that people have found out that myths do contain data in fact Massey is a archaeologists basically with the National Lab in Los Alamos and he said that there's basically largely untapped data set in the mythology that's untapped as their phrase for ignored previously but now they have found out that the myths do contain data and they're going to start looking at it they've also found out that our basically knew for years like Lange in the 1880s said that myths are the same worldwide and then Grant pointed out that you'd be amazed even staggered at how all of the myths pretty much say the same thing some are just now catching on in Australia somebody did some analysis recently and said that the myths there coincide quite closely with a number of the Greek myths the second thing was supposedly no global catastrophes but it

was around 1980 when the Alvarez's
alvarez and his son and alvarez later
got a nobel prize for a lot of this work
and they determined that the a global
catastrophe wiped out the dinosaurs
now there weren't any people around then
so they didn't make myths about that
catastrophe but it opened the door for
people to say well maybe that we did
have a cold but catastrophes not
happening billions of years ago the this
one was 56 million 65 million years ago
but then they found another one of 56
million years ago that he said okay
hey there's getting closer and closer to
the current time then they found out hey
not only to have a global catastrophes
but we had some recent ones the
Pleistocene which was around 11,000
years ago supposedly changed in 40 years
from basically the Ice Age to no Ice Age
and these stories about that are pretty
much Universal again all over the globe
so Firestone and all said something
happened we may not have the exact model
as to what but apparently something did

happen not only that we had recent global catastrophes with geological data in the 50s basically and before that even if you had a catastrophe such as the Barringer crater which was supposedly about fifty thousand years ago at that time before the 50s they tried to say well it was real of volcano but all the evidence of the volcano has disappeared but it couldn't have been a meteorite because we don't allow that but then now there have a peer-reviewed collection of papers where they say oh yeah we had recent geological information available from myths in 1955 when Velikovsky wrote earthing of evil there was such a reaction to his book worlds and collision that talked about mythology that he wrote earth and upheaval which was only geological information and in it he said that it was apparent that dinosaurs are a lot of the bones of the time period of the dinosaurs they died in a traumatic event and at the time the theory was that

well they died in bed of old age and
their bones washed into the river and
got all jumbled up
and but they found out even in 2007 that
something happened while they were dying
not after they are before they died

Derek Ager ER was head of the British
Geological Society for a while and he
said he wrote the new catastrophism and
in it he said there were great
geological events not recorded in our
histories they were recorded but to
Hager and other people of the time they
were myths and didn't really mean
anything but they found out since then
he they did mean something and people
for years have recognized that something
happened in the past and it's possibly
explainable Weston in 1696 talked about
a big comet impacted the earth and that
a lot of the biblical stories could be
explained naturally from that event and
the church kind of ignored that but then
he said some other things they didn't
like so they arrested him and hauled him
off and but he at the time had the same

chair that Newton had previously had and the one that Hawking has now so it was you know fairly influential but the fact that he got arrested kind of discouraged thinking along those lines for a while until Donnelly came along in the 1880 and he said that there was a big comet impacted the earth and that the fear of comets today was a result of that impact and let's face it he was a lawyer in a congressman so you can understand why people might ignore that but then Velikovsky came along in 1950 and basically said the same thing hey myths contain data you can explain a lot of things through that and but he was an outsider with a respect to geology or no astronomy the main sciences at the time and he was a MD psychiatrist and historian so they ignored him too and later of course Dave Talbot and warder Cardona came up with a lot of information about recognizing that the recorded data is real and useful information and it's obviously no longer 1950 because you can at least talk about

it

but again agar that we talked about
before said that for a century and a
half the geological world one might even
say brainwashed with uniformitarianism
and that the dangerous doctrine in
uniformity was oh thank you
but nearly 40 years before a Gurr
Velikovsky said the real enemy of the
theory of evolution is teaching
uniformity are the non occurrence of any
extraordinary events in the past so
Hager agreed with Velikovsky although he
probably didn't know it and wouldn't
have liked the fact that he agreed with
Velikovsky there was also guilt by
association there was such a reaction to
Velikovsky that any time anybody said
something that might sound like
Velikovsky said it they would wouldn't
want to do it that's why in 72 Gould
used the term punctuated and equilibrium
because Velikovsky had started the term
catastrophic evolution and so they
couldn't say that but now everybody
pretty much agrees but that's right and

that the punctuation came from something
outside and they said hey it's pretty
much an observation as opposed to just a
flat-out Theory type thing but the way
Clube and others have applied punctuated
equilibrium it fits quite well
and say they say that the ice age was
caused even from something else which
was around 11,500 years ago another
major catastrophe in fact they said a
mars-sized object well that's a pretty
big object to have been impacting the
earth and causing a change from the Ice
Age
but luckily science changes and pretty
much science now goes along with what
Velikovsky said in earthing uphill but
of course you can't mention them still
the third item was electromagnetic
fields and Velikovsky suggested to the
people that were planning the
geophysical year when they were going to
send probes up and stuff and he said hey
why don't you see about the magnetic
field of the earth how far up it goes
and if it goes beyond the moon and they

said it decreases in altitude so you wouldn't expect anything like that and that he invented electromagnetic fields to explain all that stuff that he had written before and he suggested through has who was the head of the Princeton Geological the geology department at the time that they measure the orientation of the rocks that they were going to get on their first lunar trip and they said yeah why bother there's no magnetic field up there and then that was one of the surprises he we sweet a major of the magnetics of the direction of the orientation of the rocks and Velikovsky also asked him saying do you really think that you could have this electromagnetic field which they had found by the end and that goes beyond the moon and not affect the moon and of course no they thought of it as a rhetorical question but then it found out that hey the every time the moon encounters of the Earth's magnetosphere you have activity going on up there so they determined that magnetic fields

are important and pointed out that alpha and others said that years ago but they were basically ignored another one that surprises is there's another magnetic moon that they really hadn't expected because still the idea of well yeah you've got a electromagnetic field that happens to interact with our moon but nothing else could have one and moon certainly wouldn't have one but they said either something wrong with our theory or our understanding of Kenny Meads their history and I suggest maybe it's both I said that the electric activity on Io may be a result of a large electric currents so we've gone from no electromagnetic fields to ok magnetic fields when we need them and now even some electric currents and more oddities the fields don't even line up right so the thing on this is of course create a concern among planetary scientists about how planetary magnetic fields are generated that's one of the things that wall and

Don't talk about considerably
another thing is x-rays you've got a lot
of x-rays appearing at places that they
didn't expect and you've got to have
three things to get the x-rays you've
got to have a source of charged
particles something to speed them up and
something for them to impact and they
say hey we've got all of these x-rays
that we don't understand and puzzling
because they shouldn't be there in no
model fits them and again there's a gap
in our knowledge or something basic is
missing basic and missing in this case
is the assumptions for the theory even
x-rays from Pluto well you know it's bad
enough this went from I not even being a
planet in our Solar System x-rays that just
shouldn't have and again the constant
speed from the Sun can create creative
extra
but not to the extent that they found
that the will in the ones that are on
Pluto in the lightning spokes the
Saturn's rings you know supposedly
known for years that they were just

debris from collisions and nothing
electrical and now that they found that
they've got these lightning strokes that
go through them and the interesting
thing here is ten thousand times more
energetic and on the earth at least they
admit electrically charged dust in 1950
the theory was that comets are dirty
snowballs and they came from this comet
field way out at the edge of space and
wander in and when they get close to the
Sun and get close to the sudden they
heat up and create the comet tails but
even in 1964

some people said hey comets are
plasmas and of course that was ignored
and so al fain pointed out that
sometimes you even sweep under the rug
observations that don't fit the current
view and that applies to the theory of
comets even in nineteen eighty eight
five still Sagan was saying comets only
an iceberg also the wind
creates mountains our dues that go the
wrong direction with respect to what you
would expect from the wind and they say

that at least admit in this case they
may be an electoral process
electrostatic process is it affecting
this and they're saying that hey there
was probably a freighter link between
comets and asteroids than we previously
thought and that 67p in particular
violates conventional wisdom of comets
resembling smooth dirty snowballs and
the lock the 2015 comment it's time to
stop thinking of comets as dirty
snowballs another the fourth item that
they used as to why belikov Z's got to
be wrong is that these solar system's
been in its current configuration for
billions of years and they even have a
law that demonstrates that was called
Bo's law at the time but then they
finally realized well bodes tolet if
from Tisha's so with the old you know
and it wasn't a bad fit really the
actual stuff and what the boat law says
so it kind of falls apart when you get
past Jupiter but it's not really that
bad and even as late as 72 they assumed
that the equation reflected the early

solar system which was a way of saying
hey Velikovsky's you out to be wrong
cause Bowdoin will roll well worked
forward so we'll but as I mentioned
oh it stole it from dishes and so they
started calling it the dishes food rule
sort of like the old Soviet thing of you
steal something when you get caught you
give half back well it turns out that in
the Tisha's bold rule if you change the
0.3 to 0.6 everything remains exactly
the same except there's no orbit for
Venus so you could say if you thought it
meant anything which it doesn't you
could say it showed Venus it was the
last one in but it's basically what is
called a curve fit you take a bunch of
data and you write a formula to fit the
data and so you shouldn't be surprised
that it fits the data well that's what
they did with the Tisha's mode rule they
just curve fit the planet orbits and
then said that proved they'd been there
forever it's really not proof of
anything

[Music]

and astronomers would still use it until
you bring up the point three two point
six part and then there admit that it
doesn't really mean anything oh also
when it is stress I'm not saying this
supports anything about a Venus model at
all because it's a curve fit so by 1960
the original solar system wasn't really
considered secret anymore
but it was still used as to why
Velikovsky must be wrong
but even these people who were well
known in their fields were saying hey
here's change that probably took place
in the solar system and they were saying
this at the same time that other
astronomers were saying no it never
could have happened well they were
weren't saying it couldn't have happened
they were just saying Velikovsky's about
it got to be wrong and this is one of
the reasons but nice thing about science
is they eventually changed with the data
and so they pretty much now say hey plan
has changed and they've even say Venus
collided with a similar body jupiter and

saturn have close encounters with
neptune these people have a huge amount
of simulations of various types where
planets change orbits and in case go
through the references too fast the book
that have mentioned that may come out on
Kindle Monday is titled Aurora
petroglyphs and pagans and it's got all
this information in the previous
information about surprising solar
system and a lot of the information
about the plasmas oh I liked this
quotation be forgiven for thinking the
eight planets drift
in from different parts of the cosmos
and current theories can't account for
all of it so obviously what they thought
in 1950 no longer applies they say hey
it's not really that stable in this one
eventually a close encounter as sender
innermost planet can rename or careening
wildly and this goes along with the
agree that it's completely different
thinking now but now they're even
comfortable with all of these things
bouncing around and they said that

Jupiter and Saturn formed differently
another one there's supposedly two body
at 18 au Uranus is now around 19 au but
it it was twice the mass of the Earth
and collided with either Neptune or
Uranus so obviously some kind of odd
carrying on now they assume all of these
things happened billions of years ago
but every now and then they'll throw in
a thing that well this happened within
the last 10 million years so in fact
they have somewhere moons of one planet
collided they say within the last and
million years and it will happen again
in another ten million years well how
many times has it happened you know they
assumed ten million years just because
it's got to be a long time but maybe it
wasn't that long and they say
free-floating planets may have been
captured in fact Planet 9 may have been
a rogue planet now a lot of this may
bring to mind work fugly toward in
Cortona and he's got a lot of
information about that and I think Dave
Talbot and others probably have similar

things that go along with what door do
was saying not only is there just one
out there there's lots of objects out
there so billions of stars have captured
rogue planets so it's not just a one-off
thing that might have been weird for our
particular history but seems to happen
all the time and how these rogue planets
formed defy current popular theories of
how solar systems formed you can have a
lot of details wrong and the more
details you have the more likely you're
going to have details wrong in fact
there's a saying in computer programming
where if you find a bug in a computer
program
there's 99% chance they're going to find
another bug so in the larger the program
the more likely you're going to find
these
well that's the same thing the more
detailed you have in a theory the more
likely one of the details is going to be
wrong but lots of people have had
details wrong the Copernicus didn't have
all the details right

but he's still highly thought of
Velikovsky had a few details wrong but
that doesn't mean that his four main big
picture items that we discussed were
wrong in fact those major components of
his theory were correct and agreed to by
all now and sometimes you can have a big
picture wrong Newton's sign square law
which was wrong and some say that it
held back development of flight for
years because of the calculations that
you did with it and history's filled
with great scientists you even had
unscientific ideas and some of the
people mentioned us on our Raleigh and
JJ Thompson and a lot of very famous
people so being wrong every now and then
shouldn't run your reputation either
belikov see stuff described something
that was all natural and a lot of times
he was associated with the space aliens
did at all people and that was another
way of ignoring what he said if he can
lump him in with somebody that you're
pretty sure is a little odd on some of
the things that they're postulating then

it's easier to just
dump them all in the same category but
he said that they were all natural
causes basically and the plasma science
helps even support more so that they
were natural causes and the work of
Broughton Scott go along those lines so
21st century thinking is completely
opposite of nineteen fifty mythology
does contain and data clova catastrophes
did occur electro many fields do play an
important part and the solar system was
not formed in its current configuration
Experion years ago used X because in
1950 DX kept changing further and
further back it's complicated and here's
the important part
more often than we might expect
conclusions that contradict initial
intuition the initial intuition in 1950
was that let's assume nothing ever
happened and try to explain everything
we can from that standpoint there was a
nice initial thought but the data didn't
support it but people weren't willing to
look at the contradictions so disclaimer

which is usually in very small print but
I'm not trying to support anybody's
particular model I'm just saying that
the data is there showing the four major
things that Velikovsky said in 1950 that
they're all worth pursuing and that
there's enough data
in those four areas for somebody to come
up with a model and the more people
trying to do that probably the better
and a lot of interesting models these
are in alphabetical order but you
probably recognize most of these people
but maybe Firestone might be and Napier
might be a little different
Duncan Steele wrote a book he
concentrated on the model explaining why
calendars were invented but he goes
through a lot of data that needs to be
explained in somebody's model there was
a book
built to last and they talked about the
Tyrian a carry any of the are that
you're quite often forced to pick this
or that you know format arianism are
catastrophes in 1950 you had to pick one

you weren't allowed to consider the
possibility that uniformitarianism is
valid between catastrophes thank you

[Applause]

[Music]

[Music]

A new scientific paper attempts to shed light on a mystery at Jupiter that continues to baffle space scientists.

Among the countless surprises the NASA

Juno space probe has revealed since it

entered Jupiter's orbit in 2016, perhaps

none has proved more puzzling than the

discovery of multiple cyclones which

appear fixed and unmoving at each of

Jupiter's poles. Nothing in the standard

theoretical toolkits of atmospheric and

planetary science predicted, nor can explain, the

phenomena. As described in a recent phys.org report,

"Photos of the planet's north pole show that there are

eight cyclones surrounding the central cyclone directly

over the pole. All eight are in close proximity and all

are nearly equidistant from the central cyclone, and are

arranged in an octagonal pattern. At this time it is not

clear if the cyclones rotate around the center. There is a

similar arrangement at the southern pole,

only there are just five cyclones, shaped

as a pentagon." The report acknowledges,

"Such behavior is of course unheard of

here on Earth. Cyclones take shape, travel

around for a while and then dissipate.

Such behavior has left researchers

scrambling to come up with a reasonable explanation for what they have observed.

In a new paper published in the journal Nature Astronomy, a team of scientists has used data and images from the Juno probe to determine the winds and direction of the cyclones. As noted in the phys.org report, the team has proposed that there is quote "...an anticyclonic ring of winds that move in the opposite direction of the cyclones, which is what keeps them in place. And while that may hold true, the team was unable to find signatures of convection, which would have helped to explain how heat was being used to fuel the cyclones. They acknowledge that much more work will need to be done to fully explain the behavior of Jupiter's cyclones."

The irony of this hypothesis is evident to those familiar with the groundbreaking work of Thunderbolts colleague Dr. Donald Scott. It was a few years ago that Dr. Scott first published his mathematical modeling of the structure of a Birkeland Current, which could be visualized as counter-rotating cylindrical shells.

In past interviews, Dr. Scott noted that counter-rotational patterns can be seen in the vortices at the poles of the gas giants Jupiter and Saturn. Indeed counter-rotational wind movements associated with Jupiter's cyclones would not be surprising, if incoming Birkeland currents are contributing to the phenomena.

In more recent years, Dr. Scott has closely followed Earth's wind patterns.

And as he described in his April 2nd 2022 Thunderbolts video, he has found clear visual evidence that our planet's polar wind patterns are driven from the outside, and not by any surface- or internal earthbound processes or dynamos.

This evidence suggests that the main outside source of these polar winds is the varying strength and direction of the Birkeland current stream of electrically charged particles.

However, the aforementioned Nature Astronomy paper looks to, quote "shallow water models," rather than plasma physics, to explain the Jovian cyclones. Nor is this the first time that space scientists

have looked to fluid dynamics to resolve the anomalous appearance of fixed, geometric patterns in the upper atmosphere of a gas giant planet. For decades, the hexagon at Saturn's south pole has puzzled planetary scientists.

Several years ago, researchers succeeded at producing similar forms through simple fluidic experiments, providing an explanation that many astronomers have favored. However, more recent scientific discoveries have definitively pointed away from the mechanical, fluidic explanation.

In 2018, scientists using images obtained by NASA's Cassini spacecraft observed an unexpected, towering vortex far above the famous hexagon. A Science Alert report on the observation stated, "There's something strange over Saturn's north pole. A tremendous structure towering high above the clouds indicates that the planet's peculiar hexagonal formation is much, much bigger than was initially apparent."

One of the investigators said of the discovery, "As the polar vortex became more and more visible, we noticed it had

hexagonal edges, and realized that we were seeing the pre-existing hexagon at much higher altitudes than previously thought.”

The problematic nature of this discovery is noted in the article which states, “...since wind conditions change dramatically with altitude, the fact that the hexagon shape persists so much higher than the cloud tops is a baffling conundrum.”

In other words, the persistence of the hexagonal feature hundreds of kilometers above the clouds is a clear indication it is being driven by energy from above and cannot be explained by simple fluid dynamics.

Is it a coincidence then that hexagons and other polygonal or octagonal forms are produced in plasma discharge?

Consider the side-by-side images on your screen. On the left are vortices of an electron beam, etched onto a carbon witness plate.

On the right are vortices of an electron beam photographed in a fluorescent screen.

The hexagonal form is a distinct feature of a well-documented plasma phenomenon called the diocotron instability. And the phenomenon observed in the laboratory is remarkably scalable. As

explained by Dr. Anthony Peratt in Physics of the Plasma Universe, "The vortices of the diocotron instability are found to occur over 12 orders of magnitude in beam current.

This mechanism was first introduced to explain auroral curtains by Hannes Alfvén."

As we've noted many times, the chief proponent of the Electric Universe, physicist and Thunderbolt science advisor Wal Thornhill made an outrageous prediction with respect to the Saturnian hexagon.

In 2005 Thornhill analyzed the mysterious hot spot in the vortex at Saturn's south pole. The Hot Spot puzzled planetary scientists because, as described by the Keck Observatory, "...both the distinct boundary of a warm polar vortex some 30 degrees latitude from the southern pole and a very hot 'tip' right at the pole were completely unexpected." Thornhill wrote of this feature, "Its compactness is due to the electromagnetic pinch effect where it enters Saturn's atmosphere." He then stated the Electric Universe also predicts, *experimentum crucis*, that BOTH poles should be hot, not one hot and the other cold."

In 2008 the Cassini spacecraft confirmed the astonishing prediction. Astonishing, because the freezing cold north pole had been

deprived of sunlight for more than 12 years.

Thornhill explained, "The polar hot spot and long-lived hexagonal feature result from a continuous electric current flowing from the Sun into the pole of Saturn."

Indeed, in stark contrast to the conventional view of the Sun as an isolated body powered by internal thermonuclear reactions, the Electric Universe proposes that the Sun is primarily an electrical phenomenon at the focus of a galactic glow discharge.

In this view, electric currents flowing from the Sun to planets has implications for many atmospheric phenomena including the tremendous winds, stupendous magnetic fields, and X-ray and temperature anomalies of the gas giants, as well as jet streams and weather patterns on Earth.

For decades, Thornhill has argued that weather systems on Earth are primarily electrical phenomena, and both on our planet and elsewhere in the solar system, the evidence of the Sun's connection to weather and atmospheric phenomena continues to grow. As we reported in 2014, scientists in the UK discovered the completely unexpected ability of solar storms to trigger dramatic lightning on

Earth. And in fact, at Jupiter scientists recently discovered a surprising influence of the Sun on tremendous heating and temperature anomalies.

As noted in the October 1st 2022 Science Alert article, a planet-sized heat wave has been found in Jupiter's atmosphere.

"A heat wave the size of 10 Earths has been discovered rippling through Jupiter's atmosphere. It was 130,000 kilometers across, and a scorching 700 degrees Celsius, traveling at speeds up to 2,400 meters per second, away from the Jovian north pole. And this, scientists say, could resolve one of the more perplexing mysteries about our Solar System's biggest planet - why it's so much hotter than models predict." As the article explains, planetary scientists have long attempted to attribute this anomalous heating to Jupiter's auroras, although the spectacular X-ray auroras themselves are not well explained in Standard Astronomy. However, a team of researchers discovered that when Jupiter was hit by a large solar storm, they noted a synchronous enhancement of so-called

"auroral heating". The Science Alert report acknowledges, "Jupiter is not the only planet in the Solar System that is hotter than it should be. Saturn, Neptune, and Uranus are all hundreds of degrees hotter than solar heating can account for."

While planetary scientists increasingly have no choice but to recognize the role of electric currents in planetary systems, as they have for many years at both Jupiter and Saturn, they still view the electric currents as byproducts of localized phenomena in closed systems.

However, just as Thornhill successfully predicted, the hallmarks of electric currents flowing into the poles of Saturn, we predict that no hypothesis based on simple fluidic dynamics will explain the fixed cyclones on Jupiter.

Rather, these dramatic phenomena are testimony to the electrical circuitry that pervades our solar system and indeed our entire Electric Universe.

[Music]

[Music]

In part one, I predicted the discoveries
to be made by the James Webb telescope
about the creation myth of the Big Bang and
the failed gravitational model of galaxies.

In this second part, I'll talk about the gulf
between thermonuclear and electric star models
and expected discoveries from the James Webb
telescope. First, I want to pay special tribute to

an unsung pioneer of the Electric

Universe, Dr. Charles Bruce

who lived from 1902 until 1979, an

Englishman who was uniquely qualified

to recognize the electrical nature of the

universe, as both a Fellow of the Royal

Astronomical Society and an authority

on terrestrial lightning. Dr. Bruce

graduated in 1924 with First Class Honours

in Mathematics and Natural Philosophy.

In 1952 he was awarded a Doctor of

Science, both from Edinburgh University.

In 1942 he was elected a fellow

of the Royal Astronomical Society,

in 1964 a Fellow of the Institute of

Physics and in 1965 a Fellow of the

Institution of Electrical Engineers. He joined

the Electrical Research Association from 1924 until his retirement in 1967. The event which led him to the study of the significance of electric discharges in astronomy was his attendance at a lecture on the Sun and the Ionosphere, given by Professor Sydney Chapman, the leading British mathematician and geophysicist.

When he noted that the velocity of a solar prominence, which reached the height of 1 million miles in an hour, was very close to that of the leader stroke of a terrestrial lightning discharge.

In December 1960, he wrote an article in *Electrical Review* titled *An All-Electric Universe*. It outlines his theory published much earlier in 1944, which and I quote "...endeavors to show that electrical discharges have gradually condensed matter from the primordial gas and dust of a general universal atmosphere, first into galaxies, then from the condensed matter of the galaxies into stars.

Discharges in the extended atmospheres of stars further condense the matter, ultimately to allow the formation of

planets and satellites." End quote.

Key to this discussion is two of Bruce's major concepts. He was the first to propose the birth of stars and planets in high-compression magnetic pinches along current channels in molecular clouds, rather like cloud-to-cloud lightning.

He was also the first to propose that secondary bodies, or satellites, may be ejected from a star by a phenomenon observed in arc welding where the arc pinches down on the electrodes causing a high pressure jet and the ejection of metal in the arc welding process. Such an ejection of matter is observed to be independent of gravity.

Bruce's detailed electrical explanation for phenomena seen on the Sun, relied upon comparisons with atmospheric lightning.

Understandably he accepted the thermonuclear source of the Sun's energy.

Bruce's struggle with astronomers was in trying to convince them of global lightning in stellar atmospheres.

The famous British astronomer Arthur Eddington had noticed evidence for stellar lightning when he wrote his book "The internal constitution of the stars", published

in 1926, that established the standard model of thermonuclear stars, and I quote,

"If there is no other way out we may have to suppose that bright line spectra in the stars are produced by electric discharges similar to those producing bright line spectra in a vacuum tube... We conclude provisionally that bright lines in the spectrum of a static star indicate that either (a) the star is greatly disturbed by 'thunderstorms,' or (b) it is a nebulous star."

But the million degree corona and excited atoms producing the bright line spectra outside the Sun, clearly show the energy is coming externally from the galaxy.

Clearly he didn't have the mathematics to deal with that. On page one of the book he states, and I quote, "...an understanding of the mechanism of the interior throws light on the external manifestation of the star and the whole theory is ultimately brought into contact with observation."

End quote. He has fooled all the experts since.

The next unsung engineering hero of the Electric Universe was Ralph Juergens who lived from 1924 until 1979. In the

1970s, Juergens referred to Bruce's work and solved the energy problem by introducing the physics of a low pressure gas discharge which requires a galactic circuit to power it. His revolutionary insight was to recognize the Sun presents all the detailed features of an electrically stressed anode in a coronal discharge. He even foreshadowed my input to his model when he wrote in 1976 and I quote, "Could it be that the search for thermonuclear energy is a false trail that has been followed all these years with no real hope of success? If the Sun and the stars indeed succeed in fusing lighter elements to form heavier ones, are the relevant activities carried out more or less in plain sight- in their atmospheres?" End quote.

We can generally trust engineers. They've got to make things work. The Electric Sun model was finally tested experimentally by the SAFIRE project, with funding from the International Science Foundation.

Following confirmation of nuclear processes by other laboratories,

success was announced at the annual Electric Universe conference in 2019 at the University of Bath in England. Just to add icing to the cake, last month a paper was published in the Astrophysical Journal titled, "The Sunward Electron Deficit: A Telltale sign of the Sun's Electric Potential. Although the real significance of the discovery is lost on the authors who insist that the heat of the Sun is causing the charge separation, what they measured was the drift current of electrons toward the Sun which is characteristic of electron drift toward the anode in a discharge tube. The SAFIRE project showed nuclear transmutation production of heavy elements that are found in the solar spectrum. It shows all main sequence stars produce some radiant energy by the electric discharge, but most importantly it catalyzes nuclear transmutations in their photospheres. To produce the star's radiant energy and heavy elements, together with neutrinos. Clearly, sunspots are dark simply because

there is no radiation coming from within.

So, the complicated ad hoc life stories for different classes of stars is unnecessary, as is the evolutionary classification of stars into populations I and II.

Shortly, I will show that the electric model fits all stars. The James Webb telescope, when successfully deployed, will allow us to see finer and fainter detail in the starburst regions of dense molecular clouds where stars and gas giant planets are born.

The twisting and turning glowing red filaments of constant width are like those in a novelty plasma ball.

They are rotating Birkeland currents threading the gestating stars in those clouds.

The stars grow in mass until they are born by a slingshot effect as the filament twists away. The enigma of the upper limit of star mass is simply answered. The James Webb telescope should put this explanation beyond any doubt, because gravity alone cannot produce such twisting and turning filamentary structures. It is hard to overstate the importance of evidence of helically twisted filament pairs and braids. The Electric Universe

position has always been that the universe is one giant web of rotating electric currents that flow as filaments of helically twisted pairs and braids and manifesting that morphology at all scales. That stars are born in an intense magnetic pinching of a galactic Birkeland current. That every star is connected to the galactic circuit by a coaxial Birkeland current.

That every galaxy is connected to a larger intergalactic circuit by coaxial intergalactic Birkeland currents.

It is often very difficult to remotely observe an electric current in plasma dark mode, passing through the diffuse interplanetary, interstellar or intergalactic medium.

For example, the discovery of interplanetary electric currents has only occurred when space probes have made unexpected in-situ measurements. Nevertheless, it is often possible to remotely observe such electric currents because, for example, dust is aggregated to the current via Markelund convection. Or, because the density of neutral atoms in the local plasma and the current density is sufficiently high for the generation of electromagnetic

radiation in different parts of the electromagnetic spectrum. As I have often noted, radio astronomy is of particular importance because Birkeland currents typically emit synchrotron radiation in the radio spectrum. Of course, many observational challenges remain. Not least because looking out into the universe from our place in the galaxy, is like looking through a tangle of spaghetti, producing the cosmic microwave foreground. The observational evidence has already been accumulating for the existence of helically twisted filament pairs and braids at all scales. In solar flares. In star-forming molecular clouds. In supernova remnants, planetary nebulae and other diffuse nebulae. Within galaxies. Connecting galaxies. And even galaxy clusters. Indeed, in June this year (2021), phys.org reported on a finding by an international team of astronomers and I quote, "...mapping the motion of galaxies in huge filaments that connect the cosmic web... that these long tendrils of galaxies spin on the scale of hundreds of millions of light years" and that "rotation on such enormous scale has never been

seen before. The results published in Nature Astronomy signify that angular momentum can be generated on unprecedented scales." End quote.

The phys.org report states "Noam Libeskind, initiator of the project at the AIP, says, and I quote, "Despite being thin cylinders - similar in dimensions to pencils - hundreds of millions of light years long, but just a few million light years in diameter, these fantastic tendrils of matter rotate."

On these scales the galaxies within them are themselves just specks of dust. They move on helixes, or corkscrew-like orbits, circling around the middle of the filament while traveling along it.

Such a spin has never been seen before on such enormous scales, and the implication is that there must be an as yet unknown physical mechanism responsible for torquing these objects."

Of course standard model astrophysics has no explanation for the observed helical and rotational motion.

The phys.org report reveals, "How the angular momentum responsible for the rotation in a cosmological context is one

of the key unsolved problems of cosmology.”

Of course, the problem remains
unsolved because there is no tool,
or combination of tools in the Standard
Model tool kit that can produce
helically twisted filament pairs and braids,
other than by development of the physics of
magnetic flux tubes which are, after all,
merely an effect of electric currents.

The Electric Universe provides the answer.

Rotating electric currents impart spin
to galaxies, stars and planets as first
proposed by Dr. Bruce almost 80 years ago.

It provides a simple explanation
for Eddington's admission,
and I quote, “...the fact is that rotation of
celestial objects is altogether mysterious...”

End quote. They are responsible for the
remarkable alignment of galactic spins over
cosmological distances and,
as Alfven noted, they are
responsible for transferring energy and
momentum over large and very large distances.

I predict that the James Webb Space
Telescope with its vast improvement in
sensitivity and resolution, will

reveal the existence of the
connecting network of helically twisted
filamentary pairs and braids even more clearly.
We will discover helically twisted filament
pairs and braids everywhere we look.
I make the same prediction for the square
kilometer array and the extremely large telescope
and indeed every new telescope that
significantly extends observational
sensitivity and resolution. Returning to stars,
two properties of stars we can measure
from their light are luminosity
and color or surface temperature.
They are presented as a scatter plot
in a Hertzsprung Russell diagram
which, from an electrical engineer's
point of view, is strangely mirror
reversed, with stars getting
cooler as you go from left to right.
There is, as Professor Don Scott writes
in his excellent book *The Electric Sky*,
an elegant correspondence between the
electric star plot and the electric Sun model.
The luminosity and color of a star is due
to plasma discharge phenomena in the
ionosphere of a dense planetary type body.

All bright main sequence stars exhibit a phenomenon seen in the laboratory on the anode of a low-pressure gas discharge, where increasing current density causes bright secondary plasma tufts to progressively crowd the photosphere to give the appearance of granulation, eventually forcing the photosphere to expand and the spectrum to move from yellow towards blue and increasing the luminosity.

Periodic behavior observed in photospheres, like sunspots and helioseismic oscillations, are driven by resonant behavior in the interstellar and interplanetary circuits.

You may notice gas giant planets in the lower left-hand corner of the plot, together with the red dwarfs. That's deliberate. There are no failed electric stars.

In that region the bright photospheric plasma tufting reduces and disappears and we see only the red anode glow of the red and brown dwarf stars enveloping their gas giant nucleus. Our Sun's more compact red anode glow is seen briefly as the chromosphere during total

solar eclipses. The red anode sheath effectively increases the anode surface area of a star to collect sufficient electrons to stabilize it in the galactic circuit. Red giant stars have a gigantic glowing anode sheath. Their powerful stellar winds are caused by positive ions, stripped from the atmosphere and body inside, and accelerated away from the star by an electric field that strengthens as the anode sheath expands.

The density of the ions passing through that anode glow contributes to their brightness.

Variations in the plasma environment cause the observed changes in size and brightness of red giants and can produce dramatic flaring from electric arc ejection of matter from the star.

The red giant Betelgeuse has recently demonstrated many of these phenomena.

I predicted in 2008 that dense red stars will appear as giants. The other outliers in the Hertzsprung-Russell plot are the white dwarfs. Eddington wrote about white dwarfs when first discovered, quote, "Strange objects, which persist in

showing a type of spectrum entirely out of keeping with their luminosity, may ultimately teach us more than a host which radiates according to rule.”

End quote. He got that right, ultimately.

Here's the lesson: The luminosity in the Hertzsprung Russell diagram has a mathematical relationship to the mass of the star, however the luminosity of a white dwarf frequently differs by a factor of 100 from that of another with almost the same mass and apparent chemical composition.

The first problem is that mass is undefined in physics. The second problem is that the universal gravitational constant, or big G, has a mathematical dimension of mass and mass according to $m=E/c^2$ is an energetic variable.

So, the luminosity of a star can't tell us how much matter is in that star.

The calculations that require white dwarfs composed of dense matter are worthless.

White dwarf stars are a simple coronal discharge. It's like the faint white light we see around the Sun in a total eclipse, which

demonstrates the low luminosity of such a discharge. White dwarfs have no bright photosphere or chromosphere.

The galactic electric field reaches down to the star and is strong enough to smear out the hydrogen spectrum and excite the spectra of heavier elements sputtered from the planetary body of the star.

A plasma discharge can switch discontinuously between dark, glow and arc mode, as we see in the abrupt brilliant flaring and X-rays of faintly glowing brown dwarf stars, nova outbursts and the sudden searchlight brilliance of a supernova.

These outbursts are caused by exploding plasma double layers where a cosmic circuit is suddenly opened and the store of electromagnetic energy in that circuit arcs across the switch.

For a nova and supernova, the power stored in an interstellar circuit is unleashed on the hapless star and heavy elements from its planetary core jetted into space, as Dr. Charles Bruce hypothesized.

The structure of the interstellar circuit in that event can often

be seen lit up around the remnant.

In no circumstance does anything going on inside the star cause it to explode.

Last we come to the family of brown dwarf stars. These stars are arguably the most important target for the infrared James Webb telescope because they are the most numerous and some of the closest stars to us. The telescope should confirm that all brown dwarfs are gas giant-sized bodies, enclosed in a huge red anode glow.

To give some idea, if Jupiter's present invisible plasma sheath were lit up, it would appear in the sky at opposition the size of the Sun.

Brown dwarfs are simply small red giants.

All red stars lack the transistor action of a bright main sequence photosphere which steadies a star's radiance as their electrical input varies.

So, the phenomenal shrinkage in size of Betelgeuse over many years with steady luminosity, followed by its recent polar ejection of matter and dimming, is easy to understand.

Like their giant brothers, brown dwarfs can be expected to show the same behaviors and like red giants, have an

unexpectedly strong stellar wind for such a cool star. A lower-mass brown dwarf in a binary system has already been found hotter than its higher mass companion.

Such a reversal of temperatures with mass is not predicted by any theoretical model for brown dwarfs.

So, I expect new discoveries to confirm important parts of this narrative and not require any ad hoc additions to the Electric Universe explanation.

In part three I will talk about what the James Webb telescope may tell us about the newborn planets and the subsequent formation of planetary systems and it includes the formation of the solar system and the recent history of the earth.

It's a cosmology that involves us.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

It's one of the great enduring
mysteries of solar physics --
why is the Sun's lower corona hundreds
of times hotter than the Sun's photosphere?

For many decades, scientists on Earth
have sought an answer to the puzzle,
doing so exclusively within the confines
of the standard model of the Sun.

Recently, a team of scientists reported
observational evidence that the mysterious
rise in temperature could be driven
by so-called "magnetic plasma pulses."

As reported by Phys.org,
an international team of
scientists, led by the
University of Sheffield,
have discovered previously
undetected observational evidence of
frequent energetic wave
pulses the size of the UK,
transporting energy from the solar

surface to the higher solar atmosphere.

Of course, like all scientific data, both what the scientists are looking for and how they interpret what they see, is governed by their theoretical premises.

In this episode, we asked Dr. Donald Scott for a comprehensive overview of the Electric Sun model's explanation for the mystery of coronal heating.

For many years, the mainstream astrophysical community has been seeking an explanation for the tremendously hot temperatures of the Sun's lower corona.

It's a classic problem, they've been doing it for decades, they've been worried about it for decades, but that Sun's lower corona is more than 300 times hotter than the 6,000 Kelvin photosphere, which is below it, if you can imagine

300 x 6,000, it's in the millions of Kelvin.

And so, it's outrageous that the Sun's outer layer should be hotter than its inner layer, close to where they presume the source of the heat is.

This search has been punctuated by a series of press releases, especially in Phys.org which is the source of all these press releases, NASA press releases and stories about these sorts of things.

So for example, I'll just go through a bunch of them.

In December 2007, one of these things came out and said what they included in their words were, "Powerful magnetic Alfvén waves in the electrically charged gas near the Sun have always been a leading candidate for why this happens.

Alfvén waves are created by convective motions, get this, when convective motions and sound waves push magnetic fields around."

I didn't know you could move magnetic fields by playing rock music and push them around.

But that's the kind of level of under-
standing or misunderstanding that these
things are full of, they
always refer to magnetic
reconnection which
Hannes Alfvén essentially
demolished as a non-process, but they
always prefer the magnetic reconnection.

Also, like in June 2012, there
was an article 'Space tornadoes
power the atmosphere of the Sun',
where they make a
great emphasis on
"Applied mathematicians
from the University of
Sheffield...say that the
solar tornadoes carry
the energy from below the Sun's
surface up to the lower corona" and
they are of course in the
form of magnetic waves.

These are applied
mathematicians who never got
close to an observatory,
but they're explaining
how all of this stuff

works, supposedly.

In July of 2018, there was
one press release that I
will spend some time talking
about, if you don't mind.

The story is this, it says,
"...coronal heating problem begins
with a green spectral line observed
during an 1869 total eclipse.

Because different elements emit light
at characteristic wavelengths, scientists
can use spectrometers to
analyze light from the Sun
and identify its composition,"
that's quite right.

"But the green line observed
in 1869 didn't correspond
to any known elements on Earth.

So scientists thought perhaps
they'd discovered a new element
that didn't exist on Earth
and they called it coronium."

Because it was observed in the corona.

Anyway, that was one of
the first fictions that these
people have invented

along with black holes and

neutron stars and...

Anyway, "Not until 70 years

later, a Swedish physicist

discovered that the element

responsible for the emission is

of all things, iron,

superheated to the point that it's

ionized 13 times, that is to say it is

so hot that it has released

13 of its outer electrons,

leaving it with just about half the

electrons of a normal atom of iron.

And therein lies the problem:

Scientists have calculated that

such high levels of ionization would

require coronal temperatures of

around 2 million Kelvin, actually.

So anyway, that's where the

whole problem was discovered.

But, these press releases continue,

year after year, and they talk about

heating of different elements

that are heated at different rates,

they're right at the doorstep,

it seems to me, of when

they start talking about
ionization, of recognizing
what the source of the whole
phenomenon is, that it is electrical.

Those ions are ripped out
of there by electric fields.

But anyway, those ions that
do escape the Sun, are those
ions form what's called the solar wind.

All of these press releases in my mind
tend to use what I
call 'purple prose.'

A perfect example of this is on August
2018, it says, "For the first time, a
NASA spacecraft will swoop
in and touch the Sun."

'Purple prose' is text that's so
extravagant or ornate, or flowery
as to break the flow
of a person's text
and draw excessive attention
to itself; I am reading
from the dictionary, that's what
purple prose is defined as being.

Well if that isn't the
purple prose, "It's going to

swoop in and touch

the surface of the Sun."

The Sun doesn't have any

surface, first part, but

anyway, that's the level,

I'm trying to get across

to you, that of the PR, of

purpleness of the prose,

based on a really fundamental

misunderstanding of what is actually

going on up there.

The last press release: so let me

talk a little bit about my reaction to it.

It does mention the four

suites of scientific

instruments that are on

the Parker Solar Probe.

First of all, that Parker Solar Probe is an

absolutely astounding marvel of engineering.

To get that probe as close

to the Sun as they're

going to get it (and it has

actually made one close

approach already),

is just marvelous.

And the instrumentation that's on board

is apparently exactly what they need.

Here are some important numbers that I get from that release, in fact, they emphasize that. The Parker Solar Probe's closest approach to the Sun is going to be around 4 million miles, that's six million four hundred thousand kilometers.

Now, the Sun's radius is about 695,000 kilometers and therefore the Parker Solar Probe's closest approach to the Sun is going to be 9.25 solar radii.

That's the closest that the probe is going to get to.

In 2016, I gave a talk, at the EU Conference, that extends the Juergens model and I mean the motive for talking to you this morning is that I'd like people to be familiar with what Juergens, and to what extent I've been able to extend his model, explain the very things that these folks are looking for, except I submit, we've got the real reason

that these phenomena occur,
and it isn't going to be
discovered or harvested by fancy
mathematical analysis or computer
simulations, especially when you don't
understand at the beginning, what is going on.

So anyway, in that talk,
if you take a look at
slide five just for example,
shows the three major layers
of the Sun's outer edge, the Sun
is positively charged and
it's full of positive ions that are
ready to escape, and the photosphere,
that you see here, consists of
charges, clumped into anode tufts.

These serve as
a barrier to other
positive charges within the Sun. It's
like a dam at the end of a reservoir.

That's really the Juergens
model of the Sun.

And this is really the basis for everything
that the Electric Universe thinks about the Sun.

Anyway, slide twelve shows the 3 plots
there, which I've shown many times.

The top curve is a plot of the voltage, with points on the line.

It starts at the surface of the Sun on the left, and goes out through the top of one of those tufts, those photospheric tufts, out toward the corona.

It's like the cross section of a dam, at the end of the reservoir, we'll come back to that in a minute.

The middle plot is a plot of the electric field, and the electric field is simply a force, a force directed toward the right on any positive ion in that area and while the chromosphere, that is from points B to D, while in there, the flow is laminar.

That is to say that's a ski-jump that goes down there and any flow, whether it's electrons, or protons, in an electric field, that laminar flow is a dethermalized flow.

Laminar flow is the opposite of turbulent, it's slick.

Turbulence is measured, at least
in a plasma, by its temperature,
so when you say a plasma is
hot, it means the elements in
that plasma are really in
random, violent random motion.

But anyway, the bottom plot there,
it shows that the ions are moving,
it's just a plot
of the velocity.

They're moving very fast after
point D and they become
turbulent, and so that red
region at the bottom there
shows high temperature.

This is the reason for the Sun's hot chromosphere;
those ions are coming out of there and colliding in the
lower corona with other neutral
atoms and other ions that
are there to start with and
they go out toward the
right hand side and after they get
past that area, there are no collisions.

So anyway, slide 16, to jump ahead.

These are the properties
of the fast solar wind.

Essentially, what is a fancy
name for the flow of those ions
that we've just seen coming over the
tops of those tufts in the photosphere.
Then it emanates from regions of the Sun's
surface where there are no sunspots.

A sunspot is a place where there are no
photospheric tufts and that's why it looks
black and when you look at the regular
surface of the Sun through a telescope,
hopefully it's a solar telescope
for otherwise you'll go blind
instantly, but you can
see these photospheric
tufts, so they move around
and they disappear.

That solar wind approaches
800 km/s, at approximately
9 solar radii away from
the Sun, remember that.

The Parker Probe is going to go in
there, get in there, to about 9 solar radii.

So at that point, this fast solar
wind is going about 800 km/s.

So, they should be able to measure
a very intense solar wind flow of

ions, at that closest approach.

Go to slide 17 and you'll

see that only a few ions are

energetic enough to get

over the top of the dam.

You can see in purple there, they

constitute a, this is important,

they constitute a low

density -- high velocity flow.

That is to say, they're falling from

a great height, a great voltage,

which is the same thing, and therefore

they get very, very fast at the bottom.

But not too many of them make it

over the top of the dam, so it's a low

density, it's not very much water

in that flow, not very many ions.

Slide 18 shows a hydraulic analogy of the

fast solar wind and it shows what that water

would look like when

coming over that sluice gate.

Slide 19 talks about

the slow solar wind.

Now, that's a different animal.

The slow solar wind emanates from

the equatorial region of the Sun,

mainly from sunspots, and its maximum velocity is only about half the fast solar wind velocity, but its ion density is more than 3 times denser than the fast solar wind.

But it's much slower than the fast solar wind.

Now why, what happens?

Well, in a sunspot, there are no photospheric tufts, the dam has been broken or removed and so it's the, water it's just, or in this case the ions, they're just free to flow outward.

And slide 24 shows a low velocity -- high density flow.

The difference between the two water levels in that picture is not very much.

The river is only a few feet higher than the level of the land onto which the water is flowing.

But, it's a lot of water, therefore it's a high density flow.

The next slide, slide 25, just shows the bottom of a sluice and both the fast and the slow solar winds; where the fast wind comes out of the tops of the tufts, and the slow solar wind comes out of a sunspot. Both of them can create very strong turbulence when they collide with ions farther out, at the bottom of the corona, just like the water here at the bottom of the sluice gate.

It is just colliding with the motionless water and perhaps some rocks at the bottom on this slide and it becomes quite turbulent, and as I said before, temperature is a measure of this turbulence.

So that's the explanation for this hot, solar temperature at the bottom of the corona.

The next slide, slide 27 is a statement made by a well-known helio-astronomer, Dr. Grail.

He said, "Our results indicate that the acceleration of the solar wind is almost

complete by 10 Solar Radii, much closer
to the Sun than had been expected.

This is about where the
Parker Probe is going to get to
and the acceleration is almost
complete at that point.

He said, this is important,
"this suggests that the acceleration
of the solar wind and
the heating of the solar
corona occur in essentially
the same region,
and thus that the underlying
mechanisms may be strongly linked.

And I remember to this day,
when I presented that I said,
strongly linked, you got to be kidding,
they're the same mechanism!

They are the electric mechanism
described by Juergens' model
and it's obvious what's
going on if you just
realize what the cause is,
it's really pretty simple.

And anyway, therefore,
given the fact that the

Parker Probe isn't going to approach the Sun closely enough to even get into the corona, even the outer edges of the corona, they only extend out about four, or maybe at most five solar radii.

Now, the corona itself exists way out but it becomes dark mode plasma, you can't see it.

I think what does happen is that the corona forms in its outer regions these, what are called coronal caps.

And those coronal caps are the basis for Birkeland currents that go out farther, but it's a filamentary kind of a flow out farther.

We'll see, perhaps they can measure, if they're out that far, how these Birkeland currents do flow farther than coronal caps, we'll see.

Anyway, slide 31 just lays it out, it says that Juergens' model explains why the plasma

corona exists in the first place and it explains the inverted temperature profile and it explains how the strong electric field above the photospheric tufts accelerates the ions of the fast solar wind.

Slide 32 is my contribution to this.

I submit that that extension of Juergens' work, explains that the solar photospheric tufts are variable electrical barriers for the positive ions attempting to escape from the Sun.

They're also traps for incoming electrons, we haven't mentioned that this morning, but they are.

Why there are two very different solar winds, one fast, one slow?

Because they come from two different places and are formed by two different electrical, I emphasize that, electrical mechanisms.

Why the fast wind is faster than the slow wind, why it has a lower density?

That's because of where it comes from.

Why the electron temperature is the same in both winds -- that's simply because the electrons don't go through the same mix master that the ions do.

Why do the tufts go away and collapse in a short time -- yeah because those photospheric tufts fill up with electrons and they neutralize and they disappear, relegated out of existence by recombination between electrons and ions.

And last but not least, why is the fast solar wind why does it come out of the coronal holes? Well, a coronal hole is simply a place where there are no sunspots, so they come out of the typical photospheric tufts.

Here's the important point -- none of these mechanisms occur at locations accessible to the Parker Probe.

None of them.

All of these mechanisms occur
way down at the base of the
corona in or just above the
photosphere and the chromosphere,
and so the Parker Probe
hasn't got a ghost of a
chance of getting into where
these mechanisms occur.

And it will be impossible for
the probe to prove anything
about magnetic Alfvén waves,
I'm sure that they're dying to do that,
but it will be impossible, because the
probe can't possibly get in close enough,
that is to say below the corona and
observe what's really happening.

No matter how complicated
the mathematical analysis or
advanced computer
simulations are, it's not
going to be of any help
if you don't understand
the electrical nature of what's
going on in the first place.

Stay tuned for Don Scott's
and Wal Thornhill's

analysis of SAFIRE

Project's latest update.

presents

Exposing the Myths of "Settled Science"

at the

Natural Philosophy Alliance

20th

Annual Conference

College Park Maryland

Exposing the Myths of Settled Science

subtitled - A Guide for the Perplexed -

And I do understand that the

NPA members are not perplexed,

but I ask people here today.

How many believe that the foundational

assumptions of the theoretical sciences

deserve to be called

settled science?

That they are fully secure?

How did I know that?

Not even close I heard.

Just a few observations, 'The myths of
settled science rely upon public confusion'.

I think everyone here understands that

that's true to one degree or another.

In every field people are confused because

they don't know what or whom to believe.

They think the issues are too deep to be

grasped by outsiders or by us plebeians.

Imagination is trapped in the

myths of settled science...

without realizing how

these myths arose.

It's incredible to discover how a couple of

core assumptions, foundational assumptions

filtered into the entire domain, the

entire edifice of theoretical science.

The two assumptions are:

- Gravity alone rules the cosmos.

- Gravity's behavior must be interpreted

through the lens of relativity theory.

And I'm just going to concentrate on

the first one because I do understand

that the second one gets a lot of

attention by members of the NPA.

Just a quick outline here of the innumerable

domains of specialized investigation

that depend ultimately upon the

foundational idea that gravity is king.

There is no other force doing real

work across cosmic distances.

I presume everybody

can see the type,

I tried to make the type

deliberately large here.

And yet, a new vantage

point is emerging today,

and that vantage point

is highlighting

the newly discovered roles of

electricity across the cosmos.

Now, there's no sound playing,

obviously, there is on my system

and that's not gonna

mean a lot, but...

We always thought that the

earth was the unique location

of electrical activity

at energies of this sort.

And yet, now we know that the electric force

is active from microcosm to macrocosm.

And how many people here

would want to defend the idea that

spectacular structures in space

of this sort can be reconstructed

through Newton's

gravitational equation?

We honors pioneers such as Kristian

Birkeland and Hannes Alfvén

experimental pioneers in the

role of electricity in space,
and dozens of others
could be mentioned.

The key components of an
Electric Universe paradigm
are first, electric current
across cosmic distances,
that's across interstellar
and intergalactic distances;
electric galaxy formation;
electric star formation;
electric sun and
electrified heliosphere;
electrical scarring
of planets and moons;
electric comets, that's comets
plunging through the electric field
of the Sun to discharge
electrically;
electricity of life, a huge new domain
of investigation within the
Electric Universe community today;
the quantum role of
the electric force.

I know many people in the
NPA are exploring this

and the connection to the
underpinnings of gravity itself;
and the electrified ancient sky,
that's my own field of
concentrated study for decades
and I'm really not going to even
touch that field here today,
other than to say it does bring
the Electric Universe with it.

Now, I formulated what I call a core
prediction of the Electric Universe
based simply on observation of what's in the science news these days.

When we examine energetic events
in space, we will always find
electromagnetic intensities far beyond the
ability of prior theory to explain them.

And this has been born out to the
most extraordinary degree
and this incidentally
is why we called our
conference earlier this
year 'The Tipping Point'.

It's not a reference to a
psychological / cultural phenomenon
this phenomenon hasn't entered into
popular consciousness at all yet.

It hasn't found its way even any clear and
meaningful way into the scientific media,
but the facts as we say, 'discovery
by discovery one surprise at a time',
taking the entire field of inquiry into
the Electric Universe unannounced.

And the admonition is
question all theoretical assumptions
when they stopped working.

The big picture of space
we say is broken,
broken in more ways than
one, it's not working
and it's broken
in the sense that
the picture of the cosmos is
one of isolated islands.

An isolated island means that to
discover what's going on dynamically
you can only find the answer
by looking inside the island,
the larger context of surrounding space has
nothing to contribute by way of an answer.

Thanks to the explosion of
technology in recent decades
we have the opportunity

to see objects in space

across the entire

electromagnetic spectrum

Well, this is the ideal for anyone

pursuing the Electric Universe paradigm.

Here was galaxy M87, just

before the space-age.

Now, M87 courtesy of

Hubble Telescope

and a structure spreading thousands of light

years across the deep vacuum of space.

X-ray emissions concentrated

along this jet,

remembering that this

jet is across a vacuum

greater than we can produce

and any laboratory.

It is entirely enigmatic in an

electrically neutral Cosmos.

At the core of M87 we see emissions

in radio and X-ray wavelengths,

but actually across

the entire spectrum

and that's the signature

of synchrotron radiation,

the highest magnitude radiation

known to science today.

And synchrotron radiation was first

predicted by Nobel Laureate,

father of modern plasma

science, Hannes Alfvén.

But what does standard theory see?

Standard theory sees this

speck that is identified,

theoretically, as the

irresistible attractor.

But what is it doing?

It is shooting charged particles away

from the black hole at the center of M87.

It's important for everyone considering

an Electric Universe paradigm

to wrap their minds

as best they can

around the distance involved

in this stupendous jets.

How far does light

travel in a second?

186,000 miles

How far does it

travel in a year?

It's something like

5.88 trillion miles

and that is a light

year of course.

These distances are typically

counted in parsecs.

A parsec is 3.26 light-years.

This jet is 50,000 parsecs,

and now it's measured

electrically.

Measurement of the Electric

Current in a Kpc-Scale Jet.

"We obtained for the first time a direct determination

of a galactic-scale electric current ($\sim 3 \times 10^{18}$ A)."

It's just unfathomable

what is occurring across

this unimaginable distance

of vacuum in space,

"Our analysis strongly supports a model where

the jet energy flow is mainly electromagnetic."

There are no islands in space.

Just imagine having to

defend the idea that

infinitesimal speck inside that glow to the

lower left is producing all of this.

The truth is that if you

had an electron microscope

to look at this image at this scale,

you would not see the black hole.

And if the image that you

did see was brought up

and you had another electron microscope to

look, you still wouldn't see the black hole.

How did it happen that we became

so confined theoretically

that we are required to look

inside that galactic core

and ignore the charged particles

that constitute a sea of plasma

feeling this unbelievable

volume of space

and it really is impossible to

wrap our minds around that.

Galaxies are immersed in the

surrounding electromagnetic emissions.

There's the galaxy.

And again, why would we ignore

the power of charged particles

in that immense volume of space

that constitutes the context

of this galaxies appearance?

And now we know that magnetic

fields pervade the universe,

and we see this as science coming to the

Electric Universe through the back door.

It is not possible in the vacuum of
space to create a magnetic field
or to sustain a magnetic field in
the absence of electric currents.

We're talking about converging
evidence, and we can bring the focus
down to our own cosmic
neighborhood and explore the sun
and ask ourselves now the question
that has never been ask in
70 years of solar physics.

Is the Sun truly
an island in space
with no electrical connection to
billions of stars in the sea of plasma
that constitute the Milky Way?

Interestingly, we now see,
courtesy of the new technologies,
the new telescopes and so on,
we see star formation along concentrated
plasma filaments or current filaments
and the expression 'Beads on a String' is
coming into the popular scientific lexicon.

"Beads on a String"

Well, that's the very phrasing used by

Hannes Alfvén and such plasma scientists
as Anthony Peratt who we
got to know quite well.

"Beads on a String"

Now, does gravity
create filamentation?

Can gravity act on a filamentation to create
a concentration of matter in a sphere?

That concentration into a star forming
region and the birth of a sun or star
is the language of the
plasma cosmologist.

And here's an amazing fact,
we didn't do this graph here:
the width of those filaments has
now been measured in infrared,
and they are
strikingly consistent.

This is from the Herschel
telescope, and you can see
the region on the
electromagnetic spectrum
where they are able
to actually measure
the widths of these
filaments quite precisely.

And again, that is a prediction
of plasma cosmology.

"This consistency of the widths
demands an explanation."

"...Herschel has shown that newly-born stars
are often found in the densest parts of them."

That's a prediction of
plasma cosmology.

Then, to explore the heliospheric
boundary, we resorted to the IBEX mission.

The Interstellar
Boundary Explorer

It was funded on the basis of 30
predictions, and every prediction failed!

The thing that's really shocking is
this ribbon of energetic neutral atoms.

Why in the deep vacuum of space
would atoms ever be energized
or gather into a ribbon?

This is what happens in an electrical
interpretation of the heliospheric boundary.

Voyager's out there now, and it's left
them all scratching their heads.

I'm not the one to
argue a point here
but I can tell you if you will follow

Wal Thornhill's predictions
with respect to what is found
at the heliosphere boundary,
you will see a remarkable accord.
And nothing that was anticipated
by conventional theory,
which imagined the heliosphere
moving to neutral space,
kinda like a comet that's warping the
magnetosphere into kind of comet-like tail,
it's not there.

"It's a huge surprise. In some sense we have
touched the intergalactic medium,
but we're still inside
the sun's house."

"The models that have been thought to predict
what should happen are all incorrect."

This is not a small thing.

So, we come right to the
Sun itself and ask,
well, we know its big and round,
but do we really know much
more about it accurately.

It's been on the table for decades
the idea that the Sun
could be a glow discharge

responding to an
electrified environment.

Geissler tubes, Crookes
tubes, neon tubes
and all those exquisite
cultural expressions.

Controlled Fusion?

It is time to actually raise the
thermonuclear Sun model to doubt,
to serious questioning.

We know thermonuclear fusion occurs;
we've seen it out of control.

But we were so confident in the
thermonuclear core of the Sun
that we have spent hundreds
of billions of dollars
believing we could replicate
that within 20 years.

The 20-year timetable
was announced in 1950,
and we're still seeing
the 20-year timetable.

This is a tokamak.

"In any useful fusion device, the energy
output must exceed the energy required
to confine and heat the plasma."

It has never happened!

Is it possible for us to begin
wondering if our assumption
about what was possible and what is
occurring in the Sun is actually incorrect.

This then forces on us a
question of logic and reasoning
on the basis of
things we now know.

How many attributes of the Sun follow from
the assumption of a thermonuclear core?

It's incredible,
not a single one.

This will drive some people crazy, and
they'll immediately challenge us on this,
but I believe it's
absolutely true.

One question can be formulated
in these different ways,
and do gases just boil off the
surface of the Sun as "wind"
as that last question is posed?

Are surface features driven
entirely from below?

Are sunspot penumbra the "convection
cells" we assume them to be?

Now, I believe that the answer
to all of these questions is
not just no, but a definitive
- No - in the sense that
when all the evidence bearing on
the question, once you ask it,
it is not a coincidence that it's
always pointing to the negative answer.

So, "The Neutrino Problem"
that was the phrase
from solar physics
when they examined the
neutrino production of the Sun
and they found it was just one-third of
what was predicted by their model.

Since then, there's been a lot of
rationalization as to what's happening
to neutrinos on their course from the Sun
and that's not something for me to get into.

But I can tell you, that in electrical terms,
there is an answer to the neutrino issue
that comes from a completely
different way of seeing everything.

When a coronal mass ejection, a particularly
strong coronal mass ejection occurs,
the neutrino count goes up.

Now, a coronal mass

ejection is a surface event.

Once we see that a surface

event is creating neutrinos

thermonuclear reactions are

occurring at the surface.

How can we ignore the simple

fact that the surface of the Sun

is incomparably greater than the focal

point of a coronal mass ejection.

Could we redirect scientific investigation,

at least long enough, to determine

if the Sun is dynamically

presenting behavior consistent with

thermonuclear reactions

at the surface?

There was on Wikipedia a

very well presented page

on surface thermonuclear

reactions on the Sun,

and you can imagine

what happened to it.

A year and a half or two

years ago it was taken down.

Solar Constancy

&

Solar Variability

I see the issue of constancy on the one hand and variability on the other hand as posing questions that are simply not been asked.

We can pose them from interdisciplinary vantage point just looking at issues of logic and reasoning.

In visible light the Sun does not vary more than one-tenth of 1% over the entire solar cycle.

That's the general rule.

At higher frequencies, which are not coincidentally at higher elevations the variability grows profound.

Here's the variability in ultraviolet light.

And in X-rays through one solar cycle, the Sun virtually blinks out.

Additionally, you have in X-rays this equally profound regional variation.

And we have to reflect on how could it happen that a thermonuclear core would produce by heat transferred outward a uniquely stable photosphere.

And then as you rise
into a higher elevations,
you get profound
variability of emissions.

What is causing
that variability?

Well, here is something that bears
directly on that kind of question.

And the line you see
there is a voltage curve
that was initially
produced by Ralph Juergens,
a brilliant engineer, who as you might say
the father of the electric sun hypothesis,
this goes back four
or five decades.

What that curve is, is a
curve of the glow discharge,
the voltage curve of
the glow discharge.

Wal Thornhill then has worked with this, and
Don Scott has worked with this curve
to explore how a voltage curve could
relate to the known layers of the Sun.

A breakthrough occurred with Don
Scott when he looked at that curve

and he said, that is the configuration,
that's the profile of a transistor.
And this gave rise then to a breakthrough
concept of a transistor action on the Sun.

And if you look at that curve that is
stable across the photosphere
just the slightest elevation
or depression of that curve,
if it's a transistor, would be
regulating to a much greater degree
other activity of the Sun,
just as a transistor does.

I am not qualified to evaluate the
transistor effect in the Sun,
but I have asked several
electric engineers,
one is here today,
in fact - Hi Roger,
and everyone has said,
it makes perfect sense.

The spicules of the Sun have to be
investigated from a new vantage point
and so much of this has to do with the
inter-facial dynamics of different plasma regions
and charged particles being launched
into higher regions and so on.

And to both Don Scott
and Wal Thornhill
place a great emphasis on the
study of the spicule dynamics.

Solar Wind

Certain aspects of the
Sun are so clear-cut
in demonstrating that the sun
has this electrical underpinning.

But we hear from NASA that:

"[The solar wind] defies a complete
description by any one theory."

They say, "It's hotter than expected,
for one, and no one has yet agreed
which of several theories
offers the best explanation..."

But these statements are made
because there's no acknowledgment
that an electric sun hypothesis
deserves consideration.

And I believe that this chart is
the single most important chart
that has come out
the electric sun concept
because it is showing you charged particles
doing what only an electric field can do.

You see down at the Sun's
surface into the lower corona
and into the upper corona
spectacular acceleration.

And then, across interplanetary
space 96 million miles
these charged particles are slowly,
mile by mile, being accelerated,
very slowly and immeasurably
at any particular point
but, this is published fact, accelerated
across interplanetary distances
and they are not
little rocket ships.

Something is acting on
these charged particles,
and that something as demonstrated
in the laboratory for centuries,
that something is
an electric field.

It's always good when there's an issue
of principle or dynamic activity
with a model behind it,
take it to the extremes.

And the transistor effect would in fact allow
for the solar wind to completely stop

because it's being regulated by a superior
regulator, which is across the photosphere.

And in January 2005, a coronal mass
ejection reach the earth in 30 minutes.

It was traveling a quarter the speed of
light by the time it reached the Earth.

So, it's not a small matter
to simply acknowledge
that an electric field is
self-evidently present.

There is nothing known to science
which could accomplish that extreme
other than any electric field.

Photosphere

It's imagery of this sort that has convinced
folks that through the convective zone
temperatures plasma are
bubbling upward
to form granulation or
cellular structures.

But we have to ask the question,
"Are all energetic events on the Sun being
driven by forces acting from below?"

That's the bedrock of standard theory:
everything is energized from below.

Is there no evidence for

electrical action from above?

The evidence appears to be everywhere

if we'll just ask the question.

Here's the idea of the magnetic

flux-injection hypothesis

if you look at these

twisted magnetic fields,

which looks suspiciously

like Birkeland Currents,

they are all being pushed

up from below in this model.

It's called the flux-

injection hypothesis.

I spent a lot of time

just asking myself,

well, if the Sun is electrical

that hypothesis won't stand up.

And so I looked into the literature,

and I found an article by Peter Shuck

this is the best article I

found, honestly, on the subject

quite apart from my preference

at finding such a thing.

it is the best article I could find in

terms of systematic evaluation

and he says in that article in

no uncertain terms,

the flux-injection

hypothesis does not work.

The budget of energy that must be present

in the lower region is not available.

Shuck determined that the flux injection hypothesis

doesn't work and must be dropped.

What he found instead was...

What he found instead was a sudden explosion

triggered from above more like lightning.

And that takes you right back to the

worker of Charles Bruce in England,

again decades ago a real

pioneer who noticed

that the signature spectroscopically

of this energetic activity on the Sun

is the signature of lightning;

this is an electrified surface.

Sunspots

&

Convection

We can take this whole issue

further by looking at sunspots

you have a spotless sun

and a more normal sun.

And when we look into the sunspot what

we see is the cooler subsurface region.

But if it is millions of

degrees rushing upward

through the convective zone, how does it

happen that we cannot find in the center

of any sunspot any indication of

subsurface super temperatures?

So, sunspots are

like an acid test

because you see these penumbral

filaments on the margin

and they can only be one thing

under the standard model.

They are convection cells.

You have to have convection,

the heat has to get out somewhere

and they think they see it

and they talk about

overturning convection

but when you pull back

up into the chromosphere

it's not quite what they were expecting and

you see everything is actually dominated

and confined contained

by magnetic fields.

It's charged particles moving

along the filamentary pathways.

What does this have to

do with temperature?

Well, they decided that this was

overturning convection.

It depends how you diagnose

something like this.

Wow, that looks like the

stuff is just pouring out.

But this is actually quite deceptive

because what you're seeing

actually is material moving

outward and show you more closely.

The stuff around the

penumbra is moving outward

and that's what you're

seeing in that image

but the penumbra, the stuff is

pouring into the sunspot.

And Wal Thornhill has such an

elementary explanation.

He says, this is like

tornadoes touching down.

It's an electrical phenomena,

and the discharging

you actually watch this

overtime and you can see,
and in other NASA animations,
you can see how
what Wal Thornhill would predict,
which is an explosive glow
at a particular point that
comes and goes but at the tips
they're dipping down, it's a
tornado touching down
I don't think any anyone ever in the
history of the electric's sun hypothesis
before Wal Thornhill proposed that
these twisting, helical filaments
where actually tornado-like
electrically-driven filaments.

Where's the

Convection

But then again there's the
overturning convection hypothesis.

And for years now solar physicists have been
seeking to find overturning convection and verify,
through temperature profiles and so on, that
it's superheated material rising surface
they've been looking to the filaments
of the penumbra and suggesting,
well, maybe the temperature is being siphoned

up through the center the penumbra.

Where is the convection?

Well, again you can find an article

'searching for overturning convection'

by Professor Rubio of

Italy and company

"Despite the excellent

quality of the data set,

we do not detect downflows that could be associated

with overturning convection in deep layers."

"The lack of a clear detection of

overturning downflows may simply indicate

that they do not exist."

Well, that would be

news because you

if you have no convection,

you have no nuclear furnace.

Well, they did an "MRI" of the Sun,

they were so confident in convection,

that means they could look into

the deeper layers of the Sun

through magnetic resonance imaging,

and they were quite confident that

that's how they would confirm

that the motion of those charged

particles convected upwards

would explain the magnetic
field of the Sun.

At best they found 1% of the
convection they needed.

And notice this, "The result...
depends our understanding
of how heat is transported
outwards by the Sun..."

See, it depends our understanding
of what we know is happening.

They don't question whether what they
think they know is actually known,
is actually true.

Same here, "...and challenges existing
explanations of the formation of sunspots
and magnetic field generation".

But no fundamental questioning
of the nuclear core hypothesis
even though it requires something
that is clearly not happening.

Coronal

Heating

Corona heating, this is discussed
so much within our circle,
I'm not gonna make a
big deal out of this.

I just like the humor

astronomer Jay Pasachoff

saying that it's been solved

a dozen times.

And since he said that it's been

solved another dozen times.

And they continue to solve it,

and what they get lasts

only weeks or months.

I'm gonna give a ridiculously

elementary example of coronal heating

from a radically

different vantage point,

the vantage point that would

emphasize inter-facial boundaries

between two domains, both of which

are contributing to a dynamic event.

Here's a candle; where's the

heat, the maximum heat?

It's not down at the fuel supply.

It's in the interface of the fuel

supply and the surrounding oxygen.

In 1996, I was caught in a ridiculous

debate with some people on it

all talk I will call

talk origins, and I said

you know if you put
a candle in space
so that you didn't have gravity
and you didn't have convection,
you'd get a spherical flame, and you
would see that the maximum energies
are at the boundary of that
fuel and the surrounding oxygen.

And it just happened that a couple years ago
that in the International Space Station
they put a candle, and that's
exactly what you do get here.

That is an example of inter-facial dynamics
that can be applied to the Electric Sun
where you do not get to ignore the surrounding
contribution of the plasma environment
through the heat of the Sun and all of
the electromagnetic emissions of the Sun
and all of the layers
of the Sun's atmosphere
with such a different levels of
constancy and variability.

Polar Jets

I'd gonna make sure that I
get to this presentation.

Polar jets that they help to complete

the image of solar sized magnet here
but this is not new, I mean, Birkeland's
experiment gave you polar jets
and essentially gave you the core or
the focal point of the hourglass form
that has been hypothesized by
the Electric Sun proponents.

And you see in such nebula
as in the Butterfly Nebula.

Torus

The torus that Birkeland produced in
his lab is such a beautiful example of
the relationship between
experimentation and theory.

Forget the math until you have got a
basis in observation and experiment
to direct the mathematicians.

Discharging from the
torus to the sphere,
the magnetized sphere of his terella,
you see the polar jets there.

And, by golly, the sun has a torus
also projected into an axial view.

And notice this.

How does it occur that the
equatorial atmosphere rotates

36 times for every 25 times

of the circumpolar rotation?

How would something...

How would something

driving the Sun from within

produce super-rotation at the

outer layer and at the equator.

I mean, actually you're looking here at

two levels of differential rotation

because it's not just the equatorial

atmosphere that is rotating fast,

it's rotating faster

than the surface below.

Now, Wal Thornhill got me to thinking about

something, this is a number of years back,

he said, the sunspot appears to be,

if you follow Birkeland's experiment,

the location of a discharge moving right

through the visible layer the Sun's atmosphere.

I was looking at this and I

thought well this is interesting

it looks to me as if that discharge is

parting the waves, you might say,

and anchoring to a slower-moving

subsurface layer.

And for that reason, it is

resisting being moved along
by the super-rotating equatorial
atmosphere of the Sun.

I just think things
of this sort would...

These stand in such total and
self-evident defiance of a standard model
that you have to begin looking from
an interdisciplinary vantage point,
complemented by increasingly
specialized research.

You have to begin looking at a new
picture of the Sun from the ground up
because what we were given 70
years ago has failed every test.

Earth-Sun

Connection

Perfect example, again, of
the experimental approach
and its impact on the future of science
was the work of Kristian Birkeland
who said, our earth aurora is being
produced by charged particles from the Sun
entering the upper
atmosphere of our Earth.

Sydney Chapman, a mathematician and

Dean of the Earth-Sun Relationship Studies,
said the Earth was insulated,
insulated by its magnetosphere,
and charged particles could not enter the
upper atmosphere of the earth directly.

And then in the 70's, we discovered
that charged particles from the Sun
were indeed entering the
Earth's upper atmosphere.

And now we call those
particle streams

Birkeland Currents in honor
of the experimentalist.

We have look closely enough to see that the
currents are moving in cylindrical forms
and ironically Don Scott has
produced a recent paper,
which I hope people will have a chance
to access in the next few months,
that gives the
mathematical bases
for this cylindrical or embedded
cylindrical form of the auroras of Earth.

There are no islands in space!

And certainly anyone who has followed the
evidence for the Earth-Sun connection,

the circuitry

connecting both bodies,

would have to agree that

you're not looking at islands.

Question all theoretical

assumptions!

And that concludes my talk.

Thank you.

Exposing the Myths of "Settled Science"

The Thunderbolts Project™

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you
and there is nothing to fear.

The Ship of Day and Night

Ancient images of a cosmic
ship give us an opportunity
to question many popular
assumptions about the ancient sky.

Our message is that
the sky we see today
does not provide a useful guide
to the ancient experience.

Extraordinary celestial formations
above the early sky worshipers
provoked an explosion
of mythic images.

If we can see these images as a
reflection of concrete human experience,
a reconstruction of the
events is possible.

For observers on Earth a revolving

crescent in the polar sky,
reflecting light from the Sun, turned
visually around a central orb or star
in a daily cycle of
brightening and dimming.

In human imagination, that revolving
crescent was the ancient ship of heaven.

One additional feature must be
included, as we've earlier noted:
the crescent appeared above a cosmic pillar,
inspiring a diversity of mythic images.

All pointing to the same underlying
form - one form in the sky
fully explaining what will otherwise
appear as hopelessly contradictory images.

In our previous episode, we
noted the strict identification
of the crescent ship with the
horns of the Bull of Heaven.

Inhabitants of the celestial
kingdom sailed on these horns
in the daily revolution
of a crescent-like ship.

We also noted the absolute
identity of the Bull's two horns
as the twin peaks of

the cosmic mountain.

We have further suggested that Egyptian
and other images of a pillar god
either holding aloft the ship,
or standing upright in the ship,
must be understood in terms
of the underlying equation
of the ship itself with
these outstretched arms.

This equation can be
fully elaborated.

The Pyramid Texts say
that the deceased king
ascends to the sky to find
his place in the cosmic ship
- "within the arms
of Atum", they say.

This identity of the ship and
the enclosing arms of the sky
is confirmed again and
again in Egyptian sources.

"[The king is raised up] in the Day-bark...
within the arms of Anubis".

"Make ready your arms for me, O Ra, come
and ferry me over to yonder side..."

In the same way the god Osiris sails

"on the two arms of Horus".

Any doubt on this equation is removed by the description of the ship in the Coffin Texts:

"Her starboard side is the right arm of Atum.

Her larboard side is the left arm of Atum".

But a huge confusion has taken over

the language of day and night,

due to the subsequent radical

change in celestial conditions.

In the ancient planetary configuration, the

crescent - the mythic ship of heaven -

was descending to

the left at sunset

and beginning to grow more

bright amidst the darkening sky.

The ship achieved it's

greatest splendor

when the crescent reached it's

position directly below at midnight.

The ship's brightness then began to

diminish as it rose to the right.

And it was at its weakest

when directly overhead.

In today's reckoning of time,

that would be called Noon.

But when Egyptian texts describe

the primeval Sun growing bright,
the translators can only
think of one thing:
our familiar Sun
rising in the east.

That fundamental misconception
sets in motion a series of
irreconcilable contradictions in
all of the standard translations.

Egyptian sources are far and away the most
complete references on this question.

In unequivocal terms, they describe the
vehicle of the gods, the ship of heaven,
in two phases of a daily cycle, a phase
of brightening and a phase of dimming.

These phases have nothing to do with
the appearance of the Sun itself.

The Sun was not even present within
the visual theatre of the gods.

It was simply the external source of
the illuminated circumpolar crescent
and its daily phases of
brightening and dimming.

As commonly translated, the Coffin
Texts express the hope of every king,
upon his death,

to find his place

"in the Night-bark and the

Day-bark like Ra, every day".

But the translators can offer no

natural referents for the terms.

All that is literally meant are the two

contrasting phases of growing bright

and growing dim, of growing

strong and growing weak.

Strength and weakness,

life and absence of life,

waking and sleeping are the

literal meanings of such terms.

The boat in the phase of

growing bright was named Atet,

meaning literally, "strong

or growing strong".

And the boat of growing

dim was named Sektet,

meaning literally, "weak

or growing weak".

Once the literal meanings are clear, the

mistranslations become transparent.

"May you sleep in the night-Bark (Sektet),

May you awake in the day-Bark (Atet)"

a popular translation reads.

The implied connections to sunrise
and sunset are provably incorrect,
and we can make this clear by simply
observing the regional positions of the ship
and the directions of the
ship's motion in it's daily cycle.

Did the ship actually move
upward in it's phase of dimming
and descend in it's
phase of brightening?

As we intend to establish
beyond any reasonable doubt,
the position of the ship was below
in the phase of brightness,
and above in the
phase of weakness.

That means a descending motion of the ship
as it began to shine brilliantly in the sky
and an upward motion
as it began to dim.

The directions of movement and the associated
conditions of brightness and dimming
are all critical to the
integrity of the symbolism.

The Coffin Texts describe
the gods sailing upstream

in the so-called "night",
literally the phase of dimming,
exactly the opposite of
the solar interpretation,
while another spell
announces that

"The sun shines forth when going downstream
from the region above to the region below".

Again the opposite of the solar interpretation,
and the literal meanings are the key,

"May you sail upstream, toward the
upper region in the night-Bark
(literally the ship of dimming) and
downstream, toward the lower region
in the day-Bark" (literally the phase
of brightening or growing bright).

Such texts as these are
complemented by numerous others,
all confirming that the ship of heaven is
indeed an acid test of our reconstruction.

We'll return to this explicit
evidence in our next episode.

Welcome to Space News from
the Electric Universe,
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On this series, we've explored the
significance of common forms and shapes
seen throughout the cosmos.

Plasma, the fourth state of matter,
pervades all of the universe
and the unique structures
produced in plasma laboratories
are clearly seen at
all scales in space.

From the filamentations seen
everywhere in the universe,
from the giant snake-like filaments
reaching from the surface of the Sun
to the dark cores of sunspots,
to the networks of long thin
filaments along which stars form
like pearls on a string,
to the hourglass
shapes of nebulae
and the similar double-lobed form that appears
to be the common shape of comet nuclei,

a form reliably produced by the
electromagnetic z-pinch effect in plasma,
and even the spiraling structures achieved
by parallel currents in the laboratory
uncannily matching the
form of the spiral galaxy.

Plasma particle beams also produce
distinct geometric shapes
that can prove difficult or even impossible
to explain through non-plasma processes
when seen in nature.

One such shape is the
hexagon or polygon
which is a generally straight-
edged closed-plane form.

The hexagonal craters commonly
observed on planets and moons
challenge planetary scientists
since kinetic impact experiments
do not produce such craters.

However, as seen in these
experiments by Jacob Gable,
it is a form routinely produced by
electrical discharge to a solid surface.

Another hexagon in nature has puzzled
astronomers since its discovery decades ago.

As far back as 1988, scientists studying data from the Voyager mission found evidence for a hexagonal atmospheric structure at the North Pole of Saturn.

Decades later, NASA's Cassini-Huygens spacecraft shared with the world the first complete images of the bizarre cloud pattern.

Planetary scientists have struggled for an explanation since the form is not seen in any other planetary atmosphere.

But in recent years, simple fluidic experiments on Earth have succeeded in producing a hexagonal structure providing an explanation that planetary scientists have heretofore favored.

However, Thunderbolts picture of the day managing editor Stephen Smith outlines just some of the problems with this theory in a recent article.

He writes,

"The fluid dynamic experiment seems to provide a plausible description of what is happening on Saturn

if several factors are ignored.

First, there are concentric
rings around the hexagon,
each with different
temperatures.

Second, Saturn's North and South Poles
are hotter than theories predict.

Third, there are
aurorae at the poles.

Fourth, there are powerful
currents of electric charge
entering and leaving
Saturn's poles,
connecting it to its
family of moons.

As previous Picture of
the Day articles argue,
the plumes of Enceladus,
for instance,
demonstrate that charge exchange
between it and Saturn."

Recently, scientific reports
have pointed definitively
toward a non-fluid
dynamics explanation.

As reported on September 6

2018 on sciencealert.com

"There's something strange
over Saturn's north pole.

A tremendous structure
towering high above the clouds
indicates that the planet's
peculiar hexagonal formation
is much, much bigger than
was initially apparent."

In 2014, scientists using Cassini's
composite infrared spectrometer
had begun studying Saturn's
northern stratosphere,
a region hundreds of kilometers
above the atmospheric hexagon.

The shocking discovery came
when they began observing a vortex
far above the famous hexagon.

One of the investigators
says of their discovery,
"As the polar vortex became more and more
visible, we noticed it had hexagonal edges,
and realized that we were
seeing the pre-existing hexagon
at much higher altitudes
than previously thought."

As acknowledged in the
Science Alert article,
"...since wind conditions change
dramatically with altitude,
the fact that the hexagon shape persists
so much higher than the cloud tops
is a baffling conundrum."

The Electric Universe
position has always been
that the key to understanding
Saturn's hexagon
is the planet's electrical
connection to the Sun.

The so-called magnetic ropes
that have been discovered
stretching the nearly 900 million
miles from the Sun to Saturn,
are one clue to this connection.

The Sun is primarily an
electrical phenomenon
at the focus of a galactic
"glow discharge"
and electric currents flowing
from the Sun to planets
has implications for many
atmospheric phenomena

including the tremendous
winds of gas giant planets
and also jet streams and
weather patterns on Earth.

Based on this perspective, in 2005,
physicist Wal Thornhill made a prediction
that could only seem preposterous
from a conventional viewpoint.

Thornhill analyzed the mysterious hotspot
in the vortex at Saturn's South Pole.

The hotspot puzzled
planetary scientists

because, as described by
the Keck Observatory,

"...both the distinct boundary of a warm
polar vortex some 30 degrees latitude
from the southern pole and a
very hot 'tip' right at the pole
were completely unexpected."

Thornhill wrote of this feature,
"Its compactness is due to the
electromagnetic pinch effect

where it enters

Saturn's atmosphere."

He then stated,

"The Electric Universe also

predicts, experimentum crucis,
that BOTH poles should be hot,
not one hot and the other cold."

In 2008, the Cassini spacecraft
confirmed the astonishing prediction.

Astonishing because the
freezing cold North Pole
had been deprived of sunlight
for more than 12 years.

Thornhill explained,
"The polar hot spot and the
long-lived hexagonal feature
result from a continuous
electric current
flowing from the Sun into
the pole of Saturn."

On the peculiar hexagonal form, consider
the side-by-side images on your screen.

On the left are vortices of an electron
beam etched onto a carbon witness plate.

On the right are vortices of an electron
beam photographed on a fluorescent screen.

The hexagonal form is a distinct feature
of a well-documented plasma phenomenon
called 'The Diocotron Instability'
and the phenomenon observed in the

laboratory is remarkably scalable.

As noted by Dr. Anthony Peratt in

'Physics of the Plasma Universe',

"The vortices of the diocotron

instability are found to occur

over 12 orders of magnitude

in beam current.

This mechanism was first introduced to

explain auroral curtains by Hannes Alfvén."

The persistence of the hexagonal feature, hundreds

of kilometers above the Saturnian clouds,

is the clearest possible indication it

is being driven by energy from above

and cannot be explained

by simple fluid dynamics.

But the basic concept of electric

currents flowing from the Sun

interacting dynamically with

electrically charged bodies,

remains a road to new

theoretical pathways

that planetary scientists

have yet to follow.

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on May 31st 2013 a 3 km asteroid called
QE2 passed within 3.6 million miles of
Earth astronomers used the opportunity
to take radar images of the asteroid and
its 750 m satellite the scientists
describe QE2 as dark red and primitive
and conclude that the asteroid is an
entirely new Beast nothing like any
asteroid we visited with a spacecraft
but how does the electric Universe
interpret this apparently anomalous
asteroid Dr Ellen Hal a US ra research
astronomer at arbo Observatory who took
both radar images of the asteroid at
arbo and Optical and infrared images
using the infrared telescope facility in
Hawaii said what makes this asteroid so
interesting aside from being an
excellent Target for radar Imaging is
the color and the small
Moon asteroid QE2 is dark red and
primitive that's her description and of

course primitive is just an interpretation she goes on to say that is it hasn't been heated or melted as much as other asteroids she says QE2 is nothing like any asteroid we've visited with a spacecraft or plant to or that we have meteorites from it's an entirely new beast in the managerie of asteroids near Earth now the idea that this is quite different from all other asteroids and meteorites of course may be more apparent than real because if we go back and have a look at something uh that was said earlier by Dr Patrick Taylor another us ra research astronomer at aroso uh he said that um approximately one out of six asteroids near Earth have moons and this is a very interesting and difficult to explain attribute of asteroids Dr Tom van fandon uh in his book Dark Matter missing planets and new comets writes in fact many minor satellites of asteroids would either fall onto the surface of their parent or

Escape into their own solar orbit within
10,000 to 10 million years or so with
such a short time scale for orbital
evolution by Tides these satellites
ought not to be as abundant as they seem
to be unless they had a recent origin
this fits precisely with the electric
Universe model which suggests that
asteroids comets meteorites all the
debris that's floating around in the
solar system were produced in Close
Encounters between planets in the recent
past and those encounters involve
electrical exchanges which actually tore
matter from the bodies of the planets
and hurled it into space this would fit
both both with the fact that the
asteroids are found in certain belts in
the solar system and it also fits with
the observation that so many of these
asteroids and smaller bodies in the
solar system have satellites the idea is
that if these objects were formed in an
explosion as Tom van fandon pointed out
without actually explaining how a planet
might explode then the material is

released in the same vicinity and it's also ejected from the gravitational influence of the parent body under these circumstances the influence of the larger pieces of the debris expands and it means that it is able to capture nearby smaller pieces of debris in other words to form a satellite and this is what we find so Tom van fandr's idea is supported but it's not a planetary explosion it's something that was actually observed by ancient man as we've been able to uncover and that is electrical exchanges the Thunderbolts of the the gods ripped material from the Martian surface in particular and so the fact that this particular asteroid shows a reddish and strange surface fits the suggestion that it is probably a piece of Martian surface that we're looking at and its satellite also would have been captured from that same event for continuous updates on Space news from the electric Universe stay tuned to thunderbolts.info

[Music]

[Music]

In pop culture media, force fields are portrayed in a silly way. In Dune movies, personal force field armor was portrayed as a covering of all but impenetrable glowing cubes. In Star Trek, force fields are portrayed as almost impervious shell-type shields, and in Star Wars is being manipulated by the mind. Really? Let's think of two objects in space that attract each other.

If there is nothing between them, why would there be any diminishment with increased distance?

Heidegger said "Nothing nothings". In other words, nothing isn't something that can do anything. So how is it intellectually responsible to posit distance in nothing, as making any real difference?

The lack of intellectual rigor in science regarding the nature of a force field, appears right up front in the dictionary definitions.

One such is that it is a computational method. Another is, it's a map of force.

Webster's dictionary defines field as a special charm, aura, or spirit that can influence anyone in his presence. Then defines it redundantly as something resembling a force field. In contrast

to these nebulous offerings, the Electric Universe paradigm defines the force field in concrete terms, something that can be easily visualized.

This issue needs more clarity, which starts with better conceptions and more useful definitions. A great mistake consistently being made in science, is the failure to recognize the existence of dipolar ether particles and their role in physical phenomena.

Is not a force field a certain volume of dipolar ether particles, that are affected electrically, to stand ready to transmit one of the two forces, attraction or repulsion, upon any object that makes contact with them?

Here is another question that should have been asked long ago. If there is no particle medium that supports a field, what is the material or concrete explanation, not just the mathematical description, for the drop-off of the field intensity in a field where the distance is increasing?

Keep in mind two metaphysical principles: Number one, there is no such thing as nothing. It's just a mental construct. And two, real physical

reality can always be visualized or portrayed.

In other words, if it cannot be visualized, it isn't real. Given that we live in a material world of matter and that the basic units of matter are what we call particles, physical science always includes dealing with units of matter or particles.

Thus we need to think of a force field as something tangible and not as something theoretical, mathematical or non-material. However, when we feel a substance with our fingers, it is not the atomic matter that we feel, but it is the electric repulsive force from the material. Is this not a violation of what was just claimed? No.

In the EU model, force is always transmitted by contact, or across distance by branching chains of the ether particles in contact.

Thus, in a field the number of particles that distribute the force is increasing by the distance - the square of the distance or the square root of the distance. The force gets spread over more particles and is diminished in intensity.

Anybody that has ever broken a rack with a cue ball in a game of pool or billiards, knows that.

We know there are two overarching realms of reality: the physical, which is the realm of tangible substance, material things, body, brain, flesh and the sensory equipment etc. This is the domain of science.

Then there is the greater spiritual realm which is the realm of mind, spirit, meaning, creativity, artistry and all the other non-material aspects, like mathematics and logic. This is the domain of philosophy and its subset, theology.

In the EU we start with basics or fundamentals, which include particles, charge, and force.

Let us remember that mass and matter are not the same thing. The current thinking is that there are two kinds of particles or packets that can be filled to various levels with mass/energy; two types of charge, positive and negative; and two kinds of force, attraction and repulsion.

The developments that we find in the physical universe are built on this tripartite foundation.

And along with motion, spatial dimension, size, shape, and structure, account for what we see or find in the material realm.

Electricity, magnetism and gravity are secondary aspects or phenomena,

and are always associated with a field.

Simply, particles can carry mass,
energy, charge and dipolarity.

A magnetic field is always produced by charged
particles in motion, even in permanent magnets.

An electric current is always charged
particles flowing, or transmitting charge.

On the other hand, in the EU paradigm
a gravitational field is produced by all
particles because they all have some dipolarity.

Therefore in the EU thinking, a field is not just
a mystical or mathematical con-
struct, but really designates a
specific volume of matter including
neutrinos, "carrying or supporting the field."

These have a force effect through
increasingly branching chains of contact,
upon other material objects or particles of
matter. This is very simple and straightforward,
easy to visualize or imagine.

Another question is this.

Given that physical science deals with
material, hasn't there been far too much
phenomenological or mystical thinking that
has crept in the back door of physics theory?

Without a medium of ether to carry

the field, some theoreticians get so discouraged that they want to do away with the whole concept of a field - dismiss it entirely.

Wal Thornhill agrees with the premise quote "...that the ether, in the form of normal matter, that is neutrinos, can be regarded as the polarizable dielectric substrate that transfers the direct electric force (which includes magnetism and gravity) and also the slower transverse electrical disturbance of electromagnetic waves."

Just consider the two cases whereby the field intensity falls off by the distance or by the square of the distance in a radial field.

This is simply because the number of ether particles in contact, carrying the force, gets increased and the intensity gets spread out, or diluted by the increasing number of the particle chain branches carrying the field out to that distance.

Nothing mystical here at all.

These two formulas, involving the distance or its square, are

mathematically simplified or idealized.

The true calculation for any specific case in the real world of even just two bodies, would be hopelessly complicated.

Therefore, practically a field consists of a certain volume and somewhat quantifiable number of neutrino/ether/matter particles surrounding the field generator, where the force of the field is still detectable by contact with the remote particles.

[Music]

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According to consensus science,
ancient cultures across the planet
with no communication between them,
independently and spontaneously invented
dragons. Remarkably, they all invented the
same physical description and modus operandi-
a fire-breathing serpent, origin in the sea,
havoc across the land and crazy weather.

Given the consistencies and global
reach of this ancient archetype,
a rational thinker might consider some
significant global event is behind it,
common to each culture. Yet the
consensus relegates this to coincidence,
or a spontaneous glitch in
a collective consciousness,
their own science denies the existence of. Truth
is ancient man was intimate with an environment
more extreme than we have today and
understood it much better than we do.
The ancients left us tales, artwork and
structures that are more than just breadcrumbs.
They are bold, articulate statements about

the environment they lived in, and how different it was from ours. This is Andrew Hall. I'm presenting Part 8 of my series: Eye of the Storm, where we've been examining dragons. The features examined in this article are proof of the dragon's passage, not random and coincidental anomalies. They appear predictably, as expected of the circuit. Reactive power is a two-way street. Energy is both released and absorbed as current alternates, spitting out and sucking back in. Chapter 7 showed the canyons and river channels arc-blasted by reactive power from resonant discharges. That was an example of reactive power spitting out. When it sucks back in, reactive power creates a mountain, not a canyon. This is where things get really interesting. The resonant reactive discharge that blasted the river apart, creating a junction, also created mountains on reactive inflow vectors. The inflow current is backwards relative to reactive outflow. And since there's a bias in the line current, the backwards direction of reactive inflow current produces a different vector

sum than the outflow.

The inflow current depletes a region of electrons. This breaks the bonds in crystalline rock, tearing it apart, heating and dissolving it. Chemistry, magnetism and the Coulomb force compete to rearrange the landscape.

The depleted region forms a mountain as atomic bonds recombine, first forming a rock wall called a dike.

The dike forms where a filament of current begins to steal electrons from the surroundings, pulling material to the filament and pinching it magnetically. After a discharge neutralizes the current, the material recombines, cools and solidifies into a wall of rock.

Wind then piles dust onto the dike, aided by rarefaction from shockwaves and electrostatic attraction to the still depleted zone, building a mountain. The effect can be seen in this image of the Will Henry and its tributaries where they branch from the Colorado River.

Adjacent to the capacitive discharge there are linear mountains, shown

in red lines, radiating away from
the crux of the river branching.

These are the reactive inflow currents,
where charge depletion made a dike on which
a mountain formed from wind-blown dust.

These are at angles that increase
between the second and third bifurcations
from 40 to 50 degrees with
respect to the outgoing
inductive current. Because these currents are
flowing backwards with respect to the line current
and the positive bias in line current
increases as reactive power is drawn
away in successive discharges,
which widens this angle.

Since there is an inductive reactive inflow
current, there must also be capacitive reactive
inflow currents, and indeed there are.

In the first image, the linear mountains
were inductive reactive inflow
currents. The next image shows
linear mountains aligned parallel with supply
current just before these same junctions. The
parallel mountains are the capacitive reactive
inflow currents. Recall from part 7, these
junctions are caused by resonant frequency

that acts like a stopper in the current flow, forcing it to squirt out sideways in a reactive discharge. As the line current is slowed by the rising frequency, charge builds in the nose of the current channel, just like pressure behind a bottleneck. A far-field positive charge builds parallel and adjacent to the charge building in the line due to capacitance.

This is known as stray capacitance in the electronics world and is generally something designed out of a system because it creates unwanted harmonic feedback. It's parallel to the supply current because it's actually making a capacitor at some distance defined by the magnetic field, which helps induce currents to build the capacitor's charge. It's to the right of the line current, because of the right hand rule which says the magnetic field is penetrating the ground at these places and saturating it with induced currents.

These capacitors are filaments of positive charge that build up before the line current explodes in a reactive discharge. When the discharge occurs,

the capacitive reactive branch connects with the capacitor filaments and drains them, which has the effect of building a dike and hence a mountain from a depleted charge zone. Once the connection is made in the filament's drain, the capacitive reactive discharge current is free to turn its vector east to align with the electric field.

In all, there are nine resonant frequency bifurcations, marked in green on the accompanying image, along the Colorado and its primary tributaries, including Lake Powell, which is a staccato series of resonant discharges. Each has the same crab claw shape, with accompanying inflow current generating mountains, inductive outflow currents that vector north, and capacitive outflow currents that vector east, parallel to the line current, which is aligned to the electric field.

You may also note some of these bifurcations are where dams are built, including Hoover, Parker and Glen Canyon. It's no coincidence that the bottleneck of a resident reactive discharge creates a bottleneck canyon,

with an arc-blasted basin behind,
perfectly suitable for damming. The
rocky choke point is a result of induced
reactive inflow currents aimed at
the crux of the resonant discharge.

The next image shows line current
and outflow reactants in blue,
and inflow reactants in red, for the major
resonant discharge bifurcations along the
southern portion of the Colorado and Gila rivers.

In some conditions mesas are created by
reactive inflow instead of mountains. This
occurs when the desaturated zones left by inflow
currents leave mesas behind, as
landscape around is sputtered away.

In the next image of Lake Powell there
are inductive absorption currents 180
degrees opposed to the inductive reactive power
discharges. See my articles on Sputtering Canyons,
Part 1, 2 and 3 for some
background on sputtering.

Note the fine tendrils running parallel
around and between the highlighted mesas.

These canyons are scars from tendrils
of charge that shot through this area,
electrifying an aquifer or wet layer of deposits and

causing the land to sputter away from that layer,
leaving already desaturated areas behind,
like the mesas. Another example of this
is at the Green River branching.

South of the junction is an arcing
network of filamented canyons and
mesas parallel to incoming line current,
just before the bifurcation. This is
another area where capacitive reactive
charge built parallel to line current prior
to the resonant discharge bifurcation.

Charge built in the ground and then was drawn
away by three large short circuiting filaments
which are the three canyons perpendicular to the
river at top center in the image, that shoot from
the line current orthogonally through the
arc, zigzagging to touch each filament.

This left depleted ground where the linear mesas are,
while the canyons were excavated by sputtering.

There are two things that can be said
about these reactive discharges.

One, the current of electrons and negative
ions in the discharge of the dragon's blood
so to speak, is a destructive force that
excavates the land in explosive arc blast events.

The reactive inflow currents, however, are

constructive and build mountains and mesas.

One is the inverse of the other. It's interesting to see how complex-number math actually displays itself in nature. Second, the reactive inflow currents are slow and cold.

They diffuse through the land, changing the chemistry and reforming rock over some time, not at the lightning pace of a spark.

Take another look at the Google Earth image where the resonant discharges are highlighted in green. There are other features marked with yellow triangles and red circles.

Let's take a look at those.

Refer to the yellow triangles on the image. Not all junctions occur as a result of resonant frequency.

Some junctions occur as a result of sudden grounding. As the main line current climbs the plateau, it's encountering hot dry deposits of sand over sheets of water.

Aquifers are layered below, left from past tsunamis, rain or ancient lakes. The grounding of the discharge happens when the supply line current induces parallel current in the aquifer and they connect, likely at a spring or other feature that provides continuity between the surface and the aquifer. The sudden

grounding creates a new current vector. As supply line current encounters a conductive path to the ground potential in the aquifer, the supply line voltage is affected. The supply line voltage vector remains straight and a new, line-to-ground voltage vector branches away. It basically creates a kink in the electric field expressed in two dimensions on the plane of the earth's surface.

But it really results from an interference pattern in three dimensions multi-phase electromagnetic field. A line-to-ground current splits away with this voltage which is clocked 30 degrees counter-clockwise to line voltage in a balanced three-phase circuit. In a balanced three-phase circuit the currents would form a star pattern, with 120 degrees between each arm forming what is called a grounded Y connection. DC bias in a very dirty signal to the current closes the current angle down to the 40 and 60 degree angle seen at the Green and San Juan junctions. The vectors represent nature finding its own balance. Another clue to its formation is

the fact supply line current vectors remain straight, while the tributary forks away counterclockwise. But there is no opposing capacitive reactive discharge evident radiating from the center of the branch, nor is there evidence of reactive inflow currents. These junctions are not due to resonant frequency and reactive power, but to an instability in the electric field created by a sudden grounding.

The effect is to bifurcate the dragon; it takes energy from the ground connection to clone itself and the clone takes a new current vector.

Y connections are used for various reasons in high voltage transmission, one being to join three-phase circuits with ground.

Grounding the connection allows certain harmonic frequencies called third order harmonics to bleed away without interfering and unbalancing the primary phases.

In particular, lightning surges will pass to ground without surging the primary circuits. Navajo Mountain sits next to the San Juan junction.

It is a fulgurite created by

negative cloud-to-ground lightning.

It looks very suspicious, sitting next to the bifurcation. But it's not yet apparent if it had a role in creating the bifurcation, or if it was a consequence. There are striations between the river and the mountain running parallel to the river's course, indicating capacitive stresses in this region. One thing that's quite obvious in the Canyonlands of Utah, at the heart of the charged capacitor dome, is that the rivers meander wildly, yet they keep true to trajectories along the electric field. Oscillations in current phase and magnetic fields cause the filaments to wobble and curlicue. When the branches are in-phase, they try to close together on a common transient current vector, but then push apart when out-of-phase and return to the original line current vector. In the image below are highlighted areas of extreme current bending and inductive discharges that flare from the bends in flame-like patterns, creating fractal chaos between and around the Green and Colorado rivers near the junction. Magnetic fields pulsate and wrestle

the currents back and forth, create
ring currents like the amazing Upheaval Dome.
A ring current stuck in its own magnetic field
which created an induction
coil. The induction coil
generated a tightly wound supersonic plasma
tornado. The center of the ring current is a
clump of sharply pointed
tetrahedrons aimed skyward from
shockwaves, where the coil's
induction drew the central
supersonic updraft. The surrounding rim
rock on the right side of the dome, is cut by
parallel triangular bites, adjacent to scalloped
walls on the opposing side of the canyon wall
farther to the right. This displays the channels
of multiple vortex wind where the tornado's inflow
bent into the central updraft of the induction
coil. The triangular bites are from standing
shockwaves where the wind turned into the updraft
of the coil. The scallops display the eddy of
multiple vortex jet streams as they make this
turn. Returning to the annotated image of the
Colorado system, there are two red ovals
indicated. The ovals indicate massive downdraft
craters caused by the two main

coronal loops on the Colorado plateau:

the San Rafael and Capitol Reef dome and

crater complex and the Monument Valley

San Juan dome and crater complex.

Recall from Eye of the Storm Part 3.

These dome and crater pairs were caused

by coronal storms which left immense

tetrahedral monoclines where

the wind deflected abruptly,

creating shock waves. Winds deflection

was due to the magnetic field pinching

around the updrafts and the downdrafts.

The same magnetic field also redirected

the ground-to-ground line currents,

the dragon's blood so to speak,

due to the Hall Effect. The Hall Effect

basically says a magnetic field will either

push or pull a current's direction, depending on

polarity. You can see the effect in these diagrams

where an electric current shown

in blue is either pushed away or

attracted to a magnet in close proximity.

Because these regions of high electric

flux generated strong magnetic fields around

them, especially at the interface of ground

and sky, it pushed the arc

around the negative craters
and drew it through positive domes.
You can see the San Juan river
bend around the downdraft crater, circled in red,
and shoot through the center of the updraft dome,
shown in green. Similarly the
San Raphael updraft dome has
tributaries of the Green River shooting
through its center and the downdraft
crater is avoided by the arc of
the Green River and its tributaries.

Another example of the Hall Effect is displayed
in these images of the famous Gila Bend
in the Gila River. Note how the river bends
south and then returns to its original trajectory.

It's as if it is detouring around an
obstacle, and it actually is. The current is
detouring around the Sentinel
Arlington volcanic field, the magnetic
field of which pushes the current around
due to the Hall Effect. A similar effect
happens in the Grand Canyon as well, but in this
case the river detours to the south twice below
the Uinkaret Volcanic Field.

There is a distinct straight
segment between the two detours.

The bar in the center is possibly a function of the frequency of the alternating current and the discharge velocity as it advances. In other words, the current is pushed away from the volcano while in opposing phase and pulled back towards the volcano as phase rotates, then pushed away again, as its phase completes a rotation. Or it could be an artifact of the way the circuit connects with the volcano subsurface where it can't be seen, producing an effect similar to the diagram shown. The final feature to examine is related to the resonant discharge we discussed in the beginning of this chapter, only this type of discharge occurs in the middle of the line current.

In other words, the resonant discharges we previously discussed were at the head of the dragon, as it searched its way along the electric field.

These reactive discharges shot out of the body of the dragon, due to pulsations in the flow of current.

The dragon at this point is a thousand miles

long. The longest recorded lightning strike is only 200 miles in length. So this is very big lightning; as discharge occurs, pulses of energy and bolides of densely charged matter shoot up and down the line current. When two waves of charge density collide, they interfere, causing a momentary spike in energy similar to a rogue wave or the pressure waves in water pipes that cause hammer and cavitation.

A reactive discharge results, creating box canyons to either side, rotated roughly 90 degrees to the line current and forming a cross. The reactive discharges are always a proper 180 degrees opposed and occasionally one of the tendrils will continue to be induced, generally north to form a longer canyon. The Grand Canyon especially exhibits these types of reactive discharge.

In Part 9 we will complete the description of the parallel RLC circuit that created the Colorado River, and then describe circuits beneath the crust from which the dragon emerged.

Thank you

[Music]

our celestial neighbor the planet Mars
astronomers once considered Mars to be a
long barren and geologically dead Rock
in space but since the arrival of our
probes beginning in the 1960s the planet
has come alive for us it does not reveal
the inactive and worn down landscape
astronomers and planetary scientists had
expected nevertheless investigators
continue to apply geologic concepts
based on their understanding of the
earth and the moon they could only see
volcanism erosion surface movement and
surface collapse all punctuated by
episodic impacts from space over
billions of years what force created the
sharply cut gouges and depressions
across the surface of Mars looking as if
a giant trowel descended to scoop out
material and radically different and
irreconcilable depths
running north to south we see massive
inter woven scratches or grooves
extending hundreds of miles and how
remarkable that a planet only half the
diameter of Earth exhibits canyons on a

scale dwarfing anything seen on our own planet and mountains that would tower over Mount Everest today no planet outside the earth has received more attention than Mars but the mysteries and theoretical contradictions have grown spectacularly for decades now investigators have wondered why the two hemispheres of Mars look as if they were formed in different worlds a southern hemisphere dominated by craters a Northern Hemisphere with only sparsely scattered craters and note the contrasting crustal depths of the two hemispheres shallow crust in the north much thicker crust in the south why would a planet evolving in isolation displace are too profound dichotomy it's as if some unknown force excavated the northern crust miles deep the hemispheric removal of crustal material requires a force external to Mars acting on the planet but when it comes to external events scientific convention has only one thing to work with random collisions could a planetoid or huge

asteroid crashing into Mars have removed
millions of cubic miles of crust a
shattering impact is all that theory
would allow

but what would Martian history look like
where we to include electrical events
events on a scale sufficient to sculpt
the surface of the red planet from pole
to pole

of all the enigmatic features in the
solar system perhaps none provokes
greater amazement than Valles Marineris
the largest Canyon on any planet her
moon the deep trench complex stretches a
third of the way around the planet
hundreds of times larger than the Grand
Canyon

it would reach from San Francisco to New
York and beyond prior theory of
planetary formation had never
anticipated such a chasm on a small
planet what natural force excavated this
colossal trench

with the arrival of the Mariner probes
NASA scientists thought the chasm could
have been cut by water erosion though

nothing even close was ever achieved by
water on the known watery planet earth
on any erosional hypothesis three
million cubic miles of material were
removed three million cubic miles and it
had to go somewhere neither the means of
fluid drainage nor the vast outflow
required are in evidence now we know
that the Valles Marineris reaches to a
greater depth than any outflow channel
originally envisioned and the
tributaries imagined by some turned out
to be cleanly cut alcoves and stubby
depressions they are not connected to
feeder streams at all
one portion of the Valles Marineris
system in particular underscores our
point here planetary scientists
acknowledge that heebies canyon much
larger than our Grand Canyon is an
inseparable part of Valles Marineris the
scientists have now acknowledged it was
certainly not created by water
nor is it plausible to suggest that
surface spreading created the massive
chasm the Valles Marineris with its

repeated morphology of sharply scalloped walls the surface was not torn it was carved and the detailed images imply a removal of material along the entire length of the chasm a process clearly illustrated by the neatly machined so-called tributaries all the way up to their rounded cleanly cut terminations whatever formed the canyon complex did not stop at the margins of the primary channel but added irregular craters and crater chains and surface grooves and gouges so the question cannot be escaped is there anything known to science today that can account for the extraordinary profile of Valles Marineris there is an explanation well known to science though it's never entered the geologists lexicon blimey the laboratory its power is demonstrated in electric discharge experiments but the form unfamiliar to conventional science today is the cosmic Thunderbolt a primary theme of our own investigation it was the brilliant engineer Ralf jürgens who first suggested decades ago

that a cosmic Thunderbolt carved Valles
Marineris
with the benefit of more recent data
electrical theorists Wallis Thornhill
returned to this extraordinary
possibility
yes the electric hypothesis will unnerve
many scientists but it is the only
hypothesis that meets the test of direct
observation here is a scar left by an
electric arc on a piece of wet wood and
a second example of a discharge to a
piece of wood
electric discharge provides a direct and
complete explanation for the Valles
Marineris the so called tributaries of
the valley were cut by secondary
streamers of the discharge that is a
typical signature of an electric arc
when it cuts a surface channel and here
is the scar from electric discharge to
an insulator notice in particular the
network of secondary streamers to the
left a perfect counterpart to the
western edge of Valles Marineris
it was long-held that this remarkable

region on Mars was the result of uplift
fracturing and spreading and from a
distance it did look like fracturing but
with a closer view in front of us it is
simply irrational to cling to that
interpretation material has been cleanly
removed exactly as in the discharging to
the insulator
the evidence now available demands a new
perspective a larger field of view in
Thornhill's interpretation the discharge
took the form of a plasmoid not unlike
the plasmoid from which a spiral galaxy
is formed
on his website
Thornhill noted how the discharge effect
spiraled upward to the east and downward
to the West an effect that shows up
quite clearly on the elevation map given
on his website in fact if we extend the
view of the elevation map we see an even
larger effect it seems that the
spiraling trails to the east and west
nearly completed two circles as they
swung back toward the trench itself but
one difference between the northern and

the southern extension stands out the
northern extension is entirely
constituted of ravines and depressions
while the southern extension consists of
ridges and mountainous terrain for this
unusual contrast electrical experiments
offer a startling explanation it was
George Christoph Lichtenberg who in the
18th century first showed that electric
arcs create ravine networks on more
negatively charged surfaces and elevated
ridges on more positively charged
surfaces could it be that simple that a
cosmic Thunderbolt
carving Valles Marineris acted on to
regions of different charge negative to
the north and positive to the south
if such was the case the only plausible
cause of the charge differential would
be an electrical exchange between Mars
and other charged bodies in the past and
what was the relationship of these
events to the hemispheric dichotomies
the removal of crustal material through
the north and the densely cratered
southern hemisphere in the electrical

interpretation the violent excavation of the surface to create Valles Marineris would have created immense deposits of sediment on surrounding topography and indeed we see that previous craters in the region were completely buried with only the largest craters appearing as outlines penetrating through the deep deposits it's apparent that the released material had a net drift to the west since the blanket of deposited sediment stretches all the way to the eastern flank of the towering Olympus Mons keep in mind as well that an electric discharge at energies necessary to create the chasm of Valles Marineris would have ejected great volumes of rocky material into space much of the rocky debris would have fallen back to littered the margin landscape and indeed shattered rock of all sizes across the surface of Mars is a long-standing mystery and the mystery is resolved by electrical events on a continental and even hemispheric scale given the energies of the events considerable

volumes of material would have surely
escaped the planet altogether and what
might this tell us about the Mars earth
connection in our reconstruction of
ancient events or the surprising
discovery that rocks from Mars have
fallen on our own planet
you

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Introduction to Velikovsky's Ideas

Irving Wolfe

OK, are we set up, can you all hear me?

I'm getting an echo.

I have no slides, no equations,
no pictures, nothing.

All I have is my charming personality,
so I hope that will do.

I'm going to introduce you
to Velikovsky, but much more than that
I'm going to tell you why he's important
in terms of knowing what goes on in the
world and how you understand science.

So, first of all I have to explain that
there is a gradation in his ideas that
most people don't seem to understand.

I look at it in terms of primary, secondary
and tertiary, and Velikovsky's ideas can
be grouped into his primary theories,
which I think are extraordinarily
important, his secondary ideas where he
tries to fill it in and his tertiary
ideas where he tries to answer the
questions that he has himself raised.

I don't know how many people agree with his answers, I don't even know if I myself agree with all of his answers but, what's most important are the questions he raised, so here's the background.

Velikovsky wrote his most important book 'Worlds in Collision' during the 1940s; he did his best to sell it to a publisher between 1946 and 1950.

By 1950, Macmillan, one of the largest publishers in America, had agreed to publish the book.

That's when certain mistakes occurred and that's when all hell broke loose.

Because a science writer called Eric Larabee, who was very well-meaning and admired Velikovsky, agreed to do a condensation of Velikovsky's theories for the magazine Harper's, which every intelligent person in America read.

And he did it and it was fairly faithful except that it didn't contain any of Velikovsky's evidence.

It merely gave his conclusions and it appeared in Harper's at least four

months before the book was published.

But overnight, it became a sensation.

Now, a sensation in a negative sense.

If you look at what's going on now with a
Large Hadron Collider and CERN in Europe.

They were looking for what
they call the Higgs particle.

Now, some idiot newspapermen dubbed it
'the God particle'.

If I were an astronomer, I would
have been seriously embarrassed
by anyone calling the Higgs boson
the God particle.

It turns out that they may
or may not have discovered it. It turns
out that there may be five different
Higgs particles, but since they spent
billions of dollars on this enormous
Collider, they wanted to show that they
got something for their money and of
course what they want is for governments
to give them another ten, fifteen billion
dollars to build an even bigger Collider
and so they had to argue that they had
found 'the God particle' which is nonsense.

Now, the Larabee article in Harper's,

unfortunately picked up on one of Velikovsky's theories which is how he explains the story of Joshua in the Bible where Joshua put up his arms and the "Sun Stood Still."

Now, we know that this isn't what happened because the Sun does not move, the Earth moves around the Sun and therefore if something like that was perceived, it had to have been a retardation of the Earth's spinning on its axis or a tilt of

the axis that made it look like the Sun was not moving, but the Sun never moves.

However, people picked up on this phrase 'the day the Sun Stood Still' and the next day it was a sensation across America.

Here is a scientist who can explain the miracles in the Bible scientifically and he explained how the Sun stood still.

So this was picked up all over the country and it was picked up by mainstream big science in America and it was picked up in particular by an astronomer called Harlow Shapley and the whole Velikovsky story for the first 10 years is really a

battle between Velikovsky and Shapley.

Shapley was the head of the department of astronomy at Harvard, he was also in charge of the Harvard College

Observatory, he was the Dean of American astronomers and he went ballistic when he read about this.

Now normally, if someone comes up with a, what you call a

crackpot theory that the world was populated by little green men, most of mainstream science will just ignore it.

But in this case, mainstream science attacked Velikovsky with all guns firing before the book had even been published.

Shapley organized a whole campaign, he had his disciples who were also members of the Harvard astronomical community, he had them write articles, they

photocopied the articles and sent them out all across the country, they asked individuals in different departments,

"write letters attacking Velikovsky", they tried to block the publication of the book by Macmillan, and this went on months before the book was published.

At the very last moment, the publisher of
Mac..., this is the Velikovsky affair, you
have to understand

that there was a Velikovsky affair.

It's very important that you understand why
it happened and what it means in the
long term for how you view modern science.

There was an enormous campaign
of name-calling, Velikovsky was called a
crank, he was called a crackpot, he was
called a pseudo scientist, he was called
a fraud, and mainly this was all carried
out by Harlow Shapley himself who
protested that he never did anything, he
never wrote letters to anybody but all
those letters are extant, and they tried to
block the publication of 'worlds in
Collision' as if it's some kind of poison.

And you cannot allow it to infect
people's minds.

Well, at the very last second,
the publisher at Macmillan had to
call in four more scientists to read
Velikovsky's book, to decide if it should
be published, they all agreed that it
should, the book was published, it became

an instantaneous bestseller and this was the man who could prove why the Sun Stood Still, a very unfortunate bit of history.

Now within about six months, Macmillan was blackmailed literally by professors all over America who said, "if you continue to publish Velikovsky, we will not order your textbooks at our universities" and you have to understand, if you have a very large university, like Ohio State and you have a couple of thousand kids in first year and they're all taking astronomy and they're all going to order Macmillan texts, this involved a lot of money.

So Macmillan unwillingly had to give up the book when it was number one on the New York Times bestseller list.

And they transferred it to Doubleday which did not have a textbook division.

Doubleday was quite happy to take it over, they made a lot of money, it continued to sell and this is a story that everyone knows about because it was written in all the newspapers, everybody said

"guess what's happening", it was a big scandal, if you google Harlow Shapley, they say quite openly that he led the campaign against Velikovsky.

Now, you have to understand why Shapley personally was at war with Velikovsky.

Harlow Shapley became a major astronomer at Harvard in the early '20s but he had a very unhappy career because at the same time alongside him was Edwin Hubble.

And Hubble turned out to be a far more important astronomer than Shapley and the big battle between them, and it was a vicious battle, was about the size of the universe.

Shapley wanted to keep everything neat and clean.

What I mean by that is, he wanted to describe the solar system as the entire universe.

And he called it 'an island universe' and when somebody said "what about all these dim spots and so on," he said "these are merely gas and so on, they're not important"

whereas Hubble said "no, these things are individual galaxies on their own, they're way outside the solar system and the universe is much larger than Shapley would allow" and Shapley and Hubble fought it out and Hubble eventually won and Shapley grudgingly had to concede that Hubble was right, although he never liked it and he called Hubble's work "junk science" and so on, but that was a tremendous disappointment in Shapley's life.

Now also, he had been a bit of a left-leaning communist before the war. He had wanted America and Russia, which had just become communist a decade or two before, to be friends. He wanted everyone to be friends and this reminds me of when I was a little boy and I went out on the street to play, remember those were the days when you could actually walk out and have friends on the street.

Now you have to have your father arrange a playdate, he has to drive you 20 minutes away

and he has to organize it three weeks in advance so you have a playdate with your friend.

In those days, you just went out on the street and you played.

Now, my mother used to tell me, "make nice-nice", in other words, get along with the people, make nice-nice you see?

And Shapley wanted America and the Russians, and so on, to make nice-nice, but it didn't work out and at the end of the war, another war started between America and Russia and this left him very unhappy.

Now, he also thought that America had the atomic bomb in 1945 or 46 and no one else had it so America became like the public school principal.

When little boys are fighting in the schoolyard at recess, the principal goes out and says "now stop," and they have to stop because he has the authority and America had the bomb and they were like the school principal that had the authority, but by 1948 or 49 the

Russians had acquired the atomic bomb so that didn't work out for Shapley, he was very disappointed but Shapley had one, I don't know if it was a secret, one secret obsession, one cherished idea and I found out about this because I went to McGill library in Montreal and I checked through four successive editions of the first year primer on astronomy that was sold to Harvard students in astronomy 101.

And it went from the 30s, 40s into the 50s, it was approved by Harlow Shapley and there is a section there on the solar system in which he argued that the solar system is the most precise organization of units in the world, in the universe, and that everything happens with absolute precision down to almost a portion of a second.

So the one place in the universe that Shapley could cherish, because everything else was going to hell.

On Earth there had been the Second World War, there had been the rise of fascism, there had been atomic bombs, anger

between different countries, he could not bring order on the world, he probably could not bring order in the distant areas of the universe because there were galaxies and I don't know if he knew, as early as 1950, that when galaxies collide or when super galaxies collide, it is the largest form of violence in the universe, but at least he could say it maybe all hell down here and it may be all hell way up there but in between there is this marvelous system of absolute unchanging serenity, it's been that way for 3 and 1/2 billion years, it will presumably continue for another three-and-a-half billion years and this is the solar system.

And Velikovsky comes along and says "no no no no no, the solar system is violent, it has experienced major disruptions up until even - 1500 and - 700 which is 3,500 years ago" and so Shapley was being attacked in the last bastion of order that he could believe in and this was too much and he went into battle with all guns blazing.

So you must see this as a war....

Is it down, oh here we are, very modern
equipment I don't know how to handle
this I'm very old-fashioned, OK.

...a war between him and Velikovsky, because
it was all or nothing, he had to destroy
Velikovsky or he would be destroyed.

He had to go, it was a battle to the death
and so Shapley tried his best to destroy Velikovsky.

Now, if this had been 400
years earlier, Velikovsky physically
may have been destroyed.

Giordano Bruno, who was a major Medieval and
Renaissance thinker, disagreed with the
church about how many worlds there are
and so on. He was given time to
reconsider and see if he will recant,
meaning take back what he said; he didn't,
so the church condemned him to death.

And in the year 1600, you think of this as a
modern age but there they were on the
plaza in Rome in front of everybody,
he was burned to death, and you have to
understand what that means, they tie you
to a pillar and your feet are on fire
while you're still conscious and

it's a horrible long slow agonizing death.

Now, they couldn't do this to

Velikovsky in the year 1950 but they

could try and destroy his books just

like the Nazis burned books in the 1930s

and they could try and

destroy his reputation.

And so, the mudslinging and the

name-calling and everything else

that went on has clung to Velikovsky.

He should have become a major figure in

20th century thought, he should be one of

the names we think about.

He hasn't because of the Velikovsky affair.

Now, I want to say that I think Velikovsky is

one of the major intellectual figures of

the 20th century, someone you ought to

know about, he is what I would call a

revolutionary or a game-changer. You can think of the

phrase "Watershed," meaning nothing was before

as it was after. You think of certain individuals

like Pablo Picasso in painting

because of Picasso, painting was never the

same after him. You think of Einstein and

his theories, nothing was

the same after Einstein.

A friend of mine, a late friend
of mine who was a Olympic figure skater,
most of you have probably never heard of
him, his name was, my mind is gone blank,
Taller Cranston, he was Canadian Olympic
figure skating champion in the '70s and
an Olympic medal winner, he
transformed figure skating.

Up until then, figure skating had
merely been gymnastics on ice,
the skaters wore uniforms that
looked like military uniforms, they even,
some of them wore ties and they performed
exercises like a gymnastic competition.

When Taller came on, he was a wild crazy
man, he was flamboyant and he transformed
figure skating and made it into ballet on ice
and figure skating has never been the
same since then.

Velikovsky was that or
should have been that sort of person, but
the dirt that was flung at him because
of the Velikovsky affair clung to him
for many years.

Now, in terms of primary, secondary and
tertiary, I think it would have been much

better if Velikovsky had published a
much smaller and more innocent-looking
book called

'Earth in Upheaval.'

I would have preferred if I had been

there at that time to tell

him to publish 'Earth in Upheaval' which
some of you should read, it's a very easy
book, anyone who is intelligent and
open-minded, if you read it you would
probably have to agree

after hundreds of pages of evidence that
certain very huge cataclysmic things
happened to the Earth within the last
4,000 years.

And if he had put that book out saying,
look here's my evidence, it
looks like this is what it implies, what do
you think about it?

That would have been a better way
to handle it, particularly
because the last chapter of the book
talks about cataclysmic evolution where
he destroys Darwin.

Now, Darwin needed destroying,

I will point out that in a moment,

but if he had..., see, Velikovsky was a trained psychologist, he had studied under Wilhelm Stoeckl who was a pupil of Freud, I think he actually knew Freud himself, he worked for about 15 years as a psychoanalyst before he came to America and Velikovsky should have known as much as anybody, that the difficulty when you're trying to cure a patient is not in finding out the cause of his problems but in how you reveal it to the patient.

Because if you don't do it right, the patient is gonna be very angry and will fight you and you will get nowhere. He should have known this but what he did is the opposite, he wrote 'Worlds in Collision' where all his guns are set forth; he didn't hold back the theory about Venus which I would have preferred him to do; he completely disobeyed all the rules of how you communicate cure to a patient and instead he published 'Worlds in Collision' which was a direct slap in the face to all of American big science.

I don't know if you're allowed to use

what I call foul language.

I checked with Dave,

maybe what I'm about to say he won't

invite me back again but, what Velikovsky

did by laying out 'Worlds in Collision'

foolhardy, a direct blow in the face of the

science, he told mainstream science

"you're full of shit" and he

made it quite plain.

Cheers, cheers, cheers!

I guess I'm okay, all right!

And so the war erupted because big

science had to either destroy him or he

would destroy them!

Now you have to ask yourself,

did he have a right to do this,

and I say yes, he did,

because Newton and Darwin needed destroying.

Now, imagine I'm a man

from Mars and I've just arrived on Earth

and I meet an earthling and I say okay,

show me your culture, what are the

important things?

So the earthling would say,

"we are Western culture and we

produce science; all the other cultures,

Islamic culture, Hindu culture and so on
they deal with mythology and gods and
stories and fairy tales, we tell it like it is."

And so I would ask this earthling
"who are your icons," and he would say
"Newton and Darwin", every schoolchild in
1950 would have said "we believe explicitly
in Newton and Darwin."

So I'm going to prove to you
that there was no reason for that.
in Newton and Darwin."

So I'm going to prove to you
that there was no reason for that.

Aristotle proposed a cosmology
and the Western world, which is supposed
to be rational, believed in and bought
Aristotle's cosmology for 2,000 years.

Now I, as the cynical man from
Mars would say to my earthling companion,
"let's look at what Aristotle was selling,
why did they buy it for 2,000 years?"

Because I would say, Aristotle was in
effect a religion, it was a secular
religion but it was a religion because
if you look at religion from a
utilitarian point of view, which I do,

what does religion offer?

Three things; it tells you how

the world works, it tells

you that the guy in charge is benevolent

and it tells you how you can connect to

the guy in charge meaning, you have friends in

high places, this is very comforting, you see?

Newman, Paul Newman made a film

in 1959 I think, it was called 'somebody

up there likes me,' you see, and there is a

famous Christian myth, 'what a friend we

have in Jesus.'

Well, what Aristotle was selling is,

what a friend we have in the prime mover

because Aristotle's cosmology was that

there were nested spheres and each one

was inside the other and they were all

moving at different rates and they

produced a beautiful music, this was the

music of the spheres, and it was all

governed by the prime mover who is

himself unmoved and the prime mover,

merely by the influence of his goodness,

makes the spheres revolve and the basic

message, you'll hear about this later on,

but the basic message that Aristotle was

selling was "don't worry," meaning there may be horrible things happening on Earth, giant earthquakes, tornadoes, hurricanes, tsunamis, huge floods, drought, pestilence, disease that kills off people, it may look like the Earth is a very dangerous place but the underlying message is, don't worry!

Because there is this eternal stability kept in motion by the prime mover and the prime mover likes you.

So that's what Aristotle sold and people bought it for 2,000 years approximately.

Now, around the year 1600, a lot of discordant data began to appear, troublemakers like Copernicus and Tycho Brahe and others began to show that, and Galileo, that the picture of the universe that Aristotle painted wasn't quite true and what happened then was a process that Thomas Kuhn in 1962 described in *The Structure of Scientific Revolutions*.

What he said was, when an old paradigm, the paradigm is

the overriding belief, is called into question because there's a lot of data that it can't account for, then a new paradigm will be offered that does a better job.

And so what happened is that Newton came along and said look, there's this thing called gravity!

Now gravity begins with G, God begins with G, they simply replaced God with gravity and Newton's theory became the accepted belief of how the world works, Newton was a deist meaning he believed that God had created the universe and ordained the natural laws and he had built the world like a clockwork and that this clock ran perfectly and the underlying message there is the same as Aristotle; what was Newton selling? The message is, don't worry.

Don't worry because, God who is benevolent did not design the world so it will destroy you, he designed the world so it will keep running like a perfect clock.

Now there are two different kinds of deists, one group

believes that God built the universe and then goes off to play golf and allows the universe to take care of itself, and the other is more like Newton who says that every once in a while God has to intervene and tweak the world a little bit and get it back online which implies that he may not be a perfect clock maker but that's the way it turned out.

Now Newton, in my opinion, is simply Aristotle with numbers.

In other words, he fed people the same fairy tale and the fairy tale is "don't worry, the guy up there likes you and the world will run perfectly forever."

So, Velikovsky had a right to destroy Newton.

Now as for Darwin, the second pillar, the second incorruptible everlasting pillar of Western science, I think Darwin is on far shakier ground, because what Darwin said is, "new species are formed but it takes about two million years" and therefore he asks you to take it on faith that a species acquires a slight

change and another change and another
change and over two million years it
becomes a different species which cannot
mate with the other species and
therefore it is a new species and that's
how speciation occurs.

But since none of us, or since
Darwin could not supply a
CCTV camera that covered an organism for
two million years to show how it became
a new organism, you have to take it on faith.

So Darwin; I can't, I don't
understand why anybody believed in
Darwin but the background to that which
you must understand and I'll explain it
now, is the battle between two concepts,
uniformitarianism and catastrophism.

Now, uniformitarianism, to put it very short,
says "nothing ever happened in the past
which is not seen to happen
today," the present is the key to the past.

And so, the essence of uniformitarianism
is called gradualism, everything is
gradual, just like my mummy said to me,
make it nice nice, everything happens in
a nice way.

Catastrophism, I don't know what the
antonym is, I suppose it's suddenism
which is the opposite of gradualism, I
don't know, but catastrophism says, things
happen abruptly and they happen
violently and these are two different
ways of looking at the world and the
Western world was obsessed with
uniformitarianism, not because it had
better proof but because it was comforting.
And so, these two beliefs,
Newton and Darwin were uniformitarianists,
everything happened slowly and gradually
and there's no violence.
Now I'm going to try and prove
to you why we should not believe in it.
The idea is this, I, as the
cynical man from Mars, I look at my
friend, my dear earthling, and I say to
him "can you not see that both of these
ideas did not come out of a vacuum, they
are not scientific in the sense of being
objective, they are products
of British culture!"
Have you ever thought of that?
They come out of the same culture.

Now, what does that mean?

Well, I'll tell you.

Barack Obama, one of the nicknames,
he was called 'no drama Obama,' you understand?

He didn't like drama and the British don't
like drama and one of the ways they
identify it is, they
are not crazy about sex.

There was a musical that appeared in
London which was called, 'no sex please,
we're British!'

And it even played on Broadway for a
short while but it was a truism.

Now, if you conflate these two, it's 'no drama
please, we're British.'

In other words, the British like
everything to be orderly and regular,
regular means no catastrophes
and slow and peaceful.

Now I'm going to give you
scientific proof why this is not so.

Are any of you familiar
with the game of cricket?

This is sort of, form like baseball
but real cricket, original cricket, we
spent some time in England a few months

ago and we stayed for a while at the house of one of our friends who lives in a small village and to get to their house we had to go past a certain cricket field owned by the local Lord who owned most of the buildings in the area anyway and this was a real old-fashioned cricket field.

Now the cricket field is green grass and all the players wear white, in other words when a young man says "I'm putting on my whites" it means he's going to play cricket.

So all the young men wear white trousers and white shirts; why, because that's the way God wants it and they play cricket in a certain way because that's the way God wants it, even the umpire wears a long white coat, like a lab coat and if the Sun is shining and you have to believe that sometimes the Sun does shine in England, he wears a white hat.

So everybody is dressed in white against the green and they play cricket in a very gentlemanly way.

If you had gone in the year 1950 and watched a soccer game,

we call it soccer, the English call it
football, of course that's what it is,
because our football is played with
hands, you carry the ball with your hands,
you pass the ball with your hands, you
catch the ball with your hands, in
England they play soccer with their feet
and so then in England they call it football.

But if you were to go to watch
a game between working-class or
lower-class teams, I shouldn't use
that pejorative adjective, you would
hear all the people in the stands
drinking,
you would hear thirty thousand voices
singing together the songs that identify
the team and they would be yelling
things like "break his legs, break his
arms, kill a bastard," you see.

But if you went to a cricket match and somebody hit
the ball properly, you would get that.

If he really hit the ball well, you would
have, you see, that that is rabid
passionate support for cricket.

And what else, do you think,
happens in cricket?

At four o'clock they stop playing.

Do you know why?

They stop for tea!

Now here's how it works, the ladies don't play,

I mean, there are some women who play

cricket but God doesn't really want

women to play cricket so, the ladies watch.

Now there they are sitting there

in their dresses, summertime dresses,

which they call frocks and they're

wearing their hats which they call

bonnets, you have to remember, England and

America are two countries separated by a

common language, and they watch the match

and they applaud because a gentleman or

a gentlelady does not, you know, you have

to understand that the English decided

that they were the superior culture in

Europe, meaning in the world, because this

was Eurocentrism and it can't be the

Germans because all they do is want to

make war and slice each other with

sabers, it can't be the Italians because

they just sing opera and they kill each

other in vendettas, it can't be the

French because the French kiss their

girlfriends in the street, no Englishman
would ever do that, so it must be the
English who are the preferred nation of
God and the English are gentlemen,
everything is proper.

Now the ladies come out and they bring out food
but I have to describe the food.

Do any of you know what a cucumber sandwich is?

Now the two pieces of bread are thick,
the cucumber is sliced horizontally very
thin, if you held it up to the light you
could see through it and so you have
this little bit of cucumber between two
pieces of bread, you couldn't feed a
mosquito on a cucumber sandwich.

It's not really food but they bring out cucumber
sandwiches and that's what the players eat.

Now it goes further than that, they
serve tea, the tea is served in a tea
service which is either pure silver or
silver plate, and the players get their
tea in what, in bone china cups.

Bone china is so thin you can
almost see through it.

It's not like a beer mug, it's not
like some heavy piece of glass,

it's bone china.

Now, how do they hold the cup?

Between the thumb and the forefinger

with your pinky up in the air and I ask

this, as some of my students in Montreal

are French Canadian, I say "how do the

British cricket players drink their tea?"

and they all did this because God wants

you to hold the cup daintily between

your thumb and forefinger and put your

pinky up in the air and that's the way

that God wants you to drink tea.

You have to understand so can you imagine an

American college football game played on

natural grass?

You remember, there used to be fields

with natural grass and it's

raining and it could be snowing in the

Northeast and there's mud on the field

and after five minutes all the players

are covered in mud, you can't even see

their numbers, the mud has gotten through

their face guard and they're all looking

like they're dressed for Halloween and

they're all covered in mud.

Can you imagine the ref blowing his whistle at

four o'clock and all these players stop for tea?

Can you imagine some defensive lineman
who's 6 foot 5 and 340 pounds and
covered in mud whose hands are as big as
a catcher's mitt,
taking his gloves off and picking up a
little cup of tea and taking a sip with
his finger up in the air?

Obviously, so the English know how
God wants it to be done.

A gentleman does things in
moderation and he does things in a
certain prescribed order.

So I, as the cynical Martian,
talked to my earthling
friend and I say, can you not see my good
fellow, that Aristotle and Darwin are
merely different forms of religion and
that they fulfil the function that
religion fulfills?

What I'm saying is that Newton
and Darwin deserved to be destroyed.

Now because I'm an English professor, I
can have the liberty of saying things
that I couldn't get away with if I were
a physicist, so there is my friend Wal

who has to protect his professional integrity, I don't know if he would go so far as to say that Darwin, sorry, gravity does not exist.

I would because I have a get-out-of-jail-free card.

Anybody says to me "why do you say that" I say well, I don't know I'm just an English professor.

I'm just, I'm just a humble English professor, how would I know, you see?

So I can go further but I would say that in my opinion, in my humble opinion, gravity doesn't exist.

There's no, you can't, it's not a force, Einstein said it's not a force, you cannot take a meter and stick it in the way and measure the force and get a reading, how does gravity propagate?

It's supposed to be gravitons, but nobody has ever proved they exist, nobody's seen them, are

gravitons merely a different form of saying there's an ether because the gravity has to move somewhere, there's no

gravitons, as for gravitational waves, the speaker yesterday showed us that the LIGO experiments, which said it had detected gravitational waves, is nonsense, they had fiddled with the numbers and it's really a fraud.

So in effect, gravity is unprovable and I would go so far as to say that it may turn out to be wrong.

Therefore, if you imagine that I am now a speaker on the program 'the nightly Business Review' it's some of you may watch on PBS.

They bring up people who are experts in the market and they advise you which stocks to bet on.

Well, I would say to you, sell gravity short; I would say, sell Darwin completely short; because he's dead and if you're gonna buy stocks, invest in Lamarck, I haven't explained to you who he is, but Lamarck was supposed to be dead and he's coming back to life; invest in Robert Shapiro and so on because if you Google, as I did the other day, 'criticisms of Darwin' they listed, to start off, 76 names and I counted them

and most of them are prominent major
biologists, all of whom disagree partly
or completely with Darwin, and then at
the end they throw in, there's hundreds more.

So I think Darwin is completely
dead, he makes no sense whatever and I
think Velikovsky was perfectly within
his rights to deny Darwin and to deny
the theory of gravity.

Wal can tell you later if he is
really going to go on a limb
that far but of course he's a physicist
and I'm not, so I can go further out on a
limb than he can perhaps.

But my feeling is that,
I like Wal and I've known him
for a long time and I respect him, so I
go with people I like and if Wal says
gravity
ain't what it's supposed to be, I
believe that because I have what they call,
a smeller, the smeller means I can smell
crap, there's another word, you see.

I'll use it, a friend of mine in
Scotland calls it crap and I will say crap.

I remember when I was an

undergraduate and one of my friends said
look, they've discovered that the first
two forces are actually the same and I
laughed and I said well, of course they are.

Nature is not extravagant, and I said
they will probably find that the third
force is also the same and lo and behold,
ten or fifteen years later, they
discovered that they are all the same.

It didn't smell right to me that they
should be different.

Now when I stand on
a huge boulder in the middle of a forest,
as we did, and somebody tells me this
Boulder is sending out forces of gravity
which are mediated through gravitons
that doesn't smell right to me and I
follow my sniffer, that's my standard of..

Now if I have to prove to you that
Britain is a country that wants
gradualism and quiet and order, I would
give you three scientific proofs.

These involve the theory which you may not
like, that British women are not sexually
arousable very quickly and that gives you
an idea of the character of the British.

So my first 'scientific proof' is this,
a Frenchman is in bed with an English
woman and suddenly he stops and he says
to her, Cherie, did I hurt you, and she
says hurt me, not at all, why do you ask?
Because, he answers, you moved!

Next 'scientific proof.'

After good sex, the Russian woman
says to her partner, you
are my god, my czar, the French woman
equally aroused says Cherie je t'aime, je t'adore,
the English woman says to her
partner, feeling better?

Now here is my
culminating 'scientific proof!'

Alfonse and Gaston are two French
fishermen coming down early in the
morning on the beach to go and get their
boat, then suddenly they see a body on
the sand and they come running up and
it's a woman and she looks dead.

So Gaston says to Alphonse, you stay with
the body, he will go and get the police
and bring them back.

When they come back on the beach,
they see that Alphonse is

on top of the woman trying

to have sex with her.

Now the French policeman runs up and

says, "Monsieur, Monsieur what are you

doing, can you not see this woman she is dead?

Dead, says Alphonse, sacre bleu!

I just thought she was English!

So now that I have proved to you 'scientifically'

beyond a shadow of a doubt what the

British culture is like, you will

understand why the British culture has

produced these theories and why I am

very suspicious because the apple does

not fall far from the tree.

The plant must reflect the soil

out of which it grows.

So Velikovsky was right in

attacking these two icons, they were, they

had feet of clay and it should have

happened 70 years ago, it didn't.

Maybe it's going to start happening now because I

see one of my purposes here is to repay

my debt to the old man.

I called him 'the old man' although

now I'm closer to his

ages than when I first met him, but I have to

repay my debt to him because I think
he's a very great man, I am honored and
respected
to have known him and worked with him, I
believe in what he says and I think it's
time that he had a fair hearing and I
think that people should start with
'Earth in Upheaval' which is a more
moderate self-restrained book.

People should read it and look into it and what
we really need is what I need and Bill
and everybody else, is three smart young
assistants who will do the work, go back
to the Velikovsky books, show how he's
been right and show how he deserves to
say the things he does, he had a right
to attack Darwin and he had a right to
attack Newton because they had, their
theories were weak and nonsensical.

Now, the dirt that has been flung on
Velikovsky still adheres to his name.

People take the time to attack
Velikovsky to establish their own
credentials among their colleagues and
it goes so far as, when was Shermer here?
In twenty fourteen or fifteen?

2015, OK, well that's just two years ago.

Shermer is a skeptic.

Now the point is that he calls himself a sniffer out of

pseudoscience but there is no way of

defining pseudoscience, you cannot take a

degree in pseudoscience, you cannot

become a specialist in pseudoscience, you

have to appoint yourself as a sniffer

out of pseudoscience, so people like

Shermer are self-appointed vigilantes

and they work on behalf of big science.

Now Shermer's report, I believe, was

published in Scientific American and we

all know that everything in Scientific

American must be true, that God stands

behind the Scientific American, so it

must be right.

And Shermer was here for half a day

and wrote a report, not because the

electric universe people are directly

Velikovskian but Velikovsky is behind

them because everybody here today who is

involved in this

owes a debt to Velikovsky whether it's

one, two, or three degrees of separation,

they all belong here, I mean they all are

connected because of the Old Man.

And so, Shermer's report, I just want to read it because this is how it starts,

"Newton was wrong,

Einstein was wrong, black holes do not exist, the Big Bang never happened, dark energy and dark matter are unsubstantiated conjectures, stars are electrically charged plasma" and so on.

Now he's giving you this as a series of beliefs that the EU offers, and of course the whole point of it is, he's asking you to laugh at them because everybody knows that Newton was not wrong, and Einstein was not wrong,

and black holes do exist and so on, but

if you paid attention to the second

speaker on Thursday night, I can't

remember his name at the moment (Jim Ryder) but he

was a physicist, he showed us that all of

the things that physicists believe in, as

part of the standard model,

they have never managed to find.

Now, maybe we can perform a short thought

experiment, Einstein loved them and I'm

going to do two with you now.

The first one will take us back 400 years, the next one will take us ahead 200 years.

Imagine that 400 years ago there was a conference in, let us say Rome, where a group of rebels, iconoclasts, heretics, just like the EU today, were assembling to talk about Copernicus and so on and the church did not like this, because they believed in Aristotle so they sent someone like Shermer, a pre-incarnation of Shermer to go to Rome and report, he would have said the same thing.

He would have said by starting in a sneering way, the concentric circles do not exist, the music of the spheres did not exist, the prime mover does not exist, and we are expected to laugh and say well, we know they do exist, and it would have been the same thing, so what Shermer did was quite disgraceful.

He did not behave like a scientist, he did not look at the ideas and say look at, this is what people say, let's take a look at it, I think they might be right or wrong in the following ways; all he did is sneer and laugh and put people down.

In fact, one of the people I forget who, he called him a self-taught mathematician meaning of course, he can't be right because he wasn't trained at a university.

So I think, Shermer's reaction and his report was disgraceful but typical of the attacks on Velikovsky and because they happened 60 years later, you can see that the stigma is still attached to Velikovsky.

Now, another thought experiment, 200 years years in the future.

We go to Cambridge through department of the history of science, I spent a whole semantical year there, I had convinced my university that I had important things to do on Shakespeare and I had to be at Cambridge, but I went every day to the Department of the history and philosophy of science, I went there like a mole, I didn't tell them who I was, I went there like a spy to see what they were doing and what they were thinking and I met a number of young, bright young people who were there to get a PhD from Cambridge and I invited them out individually for coffee and we talked

and so on and imagine that one of them
200 years from now, is being asked to
write a thesis on the state of physics
at the end of the 20th and beginning of
the 21st centuries.

Well he would do just what Shermer
did, only he would say black
holes and so on and he would list all
the idiotic things that physics believed
in in the year 2100 and how wrong
they were and how a new form of physics
has now appeared.

So you have to place Velikovsky
in that background.

Now very quickly because I don't know how much
time I have, I told Dave this morning
that I want the whole morning, 3 hours, he
says, you're not getting it!

But, how Velikovsky has impinged on me?

I began to see that the great works of art
carry a subconscious, unconscious story
and if you know how to decode it, if
you're familiar with Velikovsky you can
see what's going on.

So I wrote an article about Shakespeare's play 'Antony
and Cleopatra,' where I showed that the

action in the abstract can really be a
retelling of the Velikovsky story and I
developed a theory that in the great
works of art, we are allowed to revisit
the catastrophes in disguise
because we can never forget about them,
it's too horrible.

We revisit in disguise and we put in a happy ending so
that we can relax again but every once
in a while we have to go back and look
at the trauma again in code and then
give it a happy ending.

So I began to write articles about Shakespeare's plays,
I wrote articles about sport, about
politics, everything else, and this is
where Velikovsky left me, two
years ago in Toronto I presented two
papers, the first one was on baseball.

Now, I saw pictures of pharaohs, mainly
Tuthmose the third, and so on; photographs
taken of carvings on the walls where
Tuthmose is standing with a bat over
his sholder, how much time have I got Bill?
Five minutes, well it's five minutes
plus two hours but let's make it five minutes.

He's standing with a bat on his shoulder

and he says, I have driven off the evil
eye of Apophis.

Now what it means is this, they believed
that order, stability, orbit,
is carried on by the god Ra who travels in
a boat and when he completes the orbit,
the world is safe.

Now there is this villain who's called by different names
one of them is Apophis and he keeps
trying to destroy the path of the boat.
So the eye of Apophis is the force that
Apophis is sending to stop the boat of
Ra, and the Egyptian god knocks away
the eye to keep the boat safe on its journey.

Now you imagine a photograph of
Babe Ruth with a bat on his shoulder,
imagine W.G. Grace who was the major
British cricket batsman of the 19th
century, with a cricket bat on his
shoulder and then you have the drawings
that I showed with the Pharaoh and the
bat on the shoulder, you see that there
is a strong correlation between
Velikovsky and the game of baseball.

They don't know it, but I could see it because
I could decode baseball.

Now I also gave an article on the Nazi rallies in the late 30s, the large stupendous rallies at Nuremberg and I showed how, at one point, the Nazis had gotten, they had a huge stadium that held close to 400,000 people and they had surrounded it with searchlights, they were anti-aircraft searchlights but they brought them all to the stadium, there was a hundred and sixty of them, each one had a beam that was five feet tall and it went up about thirty thousand feet, you can imagine that.

So when these beams, all the lights were shut off, and these beams were lit, then you had the whole stadium surrounded by these pillars of light, but then, they got all the beams to intersect and where they intersected, there was an enormous brilliant ball of light, up in the sky about 20,000 feet and then the beams came down.

Now, if you look at it from the opposite view, you have all these lights flashing down, you have this beam and then they all come crashing to the ground and I look through this and I

said to myself, Hitler must have read
worlds in collision except it hasn't
come out but it was there,
you can imagine it.

Now, try and decode other things, let's take stock
car racing, I don't know if everybody
knows what it is.

Maybe the ladies aren't as interested as
the men, but if you have a stock car race,
there's a hell of a lot of violence, cars go
crashing into each other,
bouncing off, some of them burst into
flames, the driver is either injured or
not, there's a hell of a lot of wreckage
every once in a while, the race is
stopped, it goes under a yellow flag and
then it starts again and there's another
crash and there's yellow flag and so on.

But when the race is over, what happens?

The winning driver does a victory lap
and what he's showing is that the orbit
has been re-established peacefully again
and it's pure Velikovsky.

So if you train yourself as I have, to decode items of
popular culture, one can see that this is
where Velikovsky can lead you.

Let me give you one more example, one more.

About 25 years ago, this was a conference and at the end we had a dinner, just as we're going to have tomorrow night here, and I was sitting at the table with a number of people, I'm not sure if Bill was there, and I mentioned that I had heard that Velikovsky had said that every 700 years a new major world religion comes into being because there's a fear about the end of the world and if you develop a new religion, God won't dump on you.

Now, aside from the fact that there is a lot of debate about the number of years and the absolute dates, if we take every 700 as an interval without attaching specific dates, you have at minus 1400 or 1450, you have Hebrew monotheism, at - 700 you have prophetic Judaism, at the Year Zero you have Catholicism, at the Year 700, 750, you have Islam, at 1450, 1500, you have Protestantism, and I remember sitting at the table and saying where is the next world religion, I don't see it,

I don't see any big religion.

Well 25 years later the thing has blown up right in our faces.

It's Islamic extremism which is also expecting the end of the world.

My time is up, OK, so Velikovsky is right on that as well, what I'm trying to tell you is if you take a long drink of Velikovsky you will never be the same again, OK?

Blinded by the Sun

Good morning, everyone!

The good news this morning

appears to be from ESA that

they have received

data from the lander.

and that they're able to trigger all of

the experiments, as far as I'm aware.

And that they are getting data back or

they expect to get data back from that.

And that's being looked at.

So, hopefully we'll get

some more information

from them in the future to support the

Electric Universe model of comets.

But now I want to

talk about the Sun.

If comets are fundamentally

an electrical phenomenon,

it's telling us something

very important about the Sun.

And it's my contention that most of the

mysteries of astronomy can be solved

by really understanding the Sun.

What we have now is a complicated narrative

constructed over several centuries

that has proven non-predictive
in the space age.

The noted Australian solar
physicist Ron Giovanelli
working at the Mount Stromlo
observatory in the 1940's,
and I should say Mount Stromlo
is about 20 minutes from me.

And we have somebody in the audience
who actually works up there
and so I see him occasionally
at the astrophysics seminars.

Anyway, Mount Stromlo
in the 1940's.

Ron Giovanelli concluded that solar flares
are basically an electromagnetic phenomenon
in which electrons are
accelerated by electric fields
induced by changing
magnetic fields.

Now, this is the problem that astrophysicists
have in separating cause and effect.

In 1984, he published "Secrets of the
Sun" where he writes in the introduction,
"Today there are five basic
problems in solar physics.

The first is the sunspot cycle which
is closely interwoven with the second,
the structure of the
convection zone,
which is supposed to occupy about the outer
200,000 kilometers of the solar radius.

And with the third, the variation of rotation
rate across the surface and with depth.

The final two are the heating
mechanisms in the outer solar layers
and the causes of flares.

There are many other
intriguing problems,
but central to almost all is the
nature of the Sun's magnetic field.

That's the end of the
quote from his work.

In a video prepared
before his death in 1985,
Giovanelli gently upbraids others for drifting
into mathematics and leaving out physics.

He continually reminds how
little we know about the Sun
or, to put it differently,
how much there is to learn.

In the intervening 30 years and

incomparably better data from space,
things have not improved.

They have become worse!

Astronomers remain unaware of

Hannes Alfvén's admonition

to first understand the

electric circuits of the Sun

if you want to understand

its magnetism.

You compare these images of the

Sun which I will just bring up.

Compare these images of the Sun with a comment

by Fred Hoyle in "Frontiers of Astronomy".

That's back in 1955,

where he wrote,

"We should expect, on the basis

of a straightforward calculation,

that the Sun would end itself in

a simple and rather prosaic way.

That with increasing height

above the photosphere,

the density of the solar material

would decrease quite rapidly

until it became pretty well negligible,

only two or three kilometers up.

Instead, the atmosphere is

a huge bloated envelope.

Not only that, the

atmosphere extends well out

through the planetary

system to the heliosphere.

Ralph Juergens, in 1980,

stated the obvious answer

for those not blinded

by their training.

And you see the quote here,

"The modern astrophysical concept that

describes the Sun's energy

to the thermonuclear reactions

deep in the solar interior

is contradicted by nearly every

observable aspect of the Sun."

That was published in 1980.

When I read his paper, it just seemed

so obvious to me that he was correct.

And that was when I began to really try

and understand the Sun for myself.

Ralph Juergens certainly pointed the

way and did a very thorough job.

So, what is a star?

An undergraduate textbook on the

structure and evolution of stars

makes a star seem a

very simple object.

And I quote, "A star can be defined as

a body that satisfies two conditions:

a) it is bound by self gravity

and b) it radiates energy

supplied by an internal source.

Behind this definition are some critical

assumptions that Sir Arthur Eddington

bequeathed to us long before

the Space Age in his 1926 opus

"The Internal Constitution

of the Stars".

But how many students now read Eddington's

original work with a critical eye?

Indeed, how many

read him at all?

Here is Sir Arthur Eddington.

Eddington wrote, "The problem of the source

of a star's energy will be considered;

by a process of exhaustion

we are driven to conclude that the only possible

source of a star's energy is subatomic;

because at this stage

it had been discovered,

nuclear energy had

been discovered.

He said, "...yet it must be confessed that the hypothesis shows little disposition to accommodate itself to the detailed (arguments) the detailed requirements (sorry) of observation and a critic might count up a large number of fatal objections."

A single fatal objection would suffice to falsify the hypothesis but the apparent isolation of stars in the vacuum of space encouraged the belief that stars must consume themselves to fuel their own fires rather like a campfire in the sky, only a modern version.

The fatal objections would be sorted out later.

Two such objections are behind NASA's plan to launch a mission to the Sun called "Solar Probe Plus" in 2018, with first close approach in December 2024.

And I hope I'm about to report on that.

NASA says the mission's primary

scientific goal is to understand
how the Sun's corona is heated and
how the solar wind is accelerated.

Solar Probe Plus

will revolutionize
our knowledge of the origin and
evolution of the solar wind.

That's the end of the quote.

That will follow 92 years of denial
that there is a serious problem
with our understanding
of our nearest star.

Neither of these features are predicted
by the standard solar model.

Eddington argued the need for
a central fire as follows,

"No source of energy
is of any avail
unless it liberates energy in
the deep interior of the star.

It is not enough to provide for the
external radiation of the star.

We must provide for the maintenance
of the high internal temperature
without which the
star would collapse."

This is the rationale for having a high energy, high temperature core in a star.

But this assumes that a star is basically a ball of hot gas obeying gravity in the standard laboratory gas laws.

Edington's logic of exhaustion had to set aside facts that didn't fit the only "possible" theory.

Appearances can be deceptive when viewed through the lens of a single idea.

A kind of tunnel vision develops that accommodates fatal objections with the excuse that someday we will find the answers, just give me more money.

To compensate for the weakness of the excuse, those who adopt the consensus view acquire a kind of evangelical zeal

which you can see anytime you see these interviews with astrophysicists.

For example, the undergraduate textbook, referred to in the last slide, opens with, "The theory of stellar structure and evolution is elegant and impressively powerful."

Yet we have recently discovered

stars that shouldn't exist.

In one instance, the star is too huge
to be inflated by a central fire.

Tunnel-vision does more than magnify
the elegance of the single idea.

It also excludes consideration
of other ideas.

Alternative ideas are stymied by unquestioning
faith in the "only possible theory".

For this reason,
as history shows,
most fundamental breakthroughs
come from outsiders,
those who sit down before
facts like a child.

Eddington had addressed the
problem of generating electricity
when trying to explain bright lines
in the spectra of some stars.

The difficulty is that the heat of the
star can't supply the energy of the atoms
producing those bright lines.

Something extra
is adding energy.

He came close to the answer
when he wrote, and I quote,

"If there is no other way
out, we may have to suppose
that bright line spectra in the stars
are produced by electric discharges,
similar to those producing bright
line spectra in a vacuum tube."

But he goes on,

"A disturbed cyclonic
state of the atmosphere
might establish local and temporary
electric fields, thunderstorms,
under which the electrons
would acquire high speeds."

Collisions between the high-speed electrons
and atoms in the stellar atmosphere
would give rise to the
bright spectral lines.

However, in a footnote, Eddington revealed the
fundamental limitation of his theory of stars
and I quote again,

"The difficulty is to account for the
escape of positively charged particles.

Unless charges of both
signs are leaving the,
the escape is immediately stopped
by an electrostatic field."

This statement will reverberate down the years
as one of the gravest mistakes in science.

It is an electrostatic model of
an isolated self-contained star.

But stellar magnetism is an
electrodynaminic phenomenon
requiring electric currents flowing in
circuits, both within and beyond the star.

Birkeland recognized this,

Alfvén insisted on it.

A noteworthy outsider had already published
an electrical theory of the Sun in 1913
long before Eddington's
work on the subject.

Kristian Birkeland,

on the left,

was a renowned Norwegian scientist
and multiple Nobel Prize nominee,
who set up observatories under great
difficulties in the Arctic Circle
to study the Aurora Borealis.

His fascinating story can be read in Lucy
Jago's biography "The Northern Lights"
and I recommend it.

His theory that the aurora is due to
charged particle beams from the Sun

has only recently been confirmed
as Don Scott pointed out last night.

Birkeland's approach was
largely experimental.

He managed to reproduce sunspot
behavior, see the inset on the left,
in his famous Terella or
little Earth experiment
where he applied external
electric current
in a discharge to a magnetized
globe suspended in a near-vacuum.

Another outsider was Charles Edward
Rhodes Bruce, or C.E.R. Bruce.

He was a fellow of the Royal Astronomical
Society, the Institute of Physics,
the Institution of Electrical Engineers and was
a member of the Electrical Research Association
from 1924 until his
retirement in 1967.

His interest in astronomy and research
on lightning led him to write, in 1968,
"Perhaps in no scientific
discipline, other than cosmology,
have so many theories got by on
so little positive evidence.

Imagination has had free rein, often
at the expense of common sense.

The main observational evidence indicating the
existence of cosmic electrical discharges
is the same as that which would
lead an external observer
to conclude that lightning flashes
occur in our own atmosphere.

Namely, the sudden change
they affect in the spectra
and the spectra of the
Sun, stars and galaxies.

In the Sun's spectrum, line suddenly appear,
indicating the existence of gas temperatures
of hundreds of thousands or
even millions of degrees.

That's from his work
"Electric Fields in Space"
published in 1968, in
Penguin Science Survey.

Here's Sidney Chapman.

He was one of the establishment,
the British establishment,
Sidney Chapman, fellow of the Royal Society,
studied magnetic storms and aurorae,
developing theories to

explain their relation

to the interaction of the Earth's

magnetic field with the solar wind.

He was recognized as one of the pioneers

of mathematical solar-terrestrial physics.

He continued the tradition of

opposition by British scientists

to Birkeland's work and

Scandinavian science.

He disputed and ridiculed the work of

Kristian Birkeland and Hannes Alfvén

but later adopted Birkeland's

theories as his own.

Near the end of his life he did

acknowledge Charles Bruce in 1964,

in a publication called, a book

actually, called "The Solar Wind".

And I quote,

"It seems appropriate to call attention to the

ideas put forward over many years by Bruce,

concerning the importance of

electrical discharges in the cosmos

and in particular in

the Sun's atmosphere.

Bruce agrees that the Sun offers his

ideas perhaps their greatest challenge

because of the very high electrical conductivity
of the solar material at all levels.
Any electrical discharge in the Sun's
atmosphere demands an exceptionally rapid
and strong means of generating
differences in electric potential."

Here we see a recognized
leader in the field
who at the end allowed that the Sun
itself, as an isolated body in space,
might somehow generate
its own electricity.

But today, scientists don't know how the
earth can generate its own lightning.

That may surprise you but one of the
experts, Dr. Newman or Professor Newman
who's written on this subject,
it's been his subject life-long,
has admitted that we still do not
understand what causes lightning,
what actually causes that
electrical separation sufficient
to initiate a lightning
discharge on the Earth.

Let alone on the Sun.

All we have is a cover story, one

of a large and growing lists.

Of course, you've all heard about the
updrafts of ice particles and so on,
separating electricity.

It doesn't work.

In fact, some years ago

I wrote on my website,

"The balloon goes
up over lightning".

And this was where high-altitude
balloons were flown above thunderstorms.

And the surprise that came from that
was that the electric field already...

The charge is already there, it's
waiting to discharge through the cloud.

It doesn't have to be
generated in the cloud.

So the source of the
lightning is external

and of course, since then

we've seen sprites and elves

and all of the other magical things

that occur above powerful thunderstorms

rising to the ionosphere and from

the ionosphere to the magnetosphere

and from the magnetosphere we already

have these, so called flux ropes,
which are electric
currents to the Sun.

So, our weather is driven
largely electrically
and this is something that climate
scientists know nothing about.

Now, here's the guy who
made the most advance
in the understanding of the
electrical nature of the Sun,
Ralph Juergens.

An important outsider, an engineer and a
pioneer of the electrical model of stars.

He was inspired by Bruce.

And also Birkeland.

But because of the tunnel
vision of the consensus view,
he was forced to publish his ideas in
obscure journals in the early 1970's.

His model is a shining example
of common sense and simplicity
when compared with the infernally complex
and improbable thermonuclear paradigm.

One of the problems of the
thermonuclear paradigm is that

it took a lot of ingenuity to figure out
how you might have a thermonuclear cycle
which would work inside a star.

Even then you required incredible
pressures and temperatures.

But what's more, some of those
reactions, one in particular,
the reaction rate varies as the
temperature to the fifth power.

Well, that is highly unstable.

That's why they make
hydrogen bombs.

It's because it's
highly unstable.

And one of the other reactions
requires quantum tunneling.

So there all sorts of assumptions piled
upon assumptions to actually end up
with that so-called wonderful
thermonuclear model of how a star works.

Juergens' model is simplicity.

Yet Juergens' insight was in
danger of being lost following
following his untimely
death in 1979.

In fact, it was within weeks of

Velikovsky's death, which was ironic.

Ralph wrote, "As I pursued the
phenomenology of electric discharges,
it gradually dawned on
me that structurally,
the atmosphere of the Sun
bears a striking resemblance
to the low-pressure type
of electric discharge
known as the glow discharge..."

And when you look at the Sun in that
way, you can understand how easy it is
to describe what you see on the surface
of the Sun in electrical terms.

The Sun's surface is carpeted
with complex magnetic fields.

Whatever fine structure they
go down to, they can see
more and more levels of structure
in this magnetic carpet.

Now, as all electrical
engineers know,
only electricity or electric currents
can produce magnetic fields.

So, what we're looking at is a
seething storm of electric currents.

So the Sun must be understood
in terms of electric circuits
because (you cannot) all
currents must flow in a circuit.

And the questions then are, where are
these circuits and what creates them?

Well, Hannes Alfvén paved the way
by drawing a circuit for the Sun.

But, he assumed that the Sun was the
driver of that circuit and it was closed.

So you had the current flowing out
along the equatorial plane of the Sun,
the so-called solar wind.

And then somewhere at some distance, he said
it curls back and it comes in at the pole.

So he drew the circuit but he
assumed the Sun was the driver
without explaining precisely
how that might work.

And having established the circuit,
of course, that radiates energy,
electromagnetic
energy and so on.

And the Sun is obviously radiating
energy, so what sustains these currents?

So there's the summary

of just what I've said
and here is the Sun in
that solar circuit.

Remember, I said there's
a current flowing out
here and this is the solar wind
and it comes in at the poles.

This diagram is from Don Scott's
book "The Electric Sky"
and I recommend that book for
anyone who wants to go into
the electrical theory
of how this might work.

The beauty of this
relatively simple diagram
is that it shows how you can
explain the solar cycle.

It's simple, you don't have to rely on
unseen things going on inside the Sun.

All of this is happening at the very
top of the atmosphere of the Sun
which is very highly conductive of
course, and can carry these currents.

So, the greatest puzzle of the Sun, its
magnetic field reversals, is solved.

The Sun is subject to a varying

DC or direct current power input
and so generates alternating
magnetic fields
because the magnetic field always tries
to oppose a change in the current.

It's rather like a power transformer but
one that's operating with a current,
a steady current through it with
a varying input superimposed.

And this makes some kind of sense
because these Birkeland currents,
as Don showed last night,
can have waves passing through
them to cause pinches and so on.

So they're a part of a circuit.

It has a resonance.

So I would suggest the 11 or 22-year
solar cycle, sunspot cycle,
is driven by the resonances
in the Sun's circuit.

Other stars have different
resonances and so their solar,
their stellar cycles
would be different.

So I refer you to

Don Scott's book.

This diagram is on page 112

and explained more fully.

I'll mention again that the polar current

flow shown is referred to by Hannes Alfvén,

but he considered the Sun as a

generator in a closed circuit

and not as a load in

a galactic circuit.

So the principal difference in

the Electric Universe model

is that the circuit extends

beyond the heliosphere,

and this is being confirmed

by surprising discoveries

by the Voyager spacecraft at the boundary of

the Sun's interface with interstellar space,

and the IBEX mission which has picked

up, as Donald explained last night,

the signals we would expect from an enveloping

Birkeland current pinch around the Sun.

As for what creates and sustains the circuits,

I will address that in my presentation

on Electric Universe cosmology

which I think is tomorrow.

Now, you've seen

this picture before.

As we said, this is an archetype
for a stellar circuit where we can
actually see it in glow mode.

This particular object, M2-9,
is 2,100 light-years distant
and as Don said last night,
most stellar circuits operate in a
more diffuse plasma environment,
a lower current density, so
that the circuit does not glow.

But you can imagine, all stars have this
kind of plasma circuit impinging on them.

The conventional caption
for this image says,

"M2-9 represents the spectacular 'last gasp' of
a binary star system at the nebula's center."

They require a binary star system, one star
would rip material off the other (to perform)
to produce that disk

of dust and gas,
that Don explained last night
is necessary in their models,
whether it's a black hole,
a star or whatever.

Such a disc can successfully account for
the jet-exhaust-like appearance of M2-9.

I don't think so.

The last statement

is patently false.

The detailed structure of planetary nebulae

has defied all attempts at explanation

by flinging gas out of a star.

On the contrary, the structure conforms

to the concentric pinched cylinders

of an interstellar

current filament.

More on that in a moment.

Don also showed a stylized

version of this object.

It's called the

Red Square Nebula

and it's a celestial object located in

the area of the sky occupied by star

MWC 922 - in the

constellation Serpens.

And the quote here is from Peter

Tuthill of the University of Sydney.

He was one the people, his team actually

discovered this thing and imaged it.

The thing that really takes your breath

away is the astonishing degree of symmetry

within the intricate

linear form.

A series of rungs and conical
surfaces lie nested,
one within the next, down
to the heart of the system
where the hyperbolic bicone
surfaces are crossed
by a dark lane running
across the principal axis."

This of course is your, and
once again, your dust Lane
which is hiding what's
going on inside.

Then Tuthill makes the connection
and this is important,
"It is fascinating to
take a second look
at one of the most famous astronomical
images of them all: supernova 1987A."

And that was also mentioned last night
by Don and I'll talk more about that.

This particular object,
the Red Square Nebula
is 34 times closer
than supernova 1987A,
so we see fine detail in the inner

structure of the stellar circuit.

Tuthill goes on to say, it's the best
astrophysical laboratory yet discovered
for studying the physics of generating
the mysterious sharp polar ring systems
like that around
supernova 1987A.

And he goes on, "A system as
complex and fascinating as this,
is bound to keep us
guessing for years to come.

How did this beautiful, crisp
structure form? He asks.

This is the
million-dollar question.

Oh, I'd like the million dollars,
thank you, because I explained it.

I explained it in a peer-reviewed
paper to the IEEE.

And it is based, as Don
explained last night,
on Birkeland current filaments
impinging on a star.

What you're seeing there,
these are double
layers seen edge-on.

The Birkeland current filaments.

You can actually see the filaments
themselves in the original image.

They may be a little hard to see here but
you can just see this hairy look here.

And this is the pinch
coming in here.

It's quite a fantastic image and I'm
really pleased that it's been discovered
and is being examined in detail
because this is important.

So, let's move on.

This is the supernova 1987A and the clue
for this came from Tony Peratt's work.

And on the far left there you
see the stellar z-pinch.

And this is one of his
diagrams, a simulation.

And then right at this is,
in the neck of the z-pinch,
this is the detail you see here.

These filaments coming down
here, strike the material
which is in the solar wind if
you like, the stellar wind
which comes out in the

equatorial region and...

Let me see, I'll just catch

up with my notes here...

The bright ring of beads there are due

to the current filaments lighting up

the equatorial stellar wind like a ring

of searchlights through a thin cloud.

One of the interesting things is,

as I mentioned in the article

that I wrote for the IEEE

Plasma Sciences Journal,

that these beads, Tony

said they tend to pair up.

So that over time they coalesce

and they become fewer in number.

But they have certain

classical stabilities

where you get a particular

number of these things.

56 was one of the

the classical ones.

I can't remember, this quite gets to that or

might be 28 where they've tended to pair.

But I suggested that rather than

being a result of an explosion

or light catching up with something that

was left by a prior ejection of material
which is the ad-hoc
astronomical story,
these would remain relatively stationary
because they are actually the pinch itself.

So they're not going
to move very far.

But these filaments that are twisting
around one another, will pair up and so,
and so I would say
they would rotate.

And this is the kind of research
that anyone who's interested
could take up and
publish a paper on.

The more distant coaxial rings.
You'll notice over on the right
here there are more distant ones.

These are just double layers
further along the pinch.

And notice they're symmetric
because the pinch is symmetric.

They, and it's always a sharp boundary
as we saw with that red square.

Those double layers
form a very thin layer

and they, this is why it's so
remarkable for astronomers.

How do you form such
delicate structures
if this is all due to material
blowing out of a star.

OK.

So we come to the Sun's environment
and Don dealt with this
but it's worth
talking about again.

And it was published, this picture
was published in May 10, 2012,
"New IBEX data show heliosphere's long
theorized bow shock does not exist",
was a quote from that article.

I had written on my website in November
13, 2005, almost seven years earlier,
"The solar plasma and that of interstellar
space are two different plasmas,
which must therefore have a double layer
or Langmuir plasma sheath between them.

So to treat the heliospheric boundary simply as
a magnetohydrodynamic shock problem is naive."

The heliosphere is the boundary of
the Sun's electrical influence.

That's where the Sun's
presence in the galaxy
meets the interstellar
regions of the Milky Way.

So the heliosphere is the boundary
of the Sun's Electrical influence.

And Juergens said, "Most of the Sun's driving
voltage appears across this plasma sheath,
simply because of
the graphs here

which show the relationship of a
normal plasma discharge tube,
so this is in the laboratory.

These are the curves you
find in the laboratory.

And if you apply that to
the Sun, here's the Sun,
the positive electrode come
down here, there's the Sun.

As you move out from the
Sun, you'll notice that
there's only a very
shallow voltage change.

And this is important because one of the
arguments against our work has been:
if the Sun is electrical there should

be all these relativistic electrons
and particles streaming
past the Earth.

No, not at all.

The voltage difference
is very slight,
such that it's just enough to cause the
electrons to drift towards the positive anode
and in the opposite direction for
the solar wind to be accelerated
rapidly close to the Sun and then
it just continues accelerating
very slowly out towards
the heliosphere.

Until it hits this bump.

And I predicted before the event
that the solar wind would slow down
more than expected before it got to the
boundary and that was found to be so.

There were articles saying
there was no explanation for why the
solar wind should have suddenly stopped.

Well, that's the answer, it's
an electrical discharge.

So I'll just repeat, if you refer
to Juergens' original work,

you will see that he invokes a very
large voltage driving the Sun.

But he was assuming that all
of the Sun's radiant output
must be accounted for by the
electrical power input.

But we have the evidence for that nuclear
fusion is taking place at the Sun
because we've got
neutrino images now.

I don't know whether you
saw it some months ago.

There was a picture published which showed
this glow, circular glow in the sky.

It was rather pixelated because
it's not very good definition.

And right in the center there was a little
circle and that's where the Sun is.

So the neutrino telescope, if you like
to call it that, is very low definition
so you cannot tell whether the neutrinos
are coming from the core of the Sun
or from the surface of the Sun.

It's unable to distinguish.

So what I'm saying is
that the electrical power

required to catalyze photospheric nuclear
fusion, is yet to be determined.

But the Electric Universe model

says that stars, all stars,
create the heavy elements
in their photospheres.

It's all happening right
in front of our eyes.

You don't have to postulate any crazy
things or crazy conditions inside a star.

It's all happening
right in front of you.

And that makes sense.

I mean, nature always
does things the easy way.

And if that's the easiest
way, and I'm sure it is,
then that's the way we
should be looking at.

OK, I think I've
covered all of that.

Here we come to
the plasma focus.

This is something that

Eric Lerner and his,
is it Lawrenceville Nuclear

Labs or some thing or other.

He's actually producing fusion
or using one of these devices.

The important thing to notice is that
what you have is two coaxial conductors.

And if you think about it,

these stellar circuits

have concentric,

conducting plasma layers.

And when it comes

down to a pinch,

there's the possibility that you'll get

a kind of short-circuit across the,

between those layers.

So, this is important.

It's also important in

the Sun's photosphere.

What happens is that

this little red thing here

represents a capacitor bank

where you store an

enormous amount of energy

which can be released extremely

quickly, in millionths of a second.

You have a special

high-speed switch here.

This yellow part here is your inner metal
electrode ... your inner conductor.

You have insulators then, between
that and the outer conductor.

You close this gap
and, all of a sudden,
there's an electrical discharge between
the inner and the outer pipe, tube.

The discharge
doesn't stay still.

It doesn't e just go
from here to here.

It moves by electromagnetic forces
down the barrel and when it gets here
it balloons out and then folds back
in and forms a tiny little plasmoid.

And you can have the energy of
a whole roomful of capacitors,
which would be an
enormous amount of power,
released into this (woops)
plasmoid, here we go.

This will show you what it does.

We have sound.

"These filaments are little
whirlwinds of plasma.

The sheath of filaments converges
together into a dense pinch or focus,
combining all the
filaments into one.

This filament kinks and twists
itself into a tiny dense ball,
only a few thousandth of an
inch across, called a plasmoid.

Instability in the plasmoid creates
powerful beams in opposite directions.

Positively charged nuclei flow in one
direction and electrons flow in the other."

That's it.

Notice there was
thousands of an inch.

So you've got the energy stored, an enormous
amount of energy in a very tiny volume.

And where do we see that?

We see it in the
centers of galaxies.

We see it in blazars, any of these very highly
concentrated point sources of radiation.

One other aspect of these devices that I
should mention, is that it's not only
X-rays and particles that
come out of the beam.

It's also the most copious source
known in the laboratory of neutrons.
And neutrons are very important when
you want to create the heavy elements.
Because you need to supply of
neutrons to add to the nuclei
which can then beta decay and what not and give
you all the various elements up the table,
of the chemical element table
and the isotopes as well.

And it's significant, of course, that in the
solar spectrum you see the heavy elements,
very highly ionized.

Possibly because they've
only just been created.

Generated I should say,
you can't create matter.

So we go back to our
beautiful M2-9.

I've just put the little plasma focus
down at the bottom here as a reminder.

Here you have your
concentric cylinders.

And if there is a breakdown
between the central column
which, remember, there's a

central column of current.

So if you have a breakdown between the inner cylinder and the central column, you will tend to form a plasma focus effect.

And these FLIERs have some of that shape.

And see this kind of curved shape?

And they are a real anomaly.

There's no explanation for them.

So, a distinctive feature of this nebula are the two bright patches on either side which are known as FLIERs or Fast Low Ionization Emission Regions.

They appear to be relatively young moving outwards at supersonic speeds.

According to Bruce Bellick, University of Washington, some of their observed characteristics suggest that they are like sparks flung outward from the central star, late in the very recent past.

That's not very good.

It doesn't explain anything.

Yet, their shape seem to suggest

that they're stationary
and that material ejected from
the star flows past them,
scraping gas on their surfaces.

Well, it has nothing to do
with scraping gases and that.

And this is under electromagnetic
control so it's not a mechanical
blast effect or
anything like that.

In any, in either case,
the formation of FLIERs
cannot be easily explained by any
models of stellar evolution.

(Just see if I've
missed anything.)

Oh yes, an interesting
side issue is that
this might also explain the asynchronous
reversal of the solar magnetic field.

You know, when the Sun's
magnetic field flips
it often does it in one
hemisphere and not the other.

And then later, the second
hemisphere switches.

If the solar cycle is driven
by a regular disturbance
traveling along the
interstellar circuit,
then one of these dense plasma focus
effects will be affected before the other.

But as you can see, the complexity of a star's
circuitry will require a lot more research.

Birkeland wrote with his
unusual prescience in the
"Norwegian Aurora Polaris
Expedition in 1902-03,
"It might be imagined that
the interior of the Sun
form the positive pole for
enormous electric currents.

This was Juergens'
conclusion also.

"This assumption has the advantage of
appearing to give a natural explanation
of the movement of the sunspots
in various latitudes," he wrote,
which he demonstrated with
his Terella experiments.

This guy was a great
experimentalist.

In this case, the origin of the
sunspots must be that the presumptive,
more or less insulating,
photospheric envelope
was sometimes pierced by disruptive
discharges, thus forming great electric arcs.

This is the position of the
Electric Universe model.

Because you've got this
plasma storage ring.

This is SOHO NASA spacecraft
and in ultraviolet light you can see
there's a plasma torus around the Sun.

Now, the energy stored in
there can reach a point
where it discharges to
the surface of the Sun.

And depending upon the voltage
differences, it will shift in latitude.

Those discharges will shift in latitude
which is exactly what sunspots do.

So here's this guy,
back in 1902-1903.

He had it practically
figured out.

Nobody was listening,

especially not Sydney Chapman.

Sunspots. And these
are very interesting.

The sunspot penumbra shows the
detailed structure and behavior
that has nothing to do
with turbulent hot gas.

It has nothing to
do with convection.

And recent discovery by those people
looking at the seismic activity,
or what's going on
underneath the photosphere,
have shown that there is
practically no convection.

So the standard solar model has
already been discredited, again,
by this recent discovery.

The sunspot is dark, showing
the Sun is cooler beneath and
so the bright Sun is a
photospheric effect alone.

One of the things about Birkeland
currents is that it induces rotation
so the problem of why do galaxies
spin, why the stars spin,

why the planets orbit stars
and so on, is easily solved.
It's driven electromagnetically.

Super tornadoes have been
discovered in the chromosphere
between the corona
and the photosphere.

It is estimated there are
more than 10,000s of them,
continuously present
in the quiet Sun.

Surface and coronal
vortices are connected.

Rotation is a natural effect
of Birkeland currents.

So, what I'm suggesting
here is that

the penumbral filaments are
actually electrical tornadoes.

It's like a tornadic
form of lightning.

And a tornado is a slow
discharge, like slow lightning.

So what you're seeing, here on the
Sun, is a form of slow lightning.

The Sun is a ball

of slow lightning.

They have bright
edges, dark cores.

That's because on the right
is a special-effects
thing where you've got a
helicopter blade rotating above
and you put fuel into a fire at the
base and it forms this twisting vortex.

And the center, looking through
it, is darker than the edges.

And this is precisely
what you see on the Sun.

So they are tornadoes.

It's the ideal site for nuclear fusion and
heavy element synthesis by neutron capture.

Because the electromagnetic
forces, pinch forces and so on,
that are active in those stellar
tornadoes, are enormous
and it's a place where the particles
required for nuclear synthesis
nuclei synthesis, are available.

They're not going anywhere soon.

These are actually drawn-out
versions of anode tufts.

Bright plasma "tufts" form as a secondary plasma in the primary plasma of the discharge.

The number of tufts increases with increasing current density and the tufts float above the anode and are hotter than the anode.

This is why the photosphere is bright and is darker underneath.

They space themselves apart evenly over the anode surface and penumbral filaments have the features that may be expected of anode tufts in a gravitationally stratified atmosphere.

Rather like the Earth.

We get tornadoes.

It gets bigger ones.

The electric photosphere.

This is a diagram that was based on Juergens' work and Don Scott noticed that this curve has the shape of a transistor.

And the beauty of this is that a small change in voltage here, because what happens is, the positive particles in the Sun,

any of them have sufficient
energy and get into here,
are free to move about and any of
them that get over to this side here
will suddenly reach the edge
of this waterfalls effect
and be accelerated
to form the corona.

I have to go through
this fairly quickly.

I'm running out of time.

This is the tuft area.

These are those
electric tornados.

This is where all the nuclear
synthesis is taking place, I think.

Just a small change
in voltage here
raises the barrier for these
particles escaping from the Sun.

So it's a very good
control barrier.

This is why the Sun, its radiant output, remains
steady to within about 0.1 of a percent
while the X-ray output of
the Sun varies markedly.

The Sun is a variable
star in X-rays
and the X-rays are a good
indication of the electrical power
that's being expended
in a small area.

So, the tufted sheath forms a barrier
for protons escaping the Sun
and the spicules, which are these
little jets that occur between them,
provide electrons to
stabilize the sheath.

Just like the porous anodes
used in some arc lamps.

There is no explanation for
spicules in the standard model.

So, summarizing.

Electrical energy arrives at the Sun from
dark mode galactic current filaments.

The electric discharge
intensifies close to the Sun,
causing the thin atmosphere of the corona to
appear to be heated to millions of degrees.

The heavy element body of the Sun is cool
and of unknown structure and composition.

And I will address these questions in a

later talk on Electric Universe cosmology.

So, we cannot understand the countless stars
in the heavens until we understand the Sun.

All bright stars produce heavy
elements in their photospheres.

The incredibly complex, the
evolutionary story of stars
to fit the Hertzsprung-Russell
plot, is invalid.

We do not know the age of the universe
or any celestial object in it.

We have been blinded by the story
of the Sun concocted a century ago
by scientists who had no grasp of the
complexities of plasma behavior.

They were driven by a need to extend
the theoretical lifespan of the Sun
to accommodate the needs of the
geologists lengthening timescales.

So it's understandable that the
discovery of nuclear energy
was embraced at that time as
the only possible answer.

No matter that it was
entirely unpredictable.

Ironically, the astrophysicists

were and still are

unaware that the geologists' Earth

history is a fabrication too.

I will address that story

in my next presentation.

So, in a sense,

Eddington was right.

The Sun is a simple thing.

Far simpler than he imagined.

It is the electric universe

environment that is complex

but that complexity arises from a few simple

concepts and repeated fractal patterns.

Nature is like that.

Meanwhile, for those trying to

produce fusion power "like the Sun",

it's high time to move on and find

out how the Sun really does it.

Nature never does

anything the hard way.

Thank you!

This video presentation is for critical
review prior to final editing.

SYMBOLS OF AN ALIEN SKY

Episode 3

THE ELECTRIC COMET

Presented by

THE THUNDERBOLTS PROJECT™

A comet can be a wonder to behold.

For thousands of years these visitors have
mystified, enchanted and terrified humanity.

And even today, despite much

attention from astronomers,

the popular science of comets is filled

with enigmas and unresolved mysteries.

We have long thought of these bodies as mere
chunks of dirty ice warming in the Sun.

But since the beginning of the space age

it seems that the key comet discoveries

have all come as huge surprises.

"Every time we look, we find

our textbooks were wrong."

What did this continuing stream of surprises

mean for the future of comet science?

It means that the core theoretical

assumptions must be reconsidered.

"It's a mystery to me how

comets work at all."

The new facts about comets underscore
the long ignored electrical behavior of
the Sun and here the biggest surprise
changes the picture of comets altogether.

It is not rising surface
temperatures and evaporated
ices that provoked the dramatic
discharging of comets.

It is charged particles erupting
from the Sun to exchange
charge with both, the coma
and nucleus of a comet.

And there's much more to this picture
because direct evidence will rewrite
planetary history, as well.

It seems that comets are born from the
very stuff of planets themselves,
they are the residue of
shattering planetary catastrophe.

Today, we can test two views of
comets against decades of discovery.

We can pose the long
unasked question.

Is a radically new interpretation
of comets now required?

Standard View of Comets

It was only in the mid-twentieth century that a scientific consensus emerged on the nature of comets.

In 1950 astronomer Fred Whipple proposed a model that came to be known as the "dirty snowball" hypothesis.

Whipple envisioned comets as conglomerates of frozen gases, mainly water, carbon monoxide and carbon dioxide, together with the primordial dust of the early solar system.

But a dilemma had to be solved.

Comets lose considerable material at each pass around the Sun.

This means that the comets we see cannot have been around all that long.

So, the Dutch

astronomer Jan Oort

envisioned a vast horde of icy objects circling the Sun about 1,000 times more distant than remote Pluto.

He imagined that after billions of years

one of these "dirty snowballs" could be deflected from the icy cloud by a passing star.

It might then fall into the inner solar system to produce an active comet.

As astronomers came to accept the idea, they called this theoretical source of comets the Oort cloud.

But by the 1990s, it became clear that numerous objects circle the Sun at much closer distances than the conjectured Oort cloud.

Astronomers came to imagine short term comets originated from the disk of debris called the Kuiper Belt, extending outward from Neptune's orbit.

But then advanced computer simulations suggested that Kuiper Belt objects were too stable to be the source of most short term comets.

One surprise at a time the origin of comets has become increasingly uncertain.

But always it is assumed that comets are composed of dust and ice, warmed by the Sun to create a coma and tail, leaving a variety of dust.

The theory suggests that beneath the black

and shallow crust pockets of gas form.

At critical moments the pressure
breaks through the surface
creating jets, blasting vapor and
dust away from the nucleus.

But, how well does this
popular theory explain
what we've more recently
learned about comets?

Electric Model of Comets

In an alternative view, comets
have a much different history.

This view sees comets as debris
left by intense electrical activity
in an earlier phase of
solar system evolution.

Not billions of years ago - but
a much more recent epoch of
planetary instability and violence, one
that reached even into early human times.

This new perspective
combines historical facts
with surprising recent
discoveries about comets.

In the electrical interpretation, not just
comets but asteroids and meteors, as well,

were born in planetary
upheaval as electric
arcs blasted material from the
surfaces of planets and moons
to produce fused formations
identical in appearance
to fused material in laboratory
experiments with electric discharge.

Here, an arriving comet moves on an
elliptical path to the Sun's electric field.

An exceedingly weak field
but immensely powerful
across the great distances
of interplanetary space.

As the comet draws closer to the Sun
the charge imbalance triggers electric
discharge creating a coma
and long cometary tail.

The mysterious jets of comets can then be understood
in terms of arc discharges to the nucleus,
very similar to industrially
electric discharge machining.

The excavated material is accelerated into
space along the jets filamentary pathways.

Intermittent and wandering arcs erode
the the surface and burn it black,

leaving the distinctive scarring
patterns of comet nuclei.

The jets explode from the
nucleus at supersonic speed
and retain their coherent structure
for hundreds of thousands of miles.

Seen in terms of an electrically
neutral vacuum in space,
nothing of this sort should occur.

The tails of comets reveal well-defined
twisting filaments extending up
to tens of millions of miles without
dissipating in the vacuum of space.

For proponents of the electric model, this
contradiction of neutral gas behavior is no surprise;
it is the testament to the
comet's electrified environment.

The proponents of this interpretation also
say it's the electric force that holds the
spherical coma in place against the solar
wind as the comet races around the Sun.

The diameter of the visible coma
will often reach millions of miles.

And it's surrounded by an even larger and
more "improbable" spherical envelope
of fluorescing hydrogen

visible in ultraviolet light.

The "Laws" of

Compositional Zoning

For decades we've been assured

that comets were made

in the deepest of deep freezes

in interstellar space.

Comets coalesced from interstellar stardust,

the primal material of the universe

before the emergence of the Sun as we

know it, or it's planets and their moons.

A foundational principle of comet theory - and of

modern cosmology as a whole - is compositional zoning.

At the outermost regions

of the Sun's domain,

formative processes were limited

to the most rudimentary material,

raw dust constituted in an environment close

to absolute zero, with no complex chemistry.

In contrast, bodies later formed

close to the emerging Sun

would exhibit minerals formed at

relatively high temperatures.

For decades this theoretical

claim stood fast,

and the claim was even

carried into space.

It's was what prompted the

Stardust mission to Comet Wild 2.

As indicated by the very name

of the scientific mission,

the theory required that a comet

be constituted of stardust.

"Today we know that comets are black and cold, consisting of

ices and dust that coalesced from an interstellar cloud

as it collapsed to form the solar system."

But the core assumptions of comet

theory could not withstand

the shock from the data returned

by the Stardust mission.

Launched on February 7th, 1999, Stardust

carried with it a tray of aerogel

to capture samples of

comet dust from Wild 2.

And it returned these

samples to Earth.

Scientists could then view microscopically

the raw material of a comet.

The first surprise was the size of the

dust grains - much larger, stronger,

with far more complex structure and

chemistry than theory allowed.

And the gel did capture trivial amounts
of the expected microscopic dust,
invisible to the naked eye and leaving
shallow bowl shaped pits in the aerogel.

But more common by far
were much deeper tracks,
more in the shape of
carrots than shallow pits.

The particles themselves were
clearly visible to the naked eye.

To their amazement, the mission
scientists found elaborately
developed crystalline structures in the
Wild 2 dust. It was an exciting discovery,
but one that challenged all prior
theory of a comet's origins.

Crystalline structures cannot form in
the absence of minimum temperatures,
temperatures unavailable
in interstellar space.

The spectra of silicates
in cometary comas were
evident as far back as the probes of
Comet Halley, though largely ignored.
But the mystery couldn't be ignored after
arrival of the Comet Hale-Bopp in 1997.

This comet's spectra placed an exclamation point on
crystalline silicon structures in cometary comas.

To get past the problem
astronomers hedged their bets.

They surmised that
billions of years ago,
the raw material of the comet was ever
so slightly warmed by an emerging Sun.

Then all of the discrete particles
in a vast circle around the Sun
were transported outward
by means only guessed at,
to the far away and
frigid Oort cloud.

But this rationalization
failed outright
once the scientists had real comet
dust in their laboratories.

The grains were simply too
large and the mineralogical
and chemical compositions
far too complex.

"The comet samples collected by Stardust contain abundant
crystalline minerals and in most cases it is clear that they did
not form by the predicted mild heating of interstellar dust."

One puzzle was

followed by another.

Comet theory assumed that water ice was
a primary constituent of active comets.

But no water ice was detected
on the nucleus of Wild 2
and not a trace of water was found
in the well-preserved comet dust.

And yet, paradoxically, the rock
comet material of Wild 2 contained
iron and sulfur minerals that can only be
formed in the presence of liquid water.

Liquid water, not in the near-perfect vacuum
of deep space and not in a deep freeze.

"The sulfide minerals formed between 50 and 200°C
(122 and 392°F), much warmer than the sub-zero
temperatures predicted for the interior
of a comet. The discovery shatters
the existing paradigm of comets as 'dirty snowballs',
whose icy bulk never gets warm enough to melt."

Instead of trivial warming,
the Wild 2 minerals
revealed a diversity of
formative processes.

Various sulfide minerals
requiring liquid water
can only exist below 210°C, or 410°F.

These minerals have never
seen higher temperatures.

But, also occurring in the comet
dust was the mineral olivine,
who's molecular structure rapidly breaks
down in the very presence of water.

It's a common igneous form, an
abundant by-product of volcanism.

Perhaps, the biggest surprise was that some
of the comet minerals such as Forsterite,
in the instant of their formation,
were heated to thousands of degrees.

Forsterite is formed in the most
intense volcanic heating of
silicates, but occurs also in
lightning strikes to silicate rocks.

The message could not
have been more emphatic.

"That's a big surprise. People thought comets would just
be cold stuff that formed out...where things are very cold."

When these minerals formed they were
either red hot or white hot grains,
and yet they were collected in a comet,
the Siberia of the Solar System."

It was not just the hypothesized Oort
cloud that failed to work as advertised.

The entire concept of
compositional zoning
as applied to comets failed
it's first acid test.

"If this mixing is occurring, as suggested by these
results, then how do you preserve any kind of
zoning in the solar system?"

Comet material requiring moderate
temperatures in liquid water.

Comet material formed at
exceedingly high temperatures.

Only the most trivial levels of the presumed
raw material of comets, interstellar dust.

A complete absence of water despite cometary
material originally formed in liquid water,
though the olivine abundances
could not have been formed
or even survived in the
presence of liquid water.

And of course, liquid water requires
atmospheric or other pressure.

It cannot exist in the extreme
vacuum of interstellar space.

To this seemingly contradictory picture,
we must add extreme selective heating.

Selective heating because much

of the compositional material
could not survive the super
heating that created olivine,
forsterite and other
crystalline minerals.

Wild 2's discoveries have
forced upon comet science
one inescapable fact: in our
own cosmic neighborhood
the diverse mineral content of
Wild 2 is typical only of planets
in the habitable zone of
a fully developed Sun.

"Most of the components from the comet have isotopic
compositions similar to Earth and are of solar system origin."

Is a coherent explanation possible?

When the fundamentals of a theory are
falsified by unexpected findings,
a new vantage point is required, one
that explains and predicts the surprises
without introducing
new contradictions.

The conjectured Oort cloud freezer,
forming and preserving comets
for billions of years, is
falsified by the Wild 2 findings.

Only the diverse surface environments of rocky planets can provide the required raw material.

And only the recent formation of comets can explain why these rapidly degraded objects are still with us.

The bold question must now be asked: were comets created in recent periods of planetary instability and intense electrical events?

Would minerals formed in liquid water then come as a surprise?

Would comets now exhibiting no water be a surprise?

Or crystalline structures suggesting igneous processes?

Or, minerals pointing to the exceedingly high temperatures of lightning?

A more unified picture of comet formation is available to us.

And, if comets were born electrically, what might the causative connection be to asteroids and meteorites, the apparent cousins of the comet?

The Wild 2 mineral cubanite, a copper iron sulfide,

is abundant on Earth,

and so too, on Mars.

In fact, it's found in Martian meteorites

now known to have been blasted

up to escape velocity from the surface

of Mars, later to arrive at Earth.

A few years ago, things now stated by astronomers

would have been considered preposterous.

Astronomers now acknowledge that the

Martian moon Phobos, long called a

captured asteroid, was formed out of

material blasted from the Martian surface.

For the source of a comet's

constituent materials,

planets close to the Sun's habitable zone

are the most reasonable places to look.

The foremost candidate

is the planet Mars.

In this intellectual adventure, we must revisit

all earlier ideas about solar system history.

Evidence for high energy electrical

events can no longer be ignored.

The popular billion year scenarios

describing a comet's origins

will be displaced by things

now established as fact.

And the changing picture
of solar system history
will surely not stop with
the new story of the comet.

Where's the Water?

Modern comet theory has
long proclaimed that
active comets are the
result of sublimating ices.

And yet, the comet
Wild 2 was active,
though no water could be detected on
it's surface and none was found in the
well-preserved comet
dust returned to Earth.

The theory requires
cometary ices.

And that's what scientists
were certain they would find
when the Deep Space 1 probe
reached Comet Borelly in 2001.

But the probe could find
not even a hint of water.

"The spectrum suggests that the surface is
hot and dry. It is surprising that we saw no
traces of water ice."

In fact, an absence of detectable water
on comet nuclei is the common finding.

When astronomers discovered the fragments
of Comet Shoemaker-Levy 9 in 1993,
they expected to observe volatile gases from
sublimated ices, but no such gases were found.

When Comet Linear disintegrated, astronomers
were shocked by the absence of water in the
immediate debris - exactly as later occurred in
the case of the disintegrating Comet Elenin.

But, the momentum of theoretical
claims is not easily overcome.

When Borrelly's surface was
found to be hot and dry,
astronomers were not dissuaded
from theoretical assumptions.

Water must be emitted by the comet, even
if not a trace is observed on the nucleus,
not even at the very places where
the jets erupt from the surface.

"We know the ice is there. It's just well-hidden."

But the mystery of missing water
need not haunt comet scientists
if they will question their
theoretical assumption
that water is necessary to

create cometary displays.

There's more to this mystery than
common theory has even considered.

Astronomers assure us that abundant water is
detected in the luminous comas of comets.

But this is where the
real mystery begins.

Cometary comas exhibit
the hydroxyl radical $\text{O}(\text{sup})\text{H}$.

$\text{O}(\text{sup})\text{H}$ is not water (H_2O), but just one
hydrogen atom bound to one oxygen atom.

Hydroxyl radicals can be produced from
water molecules by photo-dissociation.

When a photon of a ultra violet light
from the Sun strikes a water molecule,
it can break the bond holding a
hydrogen proton to the oxygen atom.

If one of the hydrogen nuclei breaks
free from the water molecule,

what is left is the
hydroxy radical

and a freely moving hydrogen
proton or positively charged ion.

What comet scientists believe they
see is water released from the
comet's nucleus breaking down to

produce the hydroxyl radical.

They don't see the water itself,
but that's how a theory interprets the
presence of $\text{O}(\text{sup})\text{H}$ in cometary comas.

And, it does seem reasonable. Except perhaps
for the missing water on the nucleus,
and one additional mystery -
the much greater accumulation
of hydrogen than of $\text{O}(\text{sup})\text{H}$
in the comas of comets.

These great envelopes of
fluorescing hydrogen -
entirely out of proportion
to the presence of $\text{O}(\text{sup})\text{H}$ -
suggest that something is happening
around the nucleus of comets
that the theorists have
yet to comprehend.

More than 25-years ago,
scientists examining the Comet
Tago-Sato-Kosaka noted the problem:
the ratio of $\text{O}(\text{sup})\text{H}$ to hydrogen was
clearly too low if the
original source was water.

"...Cometary scientists need to consider
more carefully whether H_2O -ice

really does constitute a major
fraction of comet nuclei."

Here is a fact that has yet to enter
official discourses on comet science.

There is a simple and direct way
to produce the hydroxyl radical
in abundance, and it does
not require water at all.

Laboratory experiments

by Nobel laureate

Hannes Alfvén have

shown that silicates,

when bombarded by protons, produce

abundant hydroxyl and other species

found in cometary comas - with

no prior involvement of water.

"[The experiments] resulted in a substantial yield
of hydroxyl ions and also hydroxyl ion complexes."

The experimental evidence points directly

to charged particles from the Sun,

not light, and it directs us to the

negative charge of the comet nucleus.

The evidence for negatively charged comet

nuclei has been with us for decades,

since the Giotto spacecraft encountered

Comet Halley in March 1986,

discovering in the coma of Halley the negative ions prohibited by prior comet theory.

"As negative ions are easily destroyed by solar radiation at ~ 1 AU, an efficient production mechanism, so far unidentified, is required to account for the observed densities."

In the electric model, comets on elongated orbits pick up negative charge while far from the Sun.

As they move into the Sun's positively charged environment electric discharge is the predictable effect.

Electric discharge machining of the nucleus sputters negatively charged oxygen atoms from the surface.

These negative ions then combine at some distance from the nucleus with solar wind protons to form the O^+H radicals so prevalent in the coma.

Numerous variations in the electrochemistry of the coma are certain to follow and such reactions would be expected, even when no water is present on the comet nucleus.

The hydroxyl radical may not mean what
astronomers have routinely assumed.

High Energy Emissions

The electrical interpretation
places a new light
on the surprising high-energy
emissions of comets.

It was only as astronomers began to view
comets beyond the spectrum of visible light,
that they discovered the massive
envelopes and more energetic emissions,
including not just ultraviolet
and extreme ultraviolet light
but X-ray emissions, as well.

In common human experience, ultraviolet
light means an electrical event.

It can be a natural emission of glow
discharge, or arcing, in ultraviolet
lamps and mercury vapor lamps.

In intense electric arcs, UV
emissions are always involved.

That's why arc welders wear
their protective masks,
to shield their eyes from
the ultraviolet emissions.

To explain these surprising levels of

UV emission, astronomers envisioned atoms of the coma reflecting, or re-radiating, UV light from the Sun.

But, if comets are electric discharge phenomena, their remarkable glow and ultraviolet wavelengths could well be a new window to discovery.

Surprising Energies of Comet X-Rays

Recent telescopic explorations of space far beyond our own planetary system have revealed pervasive, explosive X-ray emissions, the one thing never expected in supposedly electrically neutral space.

X-rays are close to the most energetic forms of light, well beyond the visible spectrum, with exceedingly short wavelengths.

These emissions are created when high speed electrons, moving at millions of miles per hour, release energy when striking an atom or their course is rapidly altered by a magnetic field.

Because of the energies involved in generating X-rays,

only the rarest astronomer expected

X-ray emissions from comets

due entirely to reflection of diffuse

X-rays from an external source, the Sun.

"We had no clear expectation that comets shine in X-rays."

One of the great discoveries

in comet science

came quite by accident

on March 27th, 1996.

That's when the ROSAT satellite detected

highly energetic X-ray emissions

from the Comet Hyakutake - far

beyond any astronomers expectations.

"[Astronomers] were shocked by what they saw.

ROSAT images revealed a crescent-shaped region of S-ray emission

around the comet 1000 times more intense than anyone had predicted!"

In the sciences an event a 1000

times more energetic than expected

is a call to reconsider

theoretical assumptions.

In July 2000, when the Comet

Linear disintegrated explosively,

the Chandra Observatory

confirmed profuse X-rays.

In recent years it's become

clear that X-ray emissions

from comets are business

as usual for these bodies.

But why? All theorists acknowledge

that an electrical event is occurring,

but the meaning of the event - the

relationship between cause and effect -

needs to be made more explicit.

The electric comet model

explains this occurrence by a

strong electric field across

the comet's plasma sheath.

The sheath surrounds the

negatively charged comet

and isolates it from the more positively

charged environment of the Sun.

Where the sheath is most compressed

in the sunward direction,

it's not surprising that the electric

field is strong enough to accelerate

charged particles

to X-ray energies.

Without that electric field,

nothing dramatic would occur.

That's why in the debris cloud of

the disintegrating Comet Linear,

we saw intense X-ray emission from

the sunward face of the cloud.

The emissions occurred at the interface of the cometary coma with the more positively charged solar wind.

The electric comet model predicts that all active comets will produce X-ray emissions.

"We now recognize that X-ray emission is a characteristic of all active comets."

In an electric field the required electron speed can be achieved almost instantly.

This fact was discovered over a century ago when

Wilhelm Röntgen produced X-rays in his use of a Crookes tube.

Both, X-ray production and the fluorescence of neutral hydrogen around comets, are readily explained by simple electrical events.

Attempts to explain such behavior of comets in an electrically neutral environment will always require hypothetical effects more energetic than the conjectured cause.

Deep Impact

The single most critical test of the electric comet model came on July 4th, 2005.

That was when NASA's Deep Impact probe fired an 800 pound copper projectile at the nucleus of comet Tempel 1.

Cameras on the probe recorded the event.

And even the projectile itself contained a camera to transmit data up to the moment of impact.

As early as 2001, looking ahead to this event electrical theorist Wallace Thornhill began registering his expectations of surprises in store for comet science.

On the evening of July 3rd, 2005, the day before the encounter, the Thunderbolts website published the explicit predictions of Thornhill and his colleagues.

These predictions would highlight the contrast between the

standard and the

electric comet models.

"Advocates of the Electric Universe expect a 'shock to the system' with revolutionary implications. They say that a comet is not a primordial object left over from the formation of the solar system."

As the Deep Impact probe

approached Tempel 1,

key NASA figures gathered

in the control room.

The comet was racing toward the probe

with some 23,000 miles per hour

when the probe launched its copper

impactor toward the nucleus.

If the comet was

electrically charged,

how would the electronics of the

impactor respond to the electric field?

"Electrical interactions with Deep Impact may be slight, but they should be measurable if NASA will look for them... Electrical stress may short out the electronics on board the impactor before impact."

For most of its journey, the

impactor's signal was clear.

But in the final seconds the

signal was indeed disrupted.

This apparent electrical disturbance

was not all that Thornhill predicted.

Also noteworthy was
his expectation of an
advanced flash ahead of
the projectile's impact.

"The most obvious would be a flash
(lightning-like discharge) shortly before impact."

This is exactly what occurred.

The advanced flash left NASA
scientists scratching their heads.

"What you see is something really surprising.

First, there is a small flash, then there's a delay,
then there's a big flash and the whole thing breaks loose."

NASA scientists involved
in the Deep Impact Mission
were well aware of the
kinetics of impact explosions.

But would the projectile be
striking a solid icy surface
or a more loose aggregation
of snowy fluff?

What they did not anticipate, but the
electric model explicitly predicted,
was a major contribution from the
electrical energy of the comet.

The explosion would therefore be greater
than any NASA scientist envisioned while

working with electrically

neutral conditions.

"More energy will be released than expected
because of the electrical contributions of the comet."

It seems that the spectacular explosion that
followed the impact was the greatest surprise.

Every scientist viewing the live
images expressed his astonishment.

"How did we make such a big splash?"

"I'm at a loss to explain it."

The scientists had expected to
peer into a deep hole in a cometary

"dirty snowball" before the Deep
Impact vehicle was too far away.

But the erupting cloud of
silicate dust was so thick
and the explosion so sustained that it
completely obscured the local terrain.

To the electrical theorists the exploding
cloud was a predictable effect.

"The impact/electrical discharge will be into rock,
not loosely consolidated ice and dust."

Fortunately, the Swift satellite
provided a view of the comet
explosion not just in visible
light but in UV wavelengths

which often give the best
pointers to electrical events.

"Swift scientists have seen a quick and dramatic rise in ultra violet light,
evidence that the Deep Impact probe struck a hard surface,
as opposed to a softer, snowy surface."

The ultraviolet emissions required
temperatures of over 3,000°F.

The temperatures of the last
will explain why the initial eruption
saturated the sensors on
the Deep Impact probe.

Calculations based on pixel saturation
indicated a minimum initial
temperature of the flash at
almost 6,000°F.

Though, saturation means the temperature
could have been much higher.

Still Looking for Water

The first purpose of the Deep Impact Mission was
to excavate the envisioned subsurface water ice.

But electrical theorists have consistently
predicted little or no water on most comet nuclei.

"An abundance of water on or below the
surface of the nucleus is unlikely."

Nothing approaching the expected
levels of water was detected.

Absence of volatiles as a dominant factor can only mean that something is fundamentally wrong in standard comet theory.

"The material that came out was a surprise to scientists: a cloud of fine powdery material emerged, not the water, ice and dirt that were expected."

"Theories about the volatile layers below the surface of the short-period comets are going to have to be revised."

The last resort in the search for water was the effort to identify the vents from which, according to popular theory, pressurized gases were escaping at the extraordinary velocities of Tempel 1's observed jets.

The vents were never found.

"It has proven difficult to identify specific landforms that can be identified as the 'vents' discussed for many decades in classical comet literature, as it is difficult to locate them on Borrelly and Wild 2."

When viewed through the lens of standard theory, some predictions of the electric model could only appear absurd.

Thornhill anticipated that the locations of the comet jets could actually shift as charge

re-distribution occurred

on the nucleus after a

significant electrical event.

"The discharge and/or impact may initiate a new jet on the nucleus and could even abruptly change the positions and intensities of other jets due to the sudden change in charge distribution on the comet nucleus."

Confirmation of this prediction came from the Nordic Optical Telescope in La Palma, Spain.

As released by the observatory

two images of the comet

before impact and hours later

tell the story emphatically.

15 hours after the blast, new jets appeared

far from the location of the impact itself.

Surface Features

The Deep Impact Mission promised to give us the best images ever of a comet nucleus.

On the eve of the impact, the

Thunderbolts group stated the

electrically predicted surface

features in no uncertain terms.

"The model predicts a sculpted surface, distinguished by sharply defined craters, valleys, mesas, and ridges—the opposite of the softened relief expected of a sublimating 'dirty snowball'."

The surface of Tempel 1

astonished the experts.

Expansive mesas and steep vertical
ridges did not belong on a comet.
And the presence of craters sparked
a debate that continues today.
Fortunately, scientists had an opportunity
for a second look at Tempel 1.

After the Stardust Mission to Comet Wild 2
that probe was re-directed to the
object of the Deep Impact Mission.

Stardust was then renamed NExt
or New Exploration of Tempel 1.

It would give additional views
of the comet's surface.

Arrival of Stardust/NExT

With the arrival of the NExT probe, old
mysteries only grew more perplexing,
leaving scientists to debate
the contradictions of theory.

Even the scalloping of mesa walls
and nearly vertical ridges,
something we've mentioned so often in
connection with electric discharge
machining, was duly noted
by NASA scientists.

"The image reveals topographic features, including ridges,
scalloped edges and possibly impact craters formed long ago."

At least 60 craters were counted, though collisions along the comets path would be exceedingly rare, if occurring at all.

And the surfaces of active comets are rapidly eroded.

Far too rapidly to preserve a record of rare impacts across geologic time scales.

In fact, most astronomers now reject explanation by impact and that includes

Michael O'Hearn the Principal investigator of the Deep Impact Mission.

"Another process must account for the depressions, according to Michael A'Hearn."

What, then, was responsible for the pervasive cratering of the Tempel 1 surface?

Laboratory experiments have shown that entire fields of craters are readily produced by electric arcs to a negatively charged surface.

Nothing observed on cometary nuclei has contradicted the electrical interpretation.

Surface Arcing

Here is the most fundamental question one could ask about active comets:

is electric arcing

occurring at the surface?

If so, should we not see this arcing where
there is sufficient camera resolution?

We have a good example in the energetic
plumes of Jupiter's moon Io,
where the sensors of the
Galileo probe were saturated
by apparent electric arcs,
producing blotches of whiteout.

A second example came
with the Stardust Mission
and the appearance of small saturation
points on the surface of comet Wild 2 -
but with insufficient resolution
to make a definitive case
for what the electrical
theorists suspected.

The enigmatic whiteouts on the
active surface of Tempel 1 were
everything the electrical
theorists could have asked for.

And the most prominent were placed exactly
where the electric model envisions them.

Eroding the cliffs of
mesa walls and extending
the floors of numerous

craters and depressions.

And yet these extensive
blotches of whiteout, are
receiving occasional comments
from the specialists,
have yet to provoke any deeper
curiosity as to their cause.

View from impactor

But now, with a second look at Tempel 1,
we can contrast the surface activity of
the comet under two
different circumstances.

Deep Impact occurred just one
day before the comet reached
perihelion or its closest
approach to the Sun.

But the Stardust NExT Mission
arrived 34 days after
perihelion, as the comet
retreated from the Sun,
and the electrical activity
of the Sun itself was
far below its activity at
the time of Deep Impact.

On July 2nd, 2005,
two-and-a-half days before Deep Impact

the Space Weather website reported a remarkable surge in sunspot apparent a direct indicator of surging solar activity.

"What a difference a few days makes. Three days ago, the sun was almost blank, now it's peppered with sunspots."

An active Sun

versus a quiet Sun.

For Tempel 1, this means different levels of proton bombardment a couple a days after the ejected particles left the solar surface.

The contrast is remarkable.

The more active comet presents an abundance of whiteouts.

The less active almost none.

NASA scientists originally estimated that the Tempel 1 nucleus lost about a third of a meter in depth with each orbit.

But the electric model emphasizes selective and focused excavation.

The new look at Tempel 1 showed that the most prominent mesa cliff had been dramatically excavated.

The mesa was an estimated 15 meters high, and it had retreated some 50 meters.

The most dramatic change on Tempel 1 occurred precisely where the pixel saturation was the most dense.

The only remaining plausible explanation for pixel saturation on the more active comet is electrical erosion.

NASA scientists also say that existing craters were extended between the two visits.

Three craters close to the dominant mesa had been further excavated to form a single trench.

Electric arcs extend crater floors and erode the ridges of mesas and elevated terrain.

The typical signature of both is the scalloping effect of rotating arcs.

And it is no surprise to the electrical theorists that these processes energize a comet's jets.

In fact, almost all of the jets of Tempel 1, when captured in its less active phase are said to have emanated from the erosion of a prominent scalloped cliff.

Selective erosion is a trademark of the electric discharge machining.

"Most of the jets observed during the SN flyby can be traced back to an apparently eroding terraced scarp."

Deep Impact Crater

Before the Deep Impact projectile was fired at the comet, scientists were confident they would strike a dirty, snowy surface, penetrating well below the surface to excavate deep material.

That's how the mission would expose the primordial stuff of comet creation.

What would this deep crater look like?

Of course, if the projectile struck a rock and discharged above the surface in an electrical event, the target area might look a lot different.

Then the removed material would be silicate dust and debris but with very little penetration beneath the surface.

"The impact/electrical discharge will be into rock, not loosely consolidated ice and dust.

The impact crater will be smaller than expected."

To facilitate the investigation after a sub-surface explosion, the Deep Impact probe targeted the space

between two well identified craters.

So, in return to Tempel 1, mission

scientists knew exactly where to look.

But almost nothing could be seen and

certainly there was no resemblance to

the deep crater the

scientists had envisioned.

"There was a surprise in the sense that you could

have expected a crater that was very well defined."

To identify the crater location, the

scientists published a view of the

region with the circle of

arrows around the impact site.

How are we to understand the

absence of a deep crater?

"The images did not show much of a crater.

The scientists say they believe the debris

blown into air settled right back down."

On this question, the investigation appeared

to move into weird in theory defying science,

a typical comet's gravity is perhaps

one billionth that of Earth.

Mere walking speed would be sufficient

to escape the nucleus altogether.

How would accepted theory allow

material exploding from the comet at

thousands of miles per hour to return
to it's finite point of departure
and to refill the crater?

"It appears that the crater partly healed itself."

Energetic Coma Activity

A key to our understanding
in the Deep Impact events
is water production in the
coma of an active comet.

Abundant water or hydroxyl in the coma
of Tempel 1 was readily confirmed,
though NASA investigators saw only
trivial levels of water on the surface.

Patches of surface water in false color

"What is significant is that the extent of this ice on Tempel 1's
surface is not sufficient to produce the observed abundance
of water and its by-products in the comet's coma."

According to the scientific
reports, the observed
jet and coma activity of the
comet would require 200 times
more exposed water ice on the
surface than was actually detected.

This fact could only accentuate the
absence of any vents to the previously
supposed pressure chambers

beneath the surface.

No theoretically acceptable cause could be found for the energies of the comet jets.

And nothing was observed

that could account for

the abundant hydroxyl

or water in the coma.

But this dilemma is removed

by the electric comet model.

The model explains the absence of

water, the energies of the jets

and the absence of vents

to subsurface chambers.

And the presence of hydroxyl

and water in the coma,

but not as a general rule on the

surface or beneath the surface,

is a prediction of

the electric model.

"Negative oxygen ions from cathodic etching of rock minerals in the nucleus will combine with protons from the solar wind to form water in the coma and tail."

The evidence points to high-energy

electrical exchange, electrically

sputtered silicates from

a negatively charged

comet nucleus transacting with the
charged particles of the solar wind.

Water production through the
electrochemistry of charge redistribution.

The paradox of trivial surface ice on
Tempel 1 then finds a coherent explanation.

"The particle size of the water ice, is greater than
the icy grains in the coma and is probably
recondensed onto the comet's surface."

The surface ice was produced
electrically in the coma.

Meager amount of this water ice later
drifted from the coma to the surface,
condensing as a few
shallow patches of frost.

Scattered frost seen in false color

It's the hydroxyl radical that
gives us the persuasive answer.

Investigators thought they saw an
injection of water into the coma
from the nucleus several days after the
eruption of dust had returned to normal.

But that conclusion arose from
an unsupported assumption.

Based on data from the Swift satellite,
investigators from the UK and US

reported a spectacular increase
in water content within the coma.

But that increase did not begin
until five days after Deep Impact.

When the normal production
of 16,000 tons per day
increased by at least 250%,
continuing for five more days.

"After the Deep Impact probe hit the comet,
this rate increased to 40,000 tonnes per
day of the period 5-10 days after impact."

As reported the rise in
water content of the coma
all occurred with no increase in
dust content. No increase in dust.

That's the fact that precludes the
investigators interpretation,
comet outbursts are
never dust-free.

In electrical terms the rapid
increase in hydroxyl or water
would predictably come
days after Deep Impact.

And this is why the comets X-ray
emissions continued to grow.

Above the nucleus, highly energetic explicitly

electrical events created a flood of X-ray emission.

And water of the coma

was the by-product of

that electrical

exchange not the cause.

A reconsideration of water production

and it's direct link to a comet's X-ray

production is now essential.

In fact the contribution of charged

particles from the Sun to comet

activity is now acknowledged.

It happened in 2012 when the distinguished

Russian astronomer Subhon Ibadov's paper

appeared in the Journal

"Advances in Space Research".

Prof. Ibadov's paper

described a comet nucleus

responding to charged

particles from the Sun.

His calculated capacitor like

discharges or equivalent to observed

energies of comet flaring in

ground-based observations of comets.

Now that the door has been opened to

discussion of the Sun's electrical role

in comet discharging, how long can that role

be overlooked in comet investigations?

The Message of Deep Impact

Taken as a whole the message of Deep

Impact is remarkably consistent.

But why did the crucial findings all

come as a surprise to comet scientists?

And what does it mean

that these surprises were

the explicit predictions

of the electric model?

Deep Impact provided us with a stunning

confirmation of the electric comet,

confirming as well the larger

electrical environment of the Sun.

Converging evidence from every

line of investigation makes

clear that the space sciences

will be forever changed.

Comet Hartley 2

Perhaps no flyby of a comet

produced more instant surprises

than the visit to Comet Hartley

2 in early November 2010.

It was achieved by the

original Deep Impact probe,

subsequently renamed EPOXI, for

its encounters with Hartley 2.

Even the shape of the comet
caught investigators by surprise.

The awkward bookends are
double-lobes made no sense.

Astronomers likened it to a pickle, a
peanut, a dog bone and a bowling pin.

Why would accretion of a dirty
snowball or icy dirtball from the
homogeneous primordial cloud produce
such a remarkable configuration?

Standard accretion theories never
envisioned anything of this sort.

The theories always claimed that comets
preserved the original raw material
out of which the Sun and planets slowly
accreted over billions of years.

Hartley 2 revealed a split personality.
Astronomers were in disbelief when they
discovered that the two lobes exhibited
radically different compositions.

That finding flatly excluded
prior assumptions and
eliminated the imagined Oort
cloud of earlier theory.

One end of the comet was highly active

and the other much less so. But why?

"We have a very heterogeneous nucleus.

The lobes are different."

"How you'd get what looks like a volatile-rich object linked up to a volatile-poor object is a bit of a puzzle."

The primary outgassing of Hartley 2 was coming from the smaller lobe.

Astronomers were forced to a highly incongruous conclusion -

that the two end-pieces of the comet formed separately in much different regions of the solar system.

And here again, we meet undeniable evidence of a common history for planets and comets, both forming from well-differentiated materials in the habitable zone of the Sun.

"The ingredients for both comets and planets must have been mixed up early on in the formation of our solar system.

Without this mixing, comets would have more homogenous composition."

A collision of two comets in the vastness of the heliosphere would involve the most extreme improbabilities.

And, if two small comets originated in much different regions of the solar system, how likely would be a merging

by gentle collision?

"We are speculating that this means that the two lobes of the comet formed in different places in the Solar System.

They came together in a gradual collision..."

Hartley 2: Enigmatic "Waist"

The strangely smooth "waist" of

Hartley 2, seems to have invited

extreme speculations

from NASA scientists.

A comet just a mile wide would

have no appreciable gravity.

But could gravity have, nevertheless, guided dust

from the ends of the comet toward the waist?

"We think the waist is a deposit of material

from other parts of the comet, our first

evidence of redistribution on a comet."

"Material coming off the ends of the comet then

falls back into the lowest point, the waist."

The electric model does not force

scientists to such conjectural extremes.

The electrostatic deposition is well established

in environments of electric discharge.

High-Energy Jets

The spectacular jet activity of Hartley

2 continues to haunt comet scientists.

Jets erupted from the sunward face of the

comet but could also be seen exploding
from regions in shadow with the same
force as those exposed to sunlight.

"We have jets in the night time, we have jets along the edge,
we have jets in the sun...We have a lot of work to do to
try and understand what's going on here."

What was driving the velocities
of Hartley 2's jets?

Traditional theory has
always explained cometary
jets through both surface
and subsurface warming.

Surface sublimation in areas of
brightness or exposure to the Sun alone
would not be sufficient
to drive the high-speed jets.

Subsurface pressure
chambers are a requirement.

Investigators found that
dust and carbon dioxide were
being emitted by the comet
in consistent proportions.

This led them to the
conclusion that CO₂ pressures
building up in chambers beneath the
surface were driving the explosive jets

and in the process carrying

dust along with them.

Fortunately, Hartley 2 investigators could

trace the jets to topographical features.

But these features did not include the

expected openings to subsurface chambers.

Without the required pressures, the

acceleration of material away from the

comet would have no

identifiable cause.

In the vacuum of space, a mere surface

response to light from the Sun

would involve virtually

no pressure at all.

"The real surprise was that the [surface]

brightness was sufficient to do that... Putting

it together is something we're struggling with."

The Cyanide Anomaly

Here is a remarkable fact reported by

NASA investigators in September 2010.

Prior to the arrival of EPOXI, Hartley 2

produced an immense cloud of cyanide or CN gas.

The explosive increase in cyanide

occurred over a little more than a week,

an event investigators

dubbed the "CN anomaly".

"We don't know why the amount [of CN] coming off the comet changed so drastically for a short period of time. We've never seen anything like this before."

Typically, during the ebb and flow of a comet's activity, we see a consistent proportion of removed dust to the gases emitted.

But the EPOXI probe detected no dust increase at all.

"In other cases where a comet has had a big outburst, a lot of dust has been released at the same time. But in this case, the amount of dust did not change, yet the CN gas abundance exploded."

Equally stunning was the fact that the cyanide increase did not show up in the comet's jets, though this is exactly where one would look to identify a source if this source was, in fact, on the nucleus.

"If observers monitoring Hartley 2 do not take into account this new phenomenon, they could easily get the wrong picture of how the comet is changing."

Is it possible that the cyanide abundance did not originate from the surface but from the electrochemical activity in the coma?

Could electrical exchange

between a highly active comet
and charged particles from the Sun resolve
the mystery of cyanide production?

To clarify this issue, we consulted
with Dr. Franklin Anariba,
an electrochemical researcher and
lecturer at the Singapore University
of Technology and Design.

Dr. Anariba agreed to
explore the question,
and we subsequently invited him to
present his findings at the recent
Thunderbolts Project™ conference
in Albuquerque, New Mexico.

In his investigation, Dr. Anariba
found that electrochemical events
could account for several
key features of comets.

These would include:
plasma generation in the coma,
the observed hydrogen gas cloud
surrounding the comas of comets,
dust tail formation,
the ionized plasma tails of comets,
and gas production within the comas.

Electrochemistry requires

a voltage difference.

And the coma of Hartley 2 was
well suited for the electrical
production of water, cyanide
and a good deal more.

As for cyanide, the confirmed presence of methane
and of ammonia would be quite sufficient.

Add electric discharge and
cyanide WOULD be the byproduct.

Hartley 2 is a hyperactive comet with
a continuing potential for surprises
and anomalies to
standard comet science.

But, when is a mystery
really a mystery,
and when does it mean the breakdown
of an onboard instrument?

As pointed out to us by Dr. Anariba,
NASA investigators recently announced
that the so-called CN anomaly
was actually an instrument failure.

It appears that no further analysis of the
claimed failure has been made public.

Did an instrument really
fail to perform properly,
or did speculation take over

when the standard theory
could not account for a recorded event?
Either way, the electrochemistry
of cyanide production in the
comas of comets is a crucial
issue that must be explored.

The Mystery of Exploding Comets

December 2010. Russian astronomer
Leonid Elenin announces
the discovery of a new comet roughly
400 million miles from Earth.

Calculations show that the comet,
moving on a highly eccentric orbit,
will intersect the orbit of the Earth.

Based on the size of its coma, most
astronomers viewed the comet as
typical and unexceptional, suggesting
a body two or three miles wide.

But the projected
earth-crossing orbit sparked an
outburst of Internet rumors
and Doomsday predictions.

Most remarkable were the
suggestions that the comet was a rogue
planet, and claims that it would
profoundly disturb the Earth,

causing earthquakes, or a
shifting of the poles,
and even the end of the world.

Respected astronomers
were dismayed.

How could such scientific
illiteracy attract
millions of viewers to
Internet articles and videos?

Experts reminded us of the trivial mass
of a comet just 2-3 miles (3-5km) wide,
passing millions of
miles from Earth.

"Just driving to work every day in my subcompact
car is going to have far more of a gravitational
effect on Earth than this comet ever will."

The Surprise

As it turned out, what
actually happened to Elenin
posed a profound mystery
for comet science.

In the summer of 2011, Elenin
grew brighter than expected,
and astronomers began to
anticipate a respectable show.

But, the situation changed when a powerful

coronal mass ejection erupted from the Sun.

On August 19th, the CME
struck the Comet Elenin.

The comet flared brightly, appearing
to disintegrate explosively
followed by rapidly dimming before it was
visually lost against the glare of the Sun.

On October 24th 2011, only days after
the expected closest approach to Earth
Italian astronomers captured
the remains of Elenin on film.

An extremely faint and diffuse cloud
of dust was all that could be seen.

How did the disintegration and virtual
disappearance of Elenin occur?

The answer appears to lie in the role of
charged particles in an electrical event.

When the charged particles of a coronal
mass ejection struck the Comet Elenin,
the oppositely charged nucleus could
not withstand the electrical stresses.

It disintegrated like
an exploding capacitor.

The electrical theorists assure us that
comets are not what we are taught in school.

No practical experiment ever

demonstrated that a dirty chunk of ice
would disintegrate explosively
under gentle warming from the Sun.

The explosive demise of comets
cannot be due to solar heating.

In fact, eruptions and comet
disintegration have occurred in regions
so remote from the Sun that
warming is not even a factor.

We saw one of the most
improbable flarings
in the case of Comet Halley, a regular
visitor to the inner solar system.

In 1991, 5 years after Halley's
closest approach to the Sun,
it was well beyond the
orbit of Uranus, where
temperatures hover
around minus 330°F.

Then, it erupted, producing a dust
cloud a 180,000 miles (289,682km) across.

"The cloud was more than 1,000 times brighter than the comet was
supposed to be at that distance. To have something turn off
and suddenly brighten at that distance is unheard of."

"It is not a simple matter to explain the outburst."

If thermal stresses are excluded, it seems

that only one consideration remains.

Shortly after the Halley outburst, a few astronomers began to wonder:

could charged particles

from the Sun be a factor?

At the time, solar wind

activity had peaked at

a higher level than had

been seen in decades.

Then, two astronomers observed that

the charged particles of a powerful

solar flare on January 31

would have likely reached

Halley around February 12,

the date of the outburst.

The coincidence of the outburst with that

arrival seemed too great to dismiss.

"A kick from the solar wind is the cause of the Comet Halley's February 1991 flare."

Could electrical events be the key to

comet outbursts and fragmentation?

To this day, astronomers have no

explanation for the sudden and

spectacular brightening

of Comet Holmes in 2007.

It had been moving rapidly away

from the Sun for about five months
when it's coma size suddenly
grew by a factor of a million,
making it even larger than the Sun.

"We have guesses, but we don't
yet understand what happened."

"This is really a remarkable event.
We're at a loss."

Was it a coincidence that just two
days before the comets display,
there was a sharp spike in the
output of the solar wind?

In the electrical view, this sudden
arrival of charged particles from the
Sun will explain what otherwise
would have no known cause.

Electrical surges and capacitor
breakdowns go together.

High-tech image processing later showed
that the nucleus of Holmes had broken apart
with many fragments contributing to its
brightening, confirming a general pattern.

Comets flare brightly when breaking apart.

In 1976, Comet West brightened greatly in a
series of outbursts, perhaps a dozen or so,
then shocked astronomers by

breaking into fragments.

Warming by the Sun is not a reasonable explanation of such events.

When Comet Wirtanen

fragmented in 1957,

it was just inside the

orbit of icy Saturn.

Much the same occurred in the

case of Comet Biela/Bambert.

"Most of the comets observed to split

have done so for no obvious reason."

"We still do not know why comets split.

The problem is left unsolved."

More than once, comets have broken up at

their greatest distances from the Sun,

well beyond the orbit of Neptune, and

when break up occurs the fragments have

separated at inexplicably high velocities.

Mainstream theory has no explanation

for the energies driving such events.

"One really does require an explanation

when the velocity of separation is some

20% of the velocity of the comet itself!"

The progressive disintegration of the Comet

Schwassmann-Wachmann 3 beginning in 1995

left astronomers grasping for answers.

Though 150 million miles away,
it brightened spectacularly,
shining hundreds of times
more brightly than expected.

Then, astronomers discovered that the comet
had broken into at least four pieces.

Then in 2006, the Hubble Space Telescope
captured the spectacular disintegration of
the comet in progress while it was
still out beyond Earth's orbit.

It was then clear that the comet had broken
into more than three dozen fragments
as house sized chunks of the comet
appeared to disintegrate completely,
some within the span of a single day.

Remarkably similar to the
fate of Elenin, was the
explosive demise of the
Comet Linear in July 2000.

Like Elenin, Linear entered
the inner solar system from
its outermost regions on a
highly eccentric orbit.

For the electrical theorists, that means a
maximum change in the electrical environment.

As it approached it's perihelion, some

70 million miles (112 million km) from the Sun,
it flared, then rapidly
disintegrated.

The disintegration of Linear provides a
strong parallel to the story of Elenin.

The tear-drop form of the flare and
the relationship of the flare to
disintegration are
virtually identical.

All that was left of Linear
was a cloud of dust.

The expected abundance of
water was simply not there.

And what of Elenin?

As reported by Leonid Elenin himself,
the expected water
vapor was missing.

"American radio astronomers report
they did not detect water coming
from any remains of Comet Elenin."

If charged particles from the Sun
are triggers for outbursts or
disintegration of comets, the
behavior of these bodies has almost
nothing to do with relative
masses, or surface temperatures,

and everything to do

with the electric force.

Is it possible that one question

could remove the anomalies?

That one answer could

explain the flaring,

the fragmentation and the catastrophic

demise of these cosmic intruders?

When Planets Gave Birth to Comets

In the Electric Universe view of comets,

these bodies were excavated from

planetary surfaces in an

epoch of cosmic violence.

From this vantage point,

even asteroids and

meteors originated in the

same or similar events.

Electrical theorists have gathered

many volumes of evidence to show that

planets once moved on much

different courses than today.

In violent encounters, planets were

immersed in electric discharge

as stupendous arcs passed

between these charge bodies.

Electric arcs acting on planetary

surfaces and on the resulting

dense clouds of dust and debris fused

material into the unique shapes of

comets and asteroids, including the

double-lobed forms often observed.

Was Comet Hartley 2 fused into its

odd shape by electric discharge?

In one of the first electrical experiments

by plasma scientists, C.J. Ransom,

the fusing of surface material

produced a near-perfect

replica of Hartley 2's

unique morphology.

The only appreciable difference was in the relative

sizes of granular material, as we'd expect.

Could this remarkable similarity

be merely accidental?

At Hartley 2's smaller end,

mission scientists observed

what they called "shiny clumps", or

"cubicles", reaching up to 16 stories tall.

They were not just oddly

configured, they were two or

three times more reflective

than other surface materials.

But, look again at the Hartley 2 counterpart

produced in Dr. Ransom's experiments.

Here we see materials fused

electrically into shiny

more reflective clumps, giving us the

very answer that NASA scientists missed.

Fusing of material into glassified

texture will multiply reflectivity.

"These are spectacular features, but at this

point we don't know whether these are

deposits or growths, or something else."

The Electric Comet

Questioning the core assumptions of popular science

And so, the mysteries

of comets deepen.

And the most urgent need is to reconsider

the nature of comets as a whole.

It seems that anomalies are just

too easily ignored or forgotten.

But recurring anomalies can

be the door to discovery.

What better way to move science

forward than to ask the question:

what is a comet?

"Every time we look we find our textbooks were wrong."

Popular astronomy has long

imagined the comets to be dirty

chunks of ice moving through
electrically neutral space.

But, a growing number of electrical experts
see comets as charged bodies responding
electrically as they move more deeply
into the electric field of the Sun.

One question leads
inexorably to another.

How are comets formed?

What holds the spherical coma in place
against the force of the solar wind?

How are the long filamentary
tails created and
maintained in the extreme
vacuum of space?

What force creates and confines the
powerful collimated jets from the nucleus?

What is the source of the intensely
energetic X-ray emissions?

Spacecraft have now visited
a half-dozen comets,
and popular theory cannot withstand
the surprises that followed.

"Comets are perhaps at once the most spectacular and the
least well understood members of the solar system."

"It's a mystery to me how comets work at all."

The collapse of theory began with
the visit to Comet Halley, and the
discovery of forbidden negative ions
close to the coma of the comet.

Astronomers were stunned to find that
the bone-dry surface of Borrelly
was the opposite of the
"dirty snowball" expected.

Then the foundations of the Oort cloud
theory were overthrown by a series of
discoveries beginning with the
recovery of comet dust from Wild 2.

The dust could not be
distinguished from the diverse
materials of planets in the
habitable zone of the Sun.

In 2005, we fired a projectile into
the nucleus of Comet Tempel 1.

The outcome of that comet visit
contradicted every theorist's expectations
while confirming the explicit predictions
of the electric comet model.

Disruption of radio signals
from the impactor,
the advanced flash,
the astonishing energies of the impact explosion,

the sharply carved surface of the nucleus,
direct evidence of surface arcing,
the changing jet positions,
the overwhelming dominance of dust, not water,
in the immediate explosion.

Then, we returned to the comet in 2011, and
found that the excavation of mesas and
ridges on the nucleus had occurred exactly
as the electric model has long claimed.

We visited the highly active
Comet Hartley 2 in 2010,
for the electrical theorists the
findings that so surprised and perplexed
mission scientists were
in no way surprising.

The radically different composition
of the two lobes of the nucleus;
the jets erupting from
regions in shadow;
the absence of vents to the imagined
subsurface pressure chambers;
the smooth dust-covered waist; and
the shiny cubicles on the surface;
all point emphatically to
the electric comet.

Decades of comet exploration

have now demonstrated beyond any reasonable doubt the inseparable connection of comet activity to electrical attributes of the Sun and its domain.

The erratic flaring of comets and the explosive disintegration of such bodies occur naturally in the Sun's electric field and particularly in response to a sudden increase in charged particles ejected by the Sun.

Nor can comet science afford to ignore the experimental evidence.

Most significantly the ability of the electric arcs to create the extraordinary morphologies of comet nuclei and their cousins, asteroids.

Our understanding of comets is already and forever changed.

And this new perspective does not stop with comets.

Verification of the electric comet, will eventually touch everything we thought

we knew about the cosmos,
about solar system history and about
the history of our own planet Earth.

Welcome to Space News
from the Electric Universe
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

In episode 2 of this presentation,
Dr. Michael Clarage continues
his discussion of the Earth's
electrical environment
and his ongoing role as a
scientist on the SAFIRE Project.

In episode one Dr. Clarage offered his
thoughts on a recent space.com report
on mysteries fluctuations of
electrons in Earth's atmosphere.

We ask Dr. Clarage to further explain his
thoughts on the best experimental approach
to investigating electrical phenomena
associated with planets and stars.

As the primary astrophysicist
on the SAFIRE Project
it's my job to design
the experiments
that will best allow us to explore
electrical aspects of planets and stars.
What might the electrical potential

between a star and a planet look like.

Here's one model that I am working on, the Earth is on the left the Sun on the right, that squiggle blue line represents the rough structure of electrical potential at any point between a planet and a star.

Drawing is quite representational, just trying to sketch out the general shape of things.

This model is based partly on experimental data from SAFIRE partly on known geophysical data and partly on NASA satellite data of the Sun and solar wind.

On the left, the potential rises quickly to about 300,000 volts as you move away from the planet.

This is that 'fair weather' potential I mentioned.

The sawtooth squiggles as you move up are those bands of increasing and decreasing electron density mentioned in the space.com article.

Then continuing to move away from the Earth we reach the Van Allen belts.

The inner Van Allen belt, dominated by positive charges, is the high point of the curve, then a potential drop as you move out into the outer Van Allen belt, dominated by negative charges, then we have a long slow rise in the potential as we move towards the Sun.

There is data to support a 600 volts rise in potential from the Van Allen belts to the Sun.

I've spoken about that at several conferences and I'll give you the references below.

Putting everything together on to one graph like this is really breaking new ground.

Astrophysicists are not talking about things this way, not yet at least.

This is understandable, every scientist has enough difficulty keeping up with data in their own sub-specialty.

It is difficult to be combining measurements from the atmosphere, the ionosphere, Van Allen belts, interplanetary space, solar atmosphere and photosphere.

And like I said, none of us on the SAFIRE team are pushing any particular model

the real shape of that curve
between a planet and a star
might look very different
from what I've drawn here.

This still needs much
more exploration
and continued work matching
SAFIRE data to NASA data,
and further reinterpretation of the
NASA data in an electrical context.

Pictures such as these, of the
overall electrical potential layers,
are not yet seen in books because most
astronomers have continued to assume
that charge separations are not
maintainable at cosmological distances.

Is almost an irony to it, because my little
drawing is actually the much simpler
first-order effect
natural in plasmas.

It should have been the
first thing people look for,
but since planetary charge separations
were not considered possible
investigations were forced to
look at the much more complicated

second-order effects of complex magnetic fields and induced local currents.

With the SAFIRE chamber, we are in a unique position to run experiments exploring the possible overall electrical nature of stars and planets.

Coming back to the space.com article,

I would propose that the phrase

'The case of the missing electrons'

is somewhat of a misnomer.

Calling them missing, implies there

is something wrong about it,

like an awkward glitch in what should be

nature's otherwise tidy charge neutrality.

I have become convinced that the

whole mantra of charge neutrality

is preventing us

from seeing reality.

Nature is almost never

charge neutral,

and by that I mean, if you look at

anything interesting in nature,

like a cell, or an organelle in a

cell, or a tree, or a thunderstorm,

or the Northern Lights, nature

is always separating charges.

Inside our cells all the workings of
life are powered by charge separations
across chloroplasts and
mitochondria membranes.

Bees always have a greater
electrical potential than flowers
so there are always electrical
fields connecting bees and flowers.

And when a bee pollinates a flower
there is a quite measurable
and very exciting exchange of
electric charge between the two.

The more we look at what nature is
actually doing, the more we see that
charge neutrality seldom exists
in any dynamic environment.

Coming back to the
ionosphere, I would say that
the shells of free electrons are not
missing from regions of the ionosphere.

I would propose that the
electrons in the ionosphere
are simply arranging
themselves as needed.

Now, as needed for what?

That's a really good question.

There was another recent article, a review
article that make similar mistakes,
I would say, in describing
large-scale electrical phenomena.

This was the press release describing
an unexpected Star Trek shield
protecting the Earth
from 'killer electrons'.

Again there's an undertone
like something is wrong,
like the Earth should not have
high energy electrons around it.

Or if it does, then that
somehow a scary thing.

Think an analogy might help here,
by way of analogy you could say
that the stomach protects
the rest of the body
from the dangerous
enzymes and acids in it.

You could certainly say that,
but you need to acknowledge that
it's all part of a larger structure.

The enzymes are needed inside the
stomach for specific reasons.

The high potency acids are supposed to be

there, for the stomach to do its function.

When it comes to studying
planetary and stellar structures,
it would be better if we all
would broaden our thinking.

We would learn much more
if we came to expect
that cosmological structures are
performing useful functions also.

For reasons that we
do not yet understand
the Earth is supposed to have
high energy electrons around it.

That is a required part
of a larger structure.

Just because we do not understand, does
not mean it's a dangerous accident.

Electrical plasmas naturally form
barriers, membranes if you will,
these plasma barriers, or membranes, let
through some particles, but not others.

We have a lot to
learn about that,
our theoretical understanding of
all this is still very primitive,
but such plasma membranes have been

known about for about a hundred years.

The SAFIRE team is trying
to take us a step back
and explore experimentally
some of the basic assumptions
about the electrical nature
of the solar system.

For continuous updates on Space
News from the Electric Universe
stay tuned to
Thunderbolts.info

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you, there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you
and there is nothing to fear.

Symbols of the World Mountain

For well over a century the documented
traditions of the world mountain
have invited scholarly
attempts to explain them.

The mountain rolls along the world axis to the
visual center of the sky at the celestial pole.

But do any of the proposed
explanations actually work?

That question can only be answered
by penetrating to the core idea
across a wide range of
imaginative images.

The celestial reference was
not just seen as a mountain
but as much more than that.

By following the theme back to its
earliest expressions, we can reconstruct

the concrete celestial form beneath

the full range of mythic symbols.

The complex ancient images of a

cosmic mountain can only find meaning

in a human experience

that is not occurring today.

Events in the skies above

our early ancestors

provoked an explosion

of mythic content.

In its first form, human witnesses saw

the great mountain as a cosmic pillar,

the visual support of the sky.

Its summit was the seed of a power

remembered as the universal sovereign.

In the most archaic traditions,

the great column served as

the perch, pedestal, or resting

place of the creator god himself.

The ruler on the mountaintop

was the primeval Sun,

the central luminary of the sky,

not the body we call Sun today.

Ancient chronicles of kingship name

this luminary as the Father of Kings,

the first in the mythic line of kings, the

one from whom kingship itself descended.

In ancient Mesopotamia, this was the
Sumerian An, the Babylonian Anu.

For the Egyptians,
it was Atum-Ra.

For the Greeks, the god Kronos.

As we've observed in earlier
episodes of this series,
ancient astronomical traditions
identify this archaic dominating power
as the planet Saturn.

Our present sky is not
the key to the past.

Always the cosmic mountain appears
as the site of mythic creation,
and the mount itself is part
of that creation story.

Early traditions describe the
mountain as a cosmic pillar,
arising out of luminous ejecta
that exploded from the primeval Sun
as the central act of creation,
a great shout producing a
cloud of chaotic debris.

In the archaic creation accounts, this
explosive outflow was the raw material,

or primeval matter, from which the
unique form of creation emerged.

Human imagination interpreted
this ejecta in many ways.

It saw the clouds
or waters of chaos,
or an army of barbaric or frenzied
warriors yet to be controlled.

The same ejecta was seen as the
creator's luminous speech.

Visible words shouted into existence
and gathered into concrete form,
the world mountain providing
the creator with the support
that served as his
own lower limbs.

Imaginative contemporary illustration
of the Primeval Hill, the Akhut
The Egyptian creation account
describes the appearance of
the world mountain from this
ejecta as a defining moment.

It meant the emergence of the
far-famed Primeval Hill, the Akhut.

Akhut, the name itself came
directly from the ejecta,

called Akhu, signifying the radiant words of power
erupting as the primeval shout of creation.

The text recall the

creator Atum or Ra alone

wandering to and fro in the heavens before
finding a stationary resting place.

"I found no place where

I could stand,"

the god recalls in the

Egyptian creation account.

"I was alone. No other

worked with me."

For context the words

are critically important.

This celestial resting place was in

fact the Akhut, the world mountain.

Thus, the hieroglyph for the idea "to stand"

conveys the sense of support and stability.

"That was before a perch had been formed

for me to sit on," the god states.

The perch, described by its hieroglyph,

was the cosmic mountain or pillar,

the very pillar that the Egyptians

personified as the god Shu.

It was a common Egyptian practice to place

emblems of the creator on the perch sign

as a testament to the
critical role of Shu
as the emerging pillar of the
sky in the creation accounts.

The equation of the god's
pedestal, the Pillar of Shu,
and the Mount of Creation is
unequivocal in the Egyptian language.

The god Osiris, enthroned
upon the Primeval Hill,
"was like an exalted one
upon thy pedestal."

And the god Anubis, the god
"who is on his mountain"
was called also, "the god
who is on his pedestal."

But the symbolism of the cosmic column
ranges across many mythic interpretations.

It includes the hieroglyphic image of
the god Sept, a close counterpart of Shu.

It includes the twin-peaked mountain,
Akhut, that we previously discussed.

And it includes all Egyptian words
relating to the etheric wind
or fountain at the region
below the creator.

This luminous column served
as the resting place of Atum,
as made clear by
the coffin texts.

"The Great God lives, Fixed in the
middle of the sky Upon his support."

This pervasive language of a
cosmic pillar and resting place
constitutes a profound challenge
to all common assumptions
about the origins
of ancient thought.

Egyptian creation accounts
consistently refer
to a time before the appearance
of this resting place.

But concrete translations are essential if
we are to capture events seen and heard.

The texts make clear that in his
original condition, Atum was alone.

"I was alone. I had not spit in the
form of Shu, [the pillar of the sky.]"

"I had not poured out Tefnut,
[first form of the feminine power.]"

"No other worked with me."

"Then I laid the foundation

with my own heart."

"I poured out the primeval

Akhu in the form of Shu..."

The literal references

is to explosive outflow,

interpreted most emphatically

as visible speech,

called "words of power" shouted

by the primeval Sun god.

But the same outflow is interpreted as

masculine seed, water, fire, and wind.

This primeval matter, the Akhu,

is always identified as the raw material

of creation in events seen and heard.

Though our focus here will be on the

emergence of the towering column

personified as the god Shu, the

Egyptian priests insisted that

the same explosive events gave birth to

the first form of Shu's counterpart,

the goddess Tefnut, appearing as the

spiraling life breath of creation;

a subject to which we'll devote

considerable attention in due course.

The creator announces: "I could

find no place to stand."

"Words of power came forth from
my heart to lay a foundation."

It was from this shout of visible words of
power that the column of Shu emerged.

"I am Life, the Lord of

Years, living forever...

the eldest one that Atum

made in his words of power,"

the Akhu, "in giving

birth to Shu."

Or again Shu announces: "I came into

being in the limbs of the Self-Creator."

"He formed me through the

activity of his heart

and he created me in his

words of power [the Akhu]."

Any attempt to interpret the fiery

words of power as an abstraction

can only distort the explicit awe

and terror of the human experience.

The Egyptian priests clearly

knew that the pillar god Shu,

who held aloft the resting Atum,

was the perch or pedestal upon which

the creator eventually rested.

So while one coffin text reads:

"I'm raised aloft on my perch above
yonder places of the Abyss,"
another speaks of the great perch:
"I do not fall on account of Shu."

This resting place was also
called the foundation of Ma'at.

A stylized glyph of Ma'at is, in
fact, an image of the Primeval Hill.

Often the glyph is simply read as
the pedestal of the great god.

In its root meaning, Ma'at denotes
the stable enduring foundation,
the source of cosmic regularity.

The creation texts say that the
creator "rests upon Ma'at."

Repeatedly, we see that the
concept of support or foundation
merges with the mountain or hill. The word "thes," for example,
means "support, to bear or
lift up" but also "mountain."

The reason for this is
that the only mountain
with which the ritual
celebrations were concerned
was the cosmic mountain,
the foundation of heaven.

One finds no exceptions to this.

"May I endure in the sky like the cosmic
mountain, like the primeval support,"
reads a hymn of the
Pyramid Texts.

For this celestial peak, the Egyptians
continually look back in their myths and rites.

On behalf of the deceased king,
the priest poured a heap of sand
on the floor inside the pyramid,
placing atop the sand a statue of the
king and reciting a prayer which began:

"Rise upon it, this land which came forth
from Atum... Assume your form upon it."

The sand poured out meant
the primeval matter
and the hill so formed
meant the Primeval Hill.

And so, according
to T. Rundle Clark,
"Osiris sits in judgment in a
palace in the Primeval Mound,
which is the center
of the world."

"May I be established upon my resting place
like the Lord of life," the king declares.

One of the most familiar representations
of the Primeval Hill is the obelisk.

The small pyramidion on top of the
obelisk denoted the Benben stone,
the living soul of
the creator, Atum.

"Atum-Khepri, thou wert
high as the Hill.

Thou didst shine
forth as Benben."

Thus, the obelisk came to be employed as
an idiograph for the Egyptian word "men."

The word meant the
"mountain" or "pedestal."

But it also meant "stability"
and "to rest in one place."

Derived from the same root
is the Egyptian word "mena"
or "menat, the celestial
"mooring post."

The Egyptians conceived
this stationary pillar
as the stake around which the
secondary powers of heaven revolved.

That's the meaning of Mena Uret,

"The Great Mooring Post,"

connecting the masculine post to the
complementary symbolism of the mother goddess,
whom we shall identify as the
spiraling life breath of creation.

As we delve more deeply into the symbolism,
we'll return to the special nuances
of the cosmic column as world axis, the post,
peg, stake, nail, or anchor of creation.

The distinguished authority, Henri
Frankfort, understood the principle well:

"Everywhere the site of creation, the
first land to emerge from chaos,
was thought to have been
charged with vital power.

And each god counting as Creator was made
to have some connection with this Hill."

If the significance of this idea is to
truly register on human consciousness,
it must be seen as something more than an
obscure regional experience or abstraction.

It is a worldwide memory preserved through
competing imaginative interpretations
all pointing back to a
singular experience.

thank you very much I'd like to begin
again by expressing my honor to be here
I've really met a lot of nice people so
it's been a it's been a privilege to
attend the conference as you remember
yesterday I started my talk by speaking
about anchoring so the question becomes
if you're going to do physics you do
have to trust the laws of physics I mean
we can't just go back and recheck
everything every time we do something or
else physics wouldn't advance and
actually some laws are almost forgotten
like kirchoff's law a few people use it
in astrophysics most people don't think
about it at all but it's an extremely
important it's it's a lot of extremely
important consequences actually I as I
spoke about yesterday relative to the
Cosmic Microwave Background
I mentioned that Penzias and Wilson are
not allowed to take a temperature and
the reason that they're not is that they
cannot guarantee that they understand
the nature of their source that it has
no conduction no convection basically

that the universe would be the same as the condition required by Kirchhoff's law which is thermal equilibrium with an enclosure now I have reassigned that signal to water and I've said that water has different degrees of freedom and B and its ability to contain energy in any one degree of freedom it can be vastly different so the hydrogen bond contain very little energy

it's basically full right around three Kelvin and then the hydroxyl bond can take much more energy into it so that degree of freedom it can handle more energy well all materials are going to be like that

real materials are going to be written aid up of real atoms that are oscillating against each one another there's going to be electrons and conduction bands valence electrons and all these things that are making up that real material are going to have different degrees of freedom and those degrees of freedom will have a different ability to take up energy now this is

Kirchhoff's law is important the
downfall of Kurt
slaw is important because physics will
start looking at materials a different
way because they know that this law is
no longer universal so that has
implications in statistical
thermodynamics now relative to the Sun
it's extremely important because if
kirchoff's law is not valid you can
never have a gaseous Sun because a
gaseous Sun uses the equations of
radiative transfer and those equations
all have at their source kirchoff's law
of thermal emission so for instance in
Mills classic paper on local thermal
equilibrium
he states that at the center of the Sun
you can have blackbody radiation because
the atoms there are colliding so quickly
that you can consider things enclosed
but actually he described a condition
for conduction not thermal radiation so
you cannot have blackbody radiation at
the center of the Sun and with
kirchoff's law collapsing this is the

only thing that's required for the
gaseous Sun to go away now of course the
collapse of Kirchhoff's law also means
that we don't have universality and this
has consequences relative to our
understanding of universal constants
like Planck's and Boltzmann's and we
should remember the laws of physics they
summarize experimental observations if a
formulation is contrary to laboratory
findings it cannot continue to exist as
a law of physics it is in this light the
Kirchhoff's law can no longer hold any
place in the annals of science so now
that I've been so hard on Kirchhoff
I did want to say that he was still a
brilliant scientist remember he's the
father of spectroscopy we have spectral
analysis because of him he was the first
with Bunsen to analyze elements on the
Sun and also we for the electrical
engineers here we all know the laws of
current come from him but unfortunately
his law collapses and the proper law is
comes from Balfour Stewart it was
written two years before and that law is

much simpler than Kirchhoff's it doesn't
say that all cavities
came black radiation it just says that
at thermal equilibrium the emissivity of
an object will be equal to its absorbed
Tiffany so in this talk I'm going to
review thermal emission and I'm going to
give you a statement of Kirchhoff's law
then will quickly cover Planck's
equation and it's a nurse so derivation
Einstein's derivation I'll just glance
over it no not too much time and I'll
just present Wien's and Stefan's law then
we'll talk about thermal emissions and
gases and solids then I will discuss
briefly the experimental basis of
Kirchhoff's error and then we'll talk
about the central thing that comes from
this talk perhaps is the linking of
Planck's equation to physical reality
and this has dramatic consequences for
both physics and chemistry so now you'll
have to excuse me when I did the slides
by the way this was a last minute thing
that I knew I was coming here to give
this particular talk but when I made the

slides I I put the diagram in
wavelengths and the equations in
frequency but it doesn't matter
you you can just put the right diagram
if you want now so Kirchhoff this is a
summary of Kirchhoff's laws it whoops
sorry this is a summary of Kirchhoff's
law and it just says that there's some
function of temperature and it depends
on the image C_ν of the body
divided by its opacity or absorbed T_ν
and so you have some function now
Kirchhoff didn't really know what the
function looked like back then he just
knew it was a continuous spectrum but
what he did believe is that this
equation was universally applicable to
all cavities now here's the statement of
the law from his paper if a space be
entirely surrounded by bodies of the
same temperature so that no rays can
penetrate through them every pencil in
the interior of the space must be so
constituted in regards to its quality
and intensity as if it had proceeded
from a perfectly black body of the same

temperature and must therefore be independent of the form and nature of the bodies and determined by temperature alone so he's saying if I have a cavity any it doesn't matter what it's made out of the radiation inside will always be the same the interior therefore of an opaque red hot body of any temperature the illumination is always the same whatever be the constitution of the body in any other respect now

Planck of course is tied to kirchoff's law as you'll see in this next slide but Planck initially writes down his blackbody equation without derivation he sees the data and by just visualizing the data he knows his equation this was a marvelous feat in physics and still is today and that's why one of the reasons that Planck's equation is called a miraculous equation quantum physics was born on that day he derives the law he then goes ahead after he writes it down he writes it on a postcard mails it

to his friend and that's how Planck's law is born he derives the he then spends many weeks deriving the law of blackbody radiation treating the problem with oscillators and then invoking quantum values for the vibrations so when you look at Planck's law you see that within it here you actually have kirchoff's law this is kirchoff's law and this is Planck's okay now there's another law that's quite important this is called Stefan's law and it this is used all the time with the astronomers they actually think that the the emissivity of a body will always move with the fourth power of the temperature well actually there's almost nothing on earth that follows this law and I will demonstrate that for you in a couple of examples and gases but anyhow just the the total emissivity so the area under the curve here is just proportional to a constant times the fourth power of the temperature okay so if you have a real black body it's truly black a perfectly absorbing cavity this will be true but

other than that it's never true now we
ins a lot of thermal emission can also
be used and that law says that if you go
to the maximum wavelength here I switch
back to wavelength for the equation that
the wavelength times the temperature is
just equal to a constant so we won't go
through Planck's derivation but I did
mention to you that it used oscillators
now Albert Einstein very
elegantly derives Planck's equation in
1916 using a two energy system Einstein
coefficients and what people often
forget a radiation field which doesn't
come from nowhere the physical nature of
the transmission the transition species
is never considered so we'll just I
won't go through this too much you you
just got two energy levels and you're
gonna permit transitions within these
levels and he considers energy going
from this one to this one this one to
that one so you have the rate of
stimulated absorption the rate of
spontaneous emission the rate of
stimulated emission he puts them all

together with the the Planck brightness
and then he uses these coefficients and
then poof plant oh and then wait a
minute there's one more thing before the
poof we have to use Boltzmann's
distribution and then of course poof you
get Planck's equation now the problem
with this of course is that people often
forget well people don't forget this
part the critical step in the derivation
was C was to include stimulated emission
if this is not done you get the Rallye
gene solution but Einsteins derivation
also requires the presence of a
radiation field from which he can deduce
his coefficients and he uses Wiens
blackbody approximation to characterize
this the energy of this radiation field
so his derivation looks very easy it's
it's beautiful it's simple but of course
he's introducing something for which we
Ned worked very hard to obtain now
here's a brief review of thermal
radiation so the first thing that we
have we all recognize in this room is
most people in this room will recognize

is that gases always emit radiation in the discontinuous manner their total emission now this is something that people don't always recognize their total emission can be drawn up as a function of temperature and this is in direct contradiction to Stefan's law right Stefan's law told us that the temperature that the emission always moves with the fourth power of the temperature so this situation is unlike what is found in solids and liquids so gases solids and liquids tend to emit in a continuous manner I won't say that they follow Stefan's law may be an ideal solid my so when you learn spectroscopy you are hit with this spectrum diatomic molecules they have rotational vibrational spectra which looks something like this so you know just a bunch of lines at different frequency okay if you want to see the actual spectrum you could just go to this reference this is uh I did these figures well my son did a lot of these figures this shows you how bad I am in art and

this is a figure that is my son had an exam so you couldn't help me but so this is just a schematic representation of absorption bands and for something like CO_2 for instance you'll have a bunch of absorption bands you know and they're they're discrete and they come down to zero and there's no there's no absorption then though there'll be another band then so you get bands that's never continuous for gas now if you look at the emissivity of carbon dioxide and now we'll look at it as a function of temperature and I'll just look at one pressure well what the log of the emissivity looks like according to Stefan's law right this should move at the fourth power of the temperature so as the temperature went up this curve should be going up but in reality if you look at this authoritative book on radiative thermometry you'll see that the emissivity of carbon dioxide actually drops with temperature it doesn't go up and this is true at all pressures so if

you go to this text you'll actually see a whole bunch of lines you know a whole bunch of lines all dropping here and each line will have that will be for a specific pressure so the emissivity of a real gas drops with temperature here's water pressure water vapor the same thing the emissivity does not follow Stefan's law for a gas the emissivity drops with temperature and again you can have a whole bunch of lines here and each at a different partial pressure of a water pressure vapor pressure now how about solids solids emit radiation in a continuous manner their total emission usually does not follow Stefan's law except in the crudest sense in materials like graphite soot or other near ideal absorbers in all other cases the behavior of the emission as a function of temperature is highly erratic and polished metals tend to have a low emissivity value now this is important for the people looking at the Sun because sunspots have low emissivity and that is just a related to

their high ability to conduct so
different materials if I say okay I'm
going to have different solids well the
way that the light looks like is all
going to be different each material is
going to have is going to give you a
different spectrum okay
so different materials emit light with
varying features which change as a
function of temperature so what are we
describing here an absolute mess right
nothing is universal here all materials
are different right so how did Kirchhoff
come to tell us that things were
universal if you look at the spectrum of
aluminum oxide powders or silicon oxide
powders you'll get spectra that look
like this whereas some free at some
wavelengths there's essentially knowing
it nice and then they'll come up and wow
they have almost perfect immittance over
a very small range okay but this is not
a blackbody spectrum so materials real
materials really vary look at graphite
of course I made this slide myself again
now if you look at graphite for instance

okay you'll see that even when I talk I
said well graphite we can treat it as a
perfect absorber or a perfect emitter
and actually it's true at some
wavelengths graphite can be pretty good
but different graphite comes from
different minds and those different
minds will give you different
emissivities okay so you can have
graphite with terrible emission at
certain frequencies essentially zero
it's not emitting out there okay
so even for graphite it doesn't work
very well

now here's one frequency though at 0.66
a whole bunch of forms of graphite at
point six six micrometers you see that a
whole bunch of forms of graphite
actually give you an emissivity that's
not too bad

you know 0.9 we're getting in close now
in Kurt Ross today what did he used to
do well he made his boxes and then he'd
line him with soot people used to use
blood lampblack in those days they just
took the soot from the lamp and that was

such a good absorber okay so soot has a structure very similar to graphite and that's what they use they coated everything which stood their cooker monitors their black bodies there the whole Lab was covered in soot okay so obviously everything became universal they busted needed a maid I don't know okay so now modern physics believes that blackbody radiation is universal and this is a restatement of Kirchhoff's law so let's restate Kirchhoff's law states that within a cavity the ratio of emissive and absorptive powers is independent of the nature of the cavity walls and Max Planck wrote according to Kirchhoff's law now this is critical for physics because Planck is about to give birth to quantum physics here according to Kirchhoff's law this radiation is independent of the nature of the radiating substance and therefore has universal significance now he's not talking about the universe although we could be it could be anywhere in the universe but he's

actually talking about from material to material it doesn't matter make me a cavity and you're gonna have black radiation inside of it yet if kirchoff's law was actually valid is it actually valid and do arbitrary cavities that we make in the laboratory do they really contain black radiation if so why is it that all our laboratory black bodies are always constructed from nearly perfectly absorbing materials so obviously it cannot be true kirchoff's law can not be valid or else we'd be making black bodies out of silver this is also important there is no proper mathematical proof of kirchoff's law now this has been true in in a paper and he ends his discussion by saying well then Einstein came along and then we get kirchoff's law well unfortunately remember I told you I 9 used a radiation field and that was a Wiens field and that field was a blackbody field and it came from a blackbody saying you can also read these papers that discuss these issues but

remember black bodies are always made from nearly perfect absorbers of radiation or the frequency of interest now let's look at Kirchhoff's law a little bit we're going to consider two cases so if I look at the law you saw it this is a right on the one of the very first slides and now we're going to consider two cases we're going to look at a perfect absorber where the emissivity is 1 the absorptivity is 1 and then we're going to look at the perfect reflector where we don't have a Mississippi absorptivity but we have reflectivity as 1 so this is a perfect reflector all they could do is reflect now when I do this now remember in physics they tell us well we can assume that that epsilon is one that we do that all the time we always assume you can get 1 we have an ideal blackbody let's assume it can be 1 well let me assume that it could be 0 when I put a 0 in there this becomes undefined so this equation doesn't work so the problem is that

the true equation which is not shown in this slide but I published in a in another paper it's just it should be $\epsilon + \rho$ divided by $\kappa + \rho$ is equal to some function of temperature frequency the nature of the material and anything else you want to add into it now do cavities really contain black radiation now if you look at some astronomy books they always have this example lots of storing books have this example they give us a nice spherical cavity ok and they say look would make a very small hole in it and the radiation that comes in once it comes in it's trapped and it can't come out so therefore the radiation and it must be black well this is a fallacy because if it can't come out it never came in now let's look at this argument now this argument actually I gave a talk at the American Physical Society in Denver two weeks ago it was a poster and in front of my poster there was a discussion of this case and the professor who was

discussing it with me we left in a discord because he couldn't understand the point so let me go and explain the point now so astronomers say look I'll prove to you that every cavity contains black radiation okay so what they do is they say okay on the Left I'm going to take a real black body it's going to be an ideal black body

okay we know it has black radiation in that one now the question is does this one have black radiation in it okay now I'm gonna take an ideal blackbody this is gonna be perfectly absorbing wall and I'm gonna make another cavity with a perfectly reflecting wall but now I want to keep my radiation from going into space in other words I don't want this wall to be radiating out here right so what I'll do is I'll take this black lining here and that's gonna be an adiabatic barrier adiabatic is a big word but it only it only means no heat will go through that wall okay heat is prevented from going through that wall in any form so all the energy of this

system is contained within it it cannot go into the universe same with this one all the energy contained is within it and it cannot go into the universe but now this is a perfect reflector so their question is does this have black radiation in it well the argument that the astronomers make is look if I put these two cavities together and they're at the same temperature now they say these are at the same temperature when we begin okay when I put them together photons are going to come from the cavity on the left into the right that means that photons from the right cavity must go into the left one or else the temperature of the left cavity would drop and they're already at the same temperature so that cannot be allowed under the laws of thermodynamics under the zeroth law we can assume that there's another body out there also at the same temperature the zeroth law involves three bodies so because this temperature cannot drop that means that photons must come from

the right cabbie and go into the left
okay that's the argument that's used in
astronomy but unfortunately that's not
correct because the problem is is what
have you built here you've made a cavity
out of a perfect reflector right and you
put an adiabatic wall around it right so
where's the energy well if you can't put
it in the phonons in the wall and you're
not sure that there's radiation here you
don't even have the same temperature
you can't even characterize this this
cavity with a temperature so here's
another insight now I'm going to take
cavities surrounded by adiabatic walls
and they're now truly going to be at the
same temperature because now what I'm
going to assume is instead of building
cavity to out of a perfect reflector
instead of building cavity to out of the
perfect reflector that's just an
adiabatic wall I'm gonna build it out of
something that's like silver and I'm
gonna say this is gonna be a real
material and when I put these together
what happens is when they're at the same

temperature as soon as a photon wants to come from the left cavity into the right a phonon moves from this wall directly into this one and creates the photon again so what happens in this experiment is you just redistribute the energy you create black radiation in this cavity but it never had any initially and the temperatures do not change so this is the correct way to look at it so cavity one is transforming phonon energy of cavity two into photons the energy or temperature of the system of each system remains constant

now here's another little experiment and you know what since I'm running out of time I'll just tell you that you can take a perfect box and you could read this paper is a very simple paper and the citation is here you could just read this paper I take a perfectly reflecting cavity I take a perfectly absorbing cavity and you can prove that the radiation inside the perfectly reflecting cavity will not follow kirchoff's law but we'll skip it because

we don't have time for it so arbitrary
cavities do not contain black radiation
that's absolutely false
so what is strength what is kirchoff's
box well remember when he was in his lab
coated his box with soot well what he
had discovered is he had made a
transformer of light he wanted to know
what the temperatures of the objects was
he'd put the objects inside the cavity
and then they would occur liberate with
the walls and once the equilibrated this
the spectrum started looking like the
graphite spectrum but there was still
impurity because the the object could
directly emit light right so let's
refine it a little bit and now put
cavity the hide the object over here and
put some put some soot covered walls
inside now the only photons that will
come out will be photons from the soot
if you let this come in thermal
equilibrium with the cavity now you
always get black radiation so what
Kirchhoff had done is he had figured out
a way to take any object he didn't know

his temperature if he put it in the cavity let them to come to thermal equilibrium and took the spectrum he would know the temperature so he had made a transformer of light so here's an example if I take an aluminum oxide chunk I put it inside a cavity we'll assume that there's walls here it goes from the aluminum spectrum to the blackbody spectrum but what if I put it in a perfect reflector well if you put it in a perfect reflector you can wait all day but you're always gonna get aluminum oxide because that's a perfect reflector so it can never transform this spectrum but then this is what Planck does throughout his work if you read heat radiation Planck's in love with a carbon particle he keeps putting it everywhere inside the problem he wants to put a little carbon particle in the box so what cutt playing what Planck does is he always uses a perfectly reflecting enclosure okay it's perfectly reflecting now he knows in the lab that that doesn't work so what he does is he

says now just ensure that I have the
right radiation I'm gonna go ahead and
put a little piece of graphite in here
and as soon as he does what has he done
he's just put a perfect emitter inside
this box well it's going to become in
thermal equilibrium with this aluminum
oxide right let's make this a silver box
put this guy on the floor put that guy
on the floor there temperatures go to
equilibrium and this starts dominating
all the radiation now you get a
blackbody spectrum so as soon as you put
a perfect absorber and I can show you
this mathematically in one of my papers
as soon as you put a
perfect absorber inside the box you now
govern everything because guess what
this thing is perfect that's as if you
had line the whole cavity with graphite
so Planck had written it is therefore
possible to change a perfectly absorbing
radiation which exists at the start of
an evacuated cavity with perfectly
reflecting walls under consideration but
by the introduction of a minut particle

of carbon as a result Planck came to see the graphite particle as a catalyst in fact it was acting as a perfect absorber it was as if the experimentalist had lined the entire walls of the box with graphite as a result both Planck and Kirchhoff had left the perfectly absorbing cavity yet Kirchhoff and Planck should have considered the case of the perfect reflector as a separate case this was a serious error which resulted in Planck believing that his equation could be applied universally so in conclusion Planck erred when he assigned to graphite the role of a catalyst in fact graphite was a perfect absorber and Kirchhoff and Planck had never left the perfectly absorbing cavity so they can't speak about all cavities all arbitrary cavities having black radiation they never left them right they never left the perfectly absorbing cavity so consequently Planckian radiation is actually absolutely dependent on their state

nature of the emitting object graphite
smoke soot and carbon are still used
today to make black bodies now all black
bodies are always limited to solids
since only they can be perfect absorbers
and can be near-perfect absorbers and
unlike liquids they cannot sustain
convection now this is important
Planck's equation remains the only
fundamental equation in physics which
has yet to be linked to physical reality
Planck couldn't link it because Kershaw
had told them the radiation is
independent of the nature of the walls
so don't look for the cause it's
independent of the nature of the walls
so it was never linked this is a direct
result of Curtiss error we must explain
why a thermal photon is being produced
as a result of the temperature of an
object
this still hasn't been done it's sorry
whenever in physics or chemistry we have
light okay so whenever in physics and
chemistry we have the production of
light we always have to have five

components these must always be defined
we have to have a setting we have to
have the nature of the energy levels we
have to have the nature of the
transition species the equation which
describes the process and finally the
absorption of light so what am I talking
about let's look at the Lyman series
which the astronomers use all the time
the setting is the atom actually the
hydrogen atom what's the energy of the
the energy levels what's the electric
atomic and orbitals right what's the
nature of the transition species it's
the electron everybody knows that what's
the equation is the Ryberg equation with
the Rydberg constant and what's the
production what's the production of
light eventually the Lyman series so
everything is defined very clearly how
about an NMR my discipline well the
setting is the nucleus and now we have
to be fussy we have to take this nucleus
and it has to have spin and we have to
put it in a magnetic field what's the
nature of the energy levels it's the

spin energy levels what's the nature of
the transition species it's a spin
there's an equation describing the
process it's a llamar equation and
finally after all that we get the NMR
lines bah bah bah Planck
what Kirchhoff told us that it's setting
doesn't matter so we don't know the
setting so everything can produce black
radiation the Big Bang the Sun a gaseous
Sun everything can produce it right the
nature of the energy levels are not
defined they've never told us what the
transition species is all we have and
this is all directly because of
Kirchhoff's the first three are missing
because of Kirchhoff all we have is
Planck's equation and the blackbody
spectrum so that Planck's equation has
not been linked is a direct result of
Kirchhoff's era now I have a little joke
here if there's any black hole in
physics that's it
now so I've advanced there is a solution
to this problem because I'm living in
the graphite world I want to live in the

perfect absorber that I know will
produce a spectrum pretty close to a
blackbody so what do I want the setting
I want a nearly perfectly absorbing
solid something like graphite because
that's the closest or soot they have
similar structures so it's not something
very close to that what's the nature of
the energy levels it's probably the
vibrational energy levels within the
lattice so we need a lot Asst you cannot
get a blackbody emission unless you have
a vibrational lattice now that is a big
requirement because there's none in the
Big Bang and there's none in the gaseous
Sun what is the nature of the transition
species well we know that in physics
it's usually always the electron it's
always the electron causing light but I
suspect that in black radiation it's
actually a vibrating nucleus within a
lattice field and then of course we have
the other known too so there's some
consequences here some of them are
positive we are currently portraying
physics as if we understand everything

okay

but in the end the emissive properties
of all cavities are directly dependent
on the nature of the materials involved
okay so that has enormous consequences
not only in real material work but in
theory remember I keep saying the equal
partition theorem is not valid this has
enormous consequences okay that means
that within the material again what you
get the distribution of energy within
that material will depend about what
receptacles it has to take the energy
and that depends on the type of material
you have there is no universality in
cavity radiation and as such the concept
of Boltzmann and Planck are not
Universal in nature and this has
enormous consequences throughout physics
each material must be characterized by
its own constants and its own variables
and finally by admitting our
shortcomings we give hope to our
children that they too can contribute to
the advancement of scientific thought
and discovery now I've written a lot on

kirchoff's law these are some of the
papers this last one just just came out
I want to acknowledge my son for most of
the drawings in this presentation except
the bad ones the sketches of Kirchhoff
and balford Stuart came from Bernadette
I also want to thank my department for
supporting me the editorial staff of
progress in physics where so many of my
papers have been published for accepting
my work and I want to close with this
followed up by Max Planck we cannot
order men to see the truth or prohibit
them from indulging in error thank you
very much

Welcome to Space News from
the Electric Universe,
brought to you by The
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Today we delve more deeply into a
highly promising ongoing investigation
in the Electric
Universe community.

In the previous episode, physicist Eugene
Bagashov introduced the analysis
he and several others in
the community have conducted
into the evidence for the pervasiveness
of a type of electric current,
called a Birkeland current
within or nearby our
cosmic neighborhood.

Of course when electric currents can't
be directly measured by space probes,
the task of inferring their
existence in space is complicated.

Eugene and his colleagues have
followed Dr. Donald Scott's model
of the structure of
a Birkeland current.

In Part 2 of this four-part presentation, Eugene outlines in finer detail what he and his colleagues have found to date. In the previous video, we've discussed Dr. Scott's model for cylindrical Birkeland currents and have hypothesized that one major example of such a structure around us might be represented by the so-called local chimney; perhaps with more localized sub filaments on smaller scales inside it. But at the same time, at least one argument against such an idea might be made. If these are indeed strong electric currents, why don't we actually see them? In particular, where is any synchrotron radiation from them? And moreover, if there are strong magnetic fields in this structure, why can't we observe them in some way? The answer to the first part of that question lies in the fact that these are most likely force-free field-aligned currents,

just as the ones analyzed

in Dr. Scott's works.

What that means is that

the electric currents

are in all points of this structure

parallel to the magnetic fields.

So this is a minimal energy configuration

with little to no electromagnetic stress

and therefore as the charged particles

are not accelerated by the magnetic fields

but rather move right along them,

no significant synchrotron

radiation is being produced.

This is just a plasma current

in dark mode and that's it.

The second part of the

question is a bit trickier.

At first we should consider the main method

of detection of magnetic fields in space.

It rests on the so-called Faraday

effect, or Faraday rotation.

Without getting into the

physical reason for that effect,

as it is slightly complicated,

we might just say

that the Faraday effect

causes the rotation of the
plane of polarization of light.

That is the directions in which
the electric and magnetic field
of an electromagnetic
wave are oscillating.

And for it to happen, we should have
some medium in a magnetic field in it.

The effect is only valid for the
component of the magnetic field
that is parallel to the direction
of propagation of the wave.

But the most important property
of that effect in our context
is that it is reversed, if one
reverses either the field direction
or the direction of
propagation of light.

So, if we now consider again the structure
of the Birkeland current filament
as follows from

Dr. Scott's model,
what we see is the cylindrical
shells where each consecutive shell
has the magnetic field that is reversed
with respect to the previous one,

which would mean that
indeed any such shell
would change the polarization
of light to some degree.

But as the light enters the next
shell with an opposite magnetic field,
we get the opposite change which effectively
eliminates any change that took place
as light passed through
both of these layers.

In that way we might argue that any
Faraday effect would be virtually absent
and the best we might count on is seeing
some much weaker background magnetic field
that the filament as a
whole is spiraling around.

Well, let's assume then that we can't
directly detect the currents themselves,
then what can we detect to at
least recognize their presence?

One of the possibilities here might be
represented by plasma refraction of light,
that is bending of light when it
interacts with the charged particles
that carry the current itself.

Previously the works of

Dr. Gupta and Dr. Dowdye

have shown that the bending of light in plasma might alter the trajectory of light rays, and among other things, imitate the hypothetical gravitational lensing of light.

It might be expected therefore that the areas with higher current density in the Galactic neighborhood of the solar system might also impact the measurements of the direction of propagation of light.

In general, any inhomogeneity in plasma distribution would introduce various errors if not properly taking into account.

Let's look at some examples of that.

One well-known technique of the distance estimates to the nearby stars and clusters is the parallax method.

So, the parallax method is based on the idea that as the Earth moves around the Sun, we might observe the same star at slightly different angles, as our own position and space changes.

From this angular difference one may geometrically

determine the distance to the star,

or in principle any other object.

This angle is usually very small

as the stars are very far from us.

The largest parallax angle is

obviously observed for the nearest star,

Proxima Centauri,

as it apparently moves in the sky

the most as we proceed in our orbit.

And even that angle is only

about 0.76 angular seconds;

that is about two

tenthousandths of a degree.

However, the precision of modern observational

methods based on space telescopes

in principle allows us to measure parallax

angles as small as about 10 micro arc seconds,

which corresponds to distances of

tens of thousands of light-years.

But let us now

consider the situation

when the space between us

and the star is not empty,

but rather filled

with refracting plasma.

In this case, the reading of the

parallax angle might be distorted,
and the parallax determination of
the distance would be erroneous.

One of the famous examples of that is
the so-called Pleiades distance problem.

So, according to modern astronomy
it is possible to determine the
distance to Pleiades cluster
at least in two different ways.

First, one might do that by
looking at smaller stars in it
in infrared wavelengths,
determine their brightness, or correctly
speaking, the absolute magnitude,
and then compare that to the apparent
brightness or apparent magnitude
and get the distance measurement.

Applied to Pleiades, this procedure would
return a result of about 435 light-years.

And second, one might utilize the
current theory of stellar operation
and estimate the mass from
the surface temperature.

Then, if we're looking at some
binary star system in that cluster,
we might track their orbits.

Since before we
estimate their masses,
we might find the real size of
the orbit from Kepler's laws
and thus find the distance to them
from simple geometrical considerations.
In that way, the distance to the cluster
was estimated to be about 430 lightyears.
But the problem appeared when these estimates
were compared to parallax measurements,
especially the ones performed
by the Hipparcos satellite.

The satellite did measure the
parallax angle of the cluster,
but the according distance turned
out to be only about 385 light-years.

Moreover, some later
analyses have shown
that Hipparcos systematically gives smaller
distances for many other stellar clusters.

The later measurements made by the Hubble Space
Telescope and radio telescopes from Earth,
using the very long baseline
interferometry method,
seem to discount
Hipparcos data also.

And, finally, the new Gaia satellite essentially using the same technique as Hipparcos, has also acquired the result which is inconsistent with Hipparcos.

This seems to have ended the debate, basically meaning that something is wrong with Hipparcos itself.

Although one could argue that the difference could have been caused by different statistical processing of the results.

In particular Hipparcos data was analyzed using a weighted mean of parallaxes for different stars in the cluster, when there seems to be a correlation between distances and distance errors for stars in it.

The later estimates were made using an unweighted mean for separate stars in the cluster.

Another source of discrepancy could have been the various methods of measuring the parallax itself.

Hipparcos and Gaia were measuring the
so-called absolute or direct parallax,
whereas Hubble and radio
telescopes from Earth
have been measuring the so-called
relative or differential parallax,
basically taking some distant objects
right behind Pleiades as a reference point.

So we might assume that the
differences in these readings
and the need of invoking different statistical
procedures for the stellar clusters
might have been caused by the
refraction of light in plasma
in the Pleiades cluster
itself or on the way to it.

Moreover, there might
exist a certain dispersion,
that is the dependence of the
refraction amplitude on the wavelength
so that the radio telescope data might
introduce additional shifts of position
with the respect to
visible range observations.

The importance of plasma bending of light for
Pleiades in the framework of our hypothesis

might be reinforced by the fact that this cluster is situated in the constellation Taurus, the line-of-sight to which lies somewhere close to the axis of the local chimney.

So, if there is indeed an enhanced current density at the center of the chimney column, it is not surprising that the objects observed in that area of the sky would demonstrate some anomalies of that sort.

Perhaps it is worth noting that earlier works have also demonstrated some correlated erroneous readings for the Hyades star cluster which is also situated in Taurus.

Another prominent example of suspicious parallax measurements would be Polaris, the pole star.

Various parallax measurements of Polaris made in the last two decades have been steadily returning incompatible results.

The according distances range from about 330 to about 800 light-years, which doesn't seem to be very precise and consistent.

And there are some
other examples like that.

All of them might be related to the behavior
of plasma in the local interstellar chimney
and nested cylindrical shells of current and
sub-filamentary structures on smaller scales.

In the case of Polaris,
as Jim Weninger argues,
even the smaller scale Birkeland current
filament that is connected to Earth's North Pole
might be the cause
for the discrepancy.

I have certain doubts about that, but it
sounds like an interesting hypothesis anyway.

The importance of both Pleiades and Polaris
in astrophysics and cosmology is very high.

The Pleiades represent
a model star cluster
and the properties of stars in it
that we infer from our observations,
are directly related to
the distance to the cluster.

And Polaris is a
so-called Cepheid variable star.

Cepheid variables
are widely used in astronomy to determine

the distances to various objects

as it is assumed that we

know how exactly they work.

In particular, it is assumed

that there is a direct relation

between their pulsation period

and their absolute luminosity.

And Polaris is the

closest one to us;

so if we don't know

the distance to it,

all the other distances determined

through Cepheids should also be questioned.

To get a proper reading of that

distance, we need to firstly figure out

the proper arrangement and properties

of plasma structures in our vicinity.

ELEGANT SIMPLICITY

In the sciences,
that's the Holy Grail.

As mysteries arise seek out the root
causes, the gems in the rubble pile,
and then even the rubble
will begin to make sense.

Is it gravity that drives
the universe forward?

Within the space sciences, that's
long been a foundational assumption,
not to be questioned.

But is it true?

Or is there a deeper level at which gravity
itself is an effect, not a first cause.

Day-by-day this question
rises to the surface,
even taking center
stage on occasion.

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Universe, brought to you by
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It is a fact known to any high school
student, electric currents produce
magnetic fields.

Incredibly, this law of physics is
virtually nowhere evident in the
so-called Standard Model of the universe.

It is therefore no surprise that many
so-called baffling discoveries in the
space sciences have involved the
detection of magnetic fields at
virtually all scales throughout the
universe. A Universetoday article from
2011 describes the conundrum for
astronomers. It states, "The mention of
cosmic-scale magnetic fields is still
likely to be met with an uncomfortable
silence in some astronomical circles -- and
after a bit of foot-shuffling and throat-
clearing, the discussion will be moved on
to safer topics. But look, they're out
there.

They probably do play a role in galaxy

evolution, if not galaxy formation, and are certainly a feature of the interstellar medium and the intergalactic medium." In recent years one of the great mysteries in astrophysics was the detection of astonishingly powerful magnetic fields in so-called young galaxies. A 2008 report on such a discovery reads, "Astronomers have made the first direct measurement of the magnetic field in a young, distant galaxy, and the result is a big surprise.

Looking at a faraway protogalaxy seen as it was 6.5 billion years ago, the scientists measured a magnetic field at least 10 times stronger than that of our own Milky Way.

They had expected just the opposite." But what is the cause of these magnetic fields?

The answer to this question, which we revealed in the opening statement of this report, remains elusive for astrophysicists. Today, increasingly fine data across the entire electromagnetic

spectrum only deepens the astronomical mysteries. Recently, scientists in Germany, using the Hubble Space Telescope, have detected extremely strong magnetic fields in the quasar which is believed to be about 4 billion light-years from Earth. The magnetic fields were measured at 200 million Gauss. In comparison, the strength of the magnetic field at Earth's surface is only about one Gauss.

The scientists state that the magnetic fields are very close to the quasar's theoretical central black hole and they suggest that the magnetic fields play a role in expelling matter from the black hole's accretion disk.

However, how confident should astrophysicists be in their ideas about magnetic fields in space or their belief in the existence of black holes.

Scientists from the university of Göttingen in Germany have detected, for the first time, the existence of very strong magnetic field of 200 million Gauss immediately next to a supermassive black hole in a quasar four billion

light-years distant. As a comparison, the magnetic fields on Earth are measured in the range of one Gauss.

The report states that, "The existence of such magnetic fields could explain why so much of the matter, which happens it to enter into the surroundings field of a Black Hole, still manages to escape." Now years ago I was at a meeting of professionals

where leading astrophysicists admitted, "When we don't understand something we blame it on magnetism!"

But what that leading astrophysicists didn't say is that astrophysicists don't understand how the magnetic fields are generated!

If you have a look at Scholarpedia on the web and it says and I quote, "The origin of the first magnetic fields in the universe is still a mystery"

and it goes on, "It calls for a mechanism to sustain and organize the magnetic field." Of course mysterious dynamos are called upon to provide these magnetic fields.

You'll notice in astrophysics that these dynamos are in fact inside the Earth, inside the Sun and now inside galaxies but no one knows how they work, they've never been shown theoretically to work so they remain mysterious.

Meanwhile, plasma cosmologists have shown both theoretically and experimentally that the magnetic fields in galaxies are due to electric currents flowing into the centers along the spiral arms of the galaxy.

Now when the current reaches the center of the galaxy

it is twisted into a plasmoid where all of the electromagnetic energy is stored until that plasmoid becomes

unstable and ejects matter in jets along the galaxy axis, as observed. And all of

this was published and is easy to read

in Eric Lerner's book, *The Big Bang Never*

Happened. In plasma physics the plasmoid

is the most concentrated form of electromagnetic energy known.

You can store the energy of a room full

of capacitors in something a few

millimeters across, the tiny donut-shaped plasmoid. That plasmoid of course, to contain that energy, has an intense magnetic field itself generated just by the electric currents and the way they twist themselves together.

So this discovery confirms the plasma cosmology model.

This means of course that black holes are mathematical fiction.

Now at our Electric Universe conferences in the past year or two,

Steve Crothers has shown that the mathematics of black holes is nonsense; that the most significant argument against them is that the mathematics invoke a universe where there is no other matter,

it exists on its own, they can be no other matter in its universe.

If you want to have a simple explanation you could look at his paper called, Black Holes, Unicorns, and All That Jazz. At the heart of all of this is the problem that physicists themselves don't understand magnetism, gravity or mass

so this talk about what's going on in the centers of galaxies is complete nonsense.

I'll be talking about all of these subjects and particularly "The Long Road to Understanding Gravity" at my presentation at the Electric Universe conference this year in Phoenix, in June.

There's a great deal of evidence against Black Holes from other observations that have been made in recent years, one is the idea that these massive gravitational concentrations called Black Holes will cause gravitational lensing.

Now, the stars orbiting the so-called supermassive black hole at the center of the Milky Way have been observed over a number of years and they orbit this so-called Black Hole at high speeds and their orbits have been tracked but in no case has there been any evidence of gravitational lensing of those stars.

Another thing that was observed recently and was tracked was a cloud of gas and dust which was approaching the center of the Milky Way, the so-called black hole,

and it was expected to be gobbled up by the black hole but that didn't happen and that was a surprise.

The point is, it's not a black hole and therefore the forces in action there are not purely gravitational as this research has just shown.

Like the theoretical wormhole celebrated in the recent blockbuster film

"Interstellar", black holes are a beloved staple of science fiction and popular science media routinely present the theoretical Black Hole as a science fact.

How might the general public form independent opinions on such a complex and arcane subject?

The public is at a disadvantage with science reporting these days because it's done by press release and the original papers which present the data are usually interpreted in such a way as to make these assertions and assumptions real objects. We have artists' impressions of black holes, we have artists' impressions of all kinds of things in space --

none of which are images of something that has been actually observed. As Einstein once said but didn't actually follow; the ideas of the most important thing, not the mathematics, and yet the ideas are often not well organized logically or well expressed so that the public can be misled. But not only the public, the scientists themselves mislead themselves.

The Electric Universe, on the other hand, follows the tradition of classical physics where there is a freewheeling exchange of ideas and those ideas are organized into a coherent big picture, something which makes sense of a widely disparate set of information from different disciplines. The Electric Universe has not been surprised by any of these surprises for astronomers and astrophysicists simply because it starts from a much bigger picture, it accepts empirical evidence from plasma cosmologists, which astronomers unfortunately ignore, and the result is that we have been able to predict things in advance and to accommodate new

information and actually find

confirmation in new information week by
week, as it comes in.

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In our very first jointly published article some 40 years ago, Dave Talbott emphasized the theoretical scientific importance of anomalous mythological motifs. Quote "Ancient statements appearing to contradict elementary experience or logic are key to discovery." End of quote. The ancient testimony and artwork surrounding the divine thunderbolt is anomalous from A to Z and impossible to square with present reality. Far from being a fairy tale deriving from our ancestors experience of a terrestrial thunderstorm, the Thunderbolt was a heaven-spanning structure of awe-inspiring splendor and stupendous power, one which likely endured for generations and played a pivotal role in all ancient mythologies. Creation itself, according to numerous traditional accounts of the event, traced to the primordial coupling of a thunderbolt and the mother goddess. Thanks to numerous variations upon this globally attested mytheme, the catastrophic events in question can be reconstructed in great detail shedding

much light on the historical evolution
of the polar configuration and the
thunderbolt's manifold forms.

Perhaps the most famous example of this
archetypal mythological theme is
the lurid tale told by Euripides in the
opening lines of the *Bacchae*, wherein Zeus couples
with Semele in the form of a fiery thunderbolt. Quote,
“Semele brought to bed by the lightning-
fire.” End of quote. According to
Greek tradition, the thunderbolt not only
impregnated the maiden thereby producing
Dionysus, it killed her instantly.

Now here is a most peculiar idea, in
what sense is it possible to understand
a thunderbolt as an impregnating or
fertilizing force? A vestigial remnant of
this archaic theme is evident in the
legendary stories that grew up around
Alexander the Great. In Plutarch's life
of Alexander the conniving Olympias, the
Macedonian general's mother, is said to
have been visited by a thunderbolt on
the eve of her wedding night. Quote, “The
night before the consummation of their
marriage, she dreamed that there was a

crash of thunder, that her womb was struck by a thunderbolt, and that there followed a blinding flash from which a great sheet of flame blazed up and spread far and wide before it finally died away." Strange as it must seem to modern readers, analogous traditions will be found around the globe. The Norse thunder god Thor, much like Zeus, was celebrated for his prodigious powers of fertility.

Thus it is that Thor's thunderbolt Mjolnir served as a fructifying talisman, hence the famous passage in the Eddic poem, Thrym's Song, wherein it is stated, quote, "Bring the hammer the bride to wed, place Mjolnir in the maiden's lap."

As Hilda Davidson documented in her compendium of Norse lore, such ideas hark back to ancient conceptions of the thunderbolt as an impregnor or fecundator, survivors of which persist well into modern times. Thor himself was frequently invoked at weddings, the gods thunderbolt forming a familiar accouterment of many a bridegroom's attire. Quote, "In certain parts of Norway and Sweden, it continued

to be the custom for a bridegroom to
bear an ax at the wedding long after
Thor was forgotten; the weapon was said to give
him mastery, and also to ensure a fruitful union.”

It will be noted that Thor's thunderbolt
was here conceptualized as an ax rather
than a hammer. Very similar ideas are
attested in ancient Lithuanian where
Perkunas's thunderbolt axes were commonly
regarded as agents promoting fertility.

Quote, “In Lithuania, the ax as a
life-stimulating symbol, is laid under
the bed of a woman in labor; or the sill
to be crossed by the newlywed couple...

During sowing, axes were thrown into the field.” End
of quote. Here too, it is obvious that no farmer in
his right mind would ever view the fiery
thunderbolt as a life-stimulating
talisman. Hence the profound puzzle
presented by these widespread belief
systems. Analogous conceptions
are found already in ancient India.

Witness the following hymn from the Rig
Veda dedicated to the thunder god Parjanya.

Quote, “The winds blow forth; the lightning
bolts fly. The plants shoot up; the sun

swells. Refreshment arises for all
creation, when Parjanya aids the earth
with his semen... (Parjanya) come nearby with
this thundering, pouring down the waters as
the lord, our father. Roar! Thunder! Set an
embryo!" Here the thunder god is implored to
inseminate mother Earth and implant an embryo in
her womb. Perhaps the earliest attested example of
this archetypal motif is to be found in
Spell 148 from the Egyptian Coffin Texts,
circa 2000 BC. There it is reported
that a thunderbolt or meteor fell from
heaven and impregnated Isis. The fall of
the thunderbolt resulted in Horus being
implanted within its mother's womb. Quote,
"Isis wakes pregnant with the seed of her
brother Osiris." End of quote. I.e., Horus
himself, the soon to be king of the gods.
To return to the question posed at
the outset of this inquiry, how is it
possible to understand the ancient tradition of
the thunderbolt as impregnator or fertilizing agent?
One can search the world's corpus of
scholarly books devoted to ancient myth,
and never find even the first glimmerings of an
answer to this question. Horus's identification with

the planet Mars provides the all-important clue. As I have documented elsewhere, Mars is everywhere identified as a meteor-like object that fell from heaven. The Babylonian God Nergal for example, expressly identified with the red planet, was invoked as “miqit isatu”, denoting the “fall of fire” from heaven. Equally telling is the fact that the same phrase is employed to describe “lightning” or “meteor.” Analogous conceptions were associated with the planet Mars in the New World where the Skidi Pawnee explicitly likened the Morning Star to a falling meteor. Quote, “Now they sang of the origin of the Morning Star itself that they thought had come from a meteor.” End of quote. The same basic idea is evident in the Skiddy belief that, quote “The power of the Morning Star is the fire- impelling stone.” We know the Skiddy Morning Star was explicitly identified with the planet Mars. Granted that Mars was indeed conceptualized as a meteor-like celestial body by indigenous peoples around the globe, how does this finding help us understand the archaic and seemingly universal belief system,

whereby a thunderbolt meteor impregnated

Venus, and thereby sparked creation?

According to the historical

reconstruction offered here, the myth in

question encodes the close approach of

the planet Mars to Venus during one of

the most spectacular phases of the polar configuration.

Moving from outside the general vicinity

of Venus, the red planet seemed to fall

like a meteor into the center of Venus.

In reality, Mars was then on an orbit

between Venus and the Earth and appeared

like a tiny orb at Venus's belly. Looking

up from Earth, Mars appeared to be

nestled within the body of Venus. As

the red planet appeared to enter the

visual outlines of the much larger Venus,

it was conceptualized as impregnating it.

Or alternatively as implanting an embryo

within the mother goddess's womb. Hence

we would understand the Egyptian

tradition of a heaven-sent thunderbolt

impregnating Isis-Venus. The Vedic

tradition of the thunder god Parjanya

implanting an embryo in the belly of

the mother goddess, finds a similar

explanation. So too we would understand the mythological role of Thor's thunderbolt as fertilizing force or as located within the mother goddess's belly. Such traditions encode the extraordinary conjunction of Mars and Venus, the sacred marriage that sparked creation. It goes without saying that the planetary scenario outlined by Dave Talbott and myself requires that Mars formally appeared in front of Venus, an impossibility in the present sky, whereupon the red planet always moves on an outer orbit far removed from Venus. Yet, as we have emphasized again and again throughout this series of videos, it is the so-called "impossible situations" that are the key to discovery, as they would never occur to terrestrial sky watchers around the globe, without the stimulus provided by the natural events reconstructed here. And the fact that Mars's placement within Venus is impossible given the current arrangement of the solar system, actually serves to make the reconstructed planetary configuration the decisive test case in evaluating the

predictive power of the present
historical reconstruction against that
postulated by orthodox science. We
rest our case, confident that our
understanding of recent Earth history
will be vindicated in the coming decades.

[Music]

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
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A new scientific study could radically
change our view of the Sun.

It seems that the Sun is
not behaving as it should.

Scientists have recently
created what they call
an MRI of the Sun's
interior plasma motions.

For decades, solar physicists have
believed that at the Sun's core
is a superheated
thermonuclear reaction.

This theory requires a massive
transport of thermal energy
to the Sun's surface
through convection.

But the results of this study indicate
a virtual absence of convection,
just 1% of what a thermonuclear
core would require.

How does this affect our

understanding of the Sun?

The thermonuclear model requires several things to be going on which don't appear to be going on. One is, there's supposed to be a radiative zone inside the Sun and then above that, a convective zone.

And, of course, the radiative zone is purely speculative.

It's only required by the model, there's no evidence for it.

And the convective zone is also speculative, based on the granulation seen on the surface of the Sun that was interpreted as being the tops of convection cells.

But the fact that they've discovered very little convection, means that both the theory of the granulation, the theory of the generation of magnetic field and the theory of transfer of

energy from the center of the Sun,

all of these are in peril.

And I would say that

what we are seeing

is the demise of the

standard model of the Sun.

The absence of the

expected convection

is just the latest in a long string

of surprises for solar physicists.

There are many anomalies, in fact, the

very magnetic fields above the Sun

and the very hot corona,

none of these have been

properly explained.

There've been a lot of arm waving

about energy as somehow transferred

from inside the Sun to the outside

without affecting the photosphere.

Because this is what's required, but this

is a really weird kind of model.

We've got 16 million degrees

on one side of the photosphere

and tens of millions of

degrees up in the corona

and sitting in the middle is the

5,000 to 6,000 degree photosphere.

And it's required very, or sort
of, extreme speculation as to
how you would ever get that
energy out of the Sun?

And there's been no
satisfactory answer.

Thornhill points to a
different model of the Sun
which relies on the
principles of plasma physics.

Well, the Electric Sun is, energy
received from outside the Sun
in the form of an electric current
lighting up the ionosphere of a body
which is no different to many of the
other bodies in the Solar System,
only it might be much larger.

And so, we're looking at the top of
the, very top of the atmosphere
like the ionosphere of a body
like, say Jupiter or Saturn.

Because of the electrical energy
coming in, it's lighting up
like any of the new gas discharge
electric lights that you see

in car HitLights and so on.

So that's what we're looking
at, it's just an electric light.

I think the theorists have to
begin to look at plasma physics,
real plasma physics,
the physics of electrical
discharges in low pressure gases
and forget about thermonuclear
models at this stage
but concentrate on plasma
discharge phenomena.

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[Music]

The planet Mars is alive with geophysical activity.

The term 'geophysics' literally means the study of planet Earth's physical processes.

For planetary scientists, the idea of such processes occurring on Mars, was once highly improbable, if not unthinkable. Mars has no coherent global magnetic field. It has a very tenuous atmosphere, only about one half of one percent as dense as Earth's and it is said to have no tectonic plates. And yet for nearly half a century, scientists have puzzled over the surprisingly dynamic activity on Mars, including its towering dust devils, its planet-engulfing dust storms, its mysterious aurorae and, perhaps most surprising of all, the recent discovery of at least hundreds of seismic events which remain unexplained. A new scientific paper, published in the Geophysical Research Letters, analyzes the largest Martian quake detected to date.

The quake registered a relatively astonishing magnitude of 4.7.

Astonishing, because as described by seismologist John Clinton, the energy

released by this single Marsquake is equivalent to the cumulative energy from all the other Marsquakes we've seen so far. The best guess planetary scientists have offered at this point, is that the quakes may be connected to hidden volcanic activity, inside or deep below the Martian crust. However, seemingly lost in the discussions of the Marsquakes is the challenge they clearly pose to long-held assumptions in Earth seismology. It has long been considered a settled fact that tectonic plate movements cause earthquakes. And yet Mars has no tectonic plates, demonstrating that the mechanism is not required for seismic activity. As those who have followed the Thunderbolts project have long been aware, for decades a number of scientists have proposed that the Earth- Sun connection plays a major role in triggering earthquakes. Some of the evidence that seems to support this view, includes the apparent correlation between sunspot activity and earthquakes. Along these lines, it's been proposed that changes in the geosphere result from a temporary intensification in the Earth's magnetic field.

This might begin to explain a host of strange phenomena that have been observed for many centuries preceding large earthquakes, including mysterious low-frequency electromagnetic emissions; rapid unexplained changes in the ionosphere; major temperature anomalies seen in satellite images; the observation of so-called earthquake lights from ridges and mountain peaks; and unexplained animal behaviors; including migration several days before a destructive earthquake. As early as 2003, Dr. Friedeman T. Freund addressed these anomalies in the scientific paper, 'Rocks that Crackle and Sparkle and Glow: Strange Pre-Earthquake Phenomena', Dr Freund proposes an explanation for earthquakes that would actually place the phenomenon in the realm of semiconductor physics. In the paper, Freund states that rock acts like what is known as a p-type semiconducting material when placed under stress. Deep within the Earth quote "Positive holes are liberated and flowed to the Earth's surface, collecting there without being reabsorbed, which is the proposed mechanism behind earthquake lights."

In the 2013 paper, 'Nature of Pre-Earthquake Phenomena and their Effects on Living Organisms', Dr. Freund offers this simple summary of his hypothesis, which could explain some of the anomalous earthquake related animal behaviors.

"Earthquakes are invariably preceded by a period when stresses increase deep in the Earth.

"Animals appear to be able to sense impending seismic events. During buildup of stress, electronic charge carriers are activated deep below, called positive holes." "Positive holes have unusual properties: they can travel fast and far into and through the surrounding rocks. As they flow, they generate ultralow frequency electromagnetic waves. When they arrive at the Earth's surface, they can ionize the air. When they flow into water, they oxidize it to hydrogen peroxides. All these physical and chemical processes can have noticeable effects on animals." In the Electric Universe, the electrical nature of the Sun itself provides the missing link between sunspots and earthquakes.

The Sun is connected to the larger electrical circuitry of the Galaxy. And the same electric discharges to the Sun that cause sunspots, can affect our planet's ionosphere. As physicist Wal Thornhill explains in

his 2005 article, 'Electric Earthquakes',
"The ionosphere forms one 'plate' of a
capacitor, while the Earth forms the other.
Changes of voltage on one plate will
induce movement of charge on the other.
But unlike a capacitor, the Earth also
has charge distributed in rock beneath
the surface. And if the subsurface rock
has become semi-conducting because
of stress, there is an opportunity for
sudden electrical breakdown to occur through that
rock." Thornhill has proposed that underground
processes occur similar to those found
in atmospheric lightning. The small-scale
traveling of charge results in precursor
electromagnetic effects, perhaps similar
to the so-called 'stepped leaders' between
cloud and ground with lightning. However,
larger earthquakes may involve a vast
electric circuit from below, through the
atmosphere, to the ionosphere. In other words, Thornhill
argues that the Earth stores internal electrical energy
which can trigger subterranean lightning,
which may cause deep earthquakes.
In this view, massive disturbances of
the ionosphere accompanying major

earthquakes, are expected. The Martian environment is of course very different from Earth's.

On our planet, Birkeland Currents entering the poles, spark aurorae and modify Earth's magnetic field. However, as stated earlier, Mars has no coherent global magnetic field.

When solar storms strike Mars, the result is sometimes a global aurora.

As we've discussed previously on this channel, in recent years, scientists have observed other dramatic atmospheric and quote 'geologic events' which have coincided with impacts from solar proton storms at Mars. For a number of years, astronomers have puzzled over dramatic dust plumes sometimes seen erupting at up to hundreds of kilometers into Mars's upper atmosphere. As we reported in 2016, scientists studying Hubble Space Telescope images of Mars found an apparent correlation between one such plume and the likely arrival of a CME at Mars. However, no mechanism exists in standard planetary science to account for the dramatic phenomenon. As described in a New Scientist report on the discovery,

"One possibility is that plasma could be interacting with ice grains or dust lower down in the atmosphere and electrically charging them, boosting them higher, but it's not clear how the effect would be big enough." Likewise, the planet's towering electrified dust devils and tremendous global dust storms remain mysterious in mainstream planetary science.

However, the Electric Universe has always stated that the Martian ionosphere is electrically charged, even though Mars has no thunderstorms. This Viewpoint was outlined in a 2005 TPOD, "When Dust Storms Engulf Mars", "On Mars, electrical effects will reach directly from the ionosphere to the surface without the ameliorating leakage via storm clouds that we see on Earth. Unlike radiant energy from the Sun, electrical energy can accumulate in the 'planetary capacitor' for some time, with a potential for planet-altering events when the atmosphere finally 'breaks down' and massive discharge activity is initiated."

On Mars, as on Earth, could an electrical circuitry from beneath the ground, to the atmosphere, to the ionosphere be driving seismic activity? Of course, the Martian environment is

still alien to scientists on Earth. So
from any vantage point, surprising
revelations are to be expected. However,
the discovery of seismic activity on a world
which is acknowledged to have no
tectonic plates, is not a surprise to
proponents of the Electric Universe.
But it might serve as a call to planetary
scientists to begin exploring theoretical alternatives,
such as those offered by the Electric Universe.

[Music]

[Music]

[Music]

As I explained in the first episode of this story arc “Playing with New Thinking”, scientific activity doesn't begin with observation, as commonly thought. It begins with expectations of making sense of selected observations with particular general presumptions or world-views. I'll call these presumptions ‘Key Presumptions’ after James Hutton's 18th century proposal that the present is the key to the past. Traditionally these expectations of making sense have been called metaphysics. Meta meaning beyond, or after physics, because it's concerned with a critical evaluation of physics. Metaphysical keys set the cognitive framing which selects observations, and constrains one's thinking about the possible interpretations of them, to a manageable size. The selected observations are then considered to be evidence. With a different presumption, a different metaphysical key, the set of possible interpretations for observations will be different. The evidence will be different with each

key. The possibility of different keys is what allows for what is called, in popular discussions after Thomas Kuhn, paradigm shifts. In this episode we'll be playing with Key Thinking. An awareness of plasma behavior reveals Hutton's Key to be temporal provincialism. How long a time span will demarcate the present. Plasma events appear to follow a power law distribution. Many small, lower energy events that happen often, and a few large higher energy events that happen rarely. A global event, say an ultra-energetic solar flare with catastrophic consequences that occurs only once in a thousand years, will not be included in a mere century-long definition of the present. That temporal provincialism will be especially emphasized if there are political and psychological incentives to preserve, or to rebel against a domineering organization, or a tradition that justifies itself with myths that have no representations in the present. A present that includes rare high energy processes will raise doubts about the accepted interpretations of observations. The accepted theories, the expansion of the worldview that underlies the

theories to include larger, faster and more intricate possibilities, will overturn them. The geological record, a key interpretation of otherwise ambiguous observations, will be shredded by processes that disrupt atomic decay rates, and that may deposit geological strata in multiple distorted layers at once.

The collapse of long time, a related key interpretation will open up evolutionary thinking to such ideas as fast, stepwise speciation.

A present that includes high energy plasma events, will also provide naturalist interpretations for a large quantity of evidence from prehistory that heretofore has been dismissed as unintelligible.

For example, petroglyphs around the world depict 80 some similar forms. If they depicted sunrises and hunting and thunderstorms, they would be explained by our present theories and we would think no more about them. But they depict alien things: squatter figures, duck-headed humanoid figures, strange geometric figures, and so on. A common speculation for their origin is that the ancient artists were hallucinating.

But why would ancient artists around the world have similar hallucinations, and only during a similar era of prehistory?

Whatever forms the petroglyphs represent haven't been seen since. Until today.

They appear as instabilities and pulse power discharges in plasma laboratories.

When the photographs of the instabilities are enlarged to a similar size, they overlay the petroglyph image almost exactly. With our new instruments we know that the magnetospheres, sheaths in plasma terms, of Earth and the other planets are laced with electrical circuits.

Many are connected to the Sun.

Flares can bump up the power in them to cause magnetic storms and auroras and power grid blackouts. Infrequent flares with an order or more greater magnitude of power, which have been observed on other Sun-like stars, could cause breakdown discharges similar to the pulse power ones in labs, but on a planet-sized scale. The instabilities would appear in the sky and last for days. The collateral damage to the planet and its creatures would discourage artists from

documenting the events with texts or paintings, and suggests the more permanent technique of pecking the images into rocks.

But Hutton's key doesn't allow such possibilities, so the evidence is excluded from allowable selections of observations. Here's another example.

Myths around the world tell similar stories with similar themes and characters. If they told of sunrises and hunting and thunderstorms, they would be explained by our present theories and we would think no more about them.

But they tell alien stories. Sky gods waging wars, warrior heroes hurling thunderbolts, dragons.

A common speculation for their origin is that the ancient storytellers were hallucinating, but why would ancient storytellers around the world have similar hallucinations, and only during a similar era of prehistory? Whatever events the stories are telling haven't been seen since. Until today.

They appear as instabilities in pulse power discharges in plasma laboratories.

The twisting and pulsing plasma discharges that last only several nanoseconds at a laboratory scale, could

last for days or weeks at a planetary scale.

The evolving forms would be dramatic for small soft creatures like humans caught up in them. If the witnesses had no scientific discursive prose with which to describe their experiences, but only anthropomorphic, dramatic poetry, they would make mythic poems to memorialize the events.

Before Irving Langmuir began experimenting with plasma, it was called radiant matter.

Langmuir borrowed the term 'plasma' because the behavior of radiant matter reminded him of living processes. Scaled up to auroral dimensions, plasma discharges would appear as giant luminous living creatures, fighting dragons and each other in the sky.

The events among the sky gods would be especially impressive if they were accompanied by thunderbolts hurled to the ground, and by upheavals in the earth.

But Hutton's key doesn't allow such possibilities, so the evidence is excluded from allowable selections of observations.

There are many similarities between petroglyph images and mythic themes:

Axis Mundi figures and myths, columnar

forms and ladders to heaven, concentric wheels and so on. The similarities of images suggest a similarity of phenomena. Plasma discharge instabilities. This opens the possibilities of the past to the idea that prehistoric people in the age of myth-making, may have experienced upheavals of the earth.

Entire cities may have been destroyed by blasts from heaven; plasma discharges from space, as the ancient people testified. They may have witnessed mountains, melting like wax; and rivers of fire, carving valleys; and seas overflowing entire regions.

That's what the ancient writings say they witnessed. We should respect what people say about their origins, even if we don't understand it.

With the key of plasma behavior, the range of allowable evidence is larger and more inclusive.

Petroglyphs and myths become explainable as manifestations of a physical phenomenon: planetary scale plasma discharges.

But caution is warranted. We think in metaphors by noticing similarities among experiences, and carrying the logic of the source experiences over to the similar experiences. However, metaphors not only

highlight similarities, they also hide dissimilarities. It's easy to overlook the dissimilarities, to mistake the similarities for identities, and to conclude that we know it all. This applies not only to myth and plasma, but also to gravity and planets.

That gap in the metaphor between similar and identical, constitutes an essential epistemic uncertainty in what we call knowledge. If that uncertainty is imbued with trauma-induced terror, it will generate a compulsion to believe, or to disbelieve, that we know more, or don't, and with greater confidence than is justified.

We tend to turn our attention away from the question of how we know, with its essential uncertainty and often unconscious metaphysical keys, and to place an unquestioning belief in what we claim to know. A more appropriate criterion for metaphors than truth with its implication of universality and absoluteness, is aptness.

The similarities must be tested and the domains of aptness discovered.

For example, the metaphor of gravity theory, carried over from Newton's

alleged experience of a falling apple, becomes
inapt when used to explain galactic motions.

On the other hand, the metaphor of plasma
instabilities may be apt for explaining
hitherto unexplainable commonalities
between petroglyphs and myths.

Awareness of plasma behavior not only
reconfigures what we think we know about
today's events, but also illuminates a
prehistory that has been shrouded by the
inertia of our prior beliefs and blind spots. This
turns the uniformitarian metaphysics on its head:
the past may be the key to the present.

Ancient glyphs and myths may be a key to
unlocking a presentist prejudice.

A criterion of aptness for science,
instead of truth, recognizes its provisionality and
counteracts the tendency to believe in theories as if
they were religious dogmas. My interest here is not so
much in what those events, memorialized in petroglyphs
and myths, might have been or on how they
might be explained, but in how we think about
them. We perceive orderly patterns
that suggest the possibility of
intelligibility, of composing a coherent
narrative that will make sense of them.

How could those patterns of evidence
be interpreted so as to fit in with, or
modify, as many of other observations
as possible? How many of the other
observations could be, or should be, re-selected
and reinterpreted with different metaphysical keys?

Could the new interpretations enable us
to do things; to invent new processes and
to build new gadgets; and to create
new values that would improve our lives?

The next and final episode will bring
this entire story arc to bear on our
daily lives today. We should never think
that we've arrived at a final thought. We
should never stop asking, 'what else could it
be?' We should never take ourselves and our
thinking too seriously. We should
never stop playing with thinking.

[Music]

Albert Einstein is a cultural phenomenon. He has enjoyed scientific celebrity status for decades. He also has a lot of critics, although you don't hear too much about them from Popular Science sources. Ironically, I sometimes wonder if he would be more sympathetic to his detractors if he were still around today. And I say that in all seriousness. "I am no Einstein" he once joked in response to the adulation that began in his lifetime. According to Wikipedia – yes, I know – the German-born theoretical physicist is widely ranked among the greatest scientists of all time. Despite his cult-hero status however, growing numbers do not even regard him as a scientist, let alone great. The clue is in the two words 'theoretical physics'. This rests almost entirely on mathematical modeling, unlike classical science which emphasizes experimentation and observation. Quote, "As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality." Close quote, Albert Einstein. To summarize this philosophical viewpoint, one common among critics of Einstein and apparently Einstein himself, "Math should be ancillary, not dominant." Making science subservient to mathematics is putting the cart before the horse, let alone hubristic. Just think epicycles, where the mathematical model can make accurate predictions up to a point, yet fail to reflect the underlying

reality. Heavier-than-air flight was also considered impossible a little over 100 years ago, and they had the math to prove it. The importance of mathematics is not denied. Again, the point is that the math should follow the science, rather than building the science on idealized mathematical models and selectively interpreting data to fit. Furthermore, current models rely on three variables to balance the equations - equivocations, some might say - dark matter and dark energy are the oft-cited Achilles heel of pop science. They remain undetected after decades of searching despite allegedly comprising roughly 90% of the universe. Those who pretend there isn't any debate to be had on the dominant role of mathematics and science have a problem. But don't take my word for it. Quote "Physics is mathematical not because we know so much about the physical world, but because we know so little. End quote, Bertrand Russell. Quote, "Today's scientists have substituted mathematics for experiments, and they wander off through equation after equation, and eventually build a structure which has no relation to reality." End quote, Nicola Tesla. Oh, and here is another one from Einstein himself, quote, "Since the mathematicians have invaded the theory of relativity, I do not understand it myself anymore." End quote. Even if you think Einstein had his tongue planted firmly in his cheek at the time, I would suggest that many a

true word is spoken in jest. Philosophical issues aside, Stephen Crothers has done a fine job exposing the flaws and leaps of faith in so much math-based cosmology. A preeminent mathematician, he is counted among the most competent critics of general relativity, the Big Bang and black holes et al.

Quote, "Hawking was a pop scientist who ipso facto contributed nothing of value to science. Einstein was the first pop scientist; promoted sometime or another by that other entertainer, Charlie Chaplin. Hawking and the Einstein cult have ruined physics and astronomy, turning them into circus freak shows." Science cannot just wait until they all disappear. Whilst they are active, they are ruining young minds entering science, to be caught up in the same rat race, producing more pop scientists. The cycle must be broken." End quote, Stephen Crothers. Too bad that, for the time being at least, complex and esoteric math shield so much institutional science from robust scrutiny. Quote, "If you can't explain it simply, you don't understand it well enough." End quote, Albert Einstein. Isaac Newton admitted he did not understand the mechanism behind gravity and had to settle for describing it mathematically. Quote, "But hitherto I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypotheses." End quote, Isaac

Newton. Einstein solved this problem by factoring in time as an additional dimension, the fourth dimension resulting in alleged spacetime curvature. But has he effectively replaced a mathematical description with a mathematical abstraction? Quote, "There is no model of the theory of gravitation today, other than the mathematical form." End quote Richard Feynman. In classrooms today, Einstein's solution is sometimes illustrated by rolling balls around on suspended blankets with the smaller balls being attracted to the larger mass in the middle, as if falling into the well of spacetime. This self-evidently relies on gravity as its own explanation. It's a classic case of circular reasoning. Time dilation is often cited as conclusive evidence for special relativity. But could bias confirmation be the significant factor here? In 1972 Hafele and Keating performed experiments that purported to confirm special relativity. The evidence was derived from the differences in time recorded by cesium clocks transported in aircraft moving east and west. However, the results have been contested. Louis Essen for example, the inventor of the atomic clock, published an article in which he discussed the inadequate accuracy of the experiments. Essen concluded that the theory was no more than a bunch of contradictory assumptions, together with actual mistakes. It is important to add a caveat to the above. When time contraction and length dilation can be observed, it

doesn't necessarily lend credence to the fantastical
spacetime framework. Quote, "Poincare's advancement of
Lorentz's ether is mathematically indistinguishable
from 'Special Relativity,' while being utterly opposed
to Minkowski's diagrams and formalization
of 'isotropic constancy' found in the
spacetime metaphysics regime." End quote, Anti-
Relativity.com. GPS is often cited as conclusive
proof for general relativity but this is a fallacy too. but
According to this 1996 paper published by the GPS joint program
office, quote, "The operational control system (OCS) of the
Global Positioning System (GPS) does not include the rigorous
transformations between coordinate systems that Einstein's
general theory of relativity would seem to require." End
quote. Adjustments are made, but this is because clocks at
high altitude tick faster resulting from variations in air
density, not gravity. The air is denser closer to the Earth's
surface. Atomic clocks are also sensitive to temperature
and pressure changes in their orbit. In addition to
dark matter and dark energy, black holes are also talked
about today as if they were real. Consensus scientists
who describe them as one of the most successful
predictions of relativity choose to ignore the fact that
Einstein dismissed the idea. In a 1939 paper from the Annals
of Mathematics, he concluded that the black hole hypothesis
was not convincing and the phenomena did not exist in the

real world. The paper is now hidden behind a paywall, but there is also a reference to it at History.com. Bizarrely, theoretical physicists describe black holes as points with zero volume, infinite density, and infinite mass. Think about that. Does this concept sound credible, or more like another mathematical abstraction? Claims that a black hole has been pictured for the first time at the center of Galaxy M87 are at best contentious. The straightforward plasma focus approach makes more sense on every level. Einstein coined the term “spooky action at a distance,” latterly referred to as “quantum entanglement.” It seems that one particle knows something about another particle instantaneously over a vast distance. This phenomenon is problematic because it breaks the speed of light barrier, supposedly the upper speed limit of the universe. Because it contradicts special relativity, Einstein was compelled to issue a traffic violation. Quote, “I cannot seriously believe in it because the theory cannot be reconciled with the idea that physics should represent a reality in time and space, free from spooky action at a distance.”

End quote, Albert Einstein in a letter to Max Born 1947.

SAD - Spooky Action at a Distance - has been confirmed post Einstein. As a result, we have seen numerous attempts to

reconcile it with SR - Special Relativity - by the mathematical mysticism known as quantum physics. Quantum superposition conjectures that particles can exist in different states simultaneously. Much like the criminal who claimed to be at home when he was seen robbing a store. Science fiction can't hold a candle to it. That much is certain. But I'll take a step back. I'm not saying quantum physics is entirely without merit, just that it's highly speculative too.

To be fair to Einstein, he was a modest man and a reluctant hero. The truth is that others ran with his ideas, and ran, and ran. Today they are still running around like dogs sniffing each other's butts. Typical of this breed is the British Professor Dr. Brian Cox who made the seamless transition from pop star to pop scientist. He was a keyboard player with D:Ream in the '90s. They had a UK number one hit with "Things Can Only Get Better."

I'm not saying Cox is any worse than any of the other talking heads paraded on television today. But things really don't seem to be getting any better. Daring to question relativity remains an anathema, and doing so is liable to draw comparisons with flat earth quackery. Cox is the UK's answer to America's Neil deGrasse Tyson. Several

luminaries regard him as the best man to front

BBC scientific programming moving forward.

Which reminds me of Fred Hoyle's famous words. Another former

Royal Astronomer, Hoyle was critical of peer review and the

graduate school system and their abject failure to encourage

independent thinking. Prophetically, he summed it up: "The

road ahead is hammered out!" Quote, "Unthinking

respect for authority is the greatest enemy of truth."

End quote, Albert Einstein. A famous line from

Shakespeare's Twelfth Night seems apposite: "Some

are born great, some achieve greatness, and some have greatness

thrust upon them." I submit that Einstein belongs in the

latter category. He was more victim than genius at a time

when science took a wrong turn and mathematical modeling

began to take precedence over traditional

empiricism. Doubt is supposed to be at

the heart of good science. The funny thing is though,

while Einstein's fan club hang on almost every word he

uttered, they ignored his many doubts.

The last word belongs to him, but

quote, "You can imagine that I look back

on my life's work with calm satisfaction.

But from nearby it looks quite different. There is not a

single concept of which I'm convinced that it will stand firm,

and I feel uncertain whether I'm in general on

the right track". End quote. Albert Einstein.

[Music]

Future Science

Future Science

Of course, I can't

foretell the future

but what I can do is

provide some ideas

which may form the revolutions in technology

and so on that we may expect in future.

First I've got to set

a bit of context,

we need a bit of perspective.

Science today and this...

just a moment, see if I

can pick up at the top,

it's okay...

this is a doctored picture from the 'March

for Science' which you'll all remember,

occurred a few months ago

where all of the scientists came out

and marched on the political capitals.

I doctored this si.. this sign.

The problem really here is,

what were they marching for?

You know the march for science

boiled down to the concern

that future funding of science

projects will be cut or redirected.

I don't think there's any clear
idea of what science really is,
we seem to have lost that.

The point is that science
is never "settled".

And yet we hear an awful
lot about settled science.

Science being settled
suggests it's going nowhere.

Of course, the placard there says
that we want a theory of everything
and of course we want it now.

The other aspect of that is that
that so-called theory of everything can be
focused right down and put on a t-shirt.

Now, that's the exact opposite
of everything in my opinion
because the Electric Universe is about
an expansive picture of everything
which you cannot
fit on a t-shirt.

Just a few little problems
that science faces.

We don't understand
why matter has mass.

and yet we have built an umpteen-
billion-dollar Large Hadron Collider
to try and find out.

The very question
hardly makes sense
because if the electrons and the
protons that make up matter
have no mass, they
can have no energy,
they can have no structure
and we know that's not true.

Energy is undefined.

Einstein took care of that
because he gave us
nothing to measure it by.

Gravity isn't understood.

Now I am going into that again
because I've settled off already.

But of course, when I say
gravity is not understood,
that's the basis of
modern cosmology.

So modern cosmology is not worth
the paper it's not written on.

Time is not understood.

I mean, Einstein thought

a clock was time

and Steve Crothers pointed

out the stupidity of that.

And the result is of course that the

language of science has become meaningless.

Those people who can stomach watching

science programs on television...

I've attempted occasionally but after

having sat through a few minutes of

being able to pick holes in almost

every sentence that's uttered,

I give up!

Yet we have the hubris to think we are

prepared for this theory of everything.

Here's settled science, they

look pretty settled.

This is the math magicians'

conference in Brussels October 1927.

A very famous picture,

it's full of famous men.

Right there, center

front row is Einstein.

Now, he stopped us

from doing physics

because he removed the

standards of length and time.

They became malleable,

they become rubbery.

In fact, Salvador Dali admitted that

he was inspired by Einstein's work

to paint his melting clocks

and his weird landscapes.

And on, in the second row on the

right hand side is Niels Bohr

and he introduced quantum theory

which divorced

cause and effect.

So he crippled that

aspect of science as well.

So we stopped doing

science about this time.

Science, so science has been

"settled" for almost a century.

It's technology that has made our

existence starkly different.

You know, the past was a different country,

they did things differently there.

Today, the difference is

all due to technology.

But technology advances

without the science.

It bootstraps itself.

The better instrumentation you
build, the better rockets you build,
using as a basis
the old technology
but doing it better, has got
us to where we are now.

So most of the science
required for modern technology
was invented before this
photograph was taken.

Think about that.

Now Faraday's work, Ampère, the people
who worked on electromagnetism, Maxwell,
all of these people more or less produced
the requirements for modern technology.

But of course, scientists have to
show something for their existence.

So they claim the credit for
advances in technology
which is generally tinkering with things in
the laboratory, finding something that works
and then building better
mousetraps and selling them
as a new product.

We are being treated like
lab rats as a result.

And you can see
this in every field;
in medicine, in food production,
in pharmaceuticals, in radio smog...
I remember attending an IEEE
meeting in Canberra some years ago,
and the concern with mobile
phones then was that
is the radiation from the phone
sufficient to heat the cells,
just heat by the way,
so that it could cause damage to
the biological molecules in a cell?
There's no thought that there is something
more going on in a cell than just chemistry.
Of course, we're suffering the
cost and the consequences
both in our health and the
impact on the environment that we're having.
So the things we
must first learn,
this is a picture
from the new movie
that was shown on the National
Geographic Channel on Einstein.
That's Geoffrey Rush, an

Australian actor playing Einstein.

Now, Geoffrey Rush is very good

at getting into the character

so he read everything

he could about the man

and he described Einstein

as the 'glorious daydreamer.'

Well...

Einstein, the 'glorious daydreamer,'

wasn't so glorious at physics or math

as Steve Crothers

has pointed out.

He disconnected mathematical physics

from real standards of measurement.

Mass, energy and time are undefined in terms

of matter in motion relative to a standard.

This is why the, I insist

on defining these terms.

The energy is matter in motion

with respect to the fixed stars.

In other words, to the

rest of the universe.

Also, light is a wave in a medium.

Then unfortunately, the ether got

lost sometime around about here.

It is not a massless

particle, it is not a photon.

Multiplying zero by infinity to
give you a number is idiotic.

The universal gravitational
constant, so-called,
and 'c' the speed of light,
are not universal constants,
'c' is not a speed limit for
the transfer of information.

In fact, when you talk
about the speed of light
you must have a standard
to measure it by
but Einstein removed
that standard.

There's a consequence, now they define the
meter in terms of the wavelength of light
which is in other words,
requires you know the speed of light.

So it's a circular argument.

They've made sure that
'c' remains constant
simply by defining the
standard of length.

This is pretty tricky.

Also as I said, quantum mechanics

must have cause and effect
and particle physics must apply
these lessons and start over again
almost from scratch.

Here's the real genius of the
20th century in my opinion,
the psychoanalyst and
polymath Immanuel Velikovsky.

I took this photo on the
date shown in Princeton.

He recognized a, what he
called a, "desire not to know"
about chaos in the
celestial order.

It may explain the
delusional belief in order
and control of nature
through mathematics
and of course we heard the
story about Harlow Shapley
and how he wanted perfect
order in the solar system
and of course was one of those most
hostile to Velikovsky's attack.

It may also explain the
religious conviction of science

and the academic book burning of Velikovsky's
best-selling *Worlds in Collision* in 1950.

In other words, in my opinion, to have a
future requires a real human cosmology.

We have to be included.

It's not good talking about black
holes and dark matter and dark energy
and all of that nonsense.

We have to be central

to the cosmology,

otherwise it has

no meaning for us.

And that involves us really

understanding our past.

And it was Velikovsky who provided the

forensic keys to future cosmology,

to the Thunderbolts of the Gods

and to the Electric Universe.

So some Electric Universe rules;

It goes back to classical science

before Einstein and Bohr destroyed it,

its principles and simplification that

guides the Electric Universe model.

It's a strange thing that the more I

understand about the history of science

the more I understand that there's

practically no (idea,} new idea under the Sun
if you look hard enough.

And I think those other
scholars in the audience
and Electric Universe
aficionados know that.

When you do take the trouble
to go back in history
you find people who have had
those ideas in the past.

So the Electric Universe is a synthesis
of those ideas — and that is new.

Modern science tends to have no interest
in anything beyond a few years old
because that's all been
done, that's settled.

I should say that this big picture
here is done in the form of a puzzle
simply because this is
how I've approached it
looking for the bits and
pieces to put together.

But the Electric Universe
therefore by doing this
is a bigger picture than any
before and fewer missing pieces.

Of course, this is all my doing,
this is what I took on many years ago
having been inspired by Velikovsky
and this is why I
encourage others,
many of them have
been up here speaking,
to propose new pieces or
point out misplaced ones.

So technology rules, okay?

Technological advances are often
claimed to be scientific advances.

This forward button tends to
be rather hard to get on with.

The technology bootstraps itself
building ever better mousetraps.

If only the science was
advanced as the technology
because the basic science behind the
engineering of the Large Hadron Collider
is about 100 years old or more.

It relies on electromagnetic
theory and so on
which has been known for
that length of time.

And as I said, the notion that mass is

caused by a "cosmic treacle" particle

(of Higgs pink pigs) is cranky.

It is cranky, it fulfills the

definition of cranky science.

So is the gravitational

wave detector

which was pulled apart by

Steve Crothers the other day

and fusion energy "like the Sun."

As the SAFIRE project,

I hope, is about to say.

That's better.

I showed this slide, I

think it was last year,

the simplicity,

Elegant Simplicity of the Electric

Universe was the title of my presentation.

But this particular slide shows you

just how cranky particle physics is

because this is an explanation

of what a proton is

according to an expert,

Professor Matthew Strassler.

He says, 'imagine

all of the quarks

because protons are supposed to be

made like J.J. Thomson's plum pudding model,

out of these weird pieces, quarks.

Up, down and strange

denoted by u, d and s;

anti quarks up down... \bar{u} , \bar{d} and \bar{s}

with a bar on the top; and gluons (g)

zipping around near

the speed of light

and banging into each other and

appearing and disappearing.

And of course the notes go on to

say that the gluons themselves

also contribute to the

mass of the proton

and these particles wink

in and out of existence

which of course defies one of

the principles of physics.

So this is,

and the, of course you've got

the ultimate let-out here

because quarks are

unobservable in principle.

So this is just a story.

And here's the fellow who looked at

the sociology of this behavior

and said there is no obligation on
anyone to take any notice of any of it.

So I choose to do that.

Now Edwin Kaal told me about what
he was working on a year or so ago
and I encouraged it because this is an extra
simplification over the model of an atom.

And that is to have no
neutrons in the nucleus

and that makes an
awful lot of sense

because how do you hold a whole lot of
positively charged particles together
if all you do is stuff a few
neutral particles between them?

That is not going to work.

But if you put an electron
between two protons,

on average the force between the
protons and that central electron
is four times stronger than the
repulsive force between the two protons
because of the
distances between them.

This can be a stable arrangement
which is the basis, I think, of

Edwin Kaal's attempted model

to reproduce the

the periodic table.

I think it's excellent

and I think it shows

great promise

and I feel it's on the

right track, intuitively.

...I've just said that

and that...

This results in a resonant

geometric structure.

There is no need for

an extra strong force.

This is, a very bad habit that physics has

introduced in the last hundred years,

is more forces and more particles in the

hope of getting a Nobel Prize, I expect.

So only two particles are needed

to build all of the elements.

I like that.

What about the neutrons?

We know they exist but we only

know they exist outside the nucleus

as a short-lived dance between

a proton and an electron

in the kind of a relationship

they have inside the nucleus.

And that makes sense.

And the fact that a neutrino is involved

in the final breakdown of the neutron

tends to suggest that it's a neutrino that

may be responsible for radioactive decay.

The present radioactive decay

is a statistical thing.

In other words, the cause

and effect are disconnected.

So I think the neutrino

is involved in this.

Light is simply an electrical wave

in a polarizable medium — the ether.

No imaginary photon is involved.

Get rid of it.

You can't have a wave or a particle

just depending on your whim.

And the receiving atom is one that

happens to be tuned to the sending atom

through the instantaneous

electrical resonance

between their constituent

subatomic particles.

That's the same thing as saying

you have quantum entanglement between
the sending and the receiving particle.

So when the energy wave
arrives at the speed of light,
you happen to have an atom that is
perfectly set to receive that energy
and once it's done so, because all matter
in the universe is connected instantly,
no other particle can take it
because this one's accepted it.

That's a simple way of
looking at it anyway.

This so-called 'quantum entanglement'
currently has no explanation, of course.

Gravity, and this is from the BBC
General Certificate of Secondary
Education, GCSE, website for schools
and this is what they
say about gravity,

'It pulls objects on Earth towards
the center of the planet.

It holds the Earth's
atmosphere in place.

It holds all the components of the
solar system in orbit around the Sun
and holds all the components

of the galaxy together.'

Well, this is not a good
start for students.

The Large Hadron Collider can't tell us why
inertial mass is equal to the gravitational mass
because particle
physics is a mess.

It simply assumed that
Newton's law of gravity
applies all the way to
the center of the earth.

I remember over the decades
after I left University
there were several occasions when
anomalous readings down deep mine shafts
resulted in the suggestion that there's
a fifth force or a sixth force
to explain these anomalies
instead of thinking,
hang on a minute,
maybe we don't
understand gravity.

The balanced dipole model of gravity
has the field reversing at depth.

And also cosmologically.

And I've talked about this so I'm not

going to go into any detail here.

The repulsive aspect of gravity dominates
and provides a balanced universe
which is what Halton

Arp's research demands.

So there is no Big Bang and
collisions tend to be avoided.

The electrical nature of gravity
provides a feedback mechanism
essential for forming and stabilizing
orbital planetary systems.

Because it's a bit [inaudible]
...that didn't sound good...

The electrical nature of gravity
provides a feedback mechanism
essential for forming and stabilizing
orbital planetary systems.

Because one of the big issues with Velikovsky's
recent history of the solar system
is that you had a chaotic
system, say 12,000 years ago,
or in his case he was talking about
you know only 3000 - 4000 years ago
and here we have this
clockwork system.

How the heck do you do

that? Gravity can't do it

at least through the

conventional view.

The electrical exchange of charge

between the Sun and the planets

and their cometary tails which tend to

stretch from one planet to the next

gives you a means of adjusting

their masses electrically

that is their gravitational fields

and I've been through this before

but it shows that the inner

planet, when they pass,

if the sun's here and one planet's

here and the other one's out here

when this comes around here and the

tail of this planet reaches this one,

if they're close a lot

of charge is transferred

and the two planets move apart.

And they keep doing that until they

hardly affect each other at all.

And if one tends to

diverge from its orbit,

the other one will tend

to shift it back again.

So there is this feedback mechanism which
is essential for a clockwork mechanism.

Plasma cosmology is a central
part of the Electric Universe
and Hannes Alfvén said, There's
one great branch of physics
which up to now has told us
little or nothing about astronomy.

That branch is electricity.

You won't find any reference to
electricity in the back of a textbook
on astrophysics or astronomy.

He says, it's rather astonishing
that this phenomenon
which has been so exhaustively
studied on the earth,

(principally by him)
has been of so little help
in the celestial sphere.

Electricity has illuminated our cities
but shed no light on stellar phenomena.

It has linked the earth with the
dense net of communications
but has given no information
about the universe around us.

Nobody paid any attention.

Astronomers don't
attend the lectures
or the presentations or the symposia
of the electrical engineers
who are now carrying the
torch for plasma cosmology.

The Sun

Our understanding relies
on century-old assumptions
which don't predict any of
the features of the Sun
and that was one of the
things that caught my eye
when I read Ralph Juergens' article about
the Sun for the very first time.

Because a moment's thought

I said, yes he's right!

There are huge problems with
the thermonuclear model.

They're glossed over.

'The corona is like a flame
coming out of an ice cube,
it doesn't make any sense,'
one scientist said.

Iron increases in the corona with
increasing solar magnetic activity.

Why is that so?

What is the Sun doing?

We know there are nuclear reactions
coming, occurring at the Sun.

I'm not saying in the Sun.

Because of the neutrino telescopes
that have been able to see
the haze of neutrinos
in its vicinity.

And iron is one
of those elements
which would suggest that the iron is
being formed right in front of our eyes.

And of course, we've seen
the presentation on SAFIRE
and that gives you an idea why we're so
interested in those heavier elements
appearing in the spectrum of some
of the material on the anode,
our electric Sun.

And if we're right, this could,
this will revolutionize our understanding
of nuclear physics and energy production.

Space Science

The New Horizons mission to

Pluto was a technological marvel

that finally completed the imaging of
significant bodies in the solar system.

Pluto was the very last.

Of course, it's no longer a planet
so I had to say significant bodies.

It took 4 years to launch and a team
of only 50 people were involved,
that's pretty incredible.

It's the fastest spacecraft ever
launched on an Atlas V rocket,
it took one and a half seconds
to clear the 300-foot tower,
15 seconds to punch through
the 10,000 foot clouds.

The second stage reignited
over the Middle East
and the craft could have
reached the Moon in 9 hours.

Apollo astronauts took 3 days,
gives you some impression.

Alan Stern, I attended a meeting
about three weeks ago
at the National University where he
and another, one of the team members,
presented their
findings on Pluto.

It was a good meeting
and he said "Everywhere we
turn are new mysteries."

There are low energy X-rays
from Pluto that are unexplained.

And the moon Charon has been active and
there are mountains in the Kuiper Belt.

"This system is
amazing", said Alan.

Now these are supposed to be
equivalent to large cometary snowballs.

We weren't expecting rocks and
all of these kinds of features.

Pluto is 70% rock instead of ices
with mountains up to 11,000 feet
with no tidal heating
to power tectonics.

Pluto has clouds and
is losing atmosphere
at tons per second
which questions all this business
about how old these things are.

And also, the moon Charon which you
can see there to the right of Pluto,
these are natural colors too,
is so unlike Pluto

that they are puzzled
because these objects,
all of them out there,
should be roughly equivalent
in their composition.

So Charon and Pluto
are "too different".

What's more, those smaller satellites
Nix and Hydra are too bright
because cosmic rays are supposed to affect
the surface and darken it over time
but these things are shining
like they're covered with snow.

The small moons are
"too reflective."

So I'm more or less showing you
where we're up to now.

Biological Science

Biologists don't have the physics
to understand embryogenesis,
the mind and mind-body
connection,
extrasensory perception
or homeopathy.

All of these, most of these
things are "impossible"

and you're not even allowed to investigate
them because the subjects are "taboo."

Rupert Sheldrake has done some
very good work on embryogenesis
and shown that there is something
going on beyond the body
involved in it

but of course such
a thing is taboo.

I get the science
journals delivered
and I'm rather dismayed and
I got fed up with Nature
because it was almost cover
to cover biochemical models
incredibly complex and of no help in
trying to understand what life is.

I mean, it's all very
interesting, the chemistry,
but the actual relevance to a living
system seems to be lost in the detail.

So we're treated more or less as
chemically driven machines.

We have become "lab rats" for
the pharmaceutical industry
and the medical and

food technologists.

Far worse — publicly funded research
has been corrupted by industry,
influencing government and regulators to shut
down research into alternative modalities
on the basis that
"They're impossible".

Never listen to an expert when
they say something is impossible
because they are last to know when
a paradigm shift is about to come.

One I took out of a magazine.

Talk about misleading... see a
difference, GMO corn and non-GMO corn?

Neither can science.

Well that says a lot about
the blindness of science.

It's certainly not an argument for GMO
corn given our limited understanding
of living systems and the
interconnectedness of everything.

Genetic engineering is an experiment
with unknown consequences
since it relies on a flawed
understanding of genetics.

They're only beginning to

get involved in epigenetics
that is the changing of the genetic
information in a living creature
during their lifetime.

We have great hulking
molecules of DNA
with an unknown number of genes
that interact with one another
in unknown ways under
circumstances we don't know!

That's terrific!

It really gives you
confidence, doesn't it?

I should point out too
that we have less genes than a
nematode and less than a grape.

This gives you an idea that the
morphogenesis of an embryo
has more to do with
signals from outside
and that the DNA is more or less a
factory floor acting under instruction.

So all you need in the DNA is the
instructions on how to make things,
in other words the coding
for the proteins and so on.

But what switches
them on and off
is something that really
needs to be investigated.
I'll talk more about that later.
It assumes a closed
system and as I said
yet epigenetics shows the gene expression
is somehow tuned to environmental signals.
Science hasn't figured out yet what
all of those junk sequences do.
When they say junk, it just
means they don't understand.
Once again, we're treated as lab
rats to "whatever sells" culture
with no thought of the consequences
in such an unfathomed eco system.
Here we go, "To know the
future don't ask an expert"
and this is Richard Feynman.
"Learn from science that
you must doubt the experts.
As a matter of fact, I can also
define science another way:
Science is the belief in
the ignorance of experts."

I mean, when you look at

the history it's dreadful.

Ignaz Semmelweis could offer no acceptable

scientific explanation for his findings

and some doctors were offended at the

suggestion that they should wash their hands

between the autopsy room

and the delivery room.

I mean, you think about it now,

it just seems incredible.

I would also say that the words

debunk and labeling dissidents denier

shows the agenda

to be unscientific.

Debunking is a case of selecting

the evidence to suit your argument

and ignoring the evidence

that doesn't fit.

It's the sort of thing

that skeptics do.

Yeah, it's impossible that washing

hands between the autopsy room

and the childbirth ward will prevent

deaths from puerperal fever.

Heavier-than-air flying

machines are impossible.

Cold fusion is impossible and
I saw a show of hands
on a television,
interview with the experts,
and there was one guy who was obviously
the alpha male, the dominant one
and he put his hand up and
he looked along like this
waiting for the others to put their
hands up and the other, sort of,
you know, finally
put their hands up.

So this is how you do science.

It's a media show.

Of course, homeopathy

is impossible

but if you don't understand structured
water and Jerry Pollack's work,
of course it's impossible.

And also the transfer of information
faster-than-light is impossible.

Isn't it?

And yet the earth manages to
maintain its orbit around the sun
by knowing where the
sun is at this instant,

not eight minutes ago.

Future Science

Sir Fred Hoyle

The future is a

different universe,

they do things electrically

there in the Electric Universe.

No, he didn't say that.

What he did say is,

it's a strange thought but

I believe a correct one

that twenty or thirty pages

of ideas and information

would be capable of turning the

present-day world upside down

or even destroying it.

I have often tried to conceive of

what those pages might contain

but of course I am a prisoner

of the present day world

just as all of you are.

Well not us.

We cannot think outside the particular

patterns that our brains are conditioned to

or to be more accurate,

we can only think a

very little way outside
and then only if we
are very original.

That was in his book
'Of Men and Galaxies.'

So, the Electric Universe
is the path less traveled
and it is a game changer.

The Earth's real past and the post traumatic
stress disorder that humanity seems to suffer.

Quantum matter interactions --
the ether, time, mass, energy, light,
all of these crucial basic things
need to be understood.

Cosmic matter interactions —
electromagnetism, plasma behavior, gravity
and understand stars.

And also in, when it comes down to
the orderliness of the universe,
the orderliness of
the solar system
and the amazing ability
of living systems
to control trillions of reactions
in the body every second
requires that real-time

connectedness

and it's also associated, I
believe, with consciousness.

So In Future

The future started yesterday
and we're already late.

Right

In future, we may understand
quantum mechanics as resonances
between matter connected instantaneously
by the direct electric force.

In future, we may understand
light as the energy in a
light wave traveling
through the ether
arriving at an atom
that is tuned by the
direct electric force
to receive that energy.

In future, we may understand the real
electrical structure of atomic nuclei
and catalytic, that is
resonant, nuclear chemistry,
or "warm fusion"
energy of stars etc.

In future, we may understand gravity as a

near-instantaneous dipolar electric force
that can be attractive
or repulsive
like magnetism.

In future, understanding
electrogravity
may allow us to begin to understand the
real interiors of stars and planets
and ways to harness the
gravitational force for propulsion.

In future, understanding the instant
signaling between resonant systems
may allow biology to advance
beyond biochemistry
into the realms of morphogenesis
and consciousness,
the basis of life.

In future there is
no time travel.

I'm sorry.

But galactic communication
at the speed of thought?

Who knows?

In future, a new science
must be causally complete
that is every effect has a cause.

It must be coherent.

There can't be any exceptions. It's got to fit in with everything.

And also, it has to be coherent in the sense that the whole thing is stable and it must be consistent.

The rules and so on that apply are consistent.

In future, the language of science must be accessible to all.

This is why, whenever I present, I try to use just plain language, something that's accessible to all.

In future, the real mysteries of our existence will become clearer.

Right now, the mysteries that you find published in New Scientist and other places,

I remember getting a copy with 10 of the big mysteries

and all of them were artifacts of having the science wrong in the first place.

In future, we may understand our connectedness

and the insane divisions caused by our false beliefs.

Carl Jung said the conflict

between science and religion
is a consequence of the immature state
of both of these domains of thinking.

In future, we may appreciate
that we are earthlings
with an intimate connection and
responsibility to this pale blue dot.

I thought that picture was
rather evocative and I,
when it was first
published I thought,
surely people can get a better
perspective on our situation on Earth
instead of battling amongst ourselves for,
you know, a few square inches of land.
It just seems so insane.

In future, these
changes are essential
if we are to have a sustainable
future on this planet.

Because, for those who saw
that program last night
by the mythographer David
Evans, Dr. David Evans,
he himself made to stress this
that we are currently living

with a Bronze Age mythology,
with all of its gods and
heroes and wars and so on
and this is the basis
of our present culture.

He says we need a new cosmology and
he found us, the Electric Universe
and said this is the
only one that fits.

It doesn't, it discards
the old cosmology
because you can understand it
and once you understand it, it
no longer has a grip on you.

The Electric Universe provides a
cosmology which is about connectedness,
our understanding of our real place
in the universe for the first time
and of our real history
and that of the earth.

Once you understand those things, science
fiction stories pale into insignificance.

Future Science

There is nothing more important for
the human race than to know its past,
to be able to face it.

This was a quote from
Immanuel Velikovsky
in a documentary made
by the BBC in 1972.

And as Eric Unzicker who is a great
critic of the Large Hadron Collider says,
"With each paradigm shift there
should be a simplification."

Well, the Electric Universe
has got that in spades.

And as Dr. Iain McGilchrist says,
"Meaning comes from understanding
the whole, the big picture."

And I think that's been my obsession
most of, almost all of my life,
is trying to see
that big picture,
seeing the whole.

Connectedness, which gives us the ability
to see our place in the world more clearly,
is also the key to happiness.

I believe that's true too.

I've never seen such a bunch of happy
people as I do at these conferences.

And science and technology may
flourish with more wisdom and mastery.

Future Science

is about us

not about things.

Thank you.

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

In the previous Space News, we
discussed the electrical nature
of dramatic dust-raising
events on the planet Mars.

Today, we review one of the great ongoing
mysteries in the history of Mars exploration.

In January of 2004,
the Mars rovers Spirit and Opportunity arrived
at the Red Planet about three weeks apart.

Due to the extreme dustiness
of the Martian environment,
it was believed that the rovers would
be hindered by dust accumulation
of their solar panels and were only given
anticipated lifespans of 90 days each.

Fast forward more
than 11 years to 2015.

For reasons that no planetary
scientist has successfully explained,
the rover Opportunity is still alive and
transmitting data to scientists on Earth.

The rover Spirit survived
for over 6 years until 2010
and only expired after being ensnared
in the soil of a Martian crater.

Let us go back to the beginning of
the rovers' respective journeys.

When their missions began,
the rovers' solar cells
were providing 900 Watt-hours
(Wh) of electricity per day.

Over the months that followed, Spirit's
output dropped to 400 Wh daily
while Opportunity dropped to about 500 Wh
due to dust accumulation on the panels.

But then, to the amazement of mission scientists,
Opportunity's power began to increase
and kept on increasing until the
power peaked at just over 900 Wh.

As reported by newscientist.com,
the Mars rover Opportunity,
"...stumbled into something
akin to a car wash"
which somehow cleaned
its solar panels.

Jim Erickson of NASA's Jet
Propulsion Laboratory

admitted that the cause of the surprise

cleaning could not be explained;

"These exciting and unexplained cleaning events

have kept Opportunity in really great shape."

The remarkable cleaning occurred

in spurts during the Martian night.

The team managing the rover reported that on

at least 4 occasions over a 6 month period,

the rover's power output suddenly

increased by up to 5% in a single night.

The ad hoc explanations

immediately followed.

The first suggestion was

that the Martian winds

might have somehow swept

dust off of the panels.

Others wondered if frost could

have caused the dust to clump,

exposing the panels

to more sunlight.

It was even suggested that the

tilting of the rover while climbing hills

might have caused a portion

of the dust to drop off.

One wonders, does one's

car become cleaner

when one drives uphill on a
windy day in the desert?

With Opportunity

still alive in 2015,
having now lived more than 40 times
longer than its anticipated lifespan,
more than ever the enigma
demands explanation.

The great irony is that
scientists working with NASA
have developed technology that
provides the answer to the mystery.

Self-cleaning solar panels that
rely on electrostatic cleaning
have proven extremely effective at
dust removal. As noted in a 2010 review,
"The technology was developed for
future rover missions to Mars,
but it could work here on Earth to keep
solar panels operating at peak capacity.
It uses electrostatic charge to repel dust
and force it to the edges of the panels.
It can remove 90% of the dust on a
solar panel in a two minute cycle..."

As noted in the previous Space News, the
accepted models of the Martian atmosphere

have never adequately explained the dramatic dust-raising events on Mars. A 2006 NASA report of the strong electric

fields in Martian dust storm states:

"Dust particles [could] become electrified in Martian dust storms when they rub against each other as they are carried by the winds, transferring positive and negative electric charge in the same way you build up static electricity if you shuffle across a carpet."

But the tenuous Martian atmosphere, less than 1% as dense as Earth's, and an average of about 75 degrees colder, is not substantial enough to generate the mechanical winds required to generate such huge, sometimes planet-wide dust storms.

Despite its atmospheric deficiency,

Martian dust storms are much larger than any seen on Earth and the planet's fierce dust devils, some as tall as Mount Everest,

would dwarf the typical

tornado on Earth.

On Mars, without the ameliorating leakage

by a storm clouds that we see on Earth,

rather than lightning,

we see glow discharges

which occur from the ionosphere to the

ground and drive the so-called dust devils.

In 2005, The Thunderbolts Project made

a highly controversial assertion

about the greatest dust

storm in Martian history.

The article — When Dust

Storms Engulf Mars —

asserted that the massive global

dust storm in the summer of 2001,

involved a packed

assembly of dust devils

carrying great volumes of Martian

dust into billowing clouds.

Since its publication, the

assertion has been confirmed

though the concept of compact

dust devil congregations

can only seem absurd to

conventional schools.

In the standard theory,
an atmospheric vortex
requires a vastly larger
circulation of wind,
a condition that precludes
what seems clearly to be seen
in edge-on pictures of
storm fronts on Mars.

In the Electric Universe,
planets, like comets,
are charged bodies that are interacting
with our changing plasma environment.

Laboratory experiments have
demonstrated the ability
of electric fields and electrical
discharges to levitate dust
and to organize dust particles into familiar
planetary features such as sand dunes.

On March 18th of this
year, a new NASA
press release has provided
further confirmation
that this process is indeed
occurring on a large scale on Mars.

The report states:

"NASA's... (MAVEN) spacecraft has observed two

unexpected phenomena in the Martian atmosphere:

an unexplained

high-altitude dust cloud

and aurora that reaches deep

into the Martian atmosphere.

The presence of the dust at orbital

altitudes from about 93 miles

to 190 miles above the

surface was not predicted."

Mission scientist

Laila Andersson states:

"If the dust originates from the

atmosphere, this suggests we are

missing some fundamental process

in the Martian atmosphere."

Also surprising to MAVEN scientists was the

discovery of a highly energetic glowing aurora

that reaches shockingly deep

into the Martian atmosphere.

As one team member states:

"What's especially surprising

about the Aurora we saw

is how deep in the

atmosphere it occurs

- much deeper than at Earth

or elsewhere on Mars...

The electrons producing it
must be really energetic."

The scientists have concluded that the
source of energetic particles is the Sun.

The report states:

"MAVEN's Solar Energetic
Particle instrument detected
a huge surge in energetic electrons
at the onset of the aurora."

These observations are reminiscent
of a 2014 scientific paper
which states that charged particles from the
Sun provoke increased lightning on Earth.

It was the Norwegian
experimentalist Kristian Birkeland
who correctly hypothesized
in the early 20th century,
that electric currents from the
Sun power the Earth's Auroras.

For many decades, the scientific mainstream
largely rejected Birkeland's thesis
favouring instead the idea that Earth's
magnetosphere is an impenetrable envelope
squeezed by the solar wind
to induce auroral activity.

Only when satellites detected

the magnetic signatures
of electric currents
in the aurora, in 1973,
was Birkeland's hypothesis
irrefutably validated.

However, more than a century after
Birkeland's polar expedition
to investigate the
Northern Lights,
mainstream scientists still express
surprise or even astonishment
when they observe the tell-tale
signs of electrical circuitry
connecting the Sun
and the planets.

In recent years, NASA investigators
have observed what they described as
"giant magnetic ropes" that "connect"
Earth's upper atmosphere to the Sun
and explosions in the outskirts
of Earth's magnetic field.

The so-called ropes to which
the investigators refer,
are commonly described in plasma science
as electrical Birkeland currents,
named after Kristian Birkeland.

The rope-like structure
is not just a curiosity.
It's the structure taken by current
flow due to the long-range attraction
and short-range repulsion
between current filaments.

The so-called twisted
magnetic fields
are simply the signature of
the electric current flow.

In plasma cosmology, these entwined plasma
filaments act as transmission lines
carrying field aligned currents across
interplanetary and interstellar space.

As stated in many recent
Space News episodes,
each new discovery brings NASA
scientists closer to finally
inevitably acknowledging the electrical
circuitry throughout the solar system.

Until this reality fully
dawns on space scientists,
the list of surprises
will continue to grow.

For continuous updates on Space
News from the Electric Universe,

stay tuned to

Thunderbolts.info

[Music]

For the past century or so, the dominant trend in classical circles has been to deny any and all reality to the ancient gods. Richard Seaford, a world-renowned expert on ancient Greek religion, made the point most forcefully, "Greek deities are human constructions." It follows according to this prevailing orthodoxy that the Greek myths telling of the great gods' lives and loves are the stuff of fiction, projections of human affairs onto an imaginary Olympus as it were. It is our opinion that such views are wrong from A to Z and that the Greek gods were real. We also maintain that the myths attached to the gods were empirically based and described catastrophic natural events during a recent prehistoric period. A few examples will suffice to illustrate the profound differences in our two positions. One of the most familiar tropes in Greek mythology is that the Sun God Helios sees everything; hence the epithet 'all seeing'. In the Iliad for example, Helios is

invoked as, "You who see all things."

The very same claim appears in the Odyssey
and in various plays of the great dramatist.

This trope is employed for comedic
effect and a famous scene in the Iliad
wherein Zeus assures Hera that their
furtive love making will be invisible
even to Helios thanks to the
golden cloud he has created. quote,
"Not even Helios can look at us through
it although beyond all others his light
has the sharpest vision." Why
exactly Helios was ascribed sharp
vision has never been answered. The
conventional explanation, entirely ad
hoc in nature, maintains that inasmuch
as the solar orb travels across the
entirety of the sky with each passing
day, he must perforce be capable of
seeing anything and everything.

Martin West's opinion is representative
in this regard, "The Sun's capacity
for seeing everything that people do
qualifies him as a supervisor of justice,
or at least gives him a valuable role as
the god of justice's eye and as a trusty

witness.” Interestingly enough, Zeus shares the very same ability with Helios. In “Works and Days”, Hesiod states that, “The eye of Zeus sees all things.” Far from being an error on the part of the Boeotian bard, the same idea is current among the early poets. Thus Sophocles makes reference to the ever vigilant eye of Zeus Morios, “For the sleepless eye of the Morian Zeus beholds it.” Here we find an unequivocal reference to the round eye or kuklos of Zeus. Yet, kuklos is the very phrase employed by Aeschylus to describe Helios's all-seeing eye. It is significant that a cognate term is employed to denote the all-seeing eye of the Sun in Indic lore as well, namely “cakra”, commonly translated “wheel”. Quote “With his eye on men, he sits in the middle of heaven.” So too the Indic Sun God is described as all-seeing and wide of vision, just like the Greek Zeus. How or why the ancient Sun God should be equipped with the wheel-like eye remains unknown. Certainly there is nothing about the present appearance of the solar orb

that would suggest a wheel-like eye.

Especially telling are traditions
reporting that Zeus launched

lightning-like fire from his eye.

Aeschylus described the Greek Thunder

God as follows. "The jealous eye
of God hurls the lightning down."

The same conception is evident in Euripides'

Bacchae, "Unveil the Lightning's Eye."

With apparent reference to these archaic
idioms preserved by the great dramatists,

the Greek grammarian Hesychius observed that the
phrase 'Eye of Zeus' meant 'a flash of lightning'.

As we have documented elsewhere,

analogous traditions will be found

around the globe. Indeed, a widespread

tradition views lightning as the angry

glance of the Sun God's eye, this

despite the fact that the Sun and

lightning have no conceivable

relationship in today's sky.

In order to understand the traditions

before us, it is first necessary to

identify an 'obvious' celestial prototype

for Zeus's lightning-hurling eye.

'Obvious' that is, for prehistoric

sky watchers around the globe.

Consider the image depicted in Figure 1, analogs of which are ubiquitous in rock art everywhere. Can it be doubted that, were such an astronomical apparition to present itself in the Northern circumpolar heaven, traditions of a Sky God Cyclopean eye would be virtually certain to follow?

Now consider the image depicted in Figure 2, a close variation on the previous image, representing a slightly later phase in the evolutionary history of the polar configuration, whereupon fiery lightning-like filaments radiate out across the disk of the Sun.

It is our view that the global traditions of a lightning-emanating eye likely have their origin here. It will be noted that the central eye is composed of the conjoined orbs of Mars and Venus. Note further the Greek word for 'lightning'= 'asterope' preserves the inherent link to a material celestial body inasmuch as 'aster' denotes 'star'. This etymology alone offers compelling circumstantial evidence for the

conclusion that the Greek concept of
'lightning' was quite literally
a star-based phenomenon.

The archaic phrase "star-flung Thunderbolt",
preserved in an orphic hymn, points to
the same conclusion, needless to say.

Now consider the related image of the
so-called Sun cross. Prehistoric in nature, the
image in question resembles nothing so much as a
wheel centered on a solar disk,
a wheel-like eye as it were.

If the Sun God's central cyclopean eye
was conceptualized as a wheel-like
object, it follows a descending orb of
fiery lightning-like rays might well be
conceptualized as the act of seeing.

Hence we understand the indissoluble
connection between solar radiation
and the act of seeing in various ancient
languages. Yet Zeus's eye also flash
lightning and thus we must expect to
find an otherwise bizarre connection
between the act of seeing and
lightning-like pyrotechnics. The concrete nature
of this meteorological imagery is most explicit
in the Egyptian language wherein "m33" denotes the

act of “seeing”, while “m3wt” denotes “lightning” or “lightning-like radiation”. Yet, the very same word also denotes the spokes of the wheel.

The startling extension of meaning, apart from the cosmogram depicted in Figure 3, where the Sun's rays are quite literally the spokes of a wheel, an analogous semantic development is apparent in ancient Greek where

“derkomai” denotes “to see/look”, but also “flashing fire” or “lightning from his eyes”. Ruth Bielfeldt, surveying the Greek testimony, posits a direct connection between the act of seeing and fire. Quote:

"In both the Iliad and the Odyssey, we find the idea that fire, light and vision form an inseparable unity. Not only is fire endowed with sight, but the eyes are in turn also conceived as fire-like, their glance figured as spraying sparks.

Homer considers eyes and glances as themselves emissive of fire."

Such ideas have no conceivable basis in human biology or in Greek philosophical speculation. Nor, for that matter do they reflect the projection of human ideas onto the celestial landscape. Rather the exact

opposite. Such traditions were directly inspired by astronomical events namely the awe-inspiring spectacle presented by a lightning-hurling eye in the northern circumpolar sky.

If the classic Ra sign in Figure 1 was conceptualized as a Cyclopean-eyed Sun, the second image illustrates the emission of fiery lightning-like radiation from the God's central eye, universally conceptualized as a fiery glance, or the act of seeing. Insofar as the visible ray-like structures emanating from the central eye pervaded the entire cosmos, defined in ancient times as a unified heaven and Earth, it follows that the Sun God saw everything that transpired in the cosmos.

In short, there can be no denying the dramatic contrast between the naturalist historical reconstruction offered by Talbott and myself, and the projectionist interpretation offered by orthodox scholarship.

In a new book on Zeus published by the special series on gods and heroes of the ancient world, Ken Dowden begins by stating "To us Zeus is a mere fiction..." And then he gets

downright dismissive and condescending, quote,

"How could the Greeks have worshipped
such an empty god?... From beginning to end
Zeus has been unseen, operating
the causal system of the universe in
mysterious ways, and underlying every event...

The mythology was only a way of talking
about Zeus, a figure of speech."

"No one believed that the gods actually
had a palace at the top of a mountain in
Thessaly. Mythology was always a parable, a
transposition of the mysterious into
another language." End of quote.

It would be difficult to imagine a
more erroneous opinion or one more
disrespectful to the Greeks themselves. The manifold
mythology surrounding Greece's greatest god,
far from being a parable or figment
of imagination, accurately described
terrifying planetary interactions
of a catastrophic nature, albeit in
figurative language. Thus it is
that sky watchers around the
globe witnessed lightning being launched
from Zeus's eye. Make no mistake about it,
Zeus was seen,

Zeus was real.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

The parent star of planet Earth
holds a strange and special place in
countless ancient traditions
around the world.

The celestial body identified as
the sun in myth, religion, ancient
astronomies and rock art routinely bears
no resemblance at all to our familiar Sun.

One of the most common ancient
depictions of the Sun is an orb or star
within a crescent, an image with no
modern natural referent, and numerous
traditions depict the Sun as a
spectacular celestial wheel, with a
warrior hero appearing as
the axle of the wheel.

For decades, comparative
mythologist Ev Cochrane, as well as his
colleague David Talbott have worked to
reconstruct the natural events to
produce these extraordinary

mythical patterns.

It is their conclusion that in the relatively recent past, in the era of prehistory, a period of instability reigned in the inner solar system, bringing planets within close proximity to Earth.

In this episode, Ev begins our investigation into the question, did ancient man observe a different Sun?

It is important to underscore the radical nature of our hypothesis.

We hold that the solar system has only recently been subject to wholesale reordering that in fact, well within the memory of mankind, a different Sun prevailed.

Our hypothesis is fundamentally a work of historical reconstruction based upon our mutual researches in comparative mythology and ancient religion.

The research of Dave and myself,

is distinguished from other comparative mythologists in that we draw upon and emphasize the message of prehistoric rock art to illustrate our findings from literary traditions.

To take but one example from hundreds that might be offered, ancient paintings and petroglyphs of the Sun depict a wheel-like object commonly 4- to 8-spoked in structure.

Such artworks are global in nature, yet how is this fact to be explained?

From the conventional standpoint, such artworks are interpreted as abstract or metaphorical in nature.

Miranda Green for example, in her otherwise interesting book, *The Sun-Gods of Ancient Europe*, concludes, "The pictures do not describe reality."

We beg to differ, it is our view

that the prehistoric paintings accurately reflect the appearance of the ancient sky and offer compelling testimony with regards to an unfolding catastrophic celestial event, in which nearby planets dominated the northern circumpolar heavens.

The mere fact that analogous Sun petroglyphs will be found around the globe, supports this conclusion.

At the same time, ancient myth offers corroborating testimony in this regard, wherein a different Sun dominated the sky in former times and presented a wheel-like appearance.

In this sense, as in countless other examples, the testimony of ancient myth and prehistoric rock art agrees at a level of detail that is impossible to explain by mere coincidence.

In the Thunderbolts of the Gods, together with a number of other recent publications, Dave

and myself have presented a wealth of evidence that the former Sun was the focus of prodigious electrical activity and the source of spectacular outbursts of lightning, heaven-spanning storms, and Aurora-like phenomena.

In ancient Mesopotamia for example, the Sumerian word for Sun is Ud.

The same word is employed to write storm or thundergod, a startling extension of meaning.

Sumerian hymns invoking the ancient Sun God, likewise, describe it as a source of storms.

So one hymn reads, "The Sun God thunders over the mountains like a storm."

Another hymn reads, "As my king the Sun God comes forth the heavens tremble before him and the earth shakes before him."

Now I ask, does this sound like a realistic description of the modern experience of sunrise?

In what sense is the Sun's appearance over the eastern horizon ever accompanied by a

shaking of heaven and Earth
or great bouts of lightning?
What could the Sun have to do
with thunder and lightning?
In the present solar system,
of course, the answer is
nothing at all, yet the mere fact that
other ancient languages preserved this
very same semantic link between Sun and
lightning, confirms the fundamental
historical veracity
of the Sumerian
traditions and cries out
for an explanation.

Ancient Egypt, for example, offers
corroborating testimony in this regard.

In the Pyramid Texts from the 3rd
millennium BCE, the Sun God's thunderbolt
is specifically compared to
the lightnings of the Sun.

The word in question here
is mawt, m a w t, which has
cognates denoting lightning in
numerous other African languages.

Significantly however, the
very same word is used to

denote the spokes of a wheel.

In the present world

of course, lightning has

nothing whatsoever to do with the Sun or

wheels, hence the fundamental importance

of such terminology for

our historical reconstruction.

But we need not rely simply

on ancient language in myth alone.

Mesopotamian cylinder seals, together

with prehistoric rock art and other

early artworks, likewise depict

the Sun with lightning-

like structures emanating

from its core.

Students of comparative myth will

recognize the structure adorning the

face of the Sun here as the thunderbolt

wielded by the Thunder God.

So for example, thunder gods like Zeus or

the Semitic Hadad are routinely depicted

holding exactly this thunderbolt.

Properly understood, the evidence from

ancient language, like the testimony of

prehistoric rock art, represents an

enduring fossilized record of a

different solar system, much as the discovery of a dinosaur bone harks back to its former age, one radically different from that which currently prevails.

It must be remembered here that the denigration of myth is a relatively recent development basically originating during the early decades of the 20th century.

The science of comparative mythology, like the complementary science of comparative linguistics, grew out of the 19th century writings of world-class scholars such as Max Mueller and Adalbert Kuhn who rightly emphasized the prominent role of the Sun and the Thunder God in ancient myth and religion.

Yet the excesses of these schools together with that of the Pan-Babylonians led to a general backlash against naturist or astronomical interpretations of myth and religion.

Current models of myths such as that advanced by Georges Dumezil, which

dominates scholarship, emphasize
linguistic connections above all else
and are much more
narrow-minded in scope.

For example, Dumezil largely focuses
on Indo-European myth.

Most important perhaps is the
fact that current models
of myth always seek to
understand the ancient
traditions by reference
to the present sky.

But the ancient testimony is
impossible to square with the present
solar system and as a result, scholars
are left with empty slogans pointing to
figurative language, metaphor and such
statements as that of Green quoted
earlier, to the effect that the
pictures do not describe reality.

As Dave and I have documented
however, granted the fact
that the ancient traditions and prehistoric
rock art complement each other.

It therefore stands to reason that they
do indeed describe historical reality.

Confronted by these sun-wheels
for example, on ancient rock art, the
default position of so many modern
scholars is just to ascribe those
artworks to imagination or abstract
forms, completely overlooking
the fact that the same exact design
is found all over the world.

So, at that point you
need to ask yourself a
question, were ancient sky watchers on
every continent on the Earth imagining
the same fantastic structure in the sky,
which in this case is just a cross on
the face of the Sun or a lightning bolt
on the face of the Sun? But we could cite
a thousand other structures that we
could describe if we wanted to, we're
just trying to focus the discussion on
these particular structures at the moment.

But are we supposed to imagine
that all these sky watchers all around
the globe were imagining
the same thing?

That is not a logically
sound position.

It's much more rational to
assume that the ancient sky watchers
were trying to describe their personal
reality. They drew the picture of the Sun
that they saw, and that's why those
pictures agree all around the world.
Things that are imagined are not going
to agree unanimously around the world.
It's just that simple!

Welcome to Space News from
the Electric Universe,
brought to you by the The
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This month on Space News, we reported
on a recent study that confirms
electrostatic dust transportation
occurs on airless bodies in space,
including comets,
asteroids and moons.

The NASA-funded research suggested
that electrostatic effects
could explain a number of
mysterious discoveries
including the emission of fluffy dust
particles from the nucleus of Comet 67p,
the formation of weird dust configurations
on 67p on the asteroid Eros.

And the surprisingly smooth
surface of Saturn's moon Atlas.

The investigators observed electrostatic
effects in the laboratory
when dust was exposed both to UV
radiation and to plasma.

Nevertheless, few astronomers today consider

electrical effects on comets or asteroids

when attempting to explain the still

mysterious behaviour of these bodies.

This may be evidenced in recently

published scientific research

into a newly discovered active

asteroid called P/2016 G1.

The object has been studied, in part,

to try to answer an ongoing question.

Should asteroids that show comet-like

activity be categorized as main belt comets?

The team observed that asteroid

P/2016 G1 became active

350 days before perihelion or its

closest approach to the Sun.

Over a period of 24 days,

the asteroid emitted a total dust

mass of at least 17,000 tons.

The only hypotheses scientists

have considered are impacts,

thermal fracturing, rotational

instabilities and sublimating ices.

The explanation the team is settled on is

that an impact partially destroyed the body,

causing the subsequent

emissions of dust.

Their paper states,

"We speculate that this dust ejection
could be associated to an impact,
and that the subsequent
modeled activity
is due to the asteroid
partial or total disruption.

The impact itself had produced the
ejection of some 240 tons of dust."

The team noted that,
"...a conspicuous westward feature
in the head of the comet-like object
indicates that a significant
fraction of the dust was ejected
along a privileged direction,
right at the beginning of the event."

Let us also consider
the case of P/2013 P5,
an asteroid which was recently
reclassified as a main belt comet.

The asteroid astonished
scientists around the world
when it suddenly displayed
six comet-like tails.

One scientist said at the time, "It's hard
to believe we're looking at an asteroid."

The mystery for
astronomers was apparent.

How can a rocky asteroid
grow and maintain
highly collimated jets of material,
forming the comet tails?

An ad hoc theory arose
to the effect that
the asteroid suddenly began
spinning faster for some reason.

Possibly because, as one
scientist suggested,
pressure from sunlight exerted
a torque on the body.

This change in the asteroid spin-rate
may have caused material to,
"avalanche down slope towards the
equator and maybe shatter and fall off,
eventually drifting into
space to make a tail."

It was then suggested
that radiation pressure
stretched and confined the
dust into the comet tails.

If mainstream astronomy is now recognizing
electrostatic dust transportation

on airless bodies in space then why is
this not among the hypotheses considered
for asteroid or comets'
dust emission?

Traditionally, astronomers have only
envisioned minor electrostatic effects
on asteroids and comet nuclei
due to direct surface exposure to
solar radiation and the solar wind.

But for decades, surprising discoveries
in the study of both comets and asteroids
have demanded new
theoretical pathways.

Mysterious comet-like behaviours from
asteroids are not a mystery.

Comets and asteroids are not as different
as astronomers have long believed.

In the Electric Universe theory,
as developed by Wal Thornhill,
asteroids, comets and meteoroids were all
born in interplanetary electrical events.

Their distinctive orbital
groupings and spectral features
point to separate catastrophic events
and to different planetary bodies
involved in different phases

of solar system history.

Comet activity, including the production of the familiar coma and tail are not the result of sublimating ices due to solar warming.

A long-standing mystery is why comets sometimes flare or even explode at vast distances from the Sun, much too far to explain through solar warming.

This will happen when a comet experiences a sudden voltage spike when traveling through varying regions of electrical potential.

One such source of a voltage spike is solar flares, a subject of growing scientific interest.

At the recent Thunderbolts conference in Phoenix - Arizona, the Russian scientist dr.

Subhon Ibadov

proposed that a capacitor-like breakdown occurs between a comet's charged subsurface and a differently charged surface due to arriving protons from the Sun.

In the electric universe

theory of Wal Thornhill,
any body moving on an elliptical orbit
within the Sun's weak electric field
can exhibit comet-like
electrical discharge activity.

Though of course on a
much smaller scale,
such behavior may have
been recently witnessed
when astronomers observed giant plumes
jetting from the surface of Mars.

Scientists recently reported the
completely unexpected discovery
that a coronal mass ejection hit Mars
immediately before the plume was first spotted.

The NewScientist report
on the Discovery states,
"One possibility is that plasma could be
interacting with ice grains or dust
lower down in the atmosphere and
electrically charging them,
boosting them higher, but it's not clear
how the effect would be big."

A similar phenomena may have been witnessed
on the aforementioned asteroid P/2016 G1.

Just as the Martian plumes

were not caused by an impact,
the asteroid's emission of dust, which initially
ejected along a preferential direction,
was most likely caused
by an electrical discharge.

Investigating scientists should explore the
changes in the asteroids' plasma environment
such as the asteroid's proximity
to a planet's magnetotail.

Just as the Earth's magnetotail
has been found to create
regular electrostatic
dust storms on the Moon.

With each new discovery, it seems
that the behaviors of comets,
asteroids and all bodies
within our Sun's domain
provide greater and greater affirmation
that we live in an electric universe.

For continuous updates on Space
News from the Electric Universe,
stay tuned to

Thunderbolts.info

The Earth was once the
center of the universe.

It was flat.

Then it was round
and it circled the Sun.

It was no longer the
center of the universe.

It was a tiny part
of the Milky Way.

The Milky Way was
the only Galaxy.

Except it wasn't.

It was only one of billions of galaxies
floating in space without end.

Every single time we think we
have got it all figured out,
we realize we have merely found
another piece of the picture.

It is a big picture
with many pieces.

Sir Isaac Newton was the first
to state the Law of Gravity.

Eventually everybody agreed that
gravity alone formed galaxies
and that stars and planets and gravity
alone holds the universe together.

Then we discovered a force
a 1000 billion billion billion
billion times more
powerful than the gravity.

Until recently we believed that the space
between the stars and planets was empty
- a vacuum.

We now know it is teeming
with charged particles.

We see glowing electric filaments
spanning millions of light years.

We see stellar and galactic
formations shaped by magnetic fields.

Only electric currents
create magnetic fields.

It is possible that the predominant
force in the universe is not gravity
but something else.

Recent discoveries in space have
amazed and perplexed astronomers.

Currently popular theories in the
sciences can neither predict
nor explain the phenomena
we are now observing.

A new theory is being proposed,
a theory which can both,

predict and explain the data
coming back from deep space.
Its implications are profound and
affect all scientific disciplines.
It is in fact a synthesis
of the disciplines,
a synthesis which has already
led to discoveries that link
modern astronomy, leading edge plasma
physics and ancient mythology.
The electric model offers us a new
interpretation of the workings of the universe,
the history of our solar system
and even human history.

Myth & Science

The rise of science was a
triumph over mythology,
over magic and superstition.
That's why the word science
today implies reliability.
The word myth means
fiction, not true
and it turns out that the key
to understanding the myth
is the same key that is now helping us
to understand objects in deep space,

to understand the workings

of the physical universe.

That key is electricity.

It was 33 years ago that I

first began to wonder about

these preposterous stories told around the

world, what we call world mythology.

What was it that provoked this incredible

outpouring of human imagination

just a few thousand years ago, just before

the birth of the first civilizations?

I came to a radical conclusion that the myth

arose from extraordinary natural events.

Our early ancestors witnessed things

in the sky that are not seen today.

The events were awe-inspiring,

both beautiful and terrifying.

So it shouldn't surprise us that

the myth so incomprehensible

Well, of course, they're incomprehensible.

The celestial references

are no longer present.

It was in 1994 that I was invited to

come to the US to attend a conference,

which was dealing with the

possibility that the ancient sky

as witnessed by our earliest forebearers

was different to the one we see today.

I've been interested in

this kind of idea because

it could only be explained in terms of electromagnetic

influences within the solar system.

So, it came as a bit of a shock and

as a surprise to see David Talbott

showing slides at one of the

sessions of the conference,

which I recognized

immediately as being

similar to those of electric

discharges in the laboratory.

It was wonderful for me personally

to come to my first Kronia meeting

and hear David Talbott. And I still want to

see some of those slides that he showed

again and again and again.

That explained the white crown of Egypt and

the rest of these things that he showed us

all from mythology all from

thousands of years ago.

These things clearly were seen by civilizations

that never talked to each other

from the far corners

of the Earth.

It all just click together like a
three-dimensional jigsaw puzzles in my mind.

Unity of Myth

A breakthrough for me
came when I realized that
many different
cultures spread around the world
used different words, different
symbols, different myths
to describe precisely the
same formations in the sky.

The ouroboros or celestial serpent
biting its tail for example
occurs on every
habitable continent
but it has no ties to the
world we now observe.

Like all of the archetypes,
it is part of an alien sky:
a cosmic column rising to the center of the
sky, holding aloft the wheel of heaven
and much more than a wheel because
this was the revolving cosmic temple,
the city of the gods,
the kingdom of heaven,

always resting on
the cosmic column.

Then there is the image of the
four rivers or pathways
radiating from the
center of the sky
out to the boundary,
the rim of the wheel.

The simplest forms lead you invariably
to the full story of world mythology.

The hero's journey unfolds as
the story of the wheel's axle.

The mother goddess
finds her identity
in the star at the summit, the
hub and spokes of the wheel.

The Key

From childhood on, I've always had
a deep interest in mythology
and I remember that
as a child I was
trying to draw up genealogies of the
gods as provided in greek mythology
and I soon found out
that it didn't work
nor did anything else in

mythology seem to work.

There was no singular fitting explanation
that would make sense of these stories.

So, I basically laid this whole subject to
rest, and I didn't look at it for many years
until I came across the work by Dave
Talbott and Everett Cochrane mainly
whose articles were
real eye-opener for me
and as soon as I began to read these articles
it became clear to me that we
were really looking here at
a very important key to
the unlocking of myth.

And the recent findings provided
by plasma physics
are capable of providing that key.

Based on the results we have seen so
far and Dr Peratt's investigations
with petroglyphs,
which he matches successfully
to laboratory experiments
involving plasma,
it has now become crystal clear
and I think undeniable
that the morphology of plasma

as it manifests itself,
both in the laboratory
and in space,
can account successfully for
the major themes in mythology.
To find the true meaning of the myths,
we follow a forensic approach.
The purpose is to expose the points of
agreement between the different cultures
because here at the level
of the archetypes everything is unified.
There are no isolated themes of myth
at the level of the substructure.
This is like a holograph, follow one
archetype and its links to other archetypes,
and you'll find one story
told around the world.

PLASMA

The Fundamental State of Matter
Throughout almost all of history we
have regarded the states of matter
as being solid, liquid or gas.
But in
the last century or so,
we have found that there is a form of
matter where the charged particles within atoms

are separated to some degree or another and that is known as a plasma.

It is the fundamental state of matter.

It was not until the second half of the 20th-century that we came to realize the role of plasma in the universe, and this has changed the picture of space completely.

Not long ago we thought of the physical universe as being constituted fundamentally of nothing more than atoms and empty space.

But a plasma includes at least a percentage of charged particles, protons and electrons, that are not bound to any atomic structure, and plasma is an excellent conductor.

Electrons will move efficiently in the direction of charge equalization, and that is an electric current of course.

Now the reason why we see magnetic fields everywhere we look in space

is because electric currents
produce magnetic fields
and only electric currents
produce magnetic fields.

But astronomers working only
with gravitational equations
did not anticipate the discovery of
pervasive magnetic fields in deep space.

Electric currents also account for the
abundant filamentation of space plasma.

First the electric currents
produce the magnetic fields
then these fields confine the
electron flow to narrow paths.

Such currents paths are filaments
called Birkeland currents,
named after the pioneer,
Kristian Birkeland.

They are typically braided
just like the twisted wires
of transmission lines on Earth.

Well, that's their role in space: to conduct
electricity across vast distances,
creating the astonishing structures
we observe in every direction.

None of these structures were

anticipated by gravitational theory,
and none are indicated by the behavior
of neutral gases in a vacuum.

In any theory of the universe,
plasma is extremely important
because it has been found since
the space age that it makes up
99.99 percent of the
visible universe.

So our inexperience with it on
the Earth's surface is rather
crippling when it comes
to trying to decide
on a cosmology to explain
the visible universe.

Now, plasma behaves rather oddly
compared to normal matter,
the matter we find as solids,
liquids and gases on Earth.

If we look at a
novelty plasma ball,
you will see that it forms these bright
filaments that dart all around inside the globe.

And if you look closely at them, you'll see they are
actually twin filaments twisted together.

In other words nature

finds it efficient
to be able to transfer energy
over a distance
by twisting two pairs
of filaments together,
and this is a characteristic of the way
plasma carries electric currents in space.

And one of the puzzles that has faced
astronomers since the space age
is the discovery of
filamentary structures
in galaxies, around stars,
even the cometary tails of
planets and comets themselves.

These filamentary structures
have come as a surprise.

Plasma is Scalable

We now have plasma physicists
who are doing important experiments
in laboratories around the world.

And one of the virtues
of plasma experiments
is that they can be scaled over an
enormous numbers of magnitudes.

In other words, a discharge phenomenon
that may be seen in the laboratory that

occupies only a few centimeters can
be scaled up to the size of a galaxy
and you will see the
same structures.

Now, this introduces a new area into cosmology
where we can do experiments on Earth,
which can verify our ideas or theories
about how the rest of the universe works.

Similar Patterns

in the Lab and in the Sky

Some of the natural consequences
of electric cosmology are
the patterns that we see, both in
the laboratory and in the sky.

A very good example of this is
the work of Dr Anthony Peratt,
who was a graduate student of
the very famous Hannes Alfvén,
who was really the father
of electric cosmology.

Peratt simulated on a super computer
using just a cloud of electrical charges
and a magnetic field just using
the laws of electrical science,
not using anything
to do with gravity.

He simulated what looked
like a spiral galaxy.
And the interesting thing is that
Peratt's spiral galaxy in the laboratory
had exactly the same
rotational properties
as the real spiral galaxies
that we see in the sky.

Plasma, Gods & Monsters

Plasma was named by Irving Langmuir
because of its life-like qualities.
In other words, the
similarity to blood plasma
gave rise to the term "plasma" now used
in the sciences.

Well, this has incredible meaning for us
because of the nature of the metamorphosing.

The god, who is now an eagle,
now a serpent or dragon,
now a leonine figure
with long flowing hair.

These figures take on
a whole new meaning
when we can interpret them with
the benefit of plasma science.

Cosmology

The new instrumentation that
was developed in the space age
expanded our ability to perceive
things, perceive facts.

We can now see things in the
entire electromagnetic spectrum
instead of just the narrow
sliver of visible light.

And we had sensors that
were out in space.

We were freed from the geocentric
and anthropocentric order
that had prevailed before.

We've got a whole new universe, and
theoreticians are still trying to look at it
through [a friend of mine says they're
peering through] the wrong end of the telescope
[and trying] and telling
us what they imagine they see.

The Disconnected View

Modern cosmology gives us a rather
disconnected view of the universe.

In other words, we are separated
star from star by vast distances.

Light takes a long time to travel between
stars and across galaxies,

and, therefore, we look upon ourselves
as isolated and disconnected.

The Electric Universe

takes a different view.

It says that we are part of the sun's
environment, electrical environment,
and the sun is a part of
the galactic environment
and the galaxy itself is
strung like all galaxies
on huge electric currents
flowing through the universe.

Electricity in Space?

One of the typical questions that plasma
cosmologists hear all the time is:

How do you know what's
out there in space?

How do you know there's
electricity out there in space?

Is there energy out
there in space?

Why should we consider
anything more than gravity?

And the answer is that
through the years we've
used optical telescopes

but recently we have what
are called radio telescopes
and we've broadened the spectrum
that we can look at the sky with.
And those radio
telescopes can measure
electric currents and
magnetic fields and
we can determine from those measurements
the strength of the electric currents,
the strength of the
forces involved
and the amount of energy that's stored out there in space.

Relativity & Quantum Physics

The two major pillars of
modern cosmology are based on
the theories of relativity
and Quantum Theory
and as Einstein himself noted
the two are incompatible.
And that is maybe because the theories
of relativity deal with matter
as if it's only consequence
is the bending of space.

The Electric Universe, on the other hand, deals
with the electrical structure of matter

at the subatomic level then
works its way up through
living systems if you like,
planets, stars, galaxies
and the entire universe
and shows that it is the
electrical structure of matter
that forms the amazing
shapes we see in deep space.

Magnetic Fields

We can demonstrate the existence
of these currents flowing
between galaxies
and between stars
by the presence of the
magnetic fields they generate.

Magnetic fields are threaded through space
at all dimensions, within the solar system,
on the surface of the
sun, between stars,
and within galaxies and
even between galaxies.

Now magnetic field can only be
generated by electric currents.

So, in other words, to continue that
magnetic field for any length of time

requires that there be electrical power
input into those magnetic fields.

And that raises the

whole question:

Where does this power come from?

The Mathematical Cosmology

Modern cosmology is

highly mathematical.

In fact, we were joking

before about the idea that

the only people who understand cosmology

are professional cosmologists.

The basis of cosmology

really if you hunt for it

lies in Einsteinian

relativistic mechanics

and, when Einstein

promulgated his ideas,

he totally and completely

ignored anything electrical.

And so the modern cosmology

with all of its ideas of Omega

and expanding universe and

inflation theory and the Big Bang

and all the rest of it are

predicated on a foundation

which ignores almost half of man's knowledge
about the way the universe works,
which is electricity.

It may sound like I am dismissing Einstein
and his theories of relativity out of hand
but we have to give

Einstein credit for his integrity
in pointing out that his theory
did not meet his requirements,
and that is that his theory had to be
tied back to some form of reality.

And there is no explanation as
to why matter should curve space
to give the effect of gravity.

He felt that quantum theory
being a probabilistic theory
divorced cause and effect.

And this is one of the things
you can not do in physics,
is divorce cause and effect, otherwise you
might as well give up and get a real job.

But this is a puzzle that dogged
Einstein through his later years
to the point that his
followers tended to go off
and use his geometrical explanations

to conjure up things like
black holes and neutron
stars and so on
and the expansion of
the universe and the Big Bang
without referring back to Einstein,
who with great integrity
said he wasn't satisfied
with his explanation.

Black Holes

One of the problems faced by
astronomers, after the space age began,
was to explain the discovery
of very concentrated
outbursts of energy
in deep space.

And that meant for them, since gravity is
the only driving force available to them,
that they require an infinite
concentration of mass
because gravity is an
infinitely weak force.

The black hole as Wheeler originally
visualized it sucked everything,
including light, in and so
therefore was invisible.

So, he could postulate its
existence, and we couldn't see it.
And because we couldn't see it, we
couldn't prove that it wasn't there.

Later on, in order to explain these fantastic
emissions of energy from galaxies,
it was proposed, and I believe it was
Stephen Hawking who did it,
that there were various
types of black holes,
some of which actually then spat
matter back out again in jets
because why, because
we had observed jets.

In the electrical model, it's quite
simple if you think about it.

The power that's expressed
in your own home
in the heaters and the electric
motors and the lighting and so on
is actually generated at a vast
distance away from your house.

In deep space the
same thing is true.

The energy, which we see
concentrated in these events,

which are attributed
to black holes and so,
can more easily be explained as
the confluence of electric energy
from different parts
of the same galaxy
or even from other
parts of the universe.

And it is this explosive release of energy
which forms the vast jets that we see
lit up and exploding from the
centers of active galaxies.

We also have observed double radio
sources either side of galaxies
and that event was
predicted by Hannes Alfvén
the founding father of
modern electrical cosmology
and is still to this day
unexplained by standard cosmology.

The Pulsar

One interesting phenomenon in the
sky is the so-called Pulsar.

The pulsar is an object, that
is observed to put out pulses,
both of light and radio activity in

the RF [radio frequency] spectrum,
and those pulses are
extremely rapid.

They are something like
milliseconds apart.

So, it's like an extremely
fast strobe light.

And, thinking this of a strobe
light, astronomers immediately
leapt to the lighthouse
kind of analogy.

Something must be spinning
around, a beam was going around,
and its going around so quickly that
this thing goes flash, flash, flash.

Well, once the repetition rate
of the pulsars was observed to
get up to in the millisecond
range that meant that this star
that was putting out this beam
of radiation would have had
to be rotating at three
hundred times a second.

And three hundred times a second, we're talking
about the speed of a dentist's drill.

So, the astronomers decided, well, normal

stars couldn't possibly rotate at that speed
and so they postulated the existence
of what they called a neutron star.

A neutron star is a star that is so
dense that it holds together so well,
that it can, indeed, rotate at
the speed of a dentist's drill.

Well, the problem is that in
nuclear chemistry we know
that you can't pack neutrons
together that densely.

They will all fly apart
instantaneously.

There is a [thing] a principle called the
Island of Stability in nuclear chemistry
that absolutely prevents that.

So, here again we have the standard
astronomers or astrophysicists
going directly against another
well-developed science.

In the electrical model, however, there
is a very simple explanation for pulsars.

Everybody is familiar
with the idea that pulses can
travel back and forth on
electrical transmission lines.

Such uncontrolled pulses for
example were responsible
for the famous northeast black outs.

A similar effect can occur between two
binary stars connected by a plasma.

The two binary stars act like
capacitors that store charge.

And if you reduce that in size to something
you can produce in the laboratory,
you can produce it in the laboratory,
and it's called relaxation oscillator.

Electrical engineers use it,
and have used it, for decades.

The idea of producing pulses
every few milliseconds
is a sophomore level of experiment in
electrical engineering laboratory.

It doesn't require neutronium, strange
matter or any other fictitious device.

All it requires is two capacitors, a
battery and and a nonlinear resistor.

And we maintain that's exactly what
a binary pair of stars connected
by a plasma field presents.

Magnetic Force

vs.

Gravitational Force

A typical ion in the solar wind hydrogen nucleus moving about 20 km per second, which is relatively slow for the ions in solar wind, in the magnetic field of the sun experiences potentially magnetic forces that are something like 10 million times the strength of the gravitational force on that same ion from the sun.

An interesting demonstration that illustrates very readily the relative strength of magnetic force and gravitational force is the simple idea of a ball bearing sitting on a wooden table.

The entire mass of the Earth is pulling downward on that little ball bearing, and that's what prevents it from flying out into the space.

But a child can come along with a little horseshoe magnet, and click, can pick that ball bearing up instantly.

The space age presents us

with an interesting paradox.

That technology of science is
really quite extraordinary.

And technology has taken us out
into space, taken us to the Moon,
taken probes to distant planets, opened
up whole new vistas in remote space
with new telescopes and new ways of
measuring what's happening in space.

But the picture of theoretical
sciences is much different.

And many decades ago, assumptions began
to crystallize in the theoretical sciences,
beginning at the top, that the queen of the
sciences, as we say, which is cosmology.

These theoretical assumptions have constrained
all of the other theoretical sciences.

Cosmology deals with the big picture
questions, the first questions.

How did the universe begin?

What is it made of?

How will it end?

And so many popular theoretical constructs
from the big bang to string theory,
to dark matter and black holes, the
formation of stars, formation of galaxies,

all have arisen from assumptions
first postulated by cosmologists.
At the same time these assumptions
have defined boundaries
for other theoretical sciences, working
down from astronomy and astrophysics
to the space sciences, solar theory,
even Earth history, even human history,
have all been confined
by these boundaries
established by the
queen of the sciences:
cosmology.

Sun

The sun just dominates our sky
as the source of light and
warmth and life itself on Earth.

This preeminence of the sun is so clear
and obvious that it remains a mystery
why virtually every ancient
culture insisted that
before the present sun there was a quite
different luminary ruling the sky.

The central sun, the superior sun,
the best sun, the motionless sun.

And all of these cultures, whatever may

be the meaning of these traditions,
are insisting that
the sky has changed.

Of course, our ideas about the
sun have continually changed.

Only a few centuries ago the sun
was a campfire or ember in the sky.

Then early in the 20th-century, under
the influence of gravitational theory,
the sun was seen as a gravitationally
collapsing nebular cloud.

In the atomic age, astronomers
began to visualize the sun
in terms of a nuclear
furnace hidden at its core.

But now we are in the
age of plasma science.

With discoveries of the
electric currents in space,
and it's inconceivable
that these discoveries
would not change the
picture of the sun again.

An Electric Phenomenon

Plasma cosmologists have been able
to demonstrate experimentally

and also in a supercomputer that
galaxies are an electrical phenomenon.

Which raises the question about stars
and in particular our own sun,
which is the closest star
to the Earth, of course.

Any theory of the Sun has to explain how
it could continue to burn for billions of years
and also explain its present
size based on its known mass.

And of course, as soon as
nuclear energy was discovered,
it was grasped immediately as
the energy source of the Sun.

But all of that assumes that the Sun is
disconnected and an isolated body,
and that it must consume
itself over its lifetime
to provide the heat and life
that we receive from it.

But if the Sun is connected to the rest
of the galaxy in an electrical sense,
it doesn't require to
burn itself at all.

And the energy that we receive is
actually being received from the galaxy,

and the sun is acting as
a focus for that energy.

The Sun is actually a
fairly typical star.

And so, if we want to
understand stars and cosmology,
we really
have to understand the Sun.

And the Standard Model
of the Sun, so-called,
that astronomers are so
very proud of these days,
really doesn't explain
very much about the Sun.

Why is there a corona
in the first place?

Everybody knows about the corona, the
beautiful corona that we see during solar eclipses.

Why is it there? It is clearly
an electrical phenomenon.

Coronal Heating

One of the greatest
puzzles about the Sun
has been: with the surface temperature
of six thousand degrees [Fahrenheit],
high above that surface we have

temperatures of millions of degrees.

And the question has been:

How do we get the energy from the center
of the Sun somehow past that surface
to heat the upper atmosphere of
the Sun to millions of degrees?

In an electric model you
don't have that problem
because if the energy is
arriving from outside the Sun,
the first place you expect to
see that energy expressed
is above the Sun and its
tenuous atmosphere.

And that is the place where
particle acceleration occurs,
and the apparent temperature
goes very high indeed,
often into the
millions of degrees.

Solar Wind

The fact that the particles
in the solar wind accelerate,
that is to say increase their velocity with
increasing distance away from the Sun.

The farther away they

get the faster they go.

And the fact those particles are
indeed charged particles,
leads me as an electrical engineer
to come to the immediate conclusion
that this is an
electrical process.

In the Solar Model, think of the
Sun as being a positive anode,
a very high voltage body that obviously
would emanate an electric field.

And if you put a charged particle in
an electric field it will accelerate.

That's the way we accelerate
particles here on Earth.

It's the way every physicist
and electro-dynamicist has
ever increased the velocity
of a charged particle,
is put it in an electric field.

Sunspots

One of the features we observe on the
Sun, which have no business being there
according to the Standard
Model, are sunspots.

The most significant

thing about a sunspot

is the fact that the center

of a sunspot is dark.

And if the Sun is trying

to radiate energy from its core into space,

we should expect

that it is bright.

And if you think about that umbra, the

darkest place in the center of sunspots,

that's the place where we can

see deepest into the Sun.

And just consider the fact that, at

that point where we can really see

down into the Sun, that's the absolute

coldest place that we are able to measure.

If the center of the Sun is

really a nuclear fusion furnace,

it should be the hottest because

we're closest to the source.

And it's not the case.

We ask any astronomer,

why are there sunspots?

Why are the umbra dark?

They would blame it on some sort

of warp-twisted magnetic fields.

They will say that it has to

do with the solar dynamo.

All of which lurk unseen like a big
genie somewhere below the surface.

These phenomena are only to be expected
if the Sun is electrical in nature.

Fusion Model

Astrophysicists make the claim
that the Solar Fusion Model
has indeed been tested
in a laboratory.

And nothing really is
further from the truth.

Although each of the steps involved
in the hydrogen to helium fusion reaction
have indeed been verified
experimentally, the overall experiment,
the overall reaction has never been produced
in a continuous laboratory experiment.

Continuous Hydrogen to Helium fusion
has not been attained in the lab.

The strength in fact of the
electric cosmology is that indeed
all of the mechanisms that the
electrical people talk about
have been verified over decades, in fact
at least a century in the laboratory.

The plasma scaling is well-known and
plasma and electrical experiments
have verified every
step of the way.

Fusion Model,

No Explanations

There are any number of observations
that have ad hoc present explanations,
but really have no explanation
in the Standard Model
and are natural consequences
of the electrical model.

For example, heavy elements, the solar
spectrum, the neutrino deficiency,
the neutrino variability, solar atmosphere,
differential rotation by latitude,
differential rotation by depth,
equatorial plasma torus, sunspots,
sunspot migration, the sunspot
penumbra and the sunspot cycle itself,
magnetic field strength, the even
magnetic field, helio seismology,
solar density and
the changing size.

All of the observations
in that list

are natural consequences of

the Electrical Sun Model.

Standard astronomers tend to pass them off

as being inconsequential difficulties

that will eventually

someday be solved.

I maintain, and so do our colleagues

here, that these are not inconsequential

but are rather death blows to the Solar

Fusion Model because they are important.

They're not secondary.

They are primary falsifying observations

for that failed nuclear fusion model.

What I find so fascinating about

the electric model of the Sun

is not just that it is a challenge

to a long-standing theory

but that it opens the door to the

ancient world, to an electric sky.

The electromagnetic phenomenon that we

now observe on the surface of the Sun

and in the vicinity of the Sun are direct

pointers backwards to the plasma formations

that were seen above the

ancient sky worshipers.

Comet

Electric Currents in Space

Electrical currents in space can either be invisible or they can be visible.

If they are very

diffuse, in other words,

if there is very little energy per cubic meter, they will be invisible.

But where that energy becomes concentrated, it will begin to glow.

And we see this kind of thing in the ion tails of comets, for instance.

Where the energy becomes very concentrated, we begin to see arcs and sparks, if you like, electrical discharge phenomena.

Standard Theory of Comets

The Standard Theory of comets

comes from the view that

the solar system was formed from

a rotating cloud of gas and dust

and that the planets, in some

fashion as yet unexplained,

completely formed from most of that gas

and dust but there were leftovers.

And the leftovers are beyond sight

outside the solar system

in a hypothetical Oort
cloud, as it's called.

We have no observational
evidence for such a cloud.

The Electric Universe Model of comets
is that they are actually parts
of well-differentiated
planetary bodies

that have in the past suffered from
electrical plasma discharge machining,
and that some of the surface
material has been lofted into space.

So, it is expected to be rocky.

The second thing is that because
comets trace an elongated orbit,
both away from the Sun
and toward the Sun,
in that trajectory its charge
changes, its voltage changes.

Since it spends most of its
time in the outer solar system,
the voltage that it has reflects the
voltage in the outer solar system.

But as it hurtles towards the Sun,
as it enters toward the Earth orbit,
the voltage is changing rapidly and

the comet has to respond to that
by beginning to discharge and
that's where we see the familiar
cometary phenomena of the coma
and the various tails that it produces.
This creates a very distinct
difference between the two models,
the Standard Model of a comet, which is
supposed to be a dust and ice leftover
from the formation of the solar
system, and the Electrical Model,
which says that a comet
is an electrical body,
which begins to discharge as it
enters the inner solar system.

Comet 'Jets'

Ever since we began to
look at comets in close-up,
and Halley was the first one that was
observed by several spacecraft close-up,
it was found to astronomer's surprise
that the material coming off the comet
was coming in discrete jets
and seemed to be coming
from what looked like
circular areas on the crater.

But the imagery wasn't
sufficiently sharp
to be able to tell exactly
what was going on.

This required the Standard Model
to come up with an idea that
maybe the surface of the comet is
coated in black tarry substance
or something which was
preventing the material from
just evaporating
from the surface
and forming jets as it
burst through the surface.

But when later images were looked
at as we passed other comets,
it was found to the astronomers amazement
that they were seeing very sharp relief.

It was
not like a melted ice cream,
it was looking like a piece
of heavily cratered rock.

Now this fits the Electric Model of the
electrical discharge birth of such a body.

In other words, there is rather no
distinction between an asteroid

and a comet other

than its orbit.

Comet Tempel One

It was in this context that I

looked at Comet Tempel 1,

which was chosen as the

target for an impact.

The idea was that the impact

would create a small crater,

which could then be photographed by the

passing spacecraft and we can determine

whether the material was ice or dust or rock

based on the size of the impact crater.

It seemed to me that, if this comet

was a charged body, there would be

several other effects that

were unexpected.

Principally as a metal copper

object approached the comet,

there should be an electric discharge

to that copper projectile.

In other words, there will be an initial flash

and then there would be the impact itself.

And the impact, I suggested, would be

far more energetic than was expected

because it would tend to concentrate the

electrical discharge in the area of the impact
and also it may change the
nature of the jets nearby.

So, it was with great interest that
I waited the results of the impact
and watched that on television.

Before the impact, the astronomers
in the assembled control room
were worried that they
wouldn't see anything,
that the impact would
result in a very small puff
of dust and that would
be the end of it.

So, when the impact occurred, they
were surprised by two things.

One was that there was
an initial flash
followed by the main
impact which was so energetic that
some of the sensors were almost
swamped and the passing spacecraft
was unable to achieve its primary aim,
which was to photograph the crater.

Comet Tempel One

Finely Divided Dust

Apart from the surprising brightness
of the dust released from the impact
with Comet Tempel 1 was due to the fact that
it was so intense and so wide-spread
and one of the initial findings was that
it seems to be very finely divided dust.

Now this is the same thing that
was found at Comet Halley,
and it was a surprise then.

So, it's rather surprising that
they were surprised once more.

The point is that an electrical discharge
on a surface will release material,
dusty material, very
finely divided.

It's a technique that's
used in sputtering
of metals on to, for instance,
astronomical mirrors.

So this production of very fine dust is
to be expected in the Electrical Model.

But in the Standard Model you are asking
ices to evaporate
or to sublime and in doing so to
drive off pre-existing dust grains.

So there is no way that the

dust can be finely divided;
it will be in its
pristine state.

So, the production of this
great cloud of very fine dust
is rather inexplicable
in the Standard Model.

Comets

&

Electromagnetic Forces

The Electrical Model of comets
was driven for several people
by Velikovsky's challenge
that the solar system
had electromagnetic forces
to be taken into account.

One of the early pioneers
in addressing this issue of
comets and electrical
phenomenon was Ralph Juergens.

When he proposed the
electrical model of the Sun,
it implied that all bodies in the
solar system must have to some degree
a cometary appearance or a cometary
effect associated with them.

Electric Forces Induce

Cometary Display

Ralph Juergens in his

model of the Sun showed

that bodies moving radially

toward or away from the Sun

would experience electrical

forces which could induce

a cometary display,

as a visible display.

Also working in late years with

Ralph Juergens was Dr Earl Milton,

and he made some

predictions and statements

about the impact of Comet Shoemaker-Levy

9 fragments with Jupiter.

And his view of the electrical nature

of those impacts was also vindicated.

Venus with Comet Tail

In the Electrical Model

of the solar system

any body moving away from or

toward the Sun at any great rate,

for example like a comet, will

experience electrical effects,

which result in a cometary appearance,

and that can apply to a planet.

Now Velikovsky in his

research found that

Venus was described as a stupendous

comet at some point in ancient times.

So, it was very gratifying for him to be

able to announce at a conference in 1974

that astronomers had discovered what

they called a cometary tail of Venus.

Some years later it

was announced that

it was discovered that stringy

things were coming from Venus

and, of course, this was

confirmation to the Electrical Model

because plasma currents

flow in strings.

This discovery of a cometary

aspect of Venus raises the issue

of the intense heat

we find on Venus.

That intense heat is not well

explained at all by the idea

that the planet is somehow

a twin of the Earth.

It raises the distinct

possibility that Venus has had
a far more dynamic history
than would have been taught.

Comets and Catastrophe

Our ancient ancestors were
obsessed with the comet.

Let the slightest wisp of
a comet appear in the sky
and all of humanity was
thrown into terror.

But why was this?

It was cosmic catastrophe that
inspired the ancient words
and phrases for the comet.

The comet was the torch of the sky,
the sword hanging over the world,
the spiraling serpent or dragon,
the spiraling sidelock or ribbon,
the angry or lamenting goddess
soaring across the sky,
her hair disordered and
blowing in the wind.

Anyone exploring the roots of the
ancient comet fears is going to
run into the work of Immanuel
Velikovsky, the controversial theorist

who suggested that there is a reason for
that fear of comets around the world.

We experienced this horrific
cometary catastrophe.

The world was devastated by a comet
just a few thousand years ago,
and Velikovsky went further.

He said that not long ago planets appeared
in the sky with comet-like attributes.

In particular, he named the planet
Venus as the great comet of antiquity.

Both Wal Thornhill and I disagreed with many
components of Velikovsky's reconstruction
but we also felt that Velikovsky
had nailed certain principles
that can help us to understand
the early cultures.

In particular, Velikovsky was correct in
naming the planet Venus as the great comet.

And the cometary language
of Venus goes far
beyond anything that
Velikovsky himself published.

In every corner of the world,
the language of the comet
and the language of

Venus are identical:

Venus as serpent or dragon,

Venus as torch in the sky,

Venus as long-haired star,

Venus as bearded star.

The Sumerian goddess Innana

was identified as Venus.

She was the lady of life

but in her terrible aspect

she became a dragon-like

flame in the sky.

The texts say: "Like a dragon you have

deposited venom on the land...",

"Raining the fanned fire

down upon the nation..."

Innana became

a roaring storm,

"With a roaring storm you roar..."

she devastated the land.

"Devastatrix of the Lands..."

"Mankind comes before you in fear and

trembling at your tempestuous radiance...",

the texts say.

Innana's Babylonian counterpart

Ishtar was also identified as Venus.

"She was the shining torch

of Heaven and Earth...",

"...furious and

irresistible onslaught..."

"I rain down like flames...",

the goddess announces.

The Egyptian goddess Sekhmet

has the same attributes.

She takes the form of

a fiery Uraeus serpent.

She becomes "A flame of

fire in her tempest...",

"A star scattering

its flame in fire..."

Sekhmet herself says: "The

fear of me is in their hearts..."

and "The awe of me

is in their hearts..."

"No one at all can approach

her...", the Coffin Texts say.

"The streams behind her

are flames of fire..."

The astonishing fact is that

goddesses everywhere

exhibit this terrifying

cometary aspect.

The Canaanite Anat, the Hindu Kali

and Durga, the Greek Aphrodite,
Athena, Medusa and
countless others.

And, of course, you can add numerous
counterparts in the New World
from the Incan goddess Chasca
to the Aztec goddess Xochiquetzal
to the legendary Nokomis of
North American Indian tribes.

The serpent or dragon is an
unexplained mystical archetype.
There is nothing like it anywhere
in the biological world.

And yet, the same recurring features will
be found in cultures the world over.

The dragon's disheveled
hair and shaggy beard
its knotted aspect,
and its world-wide appearances
as entwined twins,
its fiery or lightning-like emanations,
and its effusive feathers.

In all of the ancient serpent or
dragon images, it's the luminous,
filamentary, braided,
spiraling, metamorphosing

and the destructive
aspect that stand out,
the very traits of high
energy plasma discharge.

The attributes of these mythic
monsters remain unexplained
only until we see the hairy
and feathery attributes
of the electric arc
in the laboratory.

We see precisely the same thing in
enhanced images of the comet's tail.

And we see the same thing in the
comet-like discharges of distant nebulae.

Gases in a vacuum
don't behave this way
but electrified plasma does.

INTERSECT

The recent discoveries about the
comet have astonished astronomers.

Extreme ultraviolet light, X-rays, supersonic
jets, sharply etched surface relief,
and cometary nuclei
fragmenting explosively,
no one expected such
high energy events.

The Electric Model proposes that
the comet is a charged object
moving through an
electric field.

This would explain
these phenomenon.

But what is creating
the electric field?

Suddenly everything changes
and we are talking
about an electric Sun,
electric stars and
electric cosmology
and a whole new way of looking
at how the universe works.

The End

Dedicated to Amy

Acheson -- 1946-2005

Stephen Smith on Planetary Catastrophism & Electrical Scarring of Planets and Moon - Part One

Scientists now working with
the Thunderbolts Project
have proposed a new theory of our
Solar System and its history.

In the relatively recent past,
only thousands of years ago,
several planets moved on unstable paths and
engaged in violent electrical exchanges.

However, the apparent clockwork
regularity of planetary motions today
precludes many scientists from
considering the planetary instability.

But let us consider the evidence
that these events did in fact occur.

In part one of this
extended interview,

Thunderbolts Picture Of the Day
managing editor, Stephen Smith,
offers an introduction to the
theory of planetary catastrophism
and the electrical scarring
of planets and moons.

We begin by asking the question,
where did this theory of recent

celestial catastrophe come from?

It's difficult to say exactly where the idea of electrical scarring arose since there have been myths as far back as we can trace that talk about Gods hurling energetic weapons at one another and striking various objects like the Moon or the Earth.

The myth of Phaeton and Helios comes to mind as an example of an Earth-based catastrophic event.

Phaeton, as most people realize, stole the sun-god's chariot and he lost control and steered close to Earth causing a disastrous fire that, according to Greek myths, was worldwide.

So from a scientific standpoint some early proponents of planetary scarring were probably people like Ignatius Donnelly, who in the late 1800s thought that Earth in particular had suffered a terrible catastrophe involving the approach of a giant comet.

And then later, Immanuel Velikovsky

wrote 'Worlds in Collision'

where he proposed a

similar catastrophe

due to the interaction of

planetary bodies with Earth,

especially Venus and Mars.

The two theories, from Donnelly and Velikovsky,

have been expanded as time has gone on

and they've been modified because

planetary probes and solar satellites

have made essential discoveries

about the electrical nature

of planetary plasma-spheres.

Each planet, moon in the solar

system is pretty much immersed

in a sea of a great electric

field generated by the Sun.

And that field is formed because of the

action of electrically charged particles

streaming through

the solar system.

And that stream or actually a storm

of particles, is called the solar wind

and it's composed of plasma.

And plasma, you hear it often described

as the fourth state of matter,
but since it makes up more
than 99% of the universe,
in my opinion it should be considered
the first state of matter.

And as I just mentioned of course,
the Sun is an example of plasma.

Now the general idea that Earth
is somehow an electrical entity,
is probably thousands
of years old

but it's only been in the last hundred
years that scientists have given credence
to the possibility that we are
living in a dynamic solar system
where electricity is
an important factor.

The Sun's electric field extends
for billions of kilometers
and it influences the planets,
it influences their motions,
it influences how they
interact with each other
and it maintains the
various charge signatures
or electrical potential of

each of the planetary bodies.

Now, several members of

the Thunderbolts group

including Dave Talbott, Wal Thornhill,

Mel Acheson and me for that matter,

have come to the conclusion that

Earth and other planetary bodies

and moons in the solar system

were probably impacted by huge

bursts of electrical energy

sometime in the recent past and that

would be the fairly recent past.

And my personal opinion is that what we see

on various rocky bodies in our neighborhood,

was caused by the action of

gigantic lightning bolts

and clouds of electrically energized

plasma, rather than asteroid impacts.

Scientists on Earth were surprised

when space probes returned images

of heavily tortured

planetary surfaces

and enigmatic features that conventional

geologists have been unable to explain.

Planetary scientists were stunned by images

from the first flyby of Mars in 1964.

I think it was,

that was Mariner 4.

And in fact, the giant Valley,

Valles Marineris on Mars,

is named for that mission,

it's the Mariner Valley.

The surface of Mars was a complete

surprise to the mission team.

No one thought that Mars would look

more like the Moon than anywhere else.

So as far as lunar missions were

conducted in the 60s and 70s,

more craters on the Moon and

huge cracks and what they call

sinuous rills, were discovered there

and sinuous rills are

deep canyons on the Moon

and they run for a thousand kilometres

or more through the terrain.

And one of the most puzzling

things about some of the rills

is that they go

uphill and downhill.

If they were formed

from flowing lava,

then they certainly defy the laws

of physics, that's for sure.

So Mars and the Moon have a
lot of similar structures.

Mars exhibits sinuous
rills just like the Moon.

They wind across its surface
for great distances

and I might say also that the moons of
Jupiter, Saturn, Uranus and Neptune
also possess nearly
identical features.

On Jupiter's moon Europa, for example, deep
rills nearly cover its entire surface.

On Dione, one of Saturn's moons, there are
cliff faces that crisscross the landscape
and what they do is they outline gigantic
fissures that are many kilometers deep.

So you could name practically
any moon in the solar system
and I could point out features
that are difficult to explain
when we rely on
conventional theories.

For generations, geologists have
envisioned planetary landscapes
shaped incrementally

over eons of time.

But does this approach

actually explain

what we see on Earth and

other planetary bodies?

Most children are taught geological

theories on a simplistic level

when they enter

elementary school.

They're taught about erosion, the principle

that wind and rain are natural processes

that take millions of years to create

the various formations on Earth.

I remember being taught that rain is a

carbonic acid solution that dissolves rock.

It changes that to carbon

dioxide and other minerals

that gets swept down into the

rivers and then to the ocean.

This weathering is thought by conventional

geologists, to erode the mountains

in time spans that they mark as

hundreds of millions of years.

And that's rain and then wind is

supposed to carry dust particles in sand

that scour away cliff faces.

It's slowly eroding them down.

Steep valleys are said to
gradually become shallow meanders
and sharp mountains flatten out into
rolling hills that eventually disappear.
Freezing water expands pushing
cracks and boulders apart every winter
and after millions of years they're
said to crumble into pebbles
that pile up into mountains of gravel
and form sandy beaches or desert dunes.

But since the earliest days of the
Thunderbolts Project there's been a suspicion
that something's really wrong with
that long slow view of geology.

Now I know it seems like what
I'm saying is far too sweeping
and that I'm trying to supplant so-called
normal geological processes
with unproven hypotheses,
but since I can only provide a cursory
view of these ideas during the interview,
it's important to take what
I'm saying at face value and
the listeners should look into the matter
more closely when they have the opportunity.

I've written scores of papers
that discuss these ideas
so they'd be a good
place to start.

Some of the most interesting things
I've discovered in my research are,
for example, forests of mineralized trees
under some of the deepest ice in Antarctica.

Cores that they've drilled through
the ice sometimes contains scorched
and petrified wood when it's
brought up to the surface.

Mineralized trees are also prevalent
in the Prairie, in the American Prairie,
and elsewhere in the world.

They're called petrified forests
and they often contain thousands
of shattered and splintered
tree trunks that have
been turned to stone.

There are fossilized animals in
literally unbelievable numbers
encased in sedimentary rock
that's been hardened into stone
and these deposits are
hundreds of meters thick.

And you can find millions
of fish skeletons
that look like they're
swimming through sandstone.

So I ask what force
can fossilize fish
leaving their skeletons
in lifelike postures
as if they were killed and
turned to stone in an instant?

How could it keep them whole without
being crushed or scattered?

Also there's anomalous formations on
Earth that can't be readily explained
and some of them I've written about would
be like the great Trango Tower in Pakistan,
the Brandberg Massif in Namibia,
Shiprock - New Mexico,
Ayers Rock,
the Olgas in Australia,
mount Thor on Baffin Island,
then Table Mountain in
South Africa for instance.

Now when the Cassini space probe
entered orbit around Saturn,
it found that several of Saturn's moons

also demonstrated electrical scarring.

There's signs of electric

discharge machining everywhere.

Cathode sputtering, anode

blisters and sinuous rills.

They're cut into those moons.

For example, Tethys

is a moon of Saturn.

It's only about a thousand

kilometers in diameter,

yet it's got huge scars on its

surface in comparison to its size.

Saturn's other moons exhibit the

same difficulties with scale,

moons of small mass with craters and canyons

that are hundreds of kilometers wide.

On Tethys, for example,

there's Ithaca Chasma

and the Odysseus multi-ring

formation, as it's called.

Now, Odysseus is 400 km wide.

And remember Tethys itself

is only 1,000 km in diameter.

Odysseus has steep walls, its interior is

flat, it has wide terraces along its walls

and in the center is a

circular mountain range.

They call it the crown of Tethys and it's more than 5 km high and 100 km in diameter.

Ithaca Chasma, that

I just mentioned,

is 1,000 km long and 100 km

wide and it's also 2 km deep.

So since frozen, barren, airless moons and a

warm, water-rich, oxygen planet like Earth

are home to bizarre landforms and

structures that defy convention

I think it's a mistake to use

Earth-based geological theories

as a model for the formation

of what we see out there.

Rather I think we should

do the exact opposite

and use what we find in the Solar System

to model the topography of Earth.

Scientists generally

envision only two processes

when explaining craters

on planetary surfaces,

impacts and volcanism.

But countless crater formations

routinely defy these explanations.

As far as craters on planets and moons, those are easy to see because the moon is so close to us that we can get some idea of what a heavily cratered body might look like.

But contrary to the impact of giant asteroids or extinct volcanoes being the cause of these craters, they have highly anomalous features.

For example, they have flat, melted-looking floors.

They have very steep sidewalls.

Now you would think that an impact would create a conical formation that's rather chaotic-looking and not leave vertical sidewalls on the sides of a flat melted crater floor.

There's also a lack of blast debris around the crater.

There's no giant fields of boulders and dust starting out with large objects

and then tapering off to small
objects around these craters.

In fact, the surroundings look like they're
as clean as the crater floors themselves.

There are also dendritic
ridges extending up the sides
and I know Dave Talbott has done quite
a bit of research on dendritic ridges,
particularly on Mars.

But those same dendritic
ridges are found on the Moon
and they're also found on the crater
walls on other planetary moons.

Some of the craters have
ramparts around them,
in other words, the crater
is inside of a raised mound
and surrounding sometimes
these ramparts are moats,
their deep trenches carved around
the exterior of the crater walls.

Craters (lay) often have
offset multiple rings.

Just like I mentioned
earlier on Tethys,
craters have central

peaks or bulges.

Now a lot of planetary scientists
claim that those peaks or bulges
are due to what I call it,
what's called rebound effect,
that when an asteroid hit, it
melted the surroundings and it
started to rise up like you sometimes
see slow-motion films of water-drops,
where they rise up and leave
a peak in the center, briefly.

And they contend that that's been caused
by the same sort of rebound effect.

However, those central Peaks
are often steep and sharp.

They have flat sides, there
are often multiple peaks
and a lot of times the bulges
in the centers of craters
are criss-crossed
by deep channels.

So I don't understand how any of
that sort of formation could exist
when you're talking about a
rebounding liquid that then hardens.

You would think it would be a slumped-looking,

rounded, relatively coherent looking bulge
and not these trenched bulges
or sharply pointed peaks.

Another interesting thing about
craters on the moon and other bodies,
is that they have hexagonal
or other polygonal shapes.

I've seen craters on Mars, for
example, that are square!

So I have no idea how an impactor is
going to leave a hexagon or a square
when it strikes a solid surface.

There's closely spaced
chains of craters.

You have smaller craters on
the rims of larger craters
and in fact that seems to
be a preferred formation.

When you look at craters
on Mercury, for example,
you see these wide-angle views that show
hundreds of craters within the field.

On more than half of them, you see multiple
craters on the rims of larger craters.

The craters often have
scalloped edges too,

like they've been cut out
with a cookie cutter
and one of the perfect examples of
that is Victoria crater on Mars
that a lot of people are probably
familiar with. It got a lot of press
when the Opportunity Rover parked
on its edge for quite some time.
Unbeknownst to many
scientists today,
experiments with both plasma discharge
and electrical discharge machining
have reproduced many of the cratering
patterns that defy conventional reasoning.
Plasma discharges are scalable.
When you look at formations created
in the laboratory, for example,
Dr. C.J. Ransom at Vemasat labs
performed several experiments
where he blasted different materials
with rapid electric discharges
at a very short duration.
He formed domed craters. In other
words, you've got a big old crater
with a melted looking interior
and a dome in the center

and those formations can be seen on
Mars, particularly at the South Pole.
He formed bullseye craters, that is craters
with multiple rims, one inside the other.
He created various sample materials, sandstone
and calcium carbonate and other materials
that might be found
on planets and moons,
and when he exposed them to these
fast transient electric discharges,
he created a lot of different
formations that we see.

It's not exactly electric
discharge machining
but electric discharge machining
is an industrial process
where they use high-energy electrical
discharges to machine metal.

And they use it because it gauges
out tiny little pits in the metal,
leaving very, very
smooth surfaces.

So they can make very complex metallic forms
that don't require a lot of finishing.

And when you look at some of these
surfaces under an electron microscope,

and then compare, for example, some
of the formations on Mars, it looks,
you could almost tell that Mars must have
also been electrically discharge-machined.

Since the Earth and all of the bodies
within the Sun's electrical domain
are electrically charged,
it is not surprising that we see ample proof
of electrical scarring happening today
on a smaller scale.

You do see electrical scarring as I
would call it, on comets, for example.
I would say that we've been fortunate in
this time that we've been able to send
spacecraft out to different comets
and observe their features.

One of them, that Wal Thornhill wrote
about extensively, was comet Wild 2.
And Wild 2 is a perfect example of the
electric discharge machining hypothesis
because its surface, rather than being a
slushy snowball with a bit of dirt in it,
looks like it's hot and
dry, more like an asteroid.

And when you look at its
surface and compare it

to some of these electric discharge
machined metals, they look very similar.

The comet Hartley 2 also revealed
what could be considered
an active process of electric
discharge machining on its surface,
because one of its ends
was glowing brightly
as if it was being eroded
by a plasma discharge.

We didn't get any close-up
views of that end of the comet
but surrounding it was a
cloud of ultrafine dust
that had been presumably
machined off the surface.

Now also you can look at moons
like Io, Jupiter's moon Io,
and you can see that there are what
they call, volcanoes on its surface
but these volcanoes are so hot
that any imaging by any spacecraft
of these formations has overloaded the
camera because they're so bright.

In fact all the images that you see on the
web, of Io's volcanoes, are false color

because the camera imaging system
simply could not resolve the interior,
they were so bright.

Now as Wal Thornhill
has pointed out,
because these formations
tend to move around on Io
these are probably
the touchdown points
of vast electric circuits that are
occurring between Io and Jupiter.

And in fact, Io moves through
the magnetosphere of Jupiter
and it acts like
an induction motor.

It's actually creating current
flow between it and Jupiter,
that are millions of
amperes in power.

So I would say that Io and Wild 2 and comet
Hartley and as well as, for example,
Saturn's moon Enceladus with
its bright plumes of vapor
that are being machined
off its surface,
are excellent examples of what might be

happening currently in the Solar System.

However, I should point out that some of the things that I've been discussing

on Mars and Earth and

Venus or Mercury,

those events are orders of magnitude

greater than anything we can see now

because we're presuming

a Solar System

that was far more electrically

active at some time in the past.

Stay tuned to the Thunderbolts Project's YouTube

Channel for Part Two of this discussion

You've just entered the

theater of an alien sky.

If the words and images seem strange to

you there's a reason for this.

Our world was once a vastly different

place.

To experience this won't hurt you and

there is nothing to fear.

The subject of this video series is the

ancient experience of towering

celestial forms that

are no longer present.

Worldwide testimony points to

planets extremely close to Earth

and gathered in close congregation.

We've called this gathering of

planets the Polar Configuration

because it was centered at the celestial

pole, around which the heavens visually turn.

The huge sphere of Saturn filled the circumpolar sky.

Close to the centre of Saturn stood

another body, the planet Venus,

discharging electrically, the streamers of

this discharge stretching upward across

the face of Saturn. And seen in

front of Venus was a smaller, darker

reddish sphere, the planet Mars.

At a critical juncture, a crescent cast

by light from the Sun,

appeared on Saturn rotating in an awe-inspiring cycle of day and night.

That's because the axis at the Earth was

aligned to that of the assembled bodies,

causing the configuration

to rotate visually

above observers in the northern

hemisphere, exploding into life at sunset,

the beginning of the

archaic day of the gods.

Yes! The claims are outrageous,

but also extraordinarily specific leaving

no doubt as to what the ancient evidence

should look like, in stark

contrast to all common opinion

about the ancient past. From a single

snapshot of the configuration,

seen here, we can work backwards to the

first appearance of these bodies out of

an undifferentiated cloud

or sea of dusty plasma. We can follow the

configuration's evolution through phases

that range from quasi-stability

to earth-shaking catastrophe. In these

presentations, we will suggest that all of
the mythic and symbolic archetypes
can be explained by the
presence of these bodies,
their electrical exchanges
in a plasma medium,
and their relative movements
in relation to each other.

Intense electric discharge formation
stretched between the gathered bodies,
transitioning from one form to another.

First to emerge was the triangular, or
threefold, discharge form of Venus -
interpreted mythically as
the name of the creator,
or 3 goddesses in one,
a widely acknowledged
archetype still unexplained. Here three
goddesses reveal their triangular form
with their entwined fingers, but the
variations on the ancient theme are almost
endless. And the initial
three-faced form is inseparable
from the identity of
Venus as the emerging,
radiant Great Star. The ancient astronomies

name the components of this dynamic
configuration as planets.

Different sizes and colors, and changing
relationships to each other.

The shock comes from seeing the described events
in the demanding terms of 3-dimensional perspective
where relative movement said the bodies dramatically
alter the visual appearance of the configuration.

No room for arbitrary explanations. With
the later displacement from it's polar
position, the configuration was seen
well into the southern hemisphere.

Electric discharge forms metamorphosed
violently above human witnesses
providing us with a stunning
comparison to plasma instabilities
seen in laboratory experiments.

Our message comes down to
one overriding conclusion:

Things anciently remembered bear no
similarity to the commonly accepted
picture the ancient sky.

In a former time, our world was
indeed a much different place ...

Well, they say the planets are as the lore
of God which moves in mysterious ways
but apparently, I've got a bad
throat, something's concocted here.

It won't silence me, no, but I've
got some medicinal knowledge here
so we'll pop that
down for the moment.

Instant fossilization.

Now what a subject!

Everyone's talked about planet
configurations, of the damage they do.

This could be one of the subjects, I think,
we should tap into far more than we do.

But Instant Fossilisation...

Now, around the world,
living plants and animals have
been petrified into solid rock
in violent paroxysms of nature!

Their end was agonizing
and instantaneous
as witnessed by their
contorted death throes.

Now there are plant fossils
and there are animal fossils.

How do you turn

this piece of wood
into this fossilized
piece of wood
which has high calcium, silicon,
and other mineral content?

Or even into this
fossilized piece of wood
which has very
high iron content?

I'm not going to the next slide.

So let's look at four
examples of petrification
and we will come to the
difference between petrification
and just mere
fossilization, soon.

Here's some.

Ammonites are like squids but in a
shell, swimming along soft-bodied,
and now we see them
fossilized within this beach.

They're associated with the Jurassic age
and can be anything up to six foot across.

So let's go, that's
the first example.

Let's go to another one.

I'd wanted you to actually see
the reality of these things.

So these have come off
the tree on Lesbos

And how do you explain this?

They are all cut off.

Not ripped apart, cut!

And it's solid rock, solid rock.

Amazing!

That's example two.

So this is the reality
of petrification.

Here's the next one.

Here in the area and he was

leveling that - kinda took maybe

It took ten feet off the top and up and
the bulldozer operator looked behind even
there were big bones sticking
out everywhere he had been.

Right and it's
an incredible site.

Now we're treating there roughly,

I've got to think in terms of feet.

Where it's about a 100 foot
by about 80 foot something

- About 125 by 100.

- Yeah

- This is a kind of ellipse

and although this is a mammoth site, in actual fact there's a number of species in situ, isn't there?

Right, the mammoth kind of dwarf everything else.

That's what I love.

Notice the layering of the limestone.

I will come back to this anyway.

This is a fourth example and this is my favorite.

The northward... whoops, sorry!

The northwest mineral gallery I've come to and you've got not only petrified trees to show us but some really interesting concretations containing... you tell us about!

Yes Peter, these, um, what you're going to see inside of the museum here are fossilized crabs. They're actually soft bodied fossils which are found inside of concretions.

So when we say concretion, we'll
be talking about a round egg shaped rock
and it's solid rock.

- Yes

And within that rock when you break
them open, there is a crab, right?

And that crab is actually
rock as well, is that right?

- Yes

Fossilized, so okay, sorry.

Just want to make sure

I understood.

Yeah, well, concretions are, the most popular
and known kind of concretion are round rocks.

There are other kinds but the ones
most of us know are round rocks

and they are, they often form

around the nucleus of a fossil,

a little bit of rock, a little,

I mean a little bit of shell maybe, a

little piece of leaf or something.

- Yeah

In this case we have

the whole crab.

- Yeah

And the crab has a

lot of his anatomy,
it's all right there, you'll be
able to see his orifice,
you can see the spikes on
his, his back, his claws.

Right, you'll be
able to see them
down to the minute detail
of the whole skeleton.

- Yes

So that's amazing, isn't it?

So what do these petrified
organic fossils,
remember they were actually
living, have in common?

Their end was instantaneous
and dramatic.

Their chemical
composition changed,
they changed from a carbon water
base to silicon whatever.

But the unanswered question,
what pungent force of nature
changed their chemical composition
whilst they're in their death throes?

Let's look for some answer.

Now conventional geology counts time as a
slowly moving tool that leached their bodies,
all the chemicals are taken out,
and replaced them, the carbon
with silicon and calcium.

That's the conventional wisdom.

But the rapid decay
of biological matter,
in my opinion, makes a
nonsense of this theory.

What then is the answer?

Now let's go outside
the scientific square
but before we do, I just want to get
some of these terminologies sorted out.

There's fossilization,
there's petrification.

Now, fossilization can preserve
tissue and particularly bones.

For instance Alaska and
Siberia, Antarctica.

The uh, within coal and the peat of
Snow Mass Colorado is, when I visited,
where they've got
mastodons and mammoths etc.

There they're preserved, but they're

not actually changed to rock.

Petrification is a subset

where the original carbon-like material

is either replaced or transmuted,

remember that term transmuted,

to different compounds of silicon,

calcium, iron, aluminum, etc.

In other words,

they turn to rock.

They're not just preserved.

Now although fossilization generally is

undoubtedly the result of cataclysmic events,

as you know, we can read

about in Velikovsky etc.,

petrification tends to

occur either in a bolus

such as we saw with Larry Agenbroad

in South Dakota or along coastlines.

Now I'm not sure how we can

explain this but let's try.

So there you are.

Petrification would seem to

magnify the catastrophic event

and actually transmute

elements and compounds.

I suspect this is a result of

powerful electromagnetic forces
that have centralized
in a certain area.

They're not necessary
over a broad area
such as the normal catastrophe
that does fossilize things,
but petrification tends
to be in secluded areas.

Not sure why but anyway.

Often these,
so there we go,
we've got some examples here.

There's the Hot Springs ones,
Romsey Marsh in Australia,
at the Jurassic Coast we saw before and
Diamond Bay which you'll see later.

OK, the causes of petrification.

Now, I noted before,
we should search in other places
apart from scientific endeavor.

And mythology from Rens Van der
Sluijs to Dave and Wal, etc, etc,
holds a lot of the key
to this, in my opinion.

They're witness to

catastrophic destruction.

Now Georges Cuvier who visited the Americas around about 1800 or so, around the time of the French Revolution and the American War of Independence, investigated a lot of apart from looking...

He was a paleontologist.

Apart from looking at bones and things like that, he was extremely interested in local or the Indian mythology.

And Adrienne Meyer studied this a lot and followed up on Georges Cuvier's efforts and she advocates, as a lot of this myth, Indian mythology talks about, the cosmic thunderbolt as the weapon of choice in this megafauna destruction.

Now let's just listen to this.

Monstrous creature preyed upon early humans and that the Creator then wanted to make the Earth safe for, for the new human beings.

So the Creator then killed them with a sort of cosmic lightning bolts.

Something beyond just

ordinary lightning.

So it wasn't just as description

of normal everyday?

No!

No, this was a massive

destruction of these creatures.

And it's actual fact that did happen,

the megafauna are now extinct.

They did, yes.

And they're the, the early

colonists described

the Americas as a land

of, covered with bones.

I mean, they were

everywhere you went.

There were skeletons emerging

or partially petrified, yes.

And apparently Georges

Cuvier came out.

Georges Cuvier, the father

of paleontology in Paris.

He was extremely interested in the stories

that were told by the Native Americans

because he was at that time developing

his theory of extinction and evolution

which was quite different to, let's say, Darwin and some of those. I mean, Darwin essentially was saying that it's taken millions of years to develop whereas Georges Cuvier was, more or less, saying something like number of extinctions have occurred.

He thought there must have been a series of catastrophes whether there were floods or volcanic or something like that.

I think he settled on floods but he was very interested in the disaster scenarios that the Native Americans had in their oral cultures explaining the disappearance and mass...

OK, so let's look at a couple of these, there's here these mythologies from the Native Americans and here's one cited by Erdoes and Ortiz around about the Creator.

We'll get to quote of what I said, the Lakota Nation had sent hunting

tribes down here for many, many years.

And they had a different interpretation
on what had caused the fossilizations
of these great beasts.

Karley repeats the traditions
of the first Americans.

The Creator sang a
song of destruction
and set down fierce thunderbirds
to wage a great battle
against the humans and
the giant animals.

They fought for a very long time
because the evil humans and the
animals had become very powerful
and neither could
gain an advantage.

Finally, at the
height of the battle
the thunderbirds sent down their most
powerful thunderbolts all at once.

The fiery blast shook
the entire world
toppling mountain ranges and setting
forests and prairies ablaze.

The flames lept up to the

sky in all directions

sparing only a few people

at the highest peaks.

It was so hot that the world's lakes

boiled up and dried before their eyes.

Even the rocks burned up red-hot

and the giant animals and the

people burned up where they stood.

A great flood followed and

when the survivors went out,

they found bleached bones of the giant

animals in mud and rocks all over the world.

They're still found today

in the Dakota badlands.

But can we believe these bizarre

stories of mass destruction?

Mythology from the Lakota Nation tells us

precisely how this destruction happened

and it was not so long ago.

Now what event was

that, we're not sure.

You know, you go back through the mass

destructions of the Velikovsky and Hesiod,

you know, from around about 2000

BC before right up to a 500 BC.

So we can tie that in though with

a lot of the Greek mythology
and Rens Van der Sluijs is very good at
that as are many of the people in the EU.

So let's look at some of this,
particularly the Gorgons.

Earthquakes and volcanoes routinely
emit flashing transparent plasmoids
emerging like giant bubbles
out of the ground.

These chaotic electromagnetic formations
come in many shapes and colors
and can travel at supersonic speed while
seamlessly passing through or alternatively
boring through obstructions.

Plasmoids reach far
in destruction
and according to Regan Buck, they burnt down
cities and tunneled through mountains.

And in great fear the ancients called
these ground emerging destroyers Gorgons.

Hesiod was writing about
them around 900 BC.

Stratification of
rock under the sea.

Now it seemed that the Gorgons may have been
active in Australian aboriginal mythology.

Verbal records and dance traditions
recorded these demonic plasmoids
at many sites and
in various forms.

Their Rainbow Serpent was responsible
for carving river systems
as Lichtenberg scars on
the face of the Earth
and even held responsible for
building mountains and forming lakes.

Fantasy, you might ask?

Well, I don't believe
it was fantasy.

Let's go to the next.

So here we go.

We're in search of the
causes of petrification.

We've dealt a little
bit about mythology.

What about going to the scientific
side of things and plasma physics?

Anthony Peratt certainly is an advocate of
giant plasma discharges that shaped history.

To him, this mythology could be
simulated in his laboratory.

But what evidence do we have that electrical

phenomena can cause elements to transmute?

E.g. water, and I say water so

think about that, to calcium.

What tool of nature fossilized these

once watery marine ammonites?

The ones along the

Jurassic Coast.

We have a powerful clue.

Now there's two.

There's Eric Milton and some work Wal did

at the Telstra Laboratories years ago

which gives you an indication of

the power of electrical discharge.

Conversion of the wood to rock.

Wal again demonstrates the creation of

fulgurites by powerful electric discharge.

Here

There we go.

Right there in that

light, right there.

What is this, Wal?

This is a fulgurite.

It's fused silica which follows the path

of the lightning or electrical discharge.

Which is how these

trees were petrified?

Further evidence

comes from Canada.

E.R. Milton describes his examination

of a petrified tree trunk in Alberta.

The piece was pure

clean silica inside.

It was coated with a rougher opaque

crust of partially fused sand.

The tree whose stump was petrified

was alive five years ago.

After the tree was cut down to

accommodate the right of way

for a new power

transmission line,

an accidental break allowed

the live high-voltage wire

to contact several tree

stumps in the ground.

The power was cut off

within hours of the break.

All of the tree roots which contacted

the broken wire were fossilized.

Obviously, electricity can

metamorphize matter quickly.

Look at this!

A round about 67 foot long [this

is Lesbos, again] solid rock

but it's amazing.

clearly a tree

See how this is actually

still wood, part of it.

But otherwise, it has

been turned to rock.

A substance a bit like marble.

Here's another example.

Opal mines in Australia,

White cliffs.

We're just going to go down one of the

opal mines and see some interesting things.

These are essentially limestone caves

carved deep into the hillsides.

This is where they

find the opals.

But what really intrigues me are these

Lichtenberg figures you see in front of you.

I interpret these as telluric currents coming

deep from within the bowels of the Earth

and thrusting upwards under some

dramatic geophysical crisis.

These are where the

opals are found.

This current coming up through the

Earth seems to have transmuted
the calcium into some
sort of ferrous compound.

Notice all the red.

And at other times, under different
conditions, it's formed opals.

And the opals we're interested in are these
shells and various other forms of life.

They've been totally
converted and opalized.

Some scientists take this
as a sign of very old age.

But are there other
explanations?

Let's continue our
investigation.

Well with red colored rock pebbles scattered
over miles and miles of countryside.

I suspect C.J. Ransom with experiments
in creating concretations
in his laboratory may have been very
interested in these rounded pebbles.

They bear a remarkable resemblance
to the Martian blueberries.

Is this yet again some evidence of a
major electrical discharge event?

In fact, my colleague in the US has done experiments on material like Martian soil and he has created the blueberries that they found.

- OK

You know, he's done that in the lab and yet the blueberries themselves are a mystery at present to the planetologists who are studying the surface of Mars.

We can enlighten them.

Well it's interesting that you say that there are magnetic reversals found at the site because that indicates a change in electrical currents.

Basically you don't get a magnetic field without an electric current.

- That's a precursor to

That, yeah, that's an indicator that we're looking at an electrical phenomenon.

And at certain places, for instance Lake Mungo, because after a magnetic variation when the rock turns molten it actually collects the

signal of the magnetic field.

It was found that a magnetic field was
up to eight times what it is today.

That means a powerful
electric current flow.

Could that be a possible
indicator of petrification here?

But what if.., here's
another question.

This is where we start to think
hopefully a bit laterally
and I don't have a solution
but I'll propose a couple.

What about the medium the fossils
were actually embedded in?

And in the cases we're
talking here, it's water.

The ammonites, the crabs possibly,
well we would think so certainly etc.

They're in a bolus and it's
a volumetric disaster.

So if, let's have a
thought about how,
if a crab is in water which it was,
and the fishes were in water,
and the mammoths have

fallen to watery pit.

Could the calcium
change to water?

Big question and certainly
is contentious.

But if you look at the chemistry here,
we got H_2O , two elements, hydrogen and oxygen,
with a combination of 10 protons,
2 hydrogen protons and 8 oxygen.

Calcium, the basic stuff of limestone is,
has a proton count of double that, twenty.

This is twice that of water.

All that is theoretically needed
to convert the water to calcium
is an abundance of neutrons to match
the lack of ones in the hydrogen
which only has one
proton but no neutrons.

Is that feasible?

You know, the chemistry's
there, I mean,
some people could look at H_2O as
an isotope of calcium, possibly.

Russian studies of
lightning discharges
have shown that neutrons are

promulgated during a lightning storm.

So neutrons could be
involved in this.

It's a possibility.

But something tells me if the
fish and the crabs are in water,
and that's in rock later on,
how the hell did that happen?

And this, the water itself has been
transmuted together with the bodies.

And they have the periodic tables; hydrogen, helium,
lithium, beryllium, boron, carbon, nitrogen, oxygen,
we know them all and
how close they are.

And only one, for instance, nitrogen
oxygen, only one proton away.

Silicon, the most abundant element
on Earth if I remember rightly,
they're all fairly
close together.

So there's a lot of scope and
we still don't understand
how elemental change can occur.
It certainly can do, though.

But how can it?

Plasmoid research by Matsumoto

and a number of other people,
shows that when you put electrodes
into a certain solution,
the damaged electrodes can produce new
totally different elements in that solution
and also plasmoids.

Let's have a look at a
little bit of this.

July the 19th, 2012, an
eruption occurred on the Sun.

A moderately powerful solar flare
exploded on the sun's lower
.. sending out light and radiation.

Next came a CME which shot off
to the right out into space
and then the Sun treated viewers to one
of its dazzling magnetic displays.

A phenomenon known
as coronal rain.

This is a little bit about
the Kimberley diamond region
where a giant Barramundi jumped out and
came back in on diamonds on either side.

Other icon of
Australian mythology,
the Rainbow Serpent.

The Rainbow Serpent is cited by the aboriginals
as the creator of geological formations
such as rivers, mountain
building and gorge cutting.

But the other real question is,
could these very same
processes create diamonds?

Plasmoid research in cold fusion
suggests that this might be replicated.

In laboratory experiments with various
electrodes immersed in different solutions,
we can witness cold fusion.

This creates new elements around
damaged parts of the electrode.

The electrical current flow forces mini
plasmoids to emerge from these very electrodes.

Some quite curiously look
totally like comets.

With their tails and angled colored sampling.

[This is very interesting to me at least.]

Claims by Wal Thornhill that
electrical phenomena are scalable
gives us pause to think.

The emerging plasmoids then leap and
wander across sensitive gel plates.

Work from Matsumoto and others show how

they crater and form tracking lines.

In fact, they perform exactly as the legend
told to me by Aboriginal elder Murray Butcher.

He tells the story of

the wee Wagtail bird

that lept and darted along

rivers, boring water holes.

He insists these are

actually facts, not fiction.

Large plasmoids from

volcanoes and earthquakes,

these are other

electromagnetic phenomena,

have been shown to sculpt the Earth as

they bore and tunnel at great velocities.

They often convert to the

tightly related tornado.

Even tsunamis are produced

when giant plasmoids explode.

But the plasmoid's ability to create

new elements whilst emitting light,

is an area still at a pioneering

stage of our understanding.

Where on Earth these major

electrical discharges came from,

that completely changed the

geology of the landscape?

And what's more, what could possibly
have caused the electrical fossilization
of not only giant wombats
but mammoths and other megafauna in
this period of the Earth's development?

Both of us agree that some
form of Peratt instability
led to the final discharge
causing these geological effects
and I believe, electrical
fossilization.

This is not only backed up by
mythology, with petroglyph carvings
but also by a large
amount of mythology.

Not only Aboriginal, the North
American and around the world
from Zeus's thunderbolts, the
aboriginal lightning brothers.

Aboriginal mythology and tradition
is all about cosmological warfare
in the plasma space.

Comets are mentioned, meteorites,
planets in disturbed motion,
great flashes of thunderbolts

from outer space,
earthquakes, tsunamis
covering the land,
people going mad,
huge oral traditions.

But one thing is plain
in Aboriginal mythology.

It's not myth, it's fact.

Every word that's breathed by these
oral traditions actually happened,
here in Australia.

I'll just pause
that for a second.

I hope I can go on with this.

This is Diamond Point Bay
where I live, Victoria.

And the Australians spell it wrongly
but we won't worry about that.

See this big hole here.

This is where a giant wombat,
if you don't know what a
wombat is, it's like a badger,

I think you have badgers
here, I'm not sure.

But it was the size
of a Volkswagen.

It was fossilized, petrified.

And this amazing area

it only came out last year.

But hopefully I can play this.

We might go on to the next one.

And home we go!

Electric fossilization

and the Carolina Bays.

I decided to include

this because

you're finding out that

it's again the possibility

of things that have happened that have

transmuted or created elements.

So I won't bore you with

reading all that out.

Let's see some of

the guff about it.

This is Rick Firestone from

Berkeley National Laboratories.

He ran the first

cyclotron in the US

and is the current table

of isotopes expert.

He knows his stuff.

Had to say about these

mass destructions.

We discovered that there was
a parallel line of research
where they had been studying the
disappearance at that same time
of mammoths and bears and horses ...
and bison.

All of these animals virtually
disappeared from just that region.

So it's kind of like a dress rehearsal
for what happened 13,000 years ago.

So he did a survey
of the Carolina Bays
and the Carolina Bays, you'll
see about them in a moment,
but there are thousands of depressions
all on the east coast of the US
and up into Canada, I believe, and
even down this far in some cases.

But let's see what he found out.

The remarkable study of
the Carolina Bays system
by Berkeley nuclear
physicist Rick Firestone
stimulates even further speculation
on the production of diamonds.

The Carolina Bays is a vast system
of shallow elliptical depressions
whose origin is
highly debatable.

Some claim meteorite storms, however their
shallowness and lack of debris precludes this.

Others speculate windborne
dramas from past eras.

However, plasmoids may be
involved in the Bays production.

Importantly it should be noted
that Carolina Bays accompany and bank
along Lichtenberg river systems.

EU Theory suspects,
Lichtenberg river systems
are ancient electromagnetic
discharge lines along,
and I suspect, beneath
the Earth's surface.

So what did he conclude?

Well, he was laborious in a lot of these
studies, driving around hand and foot,
analyzing them and taking
things back to the laboratory.

But he found they contained large
concentrations of nano diamonds

and we're talking about
creating new elements here.

This is not outside of
these small craters.

It's actually within them.

Outside it's totally different.

Nano diamonds, iridium, helium-3,
fullerenes, that's Bucky Balls, carbon glass,
hollow spherules and
magnetic particles.

Could an electrical discharge
or an emerging plasmoid
such as we saw with
the electrodes,
plasmoid instability
possibly create diamonds?

And we're talking here
about transmutation.

So is this a vehicle of transmutation, if
plasmoids did actually create the Carolina Bays?

Is this an indication of, they could
do other things like petrification?

And some backup stuff
here that I was curious.

I actually went to Calabria
but I couldn't find these.

See these round craters?

They were penciled in at this stage

around about 1560 I think it was.

There were huge earthquakes

killing thousands upon thousands

and one of the things that happens with

earthquakes and volcanoes, as we know,

plasmoids emerge out of

the Earth on mountains.

It's well documented

and these, they're so.

They're fairly similar to the

Carolina Bays but in a smaller way.

So Louis Hissink, a geologist involved

in diamond exploration in Australia,

said to me, he said you know,

some of the cherished theories

we hold may be quite wrong

and that's a typical EU

statement if I've ever heard one.

Get it right... Here's

the summary note.

Sort of dead and perish, they're actually

living at the time of fossilization.

They're instantaneously, you believe,

frozen if you like, in time.

Yes, what these fossils
dramatically illustrate,
even though concretions with soft body
fossils are found all over the world.
These will dramatically
illustrate to you that
these are not creatures
which are disarticulated.
They appear to have undergone no
breakdown and no decomposition.
They are in very lifelike positions and
you may have some of your own favorites
but some other examples of soft
bodied fossils were found by,
that are in particular moments of life
seemingly fossilized and turned to stone.
There was a plesiosaur that was
giving birth in Holtzmaden, Germany.
She was seemingly fossilized.
The famous paleontologists Charles
Wolcott also found concretions
which had specimens of jellyfish
which were actually dividing into
two when they were fossilized.
So it is an instantaneous thing.
It would seemingly be so.

They display all of the kind of characteristics that you would expect from an electrical discharge, formation of these types of stone orbs. It's got the layering, it's got the, it's got the equatorial bulge, if you like, it's got the polar markings and and it's wonderful because I think that the work that C.J. Ransom is doing kind of gives us an alternative unified view of how this type of geologic formation which is really found all over the United States, all over the world, could be, could have been formed not by a patchwork of explanations depending on the area but really we can see that the qualities that we see in concretions in electrically formed, in electrically formed stone.

That's Paulina West, by the way.

So here we are. Let's start summing up now.

Here's a classic, a petrified fish turned to rock in rock, eating another fish.

Caught at a moment of death.

Quite staggering.

So let's sum up what

we've gone through.

Is instant fossilization

an electrical phenomenon?

And I think we've, we can

never say positively

because we haven't

actually seen it happen

but let's go through

some of the things.

Mythology states unequivocally

that plasmoids and...

I was talking to Rens Van

der Sluijs the other day.

He's coming up with a lot of research

he's done in mythology that brings in

not only electrical

discharges such as Zeus

but plasmoid formation.

So I'm waiting to see on that.

But ...and celestial thunderbolts

cause petrification.

C.J. Ransom and others have shown the ability

of electrical discharge to form (concretions).

It would appear that the medium in which the petrification has occurred has also dramatically changed and no one seems to get that bit.

That's so important to me.

You know, something's in rock.

How can it be in the middle of rock?

I mean, if that was molten they would have just vaporized it, surely.

But it's not, it's intact.

And it's therefore, has the rock, has the water turned to rock as well?

Big question to me anyway.

Elemental, a change occurs during the process.

At some fossilization you get marginal change.

You certainly get mammoth bones preserved in muck and peat and ice.

But in, particularly in petrification it's turned to rock.

Elemental change, compound change.

The change, and this is an important part,

is very rapid and theories that
endorse long periods of transition,
the classic theories,
do not fit the fact
that biological matter
deteriorates very quickly if
not preserved by some means.

And that about sums

it up, thank you!

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you there's a reason for this,
our world was once a
vastly different place.

To experience this
won't hurt you
and there is nothing to fear.

Before the Counting of Time

In previous episodes
of this series,

we've claimed that the
first civilizations arose
under the influence of
extraordinary natural events.

But these events including phases
of overwhelming catastrophe
remain largely
unrecognized today.

In supporting this extraordinary
claim, we've offered global evidence
suggesting an ancient gathering
of planets close to Earth.

We've called this planetary
assembly The Polar Configuration

due to its alignment with the
rotational axis of the Earth.

Documentation supporting a
reconstruction of the configuration
comes down to us from
cultures the world over,
we see the events reflected
in the rise of kingship,
the emergence of the
first writing systems,
of monumental construction,
and the great national
wars of expansion,
all explicitly linked to
intensely remembered events
when planets appeared
to battle in the sky
as clouds of celestial
debris shrouded the Earth
and great volumes of dust and
rock fell upon our planet.

We've called this human memory "The
One Story Told Around The World."

The universal tradition takes us back to an
age of planetary gods and celestial wonders,
the universal source of the world's

archetypal myths and symbols.

And so we've claimed that
there could be no archetypes
without the implied
global experience.

It's the common experience that gives
the archetypes both their context
and their concrete
detail the world over.

We now know that since the dawn
of the great civilizations,
memories of fear-inspiring catastrophe
pervaded all of human activity,
an outpouring of imagination
and pervasive fear,
doomsday anxiety
showed its face in every
culture that followed.

And above all else, this body of
magical and ritual practices
sought to deflect or to forestall the
return of remembered catastrophe.

Our historical argument is drawn upon
evidence left by the great civilizations
starting with the appearance
of formal writing systems.

But there is also a layer
of prehistoric evidence
and this archaeological layer can
help us to visualize celestial events
before the appearance
of any written records.

This prehistoric evidence directs
our attention to the human response
in the very midst
of a deadly threat,
in other words, contemporaneous with
Earth-threatening catastrophe.

Here we're not dealing just with a
compulsion to reenact celestial dramas
but something more
immediate and more urgent,
refuge.

Human beings either seeking shelter
from anticipated catastrophe
or desperate to find refuge from
catastrophe already under way.

Seen from this more
radical perspective,
today's common picture
of a prehistoric world
takes on nuances that archeologists

appear to have missed.

Critical lines of evidence converge to
suggest a human retreat into caves.

Or alternately to find refuge in
crudely constructed stone enclosures
or earthen mounds
as defenses against rock and celestial
debris falling from the sky.

To appreciate the
perspective offered here,
we need only allow for
the implied urgency,
and that's a consideration virtually never
included in standard treatments of prehistory.

What was on the minds of
those who entered caves
or raised giant stone dolmens
or great mounds of earth,
seemingly with no clear
motive to account for them.

How much of this activity might be
explained in terms of perilous events
once occurring in the sky
but not occurring today.

Such events could only mean that the
present cannot be the key to the past,

and a fundamental premise of
modern science must be corrected.

From this vantage point,
certain features stand out.

The urgency is endlessly reflected in
the crude architecture of the dolmens
that punctuate ancient landscapes
across the British Isles
and Northern Europe, all the
way to Russia and Korea
and even with counterparts
in North America.

Such structures are
readily distinguished
from the more ambitious and more
obviously skillful architecture
that followed with the emergence
of the great civilisations
of Egypt and Mesopotamia.

How significant for example
are the repeated indications of
interruption and incompleteness?

In numerous instances as if a
massive undertaking was begun
but ended in tragedy and
was never finished.

That should not surprise us if these
undertakings occurred in the presence
of the very catastrophe that all
ancient communities most feared.

In many instances, a partial seemingly
irrational raised roof draws our attention,
entirely out of proportion
to its support.

Indeed the massive stone roofs are
commonly the most imposing structure.

Has any historian or
archeologist ever explained
this human investment
across the vast region?

When you see the undertaking as
a defense against falling rock,
the mystery of human
motivation instantly vanishes.

Other considerations also
enter this picture.

The apparent role of celestial
catastrophe will not permit us
to ignore the implied context of
extended deprivation and nostalgia
as we can see in the conditions
portrayed on the walls of caves.

In the catastrophic
environment suggested here,
what might the paintings of human
hunting and abundant game be telling us?

A familiar phrase from American
Indian tradition comes to mind,
the happy hunting ground.

Not an illogical phrase if the actual
condition was one of profound nostalgia.

Were the artist painting on
walls of caves and rocky cliffs
nostalgically remembering
something lost?

Psychologists know well that
in a state of deep deprivation
the mind will become increasingly
obsessed with what is missing
or what has been taken away.

That point was made explicit in
an army experiment years ago.

When placed on a narrow diet
of nothing but potatoes,
those participating in the experiment
began to dream nostalgically
of the missing diet.

Perhaps of steak dinner, their

favorite beer or her apple pie.

In this case we have

two different themes,

humans retreating to caves

and their nostalgic

remembrances,

both pointing in precisely

the same direction.

Look again at the prehistoric paintings on

the cave walls across Europe and beyond,

the hunting scenes and

the abundant game.

Could we entertain the possibility

that these scenes actually celebrate

a community life no longer

available but actively remembered?

Why such pervasive nostalgia if nothing

had been taken away by natural events?

With that concrete question in front

of us, additional questions arise.

Is it possible to identify such an

experience in the thematic links

of the cave dwellers to the emerging

civilizations that followed?

Or is there a connection to the

explosion of monumental construction

launched almost simultaneously

in Egypt and Mesopotamia?

Since Napoleon first stood in awe

of the wonder of the Great Pyramid,

scientific commentary was taken over by

questions of technology and architecture

but have we missed something?

In the conditions of the time, what was

the role of human urgency or protection,

in particular, the protection

of kings and royal families.

And how might our picture

of the ancient world,

the rise of kingship itself,

or the explosion of

military conquests

be changed when seen in the light

of an Earth-threatening sky?

Answering such questions will require us to

see the ancient monuments in a new light.

And the Great Pyramid becomes something

more than an enchanting monument

standing out on the

ancient landscape,

more than just a dark chamber

for practicing magical rites,

or recording hieroglyphic
prayers to the gods,
or charting a sky map to guide the
mythic ascent of deceased kings.

Of course, such motives
are well documented
but could there be
more to the story?

What was on the minds of those who invested
vast resources in urgent construction?

In the following episodes, we'll
consider a new perspective,
one in which all of the
ancient motives converge
as a testament to
remembered catastrophe.

In particular, a desperation
for protection
against unpredictable rains
of rocky debris from the sky
to which we shall add a noteworthy
emphasis on the planet
repeatedly named as the
source of falling stone,
the planet Mars.

Welcome to Space News from the Electric Universe brought to you by The Thunderbolts Project at Thunderbolts.info.

Astronomers are reporting their observation of the so-called brightest and furthest pulsar ever observed from Earth. Using data from the European Space Agency's XMM-Newton satellite, the supposed spinning magnetized neutron star presents a major challenge to the consensus ideas about such theoretical objects. Identified as NGC 5907 X1 the "pulsar" appears to shine with the brightness that is a thousand times greater than the object's theoretical limit. To gain a perspective on just how stupendously bright the pulsar appears to be, a phys.org report states, "In one second it emits the same amount of energy released by our Sun in three and a half years." As the lead author of a paper on the object states, "This object is really challenging our current understanding of the accretion process for high luminosity stars. It is 1,000 times more luminous than the maximum

thought possible for an accreting neutron star. So something else is needed in our models in order to account for the enormous amount of energy released by the object." The mystery for investigators is not simply the object's brightness, but also the speed at which the "pulsar's" alleged spin rate increased over a period of 11 years. As phys.org reports, "The same relative acceleration in Earth's rotation would shorten the day by five hours in the same time span." What is a so-called neutron star? Scientists tell us that the material left over from a supernova explosion of a massive star collapses gravitationally, forming an incredibly small, yet massively dense star mostly composed of tightly packed neutrons. A rotating neutron star is said to emit regular pulses of radio waves and other sources of radiation, called pulsars. But the hypothesis of the neutron star was not a predictive theory that was composed and then verified through observation. Rather, the hypothesis was

invented in the nineteen sixties after the completely unexpected discovery of radio pulses from the constellation Vulpecula. In 1968 it was the world-renowned astrophysicist Thomas Gold who proposed that the source of the pulses was a rapidly rotating star acting very much like a lighthouse, with the light beams becoming visible on Earth with each revolution of the star. The extraordinary speed with which such an object is said to rotate is sometimes many times faster than a dentist's drill. However, in recent years, with finer technological data have come numerous discoveries that in effect falsify the neutron star hypothesis. As reported in previous Space News episodes, this is not the first instance that a so called pulsar's apparent brightness has exponentially exceeded its theoretical limit. Other behaviors have proved equally puzzling, including the discovery reported in 2013, of a pulsar that switches suddenly and unpredictably between radio and X-ray emissions. The lead author of a paper on that

discovery said at the time, "The people creating models will have to rethink what we are discovering here. When we look now to what is so far published in papers, nothing at this moment can explain what is happening." But is the hypothesis of a mechanically spinning lighthouse of sorts really the only explanation for pulsars? If a crisis in cosmology exists, is it a coincidence that institutional science continues to try to explain stupendous electromagnetic phenomena through purely gravitational mechanism? In the case of so-called neutron stars and pulsars the disciplines of plasma physics and electrical engineering do offer theoretical alternatives. It has been suggested that a more useful analogy to pulsar flashes is the complex radio signals induced in Earth's ionosphere by powerful lightning. This clue could help to explain the evidence inexplicable in the standard model of pulsars switching from radio to X-ray emissions, since lightning can produce both.

In fact, scientists attempting to explain this puzzling switching of emissions, are considering changes in the star's magnetosphere, which does bring them closer to the electrical interpretation.

In fact in 1995 the renowned plasma physicist Anthony Peratt and co-author Kevin Healey published a paper, "Radiation Properties of Pulsar Magnetospheres: Observation, Theory, and Experiment." Peratt and Healey examined well over a dozen pulsar anomalies yet to be explained by the standard lighthouse model. They state: "There yet exists no self-consistent theory to describe the Pulsar electrodynamics." Using electromagnetic particle-in-cell simulations, the team investigated a, "Magnetospheric disk field-aligned current transmission line system as the origin of the observed radiation." With external wave excitation by as yet an unexplained source, this model does not require a rotating object, or the lighthouse effect. Rather, it in effect states that an electrical discharge occurs close to a star which

then travels along the magnetic field lines outwards, where it meets a disk of matter surrounding the star. Where it meets that more dense matter, a kind of short circuit occurs and the signal is reflected as in transmission lines in electrical engineering theory. In fact, in a Space News interview, retired professor dr. Donald Scott has suggested that the ideal analogy for a pulsar's flashes is not a lighthouse, but rather a strobe light. A strobe light is a small ball containing a plasma driven by a simple electrical circuit. As seen in this picture it can consist of nothing more than a resistor, a capacitor, the voltage source, and a glass tube. In the 2015 Space News, "The invention of the Neutron Star," professor Scott explained the analogy in space as follows, "If we have a pair of stars, a binary pair of stars out in space and if they're closely spaced there may very well be a plasma bridge between them and the resistance in the relaxation oscillator is the resistance of that

plasma bridge, and so the capacitance value depends on the surface areas of the two stars and if one of the stars is [at a as] being driven by an external current to higher and higher voltage, clearly this kind of oscillation is possible. Also, voltage pulses can bounce back and forth along a plasma bridge; if we have a plasma bridge that connects the two stars and we get a voltage pulse that goes from one to the other, it can bounce back again and there's all sorts of possibilities for reflections of pulses on high-voltage power transmission lines.”

But in institutional science today, theorists seeking to gain a better understanding of “neutron stars” tend not to be specialists in electrical engineering and plasma physics. Always the assumption is that the detected light pulses are produced by spinning magnetized neutron stars, even though said objects remain entirely hypothetical and the predictive record of the hypothesis grows increasingly poor. The mantra of self-styled skeptics

is that extraordinary claims require extraordinary evidence. Astrophysicists freely acknowledge that the neutron star, if it exists, would be one of the most exotic objects in the known universe. But an ongoing series of theory shattering discoveries have transformed the neutron star hypothesis from exotic to extraordinary, to perhaps impossible. However, as in countless other fields of space science discovery, real alternatives await in our Electric Universe. For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

[Music]

[Music]

In the final chapter of the Eye of the Storm series, I presented Easter eggs, surprise geologic findings that confirmed a theory, or presented astonishing new information about Earth's electric circuitry.

Exploring the Electric Earth is a perpetual egg hunt, because every rock confirms that the bunny is real.

Electrical discharges follow patterns and behaviors that yield definitive information about cause and effect.

Discharge patterns on the landscape indelibly record discharge events, like a holographic data bank. Chapters 8 and 9 of Eye of the Storm discuss surface conductive discharges across Earth's surface that form the Colorado River and its tributaries.

The trace of a surface conductive discharge is particularly rich in information because, unlike a lightning bolt that momentarily sticks on the Earth, a surface discharge has to crawl across the surface, meeting significant impedance, seeking out conductive pathways, expending

vast energies transporting matter, while explosively faulting and excavating. It takes time, it's not energy efficient and it leaves its mark.

A stunning display of a particular type of surface conductive discharge can be found in the Laramie Mountains in Wyoming.

Embedded in these mountains are gorges and ridgelines that literally form a phase diagram of what took place.

It couldn't be more explicit than if God had left his blueprint on the drafting table for all to see.

This 15-mile cross is from a discharge between two out-of-phase circuits. First however, let's consider the geometry of a surface conductive discharge. Each discharge branches out in fractal self-similar dendrites, to absorb all the surface charge on the conductive object it's attached to.

In our case it's the Earth. This is a diffusion-limited aggregation.

Each filament of a discharge soaks up charge from a particular domain.

The domain is a region surrounding the spark, defined by its electromagnetic field, from which it sucks charge of one polarity and spits charge of the other polarity in reactive power surges. It does this because it's not insulated

current, like we use in electrical systems.

Filament domains cover every square

inch of solid land on the planet.

We call them watersheds, because they

serve to collect rain water into river channels.

But that's a consequence, not a cause. The

Earth once crawled with electrical discharges.

This should be self-evident in any

theory of planetary formation.

In consensus theories, planet and comet

collisions would necessitate big sparks. In Electric

Universe theory, sparks are already acknowledged.

Why consensus science doesn't look for

evidence of electrical discharge, is evidence

they don't ask the right questions.

What is interesting, the big Easter egg i'm getting

to, is that domains cross and that filaments

interact. Giant sparks result. The interaction

we'll investigate created a landscape

that can only be explained electrically.

The statistical probability of a

consensus theory doing it, is high

impossible. Domains don't usually

cross, because skin effects occur between domains

that keep them segregated, as if by a membrane.

But they can cross and interact,

if domains are out of balance.

An over-voltage in one could make it aggressive and overcome another.

Depending on phase disparities, this can be a gentle handholding connection, or it can be an explosive punch. We'll look at one of the explosive kinds.

The annotated image shows the area of interest circled in violet, including the Laramie Mountains surrounded by green and red circles.

The Laramie is part of the Continental Divide as it cuts through southeastern Wyoming. The circles denote the major streams flowing from the mountains. Green are streams flowing to the North Platte River and then to the Missouri and ultimately the Mississippi valley and the Gulf of Mexico. Red are streams that flow to a sink in the basin west of the mountain range. The sink forms the Seminoe and Pathfinder Reservoirs, also circled in red, west of the mountains. And the North Platte River forms the Glendo Reservoir on the opposite side, circled in green. The high basin drains around the mountains in two flows, shown by yellow connections. The North Platte

runs near Casper, Wyoming, and around the north of the mountains, and the Laramie flows from Medicine Bow to Fort Laramie through a path to the south of the range. The overall structure is shaped like a heart, with the mountains filling the upper half, the basins filling the lower and the rivers acting as arteries and veins. The distinctive yellow X in the center of the range is the X-pattern that was shown earlier and it's a discharge pattern that occurred when the North Platte filament of the Mississippi discharge met a separate domain with a different phase. What you see is literally a natural phase diagram that records the phase angles of the discharge. The discharge took place because the Missouri circuit was an AC current that made connection to a ground current in the basin and sparks shot between the circuits where the domains came together. The Laramie Mountains formed as a consequence. The discharge adopted an X-pattern where it made connection with the east-west branches vectored along the electric field denoted by the dotted red and green lines. The electric field is the dipolar alignment between the lakes. The lakes, or

the depressions where these lakes are now,
were created in the same discharge
event that met at the crux of the X
and sent reactive discharges rotated
at 90 degrees to the originating spark,
between the circuit domains. The
discharge is much like the resonant
frequency discharges discussed in chapter 8
and 9 of Eye of the Storm which created the
major 180-degree branches of the Colorado River.

The geometry is different, an X instead of a T,
but that is because the X is a resonant
discharge between two existing circuit
domains, whereas the T is a result
of a single circuit bifurcating.

The bifurcating discharge means critical
resistance due to a buildup of stray
capacitance that resonates the circuit,
increasing frequency and therefore
resistance, until the current is stopped,
causing it to explode and reactive
discharges 90 degrees to either side of the original
current. The X is produced by two out of phase
circuit domains coming together.

The Missouri circuit is an alternating
current, whereas the Basin circuit

is a direct current to ground.

The two circuits go in and out of phase with each other as the AC current alternates. This makes a connection, then a discharge. The discharge is totally in reactive power mode, because the out-of-phase circuits are 180 degrees out of phase, and that has the same effect as resonant discharge, raising resistance to infinity and forcing the current out sideways at 90 degrees.

The first case is like putting a finger on the nozzle of a hose and forcing water to spray out sideways, 90 degrees to the direction of the nozzle.

The second case is like having two hoses aimed at each other where the streams impact, flow sprays out sideways. In one, the water pressure changes flow direction and makes a T, and in the other two flows impact and the pressure changes flow direction to make an X. The reactive discharge dissolves the voltage differential between circuits by expending their charge, the entire accumulated charge in the Missouri circuit in this case, in an explosive X-shaped spark.

It created what astrophysicists

call magnetic reconnection.

Astrophysicists don't recognize electric circuitry in space because in dark mode current doesn't emit radiation they detect, and since they can't see it, their reductionist minds can't make the intuitive leap to circuitry.

But they do detect the magnetic flux that results. They invented the term magnetic reconnection in lieu of an explanation, because they can't fathom the simplicity of two out-of-phase circuits coming together to make a spark. Magnetic reconnection.

The moving lines are magnetic field lines, the things astrophysicists think are reconnecting, but they are actually the magnetic field lines generated by current flow, oriented along the dotted lines. Their model only recognizes magnetism, so the dotted lines are just separating the magnetic fields. The big yellow arrows pointed inwards and outwards in different quadrants of the X, are the vectors of electric current, induced by the changing magnetic field.

In the Laramies, induced electric currents were expressed in the

atmosphere by plasma winds.

Plasma winds drew to the crux of
the discharge at ground level in
top and bottom quadrants, and blew
outward at high level, like an anvil
cloud in the right and left quadrants.

The winds lifted in a vertical updraft
over the center of the X, but even
more astounding is the effect
that magnetic fields and reactive currents had
in shaping the entire basin and range structure.

The landscape is a 3D photograph of what
happened. To appreciate what took place, the
three-dimensional nature of the circuit
domains needs to be recognized.

Charge diffused across the ground, as well
as through the ground, and into the sky.

Capacitance between the Earth
and sky force mirroring currents
in the atmosphere, stirring a violent storm
system. Think of it as a local squall line of
thunderstorms, raging over the
mountains at the time they were formed,
and while the ground discharge took place.

The central updraft over the X formed a huge
mesocyclone, flanked by smaller

thunderheads to either side.

Most of the energy of the discharge went straight up into the mesocyclone, pulsing it with energy. The wind paths to be described, are ground level winds, that were shaped by the electromagnetic field at the planet surface. The combined effect of the discharge at ground level, its magnetic field and the resultant plasma winds, makes an X pattern shown in red. The magnetic field lines, shown in blue, are just like they're shown in the pattern of magnetic reconnection.

The yellow vectors are pointing to the direction of wind paths at ground level following this storm system along the magnetic field lines. The winds in the northeast and southeast quadrants flow parallel, patterned around the X. In the northeast, they cross magnetic field lines perpendicularly, flowing straight to the crux of the discharge. The jet stream winds leave valleys with broad rounded or V-cut bottoms, carpeted with silt, but no inner gorge. They may have a superficial meandering stream erosion, but not a deep-cut, straight inner gorge.

We'll examine more wind-cut valleys later, but first, let's distinguish between a wind-cut valley and a discharge-blasted canyon, like the one that formed the X. The path of a discharge leaves canyons rough-cut, with deep inner gorges. This is the Platte River, or northeastern arm of the X in the Laramie mountains. The size of the discharge canyon indicate arc blasts which expose granite tetrahedrons. On one side the tips of the tetrahedrons jut out. This is the leeward side, exposed and broken, whereas the other side shows the flat faces of windward tetrahedrons. This indicates the mountains were laid down by a crosswind before the discharge occurred and blasted this canyon. So the mountains resulted from an evolving storm system that changed its winds surely, due to this big spark. Note on both mountain sides the cross-hatched patterns of shock diamonds, in the canyon flanks created by shock waves. Northeast quadrant wind-cut valleys between north and east arms of the X discharge. Note the many transverse striations of cuts and

gorges and how they change orientation between the arms of the discharge.

Striations come from deposition layers, shaped by shock waves, transverse to the winds, and by secondary discharge filaments between the circuit paths. The winds drew into a central vortex at the crux of the discharge, drawing dust into a pile, to form the mountains.

Therefore each quadrant of the discharge displays shock waves that are oriented by the wind in that quadrant.

Secondary discharges are from short-circuiting sparks between current paths, like sparks between live bare wires that are too close together.

There is one secondary discharge visible that makes its own X pattern, center right in the image. This is a mini discharge between the AC current in the big X and the static buildup of charge in the wind-cut lane due to the plasma jet stream.

It's essentially an AC to DC connection that makes a perfect 90-degree reaction, just like the big X. And it's even oriented in the same orientation, repeating self-similar forms. In the

next show, we'll conclude with a
look at more wind-cut valleys in the
Laramie mountains of Wyoming,
and how they're shaped
by electromagnetic fields.

[Music]

The Pulsating Universe

and Planet Earth

Okay well, hello everybody!

This is a real honor to be

participating in a historic conference.

Let's see.

So, 'The Pulsating Universe

and Planet Earth'.

So, right.

Right here we have the Crab Nebula which sends

out energetic pulses 30 times a second.

So I've chosen that as my iconic

image of the pulsating universe.

And here of course, we

have the Aurora Borealis

which is the electric

current coming into the earth

so that's my symbol of how

planet Earth is affected.

So, there are discharge events occurring

all the time on all kinds of scales,

on a whole range of

scales in the cosmos.

This one is

30 times a second.

Here we have a supernova remnant

so there was a supernova which sent
out a tremendous burst of energy
when it happened.

And here we have even larger
scale, this is a stellar nursery.

So we have a cathode object here which
is being impacted by an incoming current
and every one of those
strands is creating stars
so that's a huge scale
discharge event.

And all of these discharge events
are sending spikes of energy,
spikes of energy down
galactic currents.

Whatever current they're
on, gets a spike of energy
whenever there's
an event like that.

And those energy spikes
reach planet Earth.

Here is an image that,
here's Don Scott's image of the
Birkeland current that powers the Sun
so that current is going to get
its share of energy spikes.

And then those are passed on
to the earth proportionally
so the current coming into
the earth is a spiky current,
it's not a constant current.

It's going to get spikes whenever there's a
discharge event that is connected to our circuit.

And that's going
to cause heating.

So the reason we see
the Aurora Borealis
is because the ionosphere is
being heated to glow mode.

In this particular
report from THEMIS
they call it a hundred thousand
amps circuit coming in.

And I think on an earlier talk it
was an even larger amount of amps.

Doesn't really matter, it's a lot
of amps, that's what we care about.

And it's not just the,
I call this the entire ionosphere. I suppose
I should call it the plasmasphere
but the Van Allen belts,
these radiation belts,

that's because of current

flowing through them.

And that's being heated.

Plus the atmosphere is being heated by

discharge from the ionosphere to the surface.

It's like a 250,000 volt difference

between the ionosphere and the surface.

And these weather events are a

discharge across that potential.

So, the whole Earth system is being heated

by the current that flows through it.

The earth is basically a resistor

for this, for the current,

and resistors heat up

and it's proportional

to the current flow.

So that an energy spike is going

to create a heating spike.

So there's no question that the

earth is heated electrically,

the question is how

significant is that heating.

So to get a handle on whether

that has any significance to it,

let's take a look at

the climate record.

So what we have here is

the last 400,000 years

as recorded in the ice cores

in Antarctica, in Vostok.

I just downloaded this data from

the official website and charted it out.

So what we see is about every

100,000 years there's a major spike

and that's how

ice ages are ended,

and then we see little spikes

about every 10,000 years.

So basically the temperature

record is nothing but spikes.

There's no level periods,

it's all spikes.

And they are, and they occur

on a cyclical pattern.

So let's look at this,

let's talk about climate a little

bit while we have this slide here.

The earth is, 90% of the time,

is in what we call an ice age.

It's unusual to have

an interglacial period

so ice ages are normal.

And when we think about ice ages, we
think about people wearing skins,
hunting mastodons,
woolly mammoths.

Well that's not what
ice ages are like.

Yeah, there are more, a lot of the northern
hemisphere is covered with glaciers
but that doesn't mean
the earth is cold.

I mean, the difference between an ice age
and a non-ice age is only ten degrees.

A place like Phoenix would be much more
livable if it was ten degrees cooler.

And also because all the water
is taken up in the glaciers,
the sea level is about

200 meters lower
which means that what we call the
continental shelf becomes the shoreline.

So in the tropics it's more
livable and there's a lot more land.

So an ice age isn't, it isn't
really that the earth is cold.

It's just colder
but there's nothing to prevent life or

agriculture or civilization or anything else

during what we call an ice age.

So actually, ice ages are normal

and an interglacial

period is a crisis time

because of this huge

energy spike which ends it

and suddenly then all the

glaciers are melting

which means tsunamis

all over the world.

I should see what's next here.

Right, okay.

So now what we're going to do is we're going

to zoom in on the interglacial period.

So we're zooming in on

this little part here

and what do we see, more spikes!

So the heating pattern

of the earth is a fractal,

a spiky fractal pattern.

We're having spikes

at all scales

and that's what

a fractal pattern is.

It's very distinctive,

it's not random.

It's not at all random, it's a very distinctive
non-random pattern of cyclical spikes.

So what we have, we have fractal

energy spikes from the cosmos

and fractal heating spikes

in the temperature record

so basically we have a unique

fingerprint match between

heating caused by discharge

events and the cosmos.

So we have a pattern match

that that doesn't really,

but we don't know

about the magnitude.

I mean, it conceivably could be a

coincidence that the patterns are the same

so what we need is

some direct evidence.

Is there any direct evidence for

an electric effect on climate?

And there is, thanks

to Ben Davidson

because he showed

that solar activity,

variations of solar

activity are correlated,
strongly correlated with
significant climate change.

And variations in solar
activity are of course
due to fluctuations in the Birkeland
current that powers the Sun,
which is proportional to the
current that comes into the earth.

So, my hypothesis then is
that climate variation
is due to fluctuations in the
current flowing into the ionosphere.

Now, I really should say it's a current
flowing into the Earth's system
so it's not just the ionosphere,
it's the whole Earth system.

And I think it's a strong,
I mean, I've given a very
sketchy rendition of this,
but I think it's a
strong hypothesis.

But I think what's even,
so if we, if we have,
if this is what causes
climate variation,

of course, that's interesting
to know how something works
though what's even more interesting is
the implications of the hypothesis.

So here is the first implication
that we have a
seismograph basically,
or a voltage graph of
discharge activity into the past.

So this is a new window
onto the cosmos.

We can learn things from this
that we couldn't learn any other way.

And in particular
let's take a couple,
there we go.

We can, we can look for correlations
between heating spikes in the record
and things we can see, things
that we can see astronomically.

Like the Crab Nebula which was a pulsar,
it also, it's a supernova remnant.

And we know from
records that were kept
that that occurred in 1054 AD.

Well, that exactly matches

one of our spikes.

So what that would indicate is that the spike of energy that caused the supernova was the same spike that caused the heating spike on the earth.

Do you think what causes the supernova?

Well, supernova happens when the double layers break down.

What's going to break down the double layers is going to be a surge of current which overloads them.

It's just like a circuit breaker or a fuse.

If you put too much current through it, it goes.

And then here we have the Vela supernova remnant which astronomers tell us happened 12,000 years ago which is the spike that ended the last ice age.

So again, of course you might say well actually, it didn't occur 12,000 years ago.

The light got to us

12,000 years ago.

Well, what that's saying is that the voltage spike got to us at about light speed at the same time the light did.

Now, so that was one...

One implication of the hypothesis is that we have this record of this window onto the cosmos basically like a seismograph.

There.

A second implication of the hypothesis is that discharges seem to be always cyclical.

Now we know with pulsars that the discharges are cyclical because it happens fast enough that we can observe it.

But we would have no way of guessing that other than 100,000 year discharges are cyclical or 1000 year discharges are cyclical.

So we're getting information about the cosmos that we really couldn't get any other way.

I really, by the way, while we're on, while we, I should've really said this

when this particular

chart was bigger.

This is a good time to talk

about this global warming nonsense.

Notice starting about 1000 BC,

we have a heating spike of about

a degree or degree and a half.

And then we have another

one at Year Zero.

And another one at AD 1000.

So every thousand years...

So, at 0 and at 1000 we got this

one or one and a half degree rise.

Now this particular

chart stops at 1800.

So what would you

expect to have next?

Well, we'd expect a one or one and a half

degree rise peaking in the year 2000

which is exactly what we got.

So yes indeed, there's been two

centuries of global warming

and it's completely natural.

Now the next implication, the

third implication of the hypothesis

is that ice ages are ended by

an electrical energy spikes.

Not a collision with an asteroid,
not orbital variations, not volcanoes,
it's an energy spike.

Now, in the ice age we have
glaciers that are miles high
and they melt in less
than a thousand years.

I mean, this chart is Vostok
and it looks like

that's a steep spike
but actually there's another chart
which I unfortunately didn't include,
and it shows that the
the northern hemisphere
came out of the last ice age much quicker
than the southern hemisphere did.

If you effect, if we stretch out the
graph starting at 50,000, starting back here
and we bring in Greenland,
suddenly this spike that looks so
steep, it becomes a gradual ascent.

And the one in Greenland
is really steep
so like the glaciers melted in
less than a 1000 years.

Now what, how much electrical
energy would it take
to melt the glaciers
in such a short time?

So what we have then is the interglacial
spike is rising in intensity for centuries
and that's what
melts the glaciers.

Well, what would that
mean for the rest of the...

What effect could that have on the rest of
the solar system and the other planets?

That intense amount of energy.

So what we're getting is a constantly
increasing potential in the heliosphere.

So that the potential difference between
the Sun and the heliopause is rising,
that potential difference
is rising for centuries.

So that's going to, what
could that lead to?

Well, the first thing
that's going to happen
is there's going to be extreme
planetary weather events.

Because, I mean, now we have

250,000 volt difference,
and we're now at the
quiescent top of the spike.
But while that spike was rising,
then that potential gradient
between the ionosphere and the
surface is going to be always rising
so you're going to have amazingly
powerful weather events.

Now, we also know from
the electric model
that planetary spacing is
electrically determined
and I mean, just this morning
Wal was telling us that if the,
if you had twice the
voltage gradient,
the planets would
be twice as far.

So we're going to get, planetary
orbits are going to be shifted.

And we're going to have violent
interplanetary discharges.

So what we're going to
have for centuries then is,
oops let's go back,

we're going to have the
Thunderbolts of the Gods
going on for centuries
every 100,000 years.

So, now obviously this is,
this is different than what the Saturn
capture hypothesis says right now
and it would be really good if we could
somehow reconcile the ice core record
with the Saturn
capturing hypothesis.

And conceivably, that
could be done if,
if this huge spike
which ends the ice age,
what if it turns Saturn
temporarily into a brown dwarf?

Say, now of course I'm
totally speculating here,
it's way over my head
on what's possible.

But I can't,
it's not easy to just
dismiss the ice core record
because there are other temperature records
like for instance in the Caribbean

you can look back at temperatures based on
what kind of sea shells were being deposited
and what kind of species could
survive on what temperature
so there are, there are corroborations
for the ice core record.

We can't just totally dismiss it
and we certainly can't dismiss
all the wonderful things
that David and
others have discovered.

So it'd be nice if those two
things could be reconciled.

Anyway, to summarize,
we not only have a
pulsating universe,
we have a rhythmically
pulsating universe
because the spikes are
always occurring in cycles.

So climate is Gaia dancing
to cosmic rhythms.

And the last slide
is if we compare the interglacial
temperature record to a clip of Irish music,
we can see that these discharge

events that caused these spikes,

those are the instruments

of the cosmic orchestra.

So, thank you very much!

Welcome to the
Electricity of Life,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

Beings like ourselves, birthed
in an oxygen-rich atmosphere,
may casually understand the requirements of
life in terms of the creatures we can see.

Air is breathed or extracted
from water in the case of fish,
water is drunk or retained for weeks
and months by hardy life-forms.

The oxygenated environment
around us informs our schemas.

It is wise to remember that life is not
ultimately defined by water and air.

It is defined by the molecular
electronics in an organism's biology.

There are a great many microscopic
life-forms here on Earth
that can or regularly do thrive on
substances that baffle human beliefs.

370 miles off the shore of
Newfoundland - Canada,
the ship wreck of the

Titanic was found.

It lay almost two-and-a-half miles deep or
12,500 feet below the saline waters' weight.

Growing on the hull of this historic vessel
was a fairly historic biological discovery.

Giant mats of microorganisms
were moving along the surface of
the ship reducing it to rust.

Within their protective film,
pulses of electrical communication
allow highly diverse microscopic creatures
to move as a coordinated superorganism.

Among the colony are life forms from all three
domains of currently known organic life
including ancient
archaebacteria.

Using chemical electrical signals
the organisms can communicate
some of their growth needs to each other
in an impressive show of cohabitation.

In our human terms we might say
that some of the tiny life-forms
are not at all eating the metal
but practically breathing it.

This idea owes its strangeness
merely to our familiarity

with the experience of breathing-in air as
a necessity for every moment of our life
and our unfamiliarity with the molecular
electronics that it actually involves.

Our body, during its
generation of vital energy,
uses the oxygen we breathe
as an electron receptor
at the end of a process of splitting
and recombining molecules.

Some microbes use iron or
sulfur for the same purpose.

Here we can see one plugging in to
a microscopic surface of basalt.

In fact, there are actually species which,
in the wild, naturally use uranium.

They are highly resilient at
proofreading and repairing their DNA
from frequent damage
by radiation.

They are an apt reminder of the
diverse electronics life can have
on this planet or others.

And when a large colony of different
microscopic creatures is carrying out
sophisticated alchemy upon one of our

industrial, seemingly impervious objects,
it reminds us of how much
of ecology we do not see.

Diatoms are microscopic
jewels of the sea,
photosynthesizing organisms
which absorb silicon dioxide
and combine it with water molecules
to fashion shells of glass.

There are at least 100,000
different species of diatom,
each one can have
wildly creative shells
grown from combining these
raw molecules of reality
to form designs with intricate
features measured in nanometers.

Imagine we've prepared
a microscope slide
with some pond water with a
few small visible specs.

Looking through the lens,
those specs of matter are revealed to
be tiny islands in their own right
made of rocks and indeterminate plant
pieces, surrounded by unicellular life.

Seeing such tiny specks of familiar
debris at this layer of magnification
gives us a sense of scale and with
that a more accurate understanding
of the sheer amount of life
that is thriving all around us
inhabiting and often interacting
with the matter we see.

In every inch of dirt and every ounce of wild
water there is life in all its chemistry.

Built from and manipulating the
electricity of the physical world.

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

In part 1 of this presentation, physicist
Wal Thornhill began his analysis
of one of the most significant space
discoveries in recent memory.

The history and origins of the gas giant
Saturn, and indeed the entire solar system,
including our own planet is
not what we've been told.

Planetary scientists recently
made the astonishing discovery
that water in Saturn's satellites and rings
is remarkably similar to water on Earth.

As Thornhill explained,
this discovery was explicitly predicted
nearly 3/4 of a century ago,
by the scientific heretic Dr.
Immanuel Velikovsky.

It was Velikovsky's claim that,
only a few thousand years ago,
a period of chaos reigned
in the solar system.

One of the planets closely
associated with Earth was Saturn
and watery filaments rained on our planet
following Saturn's violent flare up.
Decades later, based on the respective
research of Dave Talbott and Dwardu Cardona,
Thornhill developed
his own model
of a primordially close relationship
between Earth and Saturn
which was the source of all
the water in our oceans
while leaving remnants
in its rings.

Today, Thornhill continues
his presentation
shifting his focus to his own successful
predictions for the Saturnian system,
including the
mysterious moon Titan.

Before I tell the epic
story, a warning!

Our education systems train students
to memorize a litany of facts
which produces
global groupthink.

Students are not given the time or encouragement
to critically examine the history of ideas.

A leading researcher in to the learning
functions of the divided brain,
Dr. Iain McGilchrist, has shown such
blinkered left hemisphere training
renders students functionally blind to
alternative ways of looking at a problem.

The left hemisphere simply blocks out
everything that doesn't fit with its take.
It doesn't see it,
actually, at all.

Societies with their narrow specialized
training may look at but cannot see
what to a non-expert
may seem obvious.

They will be the last to see a
paradigm shift in the making.

This is particularly evident for
electrical phenomena in space.

Even the Nobel Prize winning founder
of the idea of an Electric Universe,
Hannes Alfvén, was ignored when he
warned in his 1970 acceptance speech
of an inevitable crisis in astrophysics if
electric circuits in space are not recognized.

Houston, we still have that
problem after almost 50 years.

I have lived since a teenager with
uncertainty about accepted truths
and learned to have the
courage to challenge them.

The result is not chaos but a synthesis of
ideas that explains the old ideas better
and finds new ways of incorporating
what seems a chaos of anomalies
and the best test is that of
classical physics, simplification.

The resulting paradigm shift is
not a threat but an invitation
to the greatest adventure
we may ever know;
to begin to understand our real place
in the universe for the first time.

In our Electric Universe, stars and
planets are formed at the same time
inside molecular clouds along a
snaking cosmic lightning bolt.

Gravity plays no
role in the process.

Since cosmic lightning takes the form
of a twisted pair of current filaments,

it is found that most stars
are in pairs or multiples.

Planets will tend

to do the same:

Like the snaking filaments

in a novelty plasma ball,

the star-forming

filament moves on

leaving a string of massive

objects behind to gravitationally

form the weird and theoretically

challenging zoo of exoplanetary systems

recently discovered.

Some gas giant planets are subsequently

formed in close orbits about a star

that has ejected charged matter

to achieve stability with a

changed electrical environment.

The ejection flares may account for

the flickering of newborn stars

which can't be explained by

gravitational accretion.

This explains the unexpected hot

Jupiters seen in large numbers

closely orbiting other stars.

The most numerous stars in

the galaxy, brown dwarfs,
which would appear reddish if they
could be seen with the naked eye,
are generally classed
as failed stars
yet they have the baffling ability
to produce massive stellar flares.
This is simply explained because red stars
don't have the ability of main-sequence
bright stars to control their
current by a transistor-like action
in their photospheric plasma.
A brown dwarf can only respond by
discharging matter electrically.
The capture process
of a brown dwarf star
involves flaring and ejection
of charged matter by that body,
in order to achieve a new electrical
equilibrium in its adopted family.
That accounts for the large
number of close orbiting moons
of our captured gas
giants in remote orbits.
With this in mind, I want to take
you back to just before the famous

Cassini-Huygens space probe was to
arrive at Saturn on July the 1st, 2004.
In news reports, Saturn was dubbed
'the original Lord of the Rings'.
There is a profound truth behind
such a glib turn of phrase
but it wasn't until the advent of the
telescope, that Christian Huygens in 1656
was able to suggest
that Saturn had a ring.

So how do we explain the Saturnian ring
symbolism that pervades our cultures?

The halo of the saints,
the royal crown
and the ring given in marriage
are Saturnian symbols
as are the circled
or celtic cross,
the Egyptian ansate
cross or ankh,
the eye of Ra and the
astronomically baffling
star inside the crescent.

The star at the top of the large Christmas
tree is pure Saturnian imagery.

It is truly amazing that we are still

haunted by prehistoric archetypes.

It helps us to understand the
extraordinary archetypal attraction
of Tolkien's fantasy
of Lord of the Rings.

He was well versed in mythology.

The following description of events
is based on the surprisingly detailed
and truly remarkable scholarship
of Talbott and Cardona
which required explanations with the
physics of an Electric Universe.

Let's call our primordial
star Proto Saturn.

It was an independent brown dwarf
with its own entourage of satellites
including the Earth,
Mars and Titan.

Proto Saturn's dim reddish light was due
to a glowing red anode plasma sheath,
much larger than the Sun,
enclosing Proto Saturn and its inner
satellites in a radiant cell.

The term 'dwarf star'
is purely theoretical
since they are difficult

to see and measure.

In fact, NASA reported

a brown dwarf

which was radiating as if it had

twice the expected surface area.

The environment inside

the radiant red shell

is most hospitable for life

on any enclosed satellites

because there are no seasons and water is

conspicuous in the spectra of such stars.

Water misted down on this planet continually

and red light is ideal for photosynthesis

which explains the

abundance of ferns

and other vegetation globally

in the Carboniferous era.

But there is a catch.

Brown dwarf stars

are known to flare,

sometimes to the extent, as

one astronomer commented,

that any satellites would

suffer a very bad day.

Such flaring by Proto Saturn

accounts for the geological strata

and the fossil record of a number
of global mass extinctions
and instant burial of dismembered
plant and animal remains.

As we approached the
Sun from deep space,
our plasma sheath flickered
like a faulty electric light
when the two stellar plasma sheaths
or magnetospheres began to clash.

Proto Saturn's galactic electrical
power was usurped by the Sun
and its appearance
changed dramatically.

Before dimming forever,
the dwarf star proto Saturn would
have flared brilliantly like a comet,
ejecting charged matter to
relieve the electrical stresses
caused by the sudden
change in environment.

Even now the former star
has not completely cooled.

Saturn still radiates more than twice
the heat it receives from the Sun.

And we have a simple explanation

for the origin of Saturn's
mysteriously short-lived
water-ice rings.

As the Proto Saturnian system approached
the Sun in the outer solar system,
our minor star's gravitational
sphere of influence steadily shrank
and its outer satellites were
progressively stripped away.

This, and the earlier capture
of the other gas giants
provides the source of 'Trans-Neptunian
Objects' as they're known,
including Pluto with its unexpected geology
and atmosphere and its peculiar moons.

There is a simple physical characteristic that
links a captured star with its offspring.

It is the axial tilts.

Like our close-orbiting Moon,
satellites tend to orbit their primary with
the same face always turned toward it.

If they orbit in the
equatorial plane,
their spin axis will be aligned
with that of the primary.

As gyroscopes, the satellites

will retain the same tilt
even if jolted from their orbit
although the process may induce
a wobble of the spin axis.

It is therefore
highly significant
that the two key planets identified
in the ancient Pantheons,
Saturn and Mars, have axial tilts
closely similar to that of the Earth.

The tilt of Saturn, at 27 degrees to the
ecliptic plane, is itself an enigma
unless it formed
independently from the Sun.

Venus was described as a
spectacular discharging body
in the ancient
congregation of planets.

It can be explained if Venus was ejected
in the flare-up of Proto Saturn
and the in-fall of the stream of ejected
matter from swiftly rotating Proto Saturn
gave Venus a slow
retrograde spin.

The magnitude of the axial tilt of Venus
to the ecliptic is much less than Saturn's

which suggests that Venus was
ejected from a low latitude.

This accounts for the hellish
temperature and new surface of Venus
having been recently spat from the
mantle of a brown dwarf star,
its filamentary equatorial scars caused
by spectacular radial discharging
and its thick atmosphere
inherited from the brown dwarf
and subsequently modified by
interplanetary and cometary discharges.

Venus still has a cometary magnetotail
stretching to the Earth's orbit
and its mountaintops glow
with plasma discharges
which return Magellan's radar
signals as unexplained shininess.

Magellan's radar also showed Venus
has a surprisingly young surface
that gave rise to ad-hoc
theories of resurfacing events.

They're unnecessary.

Venus is a baby.

Since my predictions
were written in 2004,

the electro gravity model
has been further developed
and it explains
electro-gravitational capture
and the rounding of cometary
orbits by electrical discharge.
It explains the huge capture
cross-section of stars
and why the observed phenomenal
discharging of cometary Venus
caused it to finally have the most
circular orbit of any planet.

The Electric Universe conceptual model can
claim a number of successful predictions.
Significantly, it was the only model to predict
the surface features of smog-shrouded Titan
before the Huygens probe
revealed them in detail.

Titan, which is 50%
larger than our Moon,
is an enigma for astronomers
having a global orange haze that has
prevented us from seeing surface features.
It has a massive atmosphere,
mainly of nitrogen,
with the pressure at the surface like

that at the bottom of the swimming pool.

The atmosphere also contains methane and at least nine other organic molecules.

The methane is being continually

destroyed by solar radiation

which raises a further problem

about its source of resupply

if the moon is 4.6

billion years old.

This has led to widespread speculations

of Titan possibly being covered by

an approximately one kilometer

deep ocean of liquid ethane.

However, radar infrared and

radio observations of Titan

have not found signs of

a hydrocarbon ocean.

In fact, one radar return was of a type that

we would expect to get back from Venus.

But Titan is not 4.6 billion years old and the

Earth did not form where we find it today.

Instead, Saturn's largest moon

Titan is a child of Saturn

and a sibling of

Venus, Earth and Mars.

I wrote just before Cassini

arrived at Saturn,

"...we should be alert to similarities
between Titan and Venus."

On November 29, 2006, the

Dallas Morning News reported,

when the 3 billion-dollar Cassini spacecraft

sailed past Titan three weeks ago,

it was supposed to clear up many of the

mysteries about Saturn's largest moon.

Instead, it has left

scientists more befuddled.

The new Cassini images do not support

previous theories about Saturn's moon.

In New Scientist of

November 6, 2004,

'Titan images add two moon's

mystery' Steven Battersby reported,

"The world got its first peek at the

surface of Saturn's moon Titan last week.

The images were taken as NASA's Cassini-Huygens

spacecraft swept past the moon...

The images show a landscape that

is clearly still being shaped.

Although Titan must have suffered

numerous meteor impacts in the past,

its surface today is

largely crater-free.

Somehow these scars must have
been eroded or filled in.

"We are seeing a place that is alive,
geologically speaking," says Charles Elachi,
head of the team running
Cassini's radar instrument.

I commented at the time, that is
precisely what was said about Venus
when the Magellan orbiter
revealed that planet's surface.

It is only supposition that Titan's
surface is still being shaped.

It's based on the belief that Titan must have
suffered numerous meteor impacts in the past
and therefore something must have occurred
from within the moon to fill the craters.

However, like Venus, there may have
been no impact craters to fill.

For that matter, no one has witnessed
a large crater-forming meteor impact.

The report continued,

"Suggestions of an active, dynamic surface
on Titan are beginning to emerge.

Not a single crater has
been identified yet,

which means the surface
must be young and active...

One large circular feature,
suspected of being a crater
until closer examination
showed it to be flat,
closely resembles the
pancake domes seen on Venus
that are produced by magma
welling up to produce a bubble
that then slumps down to
a nearly flat profile...

Other features resemble the lobes
of some surface lava flows...

We don't understand
what we're looking at.

Titan is going to be
a real challenge."

My comment was,
the surprise about the lack of craters and
Titan's apparent active dynamic surface
mirrors the comments made about Venus
when radar images were first returned.

The large flat circular feature on Titan does
resemble the pancake dome seen on Venus.

However, these domes were not

formed by volcanic action.

It would require an unacceptably
large number of coincidences
to produce such circularity
in just one of these domes.

The surface must be absolutely horizontal
and the flow from the central vent
must be perfectly even in
all horizontal directions.

But there are many
domes on Venus.

In the Electric Universe model, the
domes are more simply explained
as the raised blisters,
sometimes caused by lightning.

Small-scale circular-raised
blisters have been found
following a negative cloud-to-ground lightning
strike to a lightning conductor cap.

They're called fulgamites.

A test of this hypothesis would be to determine
if the surface around these domes is sunken.

Fulgamites show this
characteristic burrough pit effect
where the material has been drawn inwards
and upwards by the intense discharge

to form the raised blister.

It is not something to be expected
from a volcanic upwelling.

Inexplicably in terms of the volcanic
model where two domes overlap,
the relief of the underlying dome
doesn't disturb the overriding dome.

This, and the chain formation seen above is
typical of electrical scarring in general
where one crater is often
centered on the rim of another,
with little disturbance
of the existing crater.

With fulgamites, one mound
often occurs on top of another
as a result of multiple strokes
within the lightning flash.

So it seems that the images of Titan's
surface returned by Cassini so far,
are predictable
based on forensic evidence that we should be
alert to similarities between Titan and Venus.

This brings us to the other major
puzzle about Titan, its atmosphere.

Titan's atmosphere is
believed by many scientists

to be similar to Earth's early
atmosphere billions of years ago.
Toby Owens, principal scientist at
the Jet Propulsion Laboratory said,
"What we've got is a very primitive atmosphere
that has been preserved for 4.6 billion years.

Titan gives us the chance
for cosmic time travel...
going back to the very earliest days of
Earth when it had a similar atmosphere."

From New Scientist, November 6,
"Titan appears to have lost much
of its original atmosphere.

The moon has an unusually high
abundance of nitrogen-15,
compared with the lighter
isotope nitrogen-14.

That could be explained if most of the
atmosphere had evaporated into space,
a process in which the nitrogen-14 would
have escaped more easily than nitrogen-15."

What could cause such
a loss is unknown,
but it would mean that Titan once had an
atmosphere 40 times as thick as Earth's
- making it a dwarf

version of a gas planet.

This bizarre world may be far more complex than we have begun to imagine."

Says Larry Soderblom of the US

Geological Survey in Flagstaff, Arizona.

My comment was, Titan's

atmosphere is primitive

but not in the sense that it

remains 4.6 billion years old.

Instead, there has not been time for

young Titan to lose much atmosphere.

If Titan, like Venus, is a

young recently-ejected body,

it may still be cooling

from its natal heat

and, like Venus, it has

a super-rotating wind.

The striking disparities

in nitrogen isotopes

is telling us something about the way

planetary atmospheres are formed

rather than how they evolved.

There are several processes during

birth in an electrical discharge

that will have significant effects on planetary

atmospheres, including that of Titan.

The primary effect comes from the
source and depth of the ejection
from the flaring parent
dwarf star or gas giant.

The chemical elements in the
discharge are then sorted
according to their critical
ionization velocity.

Also, isotopes will tend to separate in the
magnetic field of the plasma discharge.

Lastly, the plasma gun effect,
seen now ejecting material from Io's
so-called volcanoes into space,
is known in the laboratory to be
a copious source of neutrons.

The neutrons may be captured to form
heavy isotopes and radioactive elements.

The variable combination
of all these effects
suggests that it would be unlikely for
any two bodies in the same family
to have identical
initial atmospheres.

Subsequent electrical interactions
between planets and moons
would also serve to transfer

surface materials and atmospheres,
transmute elements and further
complicate the picture.

That fits generally with the irregular
elemental and isotopic signatures
found in the atmospheres
of our planetary system.

For example, nitrogen in lunar soils is 10
times more abundant than one may expect
from the concentrations
of solar wind rare gases.

There are some other mechanisms
that could also contribute
to the lack of nitrogen-14
in Titan's atmosphere.

For example, nitrogen-14 can capture
an electron to become carbon-14.

Carbon-14 decays by very weak
beta decay back to nitrogen-14
with a half-life of
approximately 5730 years.

If the age of Titan's
atmosphere can be measured
in tens or hundreds of thousands
of years instead of billions,
then a significant amount of nitrogen-14

may still be locked up as carbon-14,
contributing perhaps to the hydrocarbons
in Titan's atmosphere and on its surface.
To suggest Titan once had an atmosphere
40 times as thick as Earth's
making it a dwarf version
of a gas planet,
only complicates the plainly impossible Standard
Model of formation of the solar system.
Why don't other large moons in the outer solar
system have substantial residual atmospheres?
It seems far more plausible
to suggest that Titan
is a much newer moon than
Jupiter's Ganymede or Callisto.
Titan simply hasn't had time
to lose its heavy atmosphere,
just as Saturn hasn't had time to lose
its rings following its last discharge.
In this picture, "we now have the key to
understanding what shapes Titan's landscape",
said Dr. Martin Tomasko, principal investigator
for the Descent Imager-Spectral Radiometer,
adding,
"Geological evidence for precipitation, erosion,
mechanical abrasion and other fluvial activity

says that the physical
processes shaping Titan
are much the same as
those shaping Earth.

These comments demonstrate the problem of
interpretation when the model is geocentric.

Methane is a non-polar molecule
which doesn't form clouds and rain
like electrically polarized
water molecules do.

So, precipitation erosion and other
fluvial activity will not occur
much the same as
those shaping Earth.

Finally, returning to Venus,
why is its atmosphere so different
to the other planets and Titan?

The atmosphere of Venus is mostly
carbon dioxide, 96.5% by volume.

Most of the remaining
3.5% is nitrogen.

This inhospitable mix is accompanied
by clouds of sulfuric acid.

I explained in my 2004 article,
Venus probably began with an atmosphere
more like Titan's and the Earth's

where nitrogen dominates

and with more water.

On the Venusian surface, nitrogen
molecules require very little energy

to transmute to carbon

monoxide molecules

by a catalytic surface nuclear reaction

in the presence of red-hot iron.

The brilliant French

chemist Louis Kervran

when investigating carbon

monoxide poisoning of welders,

discovered this

surprising transmutation.

The carbon monoxide then reacts

at the hot surface of Venus

with water vapor to form

carbon dioxide and hydrogen

in a well known

industrial process.

The hydrogen produced

escapes from Venus.

This process explains the puzzling

discovery made by Venus Landers

that the water vapor concentration diminished

as they approached the Venusian surface.

But decisively, it explains the
heavy carbon dioxide atmosphere
and little remaining
nitrogen on Venus.

It also explains the
steady stream of hydrogen
escaping from the top of
Venus's atmosphere at present,
and the phenomenally high proportion,
120 times that on Earth,
of heavy hydrogen or deuterium
left behind in its atmosphere.

What I've attempted to show here is a
coherent story using forensic evidence
stretching back into prehistory
of celestial events involving planets and
their electrical thunderbolt interactions.

A new picture of the universe results
from paying heed to Alfven's warning
to introduce electric universe
science into cosmology.

This is a fundamental shift from
the ad hoc theoretical approach
which has no theory explaining the force
of gravity and so, unsurprisingly,
no success trying to introduce

order into a chaos of anomalies.

It has no chance of ever discovering

that we are children of the planet

and former brown

dwarf star, Saturn.

This is an invitation to

the greatest adventure,

to begin to understand our real history and

place in the universe for the first time.

And that must bring about a

much needed cultural change

that may dwarf the

scientific revolution.

That change is essential

if we are to have a future

because the post-traumatic

stress disorder we've inherited

threatens our very

existence on this planet.

It manifests as a desire not

to know the shocking truth

because it exposes our

existential fears.

As Roger Wescott

overtly expressed it,

"Man is a wounded animal. His

survival is astonishing.

But his inability to heal

his wounds is tragic.

It is tragic because,

as Velikovsky argued,

being descendants of the survivors of

great paroxysms of nature of the past,

we are possessed by the urge

inherited through racial memory

to repeat the violent

performance.

And it was his greatest fear

that we now had the destructive

capability to produce our own doomsday.

Along with that genius Carl Jung, he warned

that mankind is its own worst enemy.

So the cultural change offered

by Electric Universe cosmology

is essential for our survival.

By offering a real understanding

of the universe and our history,

it offers hope and inspiration

where presently there is none.

There is far more to life in the electric

universe than is dreamt of presently.

We are all intimately connected

with each other and the Earth.

Enjoy the Saturnian festival
of lights and the New Year.

Order Out of Chaos

Dwardu Cardona (presented by Wal Thornhill)

I was pleased when Dwardu asked
me to do his presentation
I've done this once before in
London, when he couldn't attend
but I'm pleased because
Dwardu's work I've followed avidly
since the 70's when he published in
Pensée and then following that in Kronos
and his work fascinated me
because it was well documented
it was extremely well researched and
it provided me with the raw material
that I needed, the input, the data, I
needed to try and figure out what happened
and then to try and explain
it in terms of Science
and as I found, science need a great
revision to be able to withstand
the input from Dwardu, I mean a sis-
kebab of planets is a hell of a challenge.
So, I'm very pleased to be able to present
his presentation called Order Out of Chaos.
According to various translations of the
Old Testament an entity named Elohim

is said to have been responsible for
the creation of heaven and Earth.

This is not only being one of the most
revered dogmas of the Judeo-Christian faith

it is likewise to be found at the root of
just about all religions, old and new.

it's interesting...

I think this is one of the problems of
compatibility between picture files
because there is or there was last night
when I looked at it on my computer
a picture of Marinus van der Sluijs, he's
down here and we'll be presenting later.

So, anyway, Marinus van der Sluijs
has gone on record in stating that
not all mythology is creation
mythology, which is quite true.

Even so as Fred Bratton
rightly stated,
creation myths are the most
widespread of all myths.

That picture worked.

David Talbott hit the nail right on
the head when he additionally wrote
that a review of the oldest versions
of creation will show that few,

if any mythical themes have
been more misunderstood.

The only thing I will add is
that this does not only apply
to the oldest versions of creation,
but just about to all of them.

One complicated problem that this involves
is that these myths are believed to refer
to the creation of the Earth or
what is even worse, the Universe.

One need not be the proverbial
rocket scientist to realize that man
who was not around when Earth came to
being could not have seen it form.

Let alone the Universe!

Why then, as David

Talbott noted,

did ancient man describe creation as if he
had seen it unfold with his very own eyes?

Most people might find it hard to believe,
but as far as ancient sources are concerned
reports of the creation that unraveled
out of nothing are somewhat rare.

As Stephen Langdon rightly
noted, in Sumerian mythology,
which constitutes the earliest recorded

samples of traditional law at our disposal,
there is no evidence of the considered
theory of the creation of the world.

If by the world is meant
the Earth on which we live.

Similar examples can also be found in
the literature of latest civilizations
from the same general region and additionally
vouched for those who came later.

Thus, sometime in the first century BC
the Sicilian historian, Diodorus Siculus,
could write that the Chaldeans say that
the substance of the world is eternal
and that it neither
had a first beginning
nor that it will at a later
time suffer destruction.

In India, Jain doctrine contains that the
world is uncreated as so is time itself
both of which are without
beginning or an end.

And while there is more than
one version of creation
to be found in the intricate
mythology of Hinduism
few of them actually claimed that the

world had been created out of nothing.

The Roman poet Lucretius was adamant
that even when it comes to divine power
nothing can be created
out of nothing.

What can we, however, say
about more ancient times.

Was primitive man capable of realizing that
the world he lived in had always been there?

Was such a sophisticated concept really
beyond the mentality of ancient man?

We cannot unfortunately
trespass beyond historic times,
but we can extrapolate from the traditional
law of presently existing tribal groups.

And, as it turns out, the concept of a non
beginning was not beyond the comprehension
of some of the world's
primitive cultures.

Thus, all over Polynesia,
Micronesia and Melanesia,
including the Hawaiian
Islands and New Zealand,
the upper or heavenly world and the terrestrial
world are thought to have existed forever.

Creation, according to most

Australian Aborigines,
merely molds or molded
what was already there.

The idea that the land may once not have
existed seems quite simply unimaginable.

One can hardly find a race more
different from the natives
of the Pacific Islands and Australia
than the Eskimos of the Arctic regions.

And yet they too held to similar
beliefs, although there was disagreement
among these Arctic people concerning the
manner in which the world had been formed
a fair portion of these indigenes continue
to believe that it always had been there.

So likewise with the primitive
ancestors of the Tongas in Siberia
who were also of the belief that what is
usually mistranslated as the universe
had always been around.

If such primitive cultures could
grasp the philosophical notion
of there having been no
Genesis to existence
so could our ancient ancestors
come to the realization

prior to the sophisticated civilizations
that rose in the fertile crescent,
the Nile Valley, the islands of Greece
and elsewhere around the world.

Even so, creation was believed, by some,
to have transpired out of nothing
just as in Christianity
it still is.

Most of these beliefs, however, are
based on a series of misinterpretations
one of which concerns the
mistaken belief that Elohim
created whatever he did
create out of nothing
which is neither stated nor
even implied in Genesis.

As it happens, ancient man more than hinted
at a pre-existing, even if chaotic, substance.

Obadi Kim from India
states that this all,
which is often misconstrued to mean the
universe, was indiscriminate chaos.

As it is there maintained, all that
existed then was void and formless.

Void and formless it might have been,
at least in the eyes of ancient man,

but it still existed.

Thus the Laws of Manu rightly inform
us that, despite being without form,
the world or what was later
misunderstood as the world
was believed to have
already been in place.

Half a world away, the Incan God Veracocha
was burdened with regional variations
of the manner in which he
had said about creation.

And yet in all these variations he
always comes out as a God Creator
who intervened in a world that was already
in existence even if still unorganized.

Veracocha's role was to
transform chaos into cosmos,
and since cosmos originally meant
order, harmony or an orderly arrangement
it can be said that creation consisted
in the formation of order out of chaos.

As it has been attested, all of these creations
were mere arrangements of existing matter
rather than creations
out of nothing.

The main pre-existing item from which creation

was said to have unfolded was the May em.

Usually translated as waters

over which the so-called spirit of

Elohim him is said to have

moved prior to creation.

The validity of this inference is evidenced

by the fact that nowhere in Genesis

is Elohim said to have

ever created the May em

nor is this concept to be

found only in Genesis.

The Babylonian version of creation,

known as the Enuma Elish,

is given in a series of

seven cuneiform tablets.

As in Genesis, the waters are given the

honor of having been the primordial element

and also as in Genesis they are proclaimed

to have existed before anything.

In Sumerian mythology, water is not

only said to have preceded creation

it was held to have been

responsible for it.

Thus in a tablet that contains a list of

deities we encounter the goddess whose Nammu

whose name is written with

the ideogram for sea.

And it is this Nammu that is
this sea that was described as
the mother who gave birth
to heaven and Earth.

As elsewhere, the origin of this
primeval sea is not accounted for.

The Egyptian myth of creation also
ascertains that water and chaos
were the pre-existing elements from which
creation was said to have developed.

Let it not be thought that we
are making too much of this
through a survey of myths dealing
with creation from around the world
it is easily recognized that one of
the most noticeable of motives is,
in practically all of them, is the idea that
what is usually misconstrued as the universe
unfolded out of chaos,
from primeval water.

We must, however, travel away from
the preachings of the biblical world
if we wish to illustrate the
universality of this team.

In India we encounter one version

out of many in which Narayana
lifelong ages floating on the
primeval waters we've been discussing
before proceeding to
create what, as usual,
has unfortunately been
misconstrued as the universe.

Later myths ascribed
creation to Brahma,
who is said to have
hatched from a cosmic egg
as it lay floating on the
same primeval waters.

So similarly outside brahmanic India
among the nation's other tribes
we come across the belief that in the
beginning nothing existed, but the waters.

Among the Eskimos of Alaska, or
the Inuit as they are now called,
we also find a creation myth that presupposes
the preexistence of a watery abyss
from which all existence
came into being.

Farther south, but still
in North America,
creation out of water continue to

be told by most Amerindian nations
thus the Hopi have for long insisted
that the creator gathered, something,
from endless space that later
manifested as the waters.
So also was the sea, but one
that floated through space
said to have already been in
existence when the Hearon deity,
known as the spirit of all,
commenced on his creation.
Likewise among the Iroquois
with the same spirit of all
was already in possession of
the gentle swishhing waves
from which to create whatever
needed to be created
but according to the Yuma this is how
it all began, there was only water,
then out of the waters rose a mist but
deep down in the waters lived the creator.
It is the same in Central America where
we come across Nahuatl creation myths
in which the primordial substance
also seems to have been water.
Although the Mayan Popol Vuh describes

creation in a rather convoluted manner

is still describes the original

state of the heavens as a void

with what has been translated as the

tranquil sea already in existence.

Thus the creator was described as having

being in the heart of the still dark sky

and in the heart

of still dark sea

or in the depths of the water

in which he seemed to shimmer.

Following the Mayan, the Azteks

were no different in this respect

according to them the world was a

huge flat space surrounded by the sea

and at a certain point the sea

curved up to become the sky.

The upper air consisted

of sky waters

I could go on and add much more to the

list, but I believe I've made my point.

The question that all this raises is,

why did ancient man resort to the idea

of a world having been created

out of a watery chaos?

Why water, why chaotic water?

And why was it not thought necessary that this water should also have been created?

In Egypt not only was the creation believed to have unfolded out of the primeval water the creator was himself believed to have risen from the water.

In digging deeper, however, we find out that as far as the Egyptians were concerned it was actually the creator himself

who was the very waters out of reach creation was said to have unfolded moreover the rising of the creator out of these waters was accompanied by the shading of light from that very source.

In fact, as with other ancient civilizations, this form the very starting point of all conjectures relating to creation.

This first burst of light is congruent with the light that was said to be shed by Elohim in the very first lines of the book of Genesis.

Throughout the years it remained emphasized in rabbinic belief that creation

was made possible by the advance of the
primordial light into the darkness of chaos.

In Egypt, the god Osiris was likewise acclaimed
as the shedder of the primordial light
but then a spell from the pyramid
texts towards the same Osiris
as having been synonymous with
the sea and or the ocean.

That this watery chaos or primordial
ocean was celestial in origin
is evidenced by being referred to
as the watery abyss of the sky.

Even the great god Ra or Re was known as
the god of the great celestial waters.

So similarly in Hindu mythology
according to which the god Varuna
is not only said to have appeared
in the seas gathered waters
and have been crowned by Brahma
as the lord of the waters
but to have been
himself the waters.

As to be expected when such
waters are equated with the god
this particular sea or ocean
was located in the sky.

But who or what then
was this creator?
Primitive as they
might have been
and long after the migration from
their original Northern homeland
the Kawesqar Indians of southern Chile
continue to remember the creator
as having being Xolas which
name translates as star
and they were right on the mark.

But let's backtrack a little,
one particular item that has confused
mythologists throughout the years
is the identity of the creator
in most of the ancient world
as the God of the planet Saturn.
Indeed as David Talbot noted, the
consistency with which astronomers identify
Saturn as the former creator
king is extraordinary.

Cutting straight across the lawn I need
to only point out one of the best-known
creators in the Western world the one
referred to in the book of Genesis
as it is their stated, in the beginning

God created the heaven and the Earth
the Hebrew word that has been
translated as God, however, is Elohim
which is the majestic plural of
the Semitic deity known as El.

The Greek transliteration of this name is
Helios the very good that Philo of Byblos
proclaimed to have been the same as Kronos
which was the Greek name for Saturn.

Besides Philo of Byblos other classical sources
as well as inscriptions in Greek and Latin
all establish the identity
of a El as the Greek Kronos.

The same as the
Latin Saturnus.

William Albright was therefore right
on track when he identified El
as the Latin Saturnus,
without much ado.

I point next to the Zoroastrian
myth in which Zurvan was said
to have provided or emitted
the original unformed matter.

This ancient deity was
regarded as the first principle
the original seed and the

father of the cosmos

and yet once again as we learn

from various ancient texts

Zurvan was also identified as Kronos

the Greek god and planet Saturn.

In ancient Chinese sources chaos

is equated with the being known as

Huangdi the Yellow

Emperor of dim antiquity.

In different versions of the myth this

yellow Emperor was responsible for

having brought in order to the Elemental

Chaos as the beginning of creation.

Huangdi, however, also originated as a

cognomen of the Saturnian planetary god.

The Huangdi was regarded as the creator,

it's also well known and that is tantamount

to proclaiming that creation was the

work of the Saturnian planetary deity.

By the time of the Greeks and Romans,

to say nothing of those who came later,

the conception was so ingrained

in the minds of scholars

and those of religious disposition that they

could spell it out in no uncertain terms.

Thus, in that mysterious work of this popularly

known as the "Great Magical Papyrus" of Paris
the Greeks actually
addressed Kronos outright
as the founder of the
whole world we live in.

Among the Romans the god Janus was
considered a god of beginnings
and described an essential
role in creation.

This same Janus was also known as the chaos out
of which creation was said to have unfolded
and yet as Alexander Hislop noted Janus
is easily identifiable as Saturn
and so likewise down
into modern times.

Although mainly whole was more
concerned with mystical philosophy
then he was with the verity
of mytho historical content
he was as David Talbott notice
till cognizant of the fact
that the planet Saturn looms as
the elementary power of creation.

Despite all that, the creative was not merely
planetary since the planet in question
had formerly been a brown dwarf

star in close proximity to Earth
before it degenerated into the gaseous
planet we now know as Saturn.

It was in the early 1940's that
Immanuel Velikovsky posited
that the planet Saturn had once
been much larger than at present.

Although he turned to be out to
be an error on many an issue
he was definitely vindicated
on this particular one.

That the planet Saturn is the relic of what
had previously been a brown dwarf star
is now an accepted tenet
of mainstream astronomy.

As Maria Zapatero Osorio reported
at the turn of the present century
in time the evolving brown dwarf stars
will look like Jupiter and Saturn
and as other astronomers found reason to
state at around the same time
sub-brown dwarfs give us a golden opportunity to
see what Jupiter and Saturn were like in the youth.

What the scholarly world also had
to finally admit is that humanity
has known and has kept track of the

planet Saturn since prehistoric times.

As far as we're concerned this would not have been all that difficult since our hypothesis demands that Earth was actually a satellite of this proto-Saturnian dwarf star which loomed large in close proximity.

It was in effect Earth's primordial Sun in a system that had originally been floating freely outside the demarcation of the present solar system.

As Vladimir Damgov amongst others has indicated brown dwarf generate enough heat to shine, but only dimly and in infrared light.

They also radiate in the ultraviolet spectrum that together with the infrared would have been needed for the inception and sustenance of life.

Proto-Saturn that were there before have been hotter than the planet that it is at present and to be sure it has not yet had enough time to eliminate all of its primordial heat.

Even after the Cassini spacecraft had time to study the planet at close quarters

Saturn was still being claimed to be a

world that is hotter than it should be.

Brown dwarf stars have also been discovered
to be surrounded by circumstellar disks
identical to, even if much smaller than,
the ones that are detected around stars.

Judging the water our ancient ancestors
passed on to their descendants
such a circumstellar disk was
remembered as having surrounded
their primordial proto-Saturnian
Sun as a nebulous entity.

Needless to say ancient man had no way of
knowing what this nebulosity really was.

In ancient Hebraic
nomenclature this nebulosity
ended up as the Tohu wa-
bohu of the book of Genesis
which phrases traditionally translated as
without form and void or voidable empty
in relation to whatever it was
Elohim was said to have created.

Tohu wa-bohu, however, can
also mean out of chaos
which conforms with the chaos that
presided as the ruling principle
before creation in various

ancient cosmogonies.

Among the Chinese the same
chaotic or nebulae cloud
said to have revolved without
fail became known as Tao.

In North America the luke spoke
of this fog and or foam
that was said to have moved
round and round continually
which fog was also described
by certain tribes in Indonesia
to the Pima it was like a fluffy
bit of cotton in the breeze
to the Phoenicians it was
Môt which is normally
translated as mud that
can also connect water
which conforms with the source from which
creation was said to have unfolded.

This revolving chaotic fog or foam
is not a species way in which
our primitive forefathers chose
to describe the indefinable world
that was seen circling
around the nearby Sun.

That under certain conditions

and scintillating eliminations
elimination such a nadie could also
mean visualize the swirling water
a whirling ocean is all
also understandable.

This is brought into prominence by the
Heliopoliten system in ancient Egypt
in which the immense chaos
that existed in the beginning
was believed to have been a celestial ocean
in which the germs of creation lay embedded.

And since creation was vouched to have
sprung out of the celestial sea
it can be stated to be developed out
of proto-Saturnus circumstellar disk
moreover very much like stars
which in fact they truly are
brown dwarf stars are also known
to flare up in an intensity
that to say the least is taken
astrophysicist by surprise.

If we are now to believe
that the mytho-historical record
after having shown dimly
in the sky for untold ages
Earth's primordial proto-Saturnian Sun

also flared up in a blinding light
to their ancient ancestors remembered
as the inception of creation.

This was the Fiat Lux, the let there be
light that is said to be shared by Elohim.

No Earthly description will ever do this
event and all that followed justice.

We who did not see it will never
be able to fully appreciate
the impact it must have had
on the primitive human psyche.

Were something similar to
occur in the present sky,
and granted that we would survive it, we
would now view it with scientific eyes

Our primitive forefathers had no science capable
of explaining that overpowering event.

All they had at their disposal
was fear, reverence and awe.

Following the shedding of
the light it became apparent to our
forefathers the Sun above them
had changed its appearance.

Not only had it suddenly
become much brighter
it also seemed to be slowly

organizing its surroundings.

Due to proto-Saturn's
plasmatic paroxysmal eruption
its circumstellar disk
had compactly shrunk
leaving a wide gap between its
inner edge and its stellar orb.

There will be those who will
hate what all this leads to,
but as Talbott expressed
it when asked what it was
that our ancient forefathers
meant by creation,
he replied that the idea
is remarkably simple.

The creator fashioned a celestial
band or circle around himself
and this band became
his cosmic dwelling.

Basically that's all
there is to it.

Judging by the very words
that our ancestors utilized
that is exactly what they
attempted to describe.

As is widely known, the climactic

entity of Elohim's creation
went down into Western thought
as the garden East of Eden.

In reality, however, the
book of Genesis states that
Elohim planted the garden
eastward in the Eden
and I stress the word
in rather than of.

But even that is
a mistranslation
since the Hebrew word translated as
eastward actually means ancient.

And the phrase in question should be read as
'Elohim planted a garden in ancient Eden'
where 'Eden' translates as
a 'pleasurable place'.

The word translated as 'garden', however,
more correctly means 'an encircled area'.

The word is derived from the Akkadian
'gana' which refers to 'an enclosure'.

The Greek - that is Septuagint - version of the Old
Testament uses the word paradisos for 'garden',
which word is now rendered
into English as 'Paradise'.

This word is derived from a Persian one

that also translates as an enclosed area.

The same concept as aptly

illustrated through persian belief

which dictates that it was

Hima who ruled paradise

and he did so from an area known as a Vara

which he circumscribed with a golden ring.

Although I do not wish to stress it judging

by their resultant illustrations there

even these among modern artists who seem to have

understood this concept quite well.

Such for instance where William

Blake and his description

or depiction of the deity's

creative effort

and Giovanni Di Paolo

in his depiction

of the expulsion of Adam

and Eve from the garden,

both of them envision Elohim's created

effort as a circular enclosure.

Whether this resulted from mankind subdued

nostalgia I will leave others to decide.

I could go on forever and a day on this

particular subject but time does not permit.

Let me however clarify that,

and this is most important,
that following its abrupt
flare-up the proto-Saturnian Saturn
did not take long to develop a set
of radiant plasmatic beams
that continued to mesmerize
mankind to no end.

And although Talbott may have changed
his mind at least to an extent
on what the result amounted to, I present
the manner in which he pictured it
back in 1980 to which I
personally still hold.

It was this entire apparition that actually
went down as the deities ordered arrangement
out of the previous chaotic cloud
that had originally surrounded him.

And Dwardu says thank
you for listening.

[Music]

A new study recently revealed the best evidence by far, of the cosmic filaments that connect ancient galaxies to what is called the cosmic web. Mainstream scientists think these filaments in the cosmic web are created by the elusive dark matter which clumps together into filaments, and causes normal matter to clump along these. Now so far, we have not been able to detect any of this supposed dark matter. The more we look for this dark matter, the more normal matter we find often in the form of plasma. For the first time, scientists have spotted what they term "a pipeline gas filament" feeding an enormous galaxy that they believe formed when the universe was only 2.5 billion years old. This discovery seems to support a long-standing model that suggests star-forming material is delivered to huge galaxies via these cosmic filaments. They have previously detected these filaments connecting the galaxies, but those were not able to capture detailed chemical information of this stream. Fu and his colleagues were

able to identify the chemical signature of the gas streaming into the galaxy, thanks to a very rare and fortuitous alignment of some quasars. They believe these quasars are situated far behind the galaxies and could be used as a light source to help see the details in the gas stream more clearly. They were able to probe the abundance of chemicals in the filament using the light from the quasar. These showed that the stream lacked heavy elements such as aluminum, carbon, iron, and magnesium. This implied that the gas had to be flowing in towards the galaxy, because if the gas was flowing out of the galaxy, it would have been enriched with heavy elements which are produced by the stars in the galaxy. These filaments seem to be the only way that this cold gas could get pumped into the galaxy, without being disrupted by the hot atmospheric surroundings of the galaxy. They believe that this is a process that is important in understanding how these massive galaxies formed in the early universe. Let's just take a step back here, as there are many aspects

to this report which would lead to a very different conclusion. We will start with the fact that this bulk of work focuses on what they consider massive starburst galaxies, at high redshifts in the vicinity of background quasars. Add into this the fact that they detect gas around these quasars, that appears to connect them to the galaxy itself. Many of you will be familiar with the brilliant Halton Arp and his extensive work looking at exactly these scenarios. He found a clear correlation to the proximity of quasars and the host galaxy, and speculated that these quasars were ejected from the host galaxies, and would continue outwards from these and slowly develop into a companion galaxy later on. He also saw very strong evidence of this ejection process occurring in an X-pattern through the center of the galaxy. Here are some examples from the many, many images that Halton examined. Let's just take another look at this galaxy. We can clearly see the quasars, that they identify, seem to be strung out below the galaxy. Not in a perfectly straight line, but more an arc shape. Halton felt that this arc curve

may be caused by the galaxy rotating by up to a quarter of a turn. We also see a companion galaxy off on the other axis, situated some distance from the host galaxy. Halton was also able to find examples of quasars that were clearly embedded in gas material, that connected all the way back to the host galaxies. This is exactly what we are seeing here as well, when Halton made these discoveries they were ignored as the redshift of the quasars would place them much further back than the host galaxies. Despite the connection via the gas cloud, the redshift of these objects is not solely related to the recessional velocity, and hence their distance from us. Halton viewed that the redshift was instead an intrinsic component of the object, that as the object aged, would reduce. So quasars are initially born as high redshift objects, and then slowly reduce their redshift. Once they evolve into a companion galaxy, their redshift would be almost the same as the host galaxy. The important point was the redshift of the quasars was always an offset of the original host galaxy. And when

we look at the redshift of the object, we do indeed see that the redshift of the quasar does reduce as you move further out. So the first quasar would have a 0.242 higher redshift than the host galaxy and the second quasar only 0.075. So again, as we're moving further out, this is reducing. If we examine the two companion galaxies that they have identified, again here we see a much lower value for the redshift, as these in Halton's view would be more mature. Now these steps also fit quite closely with the quantization that Halton Arp saw for these types of objects, as they move further out from the host galaxies. This galaxy also reminds me of NGC3067 and the quasar 3C232 which Halton Arp looked at. Here there was a quasar embedded in a hydrogen filament. Astronomers claimed that the quasar had to be situated behind the filament and could not be embedded within it. The argument was that the filament at the same redshift of the galaxy absorbed continuum light from the quasar, but did not show excited optical emission lines, proving that the quasar was much

further back than the hydrogen filament.

Halton however, pointed out that in order to get to this conclusion, they needed to make a short extrapolation. The photons needed to ionize the hydrogen in the filament, and make it fluoresce, were at a shorter wavelength than those in the spectrum.

The actual amount needs to be determined by the amount of hydrogen at redshifts intermediate between the quasar and the hydrogen filament, the degree to which the filament was composed of small dense clouds, and the relative beaming angle between the ultraviolet and radio wavelengths of the quasar.

These are all values they do not know, so they have to guess in order to derive their value.

Now one important point to realize is that they see a direct link between these star-forming galaxies and the neutral gas reservoirs that may fuel the future star formation. Again, here we must consider the type of galaxy.

These are considered to be active galaxies and once more, these are exactly the galaxies that Halton had identified.

These types of galaxies often had quasars associated with them and companion

galaxies. We know that these types of galaxies also output vast amounts of materials from massive jets that they produce.

It was along these jets that Halton found many of the associated quasars.

The material was not flowing inwards but was flowing outwards in his view, forming a sort of umbilical cord back to the host galaxy.

Another important point to realize is that if you accept the idea that redshift is largely an intrinsic component of the host object, then this too would apply to the galaxy.

This immediately would mean that this too is not a distant massive old galaxy.

Instead, it is a younger more active one in the process of creating newer younger galaxies through the emission of these quasars.

The increased activity will also lead to more energy within the galaxy, and hence a higher current density, leading to rapid star formation.

They identify interesting absorption structures towards both quasars, which include variable metallicities and what the author sees as a filament structure

which will eventually collapse to form a cluster of galaxies. This, and the unexpectedly large covering factor that they have identified for the quasars, is much easier to explain if you take the bold step to see that these quasars are instead embedded within the filament. Where they identify a filament structure which is associated with the quasar, this is actually the umbilical cord connecting the quasar back into the large filament extending from the host galaxy. Galaxies undergo a life cycle which includes the ejection of material which forms quasars, which eventually forms companion galaxies. We see all these phases in this galaxy and its surroundings. We see clear evidence of the existence of filaments connecting to the galaxy. We see companion galaxies located along two of the axes of the galaxy. And most importantly, we see two quasars embedded within the filament and these have a delicate filament structure that connects them back

into this filament. At some point
coincidences cease to exist. You
must start to see the data in a new
light. Halton Arp was
a pioneer in this field.

Our universe is electric and screams
this at every possible opportunity.

You just have to be willing to shake off
the old paradigms to see it come to life.

[Music]

[Music]

[Music]

good morning ladies and gentlemen thank
you for coming this morning to have it
early to listen to my lecture on the
logical inconsistencies of that special
theory of relativity Einstein wrote a
paper in 1905 that is heralded as a
turning point in our understanding of
the nature of space-time in the universe
it's true in a sense but in the reality
it's unfortunate because it's introduced
the an element of mysticism into physics
so so although it did have this effect
it's been quite a disaster for science
so first I'd like to start off with a
bit of a discussion on dimensions in
units because they're quite different if
we call time T where we can measure the
time T in any kind of unit we could use
it in seconds or years so or hours and
days and lengths if we call length L but
we don't worry about the actual units
that we use we just talk about length
and other than that and we denoted by L
and we can measure that in measures or

meters have feedin light-years four
inches and we have from our common
experience three length dimensions
length breadth and height for instance
in a box we have the length of the box
the width of the box the height of the
box now the obvious thing about is that
if you have a length can you add to it a
time hello oh yes we're back the first
thing is that if we consider now units
we might measure length in meters and
time in seconds can you add meters to
seconds obviously you cannot so you have
to be able to add
it seems that we're working again so and
you can't add or subtract meters from
seconds and vice versa you can only add
the same units in mathematics they're
just numbers so if you've got no units
to them you X's and Y's etc but in
physics we want units there are unit
unitless quantities constants and such
but there are also constants that have
units so units are very important to
physics and strictly speaking an
equation needs to be the left hand side

and you in needs to have the same units
as the right hand side and diligent
engineer and scientist would make sure
that they've got meters on one side if
they'd want meters and the other side of
their equation has also got meters
because if they have meters equal to
seconds there's a bit of a problem so
ultimately they're different dimensions
so if you go back to our generic
dimensions length can't be met added to
time and vice-versa but we already live
in a four-dimensional world because
we've got length three you three sets of
them length breadth and height all units
of length and we have time so we already
live in a four-dimensional world in this
sense but in Einsteins world length and
time the three lengths XY z-- and Zed's
for instance and time are jumbled up
together so that you have a
four-dimensional time which in which you
can add and subtract all of these
quantities in one equation so let's have
a look at how we can denote a position
in place and time where we'll have X is

the length Y is the breadth and Zed is
the height and we'll have T is time so a
time and place can be specified by a set
of coordinates X Y Zed in time for
instance if you say to your friend I'm
going to meet you at the cafe for a
coffee at one o'clock well if you go
there at five o'clock
are you likely to encounter your friend
probably not and if you decided that you
didn't like the cakes can Y Zed
coordinates
you went to a different place you
probably wouldn't make your friend
either so you have to go there X Y Zed
the right coordinates for the place and
at the right time so we already live in
a four-dimensional world so there's
nothing new in Einstein's idea of a well
not nothing new in the idea of a
four-dimensional world in the terms of
Einstein's
conception of the universe because we
already have that what is different is
that the you cannot jumble up XY z-- ins
Ed's and T's jumbled up time and space

together which is what he has done so
for instance the distance between two
points depends on X Y Z and Z it doesn't
depend on time the difference between
Phoenix and I don't know LA the distance
between there is XYZ and Z 's
but it's not a question of time now that
means that the four-dimensional world in
which we live has modeled by Newton is
consistent with Newton so we'll have now
looking at Cartesian coordinates I'm
sure you're all familiar with this from
school usually we'll have the Cartesian
plane x and y here we've had added the
 Z so we have space but it's just like
the corner of a room if for instance if
you look at any corner of this room
because it's a rectangular building we
have an x y & z set of coordinates
immediately before us and they are all
perpendicular to one another not only
that they're independent of one another
so that any distance along well XYZ it's
been purpose because they don't have
components in each other's directions
because their definitions so now I want

to look at a right triangle when we see how the jumbled up nature of time and space is based on an error utilizing right triangles so we quickly revise the theorem of Pythagoras and I'm sure you will remember that if you construct the square on the x axis as I've drawn it in this diagram in a square on the y-axis we have areas of those squares $x^2 + y^2$ from simple geometry and then you'd construct a square and the hypotenuse of the right triangle then we find that $x^2 + y^2 = R^2$ well that's just the area of - trying to two squares rather added together give you the area of another Square and usually in geometry in school the squares are dropped off and we just say $x^2 + y^2 = R^2$ square or what if you want to give a label to the hypotenuse of the right triangle but this is the theorem of Pythagoras but I ask you is asked well let's consider this R is not a new dimension because it's composed of X 's

and Y's so it's not a new dimension it's not perpendicular to x and y it's a function if you like of x and y it's determined by x and y now we'll consider a circle and we'll draw the circle around the right triangle the right triangle hasn't changed but now we can reinterpret the length of the hypotenuse of the right triangle as the radius of a circle it goes through the end of the hypotenuse where the hypotenuse is has its origin at the origin of the coordinates where x and y is 0 and again by the theorem of Pythagoras because it's a right triangle $x^2 + y^2 = R^2$ now you can see why I label that R star because to give you the idea it's also the radius of a circle in this circumstance now is the hypotenuse of the right triangle in this instance perpendicular to X and y know it's still the right triangle and can $x^2 + y^2 - r^2 = 0$ never B not equal to 0 this is the important point we can see that it must

always be 0 because $x^2 + y^2$ squared equals R^2 so if you subtract R^2 from each side you must have 0 on the right side that's always 0 unless of course you're a cosmologist which I'll come to shortly so x & y stay perpendicular to one another and even in this last equation $x^2 + y^2 - R^2$ equals zero

the R is not perpendicular x and y now let's go from the 2-dimensional to the 3-dimensional this is a sphere again our right triangle is present notice that in this case by the theorem of Pythagoras if you look in the xy -plane there

$x^2 + y^2 = R^2$ that's the same triangle we've been talking about now if we go from the tip of the hypotenuse and go into the Z direction

the lengths are from the origin to the surface of that sphere is $R^2 + Z^2$ and we know what R^2 is so we'll put that into the

equation and we get $x^2 + y^2 + z^2 = R^2$
again we've applied the theorem of
Pythagoras so the quantity R in
three-dimensional space is not
perpendicular to x , y & z either and again
if we take $R^2 - R^2$ from both
sides of this equation I get $x^2 + y^2 + z^2 - R^2$
 $= 0$ can it ever be
anything other than that of course it
cannot again unless you're a cosmologist
which I will show you shortly so but
before I go to that interesting point
let's revise what we know about speed
what do we define a speed it's the
distance that something moves in a
certain time and we take the ratio of
the distance the time that gives you a
speed so in the case of the hypotenuse
of that right triangle in the sphere
that I drew in three dimensions the
distance from one point to the other
point or the from between the two ends
of it is the square root of $x^2 + y^2 + z^2$ because

sorry $x^2 + y^2 + Z^2$
squared because R^2 is the square
of the distance so the length of the
hypotenuse is not R^2 that's the
that's the area of the square that we
drew on it so the length of the side of
the square is R so we take the distance
 $x^2 + y^2 + R^2$
said sorry I'll say that again $x^2 + y^2 + Z^2$
take the
square root of it that's the distance we
divided by time and that can give us a
speed in again whether we use if we use
that the distance that for instance that
light travels some distance and the time
that light travels that distance and we
take the ratio of that we have the speed
of light just as though you had the
speed of a truck if a truck goes from A
to B and it travels that distance in
a certain time T well you can calculate
its speed what's the same with light
instead of the speed of the truck we put
in the speed of light so we
conclude from this that for so that
neither VT nor CT now VT is a distance

so if I say to gyro traveling at 60 miles an hour for one hour how far did you go well you take the speed you multiply it by the time and you get the distance you know it's simple instance it's 60 miles per hour times one hour the hours cancel out you've got 60 miles so VT and CT is not an independent fourth length dimension

it's just how long did it take to travel along the hypotenuse of a right triangle unless you're a cosmologists because the space-time concept associated with Einstein and Minkowski it was actually introduced by Minkowski in 1907 and enthusiastically adopted by Einstein and all his followers ever since so now you've got a four-dimensional space-time continuum that just has curvature so space-time requires CT to be in an independent fourth length dimension because $C \times T$ that's a distance now we can add that distance to other things if you have a distance you can add it to distances this is how time is snuck in to an equation two jumbled up space and

time and give you the idea of space-time
well it's not it's just some
kind of space with all length dimensions
so mathematically treating C times T or
 V times T is the speed of a truck times
the time had traveled does not make it
but mathematically treating it as such
does not make it so and does not make T
an independent for that length dimension
 $C T$ is not $1/4$ length I mentioned $V T$ is
not a for think I mentioned and T on its
own they can't even be a length so we
going to go to the truck that I was
talking about let's consider a truck
moving along the hypotenuse of the right
triangle from A to C now there are two
ways you could get the right from A to C
you could go along the x -axis at some
speed you can go then along the y -axis
at some speed and you get there but the
shortest distance of course is along the
hypotenuse as we know from elementary
geometry so let's have a look at this a
truck has a constant speed along R star
is V in time T it travels from A to C
along this hypotenuse of a right

triangle then the theorem of Pythagoras applies and we say R^2 is equal to V times T^2 and that's equal to $x^2 + y^2$ and that means that V times T is equal to the square root of $x^2 + y^2$ squared that's the length of the hypotenuse of a right triangle and still our star equals V times T is not a new dimension and it's not orthogonal to X and Y so we write the equation of this right triangle as $x^2 + y^2$ squared equals $V^2 T^2$ well recall we could draw a circle around that and that would make it the radius of a circle and if we subtract $V^2 T^2$ from both sides we still get $x^2 + y^2 - V^2 T^2$ squared equals 0 can it ever be other than naught well it's the right triangle the answer is it cannot again unless you're a cosmologists so now we'll go to the three dimensional analog because it's actually the same diagram except of draw or a spheric sphere around the right

triangle and everything else applies in
 the same way as we did with the right
 triangle in the sphere before so instead
 of our
 we're well a truck travels from ADA to D
 at some speed V and so the distance
 along there is V times T and the x
 squared plus y squared plus Z squared
 equals V times T or squared well as we
 had before x squared plus y squared was
 equal to R^2 or $V^2 T^2$
 squared T squared that was the equation
 also of a circle so the equation for the
 length of the hypotenuse of the right
 triangle also gives us the radius of the
 equation for a circle here we have the
 length of the hypotenuse is also giving
 us the equation for a sphere so right
 triangles are very important and again
 we can write x squared plus y squared
 plus Z squared minus V squared T squared
 equals naught it's always annoyed and
 it's not orthogonal to x y & z unless
 you're a cosmologists so we see that
 space time is not a 4d continuum let's
 replace the truck that was moving along

from A to D by a light ray everything
 is exactly the same as before except now
 the speed is not the speed of a truck
 it's the speed of light so the trucks
 not going from A to D a light ray is
 going from A to D does anything else
 change not at all and so now we come to
 what the cosmologists do following
 Minkowski and Einstein so for the right
 triangle $x^2 + y^2 + Z^2 - C^2 T^2 = 0$
 always so it can never be not equal to
 0 and it can never be orthogonal to x
 y & z it's always the right that's always
 the hypotenuse of a right triangle so if
 you take away the sides of the triangle
 and just leave the radius line does it
 change anything no it doesn't it's still
 the hypotenuse of a right triangle but
 we don't have the right triangle there
 anymore and with the right triangle
 disappeared magic is done because
 cosmologists write $x^2 + y^2 + Z^2 - C^2 T^2 = s^2$
 it's not
 equal to know it and equal to know it is

a special case according to them
according to Albert Einstein and Hermann
Minkowski but this is clearly a
violation of elementary geometry all
right now
the fundamental reason why they start
writing this their squared not equal to
zero is because they mix it up
incorrectly with what's called
Riemannian geometry but if you want to
have a four-dimensional space in pure
mathematics you have to have four
independent quantities well x , y & z as we
see by looking up at say the corner of
one of these rooms corners in this room
you'll have x , y & z they're independent of
one another but we see that the speed
between any points in that space is not
independent because you need the XYZ and
 Z 's and the time to be able to
calculate the speed so it's not
independent the speed is not independent
if I multiply speed by time the very
same time I use to calculate the speed
that's not independent either because
it's the length of a right or the

hypotenuse of a right triangle so to do
four-dimensional mathematics you need
four independent quantities well C times
 T is not an independent quantity
treating it as an independent quantity
by saying well we'll make it equal to s
squared not equal no it doesn't make it
true
it means you made a mistake the length C
 T well what is it what its units or
rather what is its dimension its speed
times time so speed is length divided by
time and then we multiply that by time
well T cancels out ones in the numerator
ones in the denominator and we're left
with length obviously so just because
you've got lengths out of some quantity
doesn't mean that you've got a new
dimension for instance if I multiply X
by Y I get length squared and if I
divide it by Z I get length squared
divided by length that gives me length
is $X Y$ over zero
you dimension not at all similarly with
 X^2 x^2 over y or x^2 y^2
plus y^2 well x^2 plus y

squared still has the units of length
squared or the dimensions of length
squared so if you had meters squared
plus meters squared you still got meter
square or if you got length squared plus
length squared you're still at length
squared because it's not a change in any
unit and if you divide length squared by
length for instance $x^2 + y^2$
divided by y you get length
did I just make a new fourth independent
dimension orthogonal to the x, y, z not at
all and finally if I take $x^2 + y^2 + z^2$
divided by x or y or z I still get the dimensions
of length but I did not create a new
dimension it's not a new dimension
that's not orthogonal to x, y, z unless
you're a cosmologist I know it's a bit
of a tiring refrain but we need to
remind ourselves what because our leaders
do so we never lose track of that
so I ask you now if I have XY over Z is
that the length of anything
what is it the length of we've got our x, y, z
coordinates I take XY and I divide

it by said what's that the length of
it's not in the length of anything it
has dimensions of length there's a
formal mathematical relationship but
what is that what is it the length of
it's not certainly not the length of a
hypotenuse of a right triangle then it's
not the length of X or a wire it's just
some combination of X Y Z and says to
produce length but it's not a new
dimension and it's not orthogonal to
anything of those or those new
dimensions it's just nothing it's not
the length of anything and is it
perpendicular to the XY z-- and Zed's
well no so it's neither perpendicular to
anything and it's not the length of
anything even though it has the units of
or the dimensions of length and it's
made up of the XY z-- and Zed's
so combinations of XYZ and says don't
give us new dimensions so we come now to
Einstein's fantastic clocks now will
bear in mind the things that I've
covered here when when we get to
space-time it's

off but before we do that we want to
talk about I like to talk about
Einstein's fantastic clocks and in his
famous 1900 and what five paper Einstein
defined time by means of these fantastic
clocks that he concocted I'll read to
you what comes from his 1905 paper the
so called seminal work to turn physics
into a completely new paradigm that
changed our conception of space and time
well it ruined our conceptions of space
and time by turning it from physics
into a Fantasyland here's where Einstein
says thus with the help of certain
imaginary physical experiments we have
settled what is to be understood by
synchronous stationary clocks located at
different places and have evidently dub
tained the definition of simultaneous or
synchronous and of time the time of
event is that which has given similar
results with you with the event by a
stationary clock located at the place of
the event this clock being synchronous
and indeed synchronous for all time
determinations with a specified

stationary clock well if you can make sense of that you know it's that would be a miracle but you know let's see now there are a number of points I want to make about this the first thing is he wants systems of stationary observers holding clocks that can all be synchronized in other words they all read the same time so he wants systems of clocks synchronized stationary observers that's what he's saying there the other thing is he says he defines time well I'll ask you something do clocks define time do they did find time clocks no more define time than a pressure gauge defines pressure a speedometer defines speed a thermometer of the fine speed or a spring defines gravity because if time is defined by a clock well all those other things must be defined by the measuring instruments but measuring instruments a measure are they were invented to do what to measure something other than themselves if a measuring instrument measures only itself it's

pretty hopeless

Einstein's clocks measure only
themselves

he has dispensed with physics something
external to the measuring instrument and
defines time in terms of his clock now
he's fantastic clock can do whatever it
likes independent of any physical
reality and there boy

warp stuff let's have a look at how he
sets up clock synchronizations we're in
from Einstein so there's no doubt we
have so far defined only in a time in a
B time he's got I'm T a time at a time
in right oh we have not determined a
common time for a and B this is where he
wants to get he synchronizing clocks
right for the ladder cannot be defined
at all unless we established by
definition that the time required by
light to travel from A to B equals the
time it requires to travel from beat
away you go from A to B then you travel
from beat away at the same speed well it
should take the same time let our light
little ray of light start at the

direction of a and arrive again at a at
the a time T primed a in accordance with
the definition the two clocks
synchronized if T_B minus t_a equals T
prime de minus T_B in other words if you
go from A to B and you go and it takes a
certain time you go from beat away at a
certain time traveling at the speed of
light they must read the same times
that's his way of setting up clocks in
that little diagram you go from a you go
to B then you go from B backed away and
you see that at a you start at T_A you
get the T you get at B you get T_B and
then when you get back to a you're at t
prime day now he goes through as you see
a great pains to define what he means by
clock synchronization this is only part
of it this is the part that I wanted to
talk about

now to emphasize again his systems of
observers what do we see from his
earlier statements he wants systems of
clocks synchronized stationary observers
okay that means everybody in this room
who's sitting there you're not moving

anywhere and you're all holding a clock
and we want to make sure all your clocks
are synchronized so that everybody says
yes I've got the same time even though
you're in different places well that's
reasonable we want that experience tells
us that's what we need

Weinstein says let the time T of the
stationary system now he's got a system
of stationary observers and they're all
got the same time so he's got now let
the time - of the stationary system be
determined for all points thereof at
which there are clocks by means of light
signals in the men are indicated in
section one that's his elaboration on
how he's going to synchronize his clocks
send the light ray from A to B everybody
comes back we have this relationship and
that's it similarly let the time t of
the moving system so he's got first a
system of stationary observers and with
all their clocks and then he's got
another system over here ones t and ones
 t' for their times so he's got now
okay he says here where we are I've got

my place I'll go epic and read anyway
similarly let the time tour of the
moving system be determined for all
points of the moving system at which
there are clocks at rest relatively to
that system by adopting the method given
in section one of light signals between
the points at which the latter clocks
are located - any system of values $X Y Z$
and T yes one system which completely
defines the place and time I'd event in
the stationary system Einstein calls
that a stationary system there belongs a
system of values see e de xira
int or determining that event relatively
to the system K so if we have $x y \& z$
associated with a system big K and the
Greek letters and for the system little
 K his big case systems moving and his
little K or his big day system a
stationary in his little K system is
moving
but according to him you can switch it
around the little system guy could be
stationed here and the other one could
be moving because it's only relative

motion now however as we know how to judge whether two or more clocks show the same time simultaneously and run in the same way we can very well imagine as many clocks as we like in a given CS CSS coordinate system each of them will help us to determine the time and events happening in its immediate vicinity the clocks are all at rest relative to the coordinate system they are good clocks what is a good clock maybe they were made by the Swiss they make good clocks and synchronized which means that they show the same time simultaneously well this is all of this long-winded stuff it says you're all sitting in the room and you've all got a clock where you're going to watch that's a clock and you've all got them synchronized so you read the same time that's all it means all of this just means that but you've got two systems so there's another set of people in another room the same size as this they call their clocks readings *your* you call your clock readings too they call their positions see either and

in Zita and you call it x, y, z that's all
so now we have his systems Einstein
systems have observers there are two
systems all having the properties we
just spoke of big guy and little code
Einstein likes to keep his little K the
moving system and he's big K the
stationary system but as I said you can
switch it around it doesn't matter so in
the left-hand diagram K and K there's no
motion between these two systems of
stationary clocks synchronized observers
and in the other two they are moving
well Einstein keeps the K capital K as
his stationary system and he says that
the little K is the moving one well if
it's moving to the right in the middle
one K is moving to the right with
respect to K big K and on the other
final diagram

little k system the whole system is
moving along to the left at some speed V
well that's minus V according to K
because it's in the opposite direction
and Einstein systems of observers K and
 K are both clocks synchronized and

stationary within their systems right
they are not clock synchronized and
stationary with respect to the one
another those those systems because one
systems moving with respect to the other
ones so it's not stationary but if
you're in one of those systems all your
points are stationary and all your
clocks are synchronized so if you're the
one in little K and I'm the one in big K
or my clocks are synchronized and all
the points on the x axis are all
stationary and in your system all your
clocks on the z axis are stationary and
all your x tour are synchronized
Einstein's systems of clocks synchronized
stationary observers are now an
essential feature of special relativity
he holds that the Lorentz transformation
associates coordinates $X Y Z T$ of a
stationary system K yeah we'll look at
the bottom the system of observers
they're all stationary and they're all
reading the same time with the
coordinates see either Zeta and tour of
the moving system that's the little

system little K system at the top so the
little K system is moving producing time
dilation and length contraction a system
of clocks synchronized stationary
observers little K when at rest is not
clock synchronized
when they are all moving together or all
move together with respect to a clock
synchronized stationary system okay so
in other words if you're in the case
sister the big case system where all
your clocks are reading the same time
and you look at the clocks as they all
pass you held by other stationary
systems in their system it all goes
haywire all the clocks are all reading
different things so it becomes
mind-boggling
so now we're going to look at the
Lorentz transformation the Rhenish
transformation is on the left this was
first introduced by Valdemar void in
1887 he didn't have the term bead oh
that's the only difference
the beter term which is one over the
square root of one minus V squared over

C squared this term did not occur or did not appear in Voigt's transformation so if you take β out you have voids transformation subsequently Poincare the French mathematician Lorentz the Dutch physicist and Einstein they adopted Lorentz transformation modified by this effectively constant β because V is moving or the value of V is a constant it's the Russian ship between the two moving systems is such that the speed views are constant that means β will be a constant for any given value of V will see is fixed because the speed of light so V over C and V squared over C squared that's some constant and we have a constant β now let's eliminate from the from the X from the equations for the Greek ones a little key T we eliminate X so we solve this equation here the second equation for x we get the result and we stick it into the top equation and we get t is equal to T over β minus $Z V$ over C squared it's just a simple bit of algebra you could do it but we won't bother with that the

details here is because you could do it
 yourself and if T equals zero
 τ equals zero so in other words if τ
 is equal to t over β that happens
 when Z is zero because if you look at
 the top equation set z equal to 0 you
 get τ is equal to t over β and then
 if τ is not zero τ is not zero so if
 you've got Z equals not zero then you're
 gonna have T^2 as not zero and τ is
 wasn't that's what Einstein wants to do
 he wants to make sure that the two
 origins coincide at the time T was
 not as they go past one another but if
 τ was not so a but if T was
 not zero
 you can just put in T was not zero
 the top equation you get τ equals
 $\frac{t}{\beta} - \frac{Z}{c^2}$
 professor Wolfgang Englehart wrote a
 paper in 2016 late last year and where
 he points this out and you see that well
 τ now is a function of position Z
 that's supposed to be the time of all
 the clocks in the stationary system so
 if τ is not zero τ is not zero does

not necessarily know it which means that
since we're talking now here only about
the system itself all the coordinates in
the moving system itself all the
positions in that system have different
times right so that means einstein's
idea of having clocks synchronized
stationary systems actually fails
because he wants to have T equals naught
that toric was naught but if we make T
equals not we don't necessarily get
toric was not why because you also have
to specify that Z was not but that's the
position in the moving system so you see
that the idea of having clock
synchronization in the moving system
fails because in that instance as
Engelhard has pointed out all the tours
are different depending on different
positions so we see by using the Trent
Lorentz transformation on the previous
slide Einstein's clock synchronization
doesn't hold
unless tore mystique was not and Zeke
was not well that's a special case
here's his logical error now when I read

Engle Hart's paper I could see
immediately that I could generalize it
because professor Englehart just had
Teague was naught I said well let's make
tor equal naught then we find for any
time T in the movie in the stationary
system there is always a place Z and the
moving system where the time is always
naught well that violates einstein's
idea thus for every T greater than
naught of the stationary system K there
exists the point Z greater than 0 in the
moving system little kaiware torres know
it but they're both supposedly starting
in offered zero and Counting well if
you're both counting you get bigger than
nought but here we show that you can
always find a place where it's still
nought but according to Einstein's clock
synchronization this must be impossible
Einstein's synchronization is
inconsistent inconsistent with the
Lorentz transformation this is a logical
inconsistency in the theory if you have
a physical theory that has logical
inconsistency is it valid no if you have

a physical theory that doesn't accord with the experiment is that valid no so there are two things that a physical theory must have it must have logical consistency and accord with experimental reality if it fails on either one of those it fails absolutely well here's a logical problem it gets worse this is just the key to the door so we see that by instance clock synchronization is inconsistent with the Lorentz transformation but he wants to make everything consistent with the Lorentz transformation he didn't let's have a look at a system of stationary observer so I ask a question our system of stationary observers satisfying the Lorentz transformation clock synchronized in other words if I set up a system of stationary observers I make them satisfy the Lorentz transformation must they necessarily come out to be clock synchronized as Einstein wants them the answer well that's been the answer is no because we just proved that in the previous two

slides now we can construct some counter
 examples let's construct a system of
 stationary observers which means that
 they don't change with time all the X's
 are not dependent on time they're
 stationary I'll take a real number Σ
 and I'll put a subscript on an X and
 I'll say X_{Σ} equals Σ X_{Σ}
 X_1 greater than naught so if I
 give you an X_1 and you have the
 Σ which is a real number you can say
 X_1 is located here on the x axis
 and all the others are now specified
 immediately by some value of Σ that
 you can put in because Σ is a real
 number so we have a system now of
 observers that we have labeled each one
 of them and so we can refer to each one
 of them as
 what they see as opposed to just calling
 it X and never knowing which one we're
 talking about it which is what Einstein
 does each observe a Σ at position X
 Σ reads its own clock time T_{Σ}
 Σ so X_1 you see there X_{Σ}
 Σ they're located on the x axis and

they're stationary so if we use X of
 Σ equals $\Sigma X_{sub 1}$ and the first
 equation of the Lorentz transformation
 which was three or four slides ago and
 we stick it in there is only one way we
 can ensure that we get consistency that
 our inch transformation and we get this
 equation for the times $t_{sub \Sigma}$
 equals t_1 plus Σ minus 1×1 over
 c -squared if I put Σ equals 1 what
 do I get $T_{sub \Sigma}$ equals $T_{sub 1}$
 that's one case if any other value of
 Σ the times are not the same in
 other words if they are systems of
 stationary observers that satisfy the
 Lorentz transformation they cannot be
 clocked synchronized here's an equation
 that I derived in a paper that I write
 but I have just given you the result
 rather than a derivation if you put
 ΣX_{up} Σ equals $\Sigma X_{sub 1}$
 and in $T_{sub \Sigma}$ into the second
 equation of the Lorentz transformation
 that we saw earlier slide we get this
 complicated looking expression and again
 if we make Σ equals 1 in that bottom

sight equation Σ equals 1 then we
 get $1 - \frac{V^2}{C^2}$ squared over C^2 squared
 plus $\frac{V^2}{C^2}$ squared over C^2 squared that's
 just 1 and that produces $\gamma \left(1 - \frac{V}{c} \beta \right)$
 1 multiplied by β that's exactly the
 Lorentz transformation in one particular
 case Einsteins case so we'll draw up
 here real graph here a little table of
 things we've got Σ on the Left
 various values you can put any values
 you like I've put in a few except Σ
 T sub Σ Z sub Σ and t
 what will you see t comes out to be
 the same but that's not synchronized in
 the moving
 system that's what the stationary system
 sees when it looks at the moving system
 the moving systems going past it looks
 at the system and says well all those
 clocks are in sync but all the clocks in
 my system or your system that's watching
 it are not in sync a copy clock
 synchronized now it can revert it
 because it's symmetric in the other
 system where you looking at the clocks
 they're all sync if you're in that

system looking at this system you say
well all my clocks are not sync but the
ones in the other one that's moving past
me are in sync well that's completely
opposite the Einsteins remember the
diagram all the ones on the bottom were
all in sync and the ones that were
moving past all right I think here we
got the opposite so this is the
stationary Lorentz transformation in
other words this is a system of
equations that is that's is for
stationary systems of observers that
satisfy the Lorentz transformation you
can see here that the time cannot be
synchronized but if I make Σ equals
one everything reduces to the simple
expressions that we started with so I
said here setting Σ equals one in
the stationary Lorentz transformation
the Lorentz transformation used by
Einstein is recovered however a system s
that contains only one observer cannot
by its singular character synchronize
its clocks with anything or Judge Samuel
taneous of events Einstein incorrectly

permitted his privileged observer Sigma equals 1 to speak for all observers thereby violating the fundamental tenets of his theory that no observer is privileged in other words he had a tested assumption that he could construct systems of clocks synchronized stationary observers with the Lorentz transformation we see that it's only a true in one sort of in one case Sigma equals one but in that case it's the only one in the whole system there are though others in the system can it synchronize with anything no there's only one clock in the system itself can it measure distances no because it's only one point it's like taking the point out of the whole x axis and looking at the point itself the other XS the rest of it has disappeared so it can't measure this or anything and it can't be privileged because Einstein requires that they're not privileged that's why once whole systems of clocks synchronized stationary observers no ones privileged

this is the inverse transformation I
 just put it there for content now we
 look at clocks synchronized systems so I
 asked the second question our systems of
 clocks synchronized observers satisfying
 the Lorentz transformation stationary
 the answer is no we can construct
 counter examples here by we making
 taking the Lorentz transformations and
 we insist that all the clocks in the
 capital K system read the same time T so
 that's on the left and the only way to
 do that is using the Lorentz
 transformation is by setting that
 equation up then we ensure that every
 clock in the in one system is
 synchronized so they read the same time
 can they be stationary well we see here
 that when we solve it all we get for X

$$x_{\text{sub Sigma}} = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} \left(\frac{v}{c^2} T + x_1 \right)$$
 where x_1 is greater than 0 but
 arbitrary now we see that $x_{\text{sub Sigma}}$ is
 a function of time that means it's not
 stationary

so although observe all observers in K
 o'clock synchronized through a common
 time T only x_1 is not a function of the
 time T if I put $\Sigma = 1$ in I get
 x_1 is equal to x_1 that's not a
 function of time
 that's Einstein's privileged observer 1
 in a set of how many well they're
 infinite sets so he has one element out
 of an infinite set not the infinite set
 and he takes that one element and allows
 it to speak for the whole infinite set
 of observers that's wrong here we see
 counter examples here's their orange
 transformation for clocks synchronized
 observers notice that Σ can only
 have limited values it's not a it's not
 the whole set of real numbers it's only
 $1 - \frac{v}{c} < \Sigma < 1 + \frac{v}{c}$ and if v is
 nought we get $1 < \Sigma < 1$ that just means it's 1
 Einstein's observer again so if we set
 $\Sigma = 1$ in the clock
 synchronised system we recover the
 Lorentz transformation used by Einstein

it's a privileged observer he's not
allowed to have that because he says we
don't have privileged observers it
pertains to only one observer in system
K and one observing system K the little
K by tacitly assuming systems of clocks
synchronized stationary observers
consistent with the Lorentz
transformation Einstein incorrectly
permitted he's privileged observer Sigma
equals one to speak for all observers
thereby violating the fundamental tenets
of his theory that no observer is
privileged this is the set of equations
for the inverse clock synchronize
Lorentz transformation they're going for
content now Lorentz invariance according
to the cosmologists in Einstein and
Minkowski remember when we did the right
the right triangles in this end in the
spheres and we had $x^2 + y^2 + z^2 - c^2 t^2 = 0$
squared minus s squared plus said
squared minus C squared T squared equals
zero well Einstein requires that no
matter how the systems are moving they
all must come out with exactly the same

equation the only change being the symbols any cause this well this is called Lorentz invariance so they require this top equation so when you change from the XYZ and T to the Greek ones for the moving system you get the same equation well we remember that that's always at naught cosmologists think that that's not always not so but by the Lorentz transformation we have x and y not sorry y&z don't appear there zero because everything's moving along the x axis so we can make that zero and we can therefore reduce the equation to a simpler one $x^2 - c^2 t^2$ is equal to the $c^2 t^2$ minus $c^2 t^2$ squared but if we substitute now the findings of the previous slides for the stationary system we get this complicated expression and this is true for all values of σ so Lorentz invariance is maintained by the counter examples that I've constructed well we expect that because I constructed it using the Lorentz

transformation so we would expect that they have a Lorentz transparent invariance that satisfies Einstein's requirement but again this is not a single this is not a single observer it's many observers infinite set now here's the same relationship for the clock synchronized

Lorentz transformation and we get that expression I'll go back to the other one there is that expression for this and there's the expression for this system and again we see when you put the nut put all the things in there you get Lorentz invariants the only change in the equation is the symbols that's what he wants so the counter examples satisfy that condition now we compare the observers let's take the the stationary Lorentz transformation relation that before in equator to the clock synchronized

Lorentz transformation they're not the same unless γ equals 1 so if I put in γ equals 1 this becomes an identity because in any other case

they're not equal they satisfy the relativity
invariance individually but when they're
equated they only hold when γ equals
1 that's Einstein's privileged observer
which he allows to speak for all
elements of the infinite set of
observers that's his mistake
so Einstein's system of clocks
synchronized stationary observers holds
holds for only one observer no other
observers are equivalent thus Einstein's
tacit assumption is false in the special
theory of relativity is false here's a
wave equation this is a simple wave
equation sine wave this is a little bit
more complicated because we now we have
a differential equation the wave
equation the standard wave equation
electrical engineers I'm sure are
familiar with this because it's related
to electromagnetic radiation so if you
have a wave polarized in the Y Direction
traveling in the X direction with speed
C this equation describes it it's called
the standard wave equation right this is
a one-dimensional wave equation as

opposed to a three-dimensional wave
so I don't expect you all to understand
that but the point of it is we have a
nice little sine wave here
that's a wave equation it's a plane wave
so now special relativity requires the
wave equation to be invariant under the
Lorentz transformation in other words
the equation when you put in the Lorentz
transformation on the left hand side
equation you get the right-hand side
it's exactly the same equation except
that you've just changed the symbols so
now the standard wave equation becomes
invariant between moving systems systems
that are in constant rectilinear motion
this is what Voigt wanted to do in 1887
for reasons that are only known to avoid
because it doesn't make sense so using
the standard or using the stationary
Lorentz transformation I take the counter
examples that I've constructed and I put
it into the standard wave equation and I
get the thing on the right
this is invariant only when β equals
1 again Einsteins privileged observer if

you put one in there you see comes out
to be the standard wave equation
otherwise it is not so the idea that the
Lorentz transformation makes the
standard wave equation invariant under
its transformation is patently false
Voight was wrong and hence pancamo was
wrong Lorentz is wrong and Einstein
wrong but this is central to special
relativity without at all special
relativity is a dead duck here now I'll
use the clocks synchronized Lorentz
transformations we get exactly the same
equations again $\Sigma = 1$ is the
only one that makes it invariant that's
Einstein's privileged observer he
doesn't know that what he's done he
takes this privileged observer and he
lets it speak for all of them so now he
thinks he's got clock synchronized
systems of stationary observers when he
doesn't he only has one and one is
meaningless so we compare the wave
equations they are the same
only when $\Sigma = 1$ comparison of
positions and times they are the same

only when Sigma equals one so we now
conclude systems of clocks synchronized
stationary observers are inconsistent
with the Lorentz transformation
Einstein's theory of relativity is
therefore logically inconsistent it is
therefore force and the Lorentz
transformation is meaningless because it
does not matter it does not do what it
says or already claims that it can do it
does not and so that concludes my rather
technical discussion proving that the
special theory of relativity is a fairy
tale thank you

[Applause]

[Music]

[Music]

you

[Music]

Preparing to the today's talk was a bit of a challenge because we now have a worldwide audience and many viewers probably have never heard of the Electric Sun Model or the SAFIRE experiment. SAFIRE experiment is charged with the task of exploring the theory that our Sun, all stars, are electrically powered. To do this we have a chamber with a little ball in the middle, this is our little Sun. Then we fill the chamber with various gases, apply various voltages and create an electric plasma discharge. We then must design experiments and collect data and that data will be compared with the wealth of NASA, the European Space Agency, other agency, data and ideally SAFIRE experiments will replicate the type of measurements done of our Sun so that we can have an apples to apples discussion with their scientific cousins in these organizations. And if I do my job well we'll also be able to suggest new ways of looking at the existing satellite data that will highlight electrical aspects

of the Sun. Designing experiments to prove scientific theories is difficult. There is no instruction manual for how to do it. I recall vividly my teachers who studied with the generation of Schroedinger and Dirac trying to impress upon us young physicists that the data you collect in any experiment can be interpreted in many ways. And if one which is to create a new scientific model, as they had helped to create quantum mechanics, then you need to think big. And they were clear to tell us, the struggles you will end up facing will not only be scientific. You will also find yourself fighting political battles and sometimes even religious battles. To look at the difficulty of verifying new scientific models we can look at another instance in history where there were disagreements about the fundamental electrical nature of our universe. A short story about the vision of one scientist and the data he collected.

In the late 1800's Kristian Birkeland

had an intuition that the Earth and the Sun were electrically connected. Now this was not the prevailing idea at the time.

The prevailing idea was that the Earth and the Sun were electrically isolated from each other. So we have two theories, on the one hand the Earth and Sun electrically connected, on the other, the Earth and the Sun electrically isolated.

So how would you prove which theory is correct?

Birkeland made many excursions into the Arctic regions of Norway and with hand held magnets he measured magnetic fields on the ground while the Northern Lights blazed over head. So on the left of this figure we have Birkeland's theory that the Sun and the Earth are electrically connected, in the middle

a little schematic of a model, showing electrical connection between the Sun and the Earth and down the bottom there you can see Birkeland walking around the Arctic with his hand-held magnets. Now the data he collected on the ground actually matched his model and he took that

as support of his theory. Now on the right hand side of this drawing you can see the prevailing idea of the time, no electrical connection between the Earth and the Sun and a well-known mathematician of the time created an elegant theory to show that all you needed was heat from the Sun and that would generate local convection currents above the Earth's poles and this then would generate the same exact compass measurements on the ground. And that second theory is the one that won out. Now the passage of a hundred years has somewhat blunted the story for you and me and we don't know anybody personally connected with it, just an anecdote in the history of science. But it bothers me and I often think well could those measurements taken beneath the Blazing Northern Lights could they really not tell us which theory was correct and the answer is no, they could not. As all too often happens the data works equally well in both models and one theory prevails

usually more for social or philosophical reasons than scientific reasons and Birkeland never got to see his ideas accepted. The isolationists won out until about the nineteen seventies when satellite measurements were good enough to actually show that there are indeed electrical connections between the Earth and the Sun. You saw this earlier, this is one of the beautiful discharges from our chamber, we'll call this one the flower discharge and it's actually not spherical it's more disc shaped and it's not clear what the conditions are that produced this. So we're now at a time where there is the real possibility for a paradigm change in astronomy, enough data has been collected that probably future astronomers will grow up studying such concepts as electrical double layers, electric potential over large distances of space and cosmic Birkeland currents. The study of the Sun is a particularly fruitful area for studying electricity in space. Here is a short list of observations collected over many

years by many different people in the EU community. Not to read them all, just to give you an idea that t'was quite a bit and with each within each one of these there are actually thousands of papers and conference proceedings so the good news is there's a lot of material for us to choose from.

Now for the point of view of where we're at currently with SAFIRE here's a short list that I will be talking about, of specific areas to focus on. So I'll talk about each one of these in course.

This is one of the, lot of us have seen this one, of the very confusing diagrams about the Sun, a plot of the Sun's temperature as a function of height above the sun's surface. So at 0 height on the left hand side there in the photosphere about five thousand degrees and as we move away from the Sun the temperature increases in very specific jumps as you move away and then at a certain point the temperature shoots way up very quickly through the transition zone up to millions of degrees. Now with

this, if the SAFIRE experiment sees something like this, in our Chamber, that's a major win for the electrical model of the Sun. And just to be clear, no one has yet flown a thermometer into the Sun.

When you see statements about the sun's temperature like these, those statements are made by looking at light emitted from the Sun. Some of the light emitted from the Sun is in discrete spectral lines and scientists can use spectral lines to measure temperature.

For example we might be measuring just one line from one element on the Sun, say neon or measuring one color of neon light from the Sun. And we can examine the details of how that line changes as you move away from the Sun so here's a short diagram to say what I mean here.

You can imagine three different cases, in the top diagram this one here, the width of the line, the size of your spectral line is broadest close to the Sun and then it gets more narrow as you move away from the Sun and you, if you do if you're using line width to be a proxy or

an estimation of temperature you would say, well things are cooling down as I move away from the Sun, sometimes that's called the campfire model that things get colder as you move away from the campfire. Now we can imagine a different case, this middle one here, where the width of the line stays the same as you move away from the Sun. Now if we saw that then we would say well by using line width as a measure of temperature, it stays the same as you move away from the Sun, OK, and then the last example, one down here which is more like our real Sun, the line widths increase as you move away and so again using this as a proxy for temperature you say, things must be getting hotter as we move away. So using this as just one principle, just one of the many principles we have at our disposal, we can look at some movie of some actual, the SAFIRE spectra which you saw earlier but I like watching it ok.

Real-time, this is what it looks like..

That's when all the USB ports blew up on the computers. Now there is a wealth of information as you could imagine in this spectral data, we can just choose one, one slice one snapshot from that and we can just choose one of the lines in one of the snapshots and we can look at that line from different points in the chamber so here's a picture of the chamber and you can see the center glow is the anode right this part here and then down here do you see these cylinders, those are fiber optics, that's what's collecting the light, collecting the light in the chamber and you can see how they point in different directions so one, you know, one we can point where we want, one just grazed the anode, one of looked at halfway out, maybe one looks towards the cathode, so this is a way that we were exploring that how, can we measure line widths and other properties at different points in the chamber. It actually was not obvious when we started out if it was even possible. So we can look at that again

just one line, one spectral line.

Here's a plot that shows just looking at, actually this is more than one line, several different lines and looking at their widths, so all the ones over here these are all red and these are blues. There are, these are blue spectral lines in our discharge and over here the reds like a rainbow, over here are red spectral lines in our discharge and you can see that

here's like for example, you know, 12345 different points up here, they have more width to them, so the vertical axis on this graph is how wide the line is, so this group here has more width to their lines than this group down here. So that was great so we verified yes, we can show that we can distinguish different line widths in different parts and then I went back and I said, wait a minute which which groups are these, and this whole group up here was all from fiber optics looking at the anode or close to the anode. Sorry, backwards, this group down here was all looking at the

anode, close to the anode, this group here was all looking away. So again, if we use this as a proxy for temperature which, I'll say it more later there's other ways to look at it, then we've got already here some kind of strange result where it looks like, even in our chamber, temperature might be might be higher as you move away from the center. Now here is, looking at one particular point, it's not only there's no there's another way that this we analyze the data it which is the shape of a line, not only how wide it is but the shape of it and it actually tells us a fair amount about the physics so for example if your line width, your line shape is fit by Gaussian statistics then you're probably looking more at temperature and indications of temperature. If your shape is fit more by a different kind of statistics, Lorentzian statistics, then you're probably looking more at electron density in the chamber. And so again, our job was to say well, can we measure these differences and yes we can measure these differences within

our Chamber. Alright, moving onto the next item on the shortlist, coronal streamers.

It's gonna be a movie of SOHO, ultraviolet data, so the Sun is in the center there

these are coronal, called coronal streamers flying off. Now people at the Catania observatory in Italy, Ventura and Spadaro, they looked at these coronal streamers and they wanted to examine things like temperature, how does the temperature vary inside of these streamers. Ok so that white line there shows you like an example of where they were sampling data and they found some pretty strange results. Here's here's some of their data, they were using line width, the width of the spectral lines as a measure of temperature. What they found unexpectedly was that it depends upon what element you're looking at and so all of these upper plot points here these are all from oxygen atoms inside the streamer and as you move away from the Sun those oxygen atoms get hotter and hotter and hotter okay, these down here are all using

the same method, looking at line width as a measure of temperature but for hydrogen. Hydrogen is a hundred times colder, this is a logarithmic plot. A hundred times colder and it gets cooler as you move away from the Sun. So, needless to say, there are unexpected results, and it's not at all clear what this, why this would come about. It also makes me wonder if we really can make such simple correlations between line width and temperature. Cause one person would say well clearly your oxygen is hotter than your hydrogen. Someone else might say well, you know what, maybe we don't really understand the connection between line width and temperature. I would be one of those people. It gets even better, now they're gonna look at that temperature profile as you cut across a single-streamer ok, so that line there shows slice perpendicular to the streamer we're gonna look at the data across that, look at that oxygen and hydrogens again. So here's a plot of the intensity as you cut across the

streamer and that makes sense, it's, there's more intensity coming out of the streamer in the middle, right. Quiet, then it gets intense than it's quiet again. Now let's look at what happens if you look at the temperature of oxygen as we cut across. Well it is hotter outside the streamer, then it cools down in the streamer, and then it gets hot again, right. Look at hydrogen, just the opposite. It's cooler outside the streamer, the temperature goes up as you get inside the streamer and then it's cold again as you go on the other side. So these were extremely strange results. Now I think this is a, could be as a consequence of electrical activity on the Sun but again we have to design experiments that can verify this. This is one particularly beautiful discharge. So whether or not these discharge structures that we see, whether or not they correspond directly to photosphere granules, whether they correspond directly to coronal streamers ok, all this is yet to be established but the approach, again to emphasize, the

approach of SAFIRE is that we need to mimic the types of measurements that are done

of the Sun, OK. So we would use our fiber optics to look inside of these structures here, the same way that the people in Catania used the STO data and we'll see if we have measurements that correspond.

Now we have the added benefit of having additional instruments, like for example a Langmuir probe which can measure the plasma characteristics, voltage potential, ion, electron temperatures, so we can take that data then and then suggest back to other people

new ways they can look at the existing satellite data. So now given all this is

how we gonna go to Monty and I say, Monty

we need to be able to move the fiber

optics across the anode tufts, the anode tufts

are about two millimeters across, I need

a positional fiber-optic that's down to

about point O five millimeters, can you

do that for me? And as you heard earlier

today he comes back eventually and goes, yes I

can do that for you can do it. And I asked Lowell, I say Lowell, do you think, can you look at the Boltzmann equation for our situation, see what you think that the temperature, the measured temperature of oxygen and hydrogen would be, do you think we would see the same sorts of things that we see around the Sun? OK, under the next item in the list, that was the first ionization potential anomaly. The first ionization potential anomaly is a well known but unexplained observation of our Sun and other stars and an analogy will help a lot here so imagine that you are throwing a very big party, hundreds of guests there from all walks of life some rich, some poor, some men, some women, married, not married and imagine that you notice a pattern, you notice that there's always the same set of 12 people that go outside and talk outside for a while. And amongst those 12 it's a mix, some are young, some are old, some are married or not and they're not smoking, so what would they have in

common,

why do they go outside? So when you're thinking that over, now we can switch to the astronomical case, something happens very similar to this party example, to the chemical elements on the Sun and a certain group of elements are much more likely to be found outside the Sun than on the surface of the Sun. So for example on the photosphere we see about 35 magnesium

atoms for every million hydrogen atoms but in the solar wind leaving the Sun there are four times that many magnesium atoms. Another example, we see about forty seven iron atoms for every million hydrogen atoms on the photosphere but a solar flare might have a hundred times that much iron and for helium it's exactly the opposite,

there are fewer helium atoms in energetic particle emissions from the Sun than there are in the photosphere so what makes these special, why do some of them tend to be found outside the Sun, why do some of the guests tend to go

outside the party. So it seems that it all comes down to, how easy it is to pull an electron off of that element. Now if it's easy to pull an electron off of an element then we find more of that element outside the Sun like in solar flares or the solar wind and physicists have a name for how easy it is to pull an electron off of an atom, it's called the first ionization potential. So here's a plot of various chemical elements, the horizontal axis, horizontal axis here is how easy it is to pull off an electron, you can see over here on the left, about four volts is what you need to pull off the first electron off of potassium then there's a progression and when you get out to here like neon and helium it's really hard to pull off an electron off of those elements. And the vertical axis here shows is how much more likely it is to find that element outside the photosphere so you can see the elements on the left, the ones where it's easy to pull an electron off. Those are the ones that you find more abundant in emissions

from the Sun and elements on the right with the higher ionization potential are less likely to be found outside the Sun.

So going back to our analogy, we found a property that tells us why, might tell us, why these twelve people keep going outside the party.

Now why this one property of first ionization potential should lead to all of this is not at all clear from the standard model of the Sun where you only get to use hot gases and magnetic fields.

It is explainable from the electric Sun model but the main point is, we need to design an experiment that will measure it. So like NASA, we would use spectroscopy to remotely deduce the abundances of different elements close to our anode and like NASA we would use a mass spectrometer away from the anode to measure the elements far from the anode.

So now I have more requests for Monty, Monty can we coat the anode in magnesium, magnesium has a low ionization potential then Paul if I give you fiber-optic data and mass spec data what

other factors do you need that will give us good statistics on the DOE. So I hope you can start to see the flexibility of the SAFIRE chamber, that we can ask such a wide variety of questions and actually stand a good chance of running experiments to look at them in the laboratory. Next on the list. So sometimes it's important to step back and look at the forest, not the trees and as many have heard here, one of the outstanding features of the Sun is its discrete layers and their very very different properties. So here's a combination, on the right there the photosphere, we see a lot of that, then just just a hair's breadth hair's breadth above the photosphere is the chromosphere which if you look at it closely looks a lot like a fur coat with clouds floating over it, very strange. And then you move out a little bit more, the lower Corona, that's where you see all this incredible loops and x-ray emissions, lot of dynamic activity, pulling back further you see the upper Corona which again has

a very different properties, these wispy hairy filaments that extend out for long long distances. Then there seems to be a long stretch where things don't change that much in the solar atmosphere, until you get to the heliosphere boundary and right now the Voyager satellites, as we know, are out there going through some boundary of some kind what it is, is now been thrown up into question, this is an artist's rendering of the Voyager satellites out of the boundary of the solar system. Now these probes are returning very interesting data, on the left it shows a plot of Voyager measuring the electron density as it's passing through the boundary, on the right is a plot of the density of positive ions as it's going through this boundary and the main point is these rapid fluctuations that we see at the boundary. Are these rapid fluctuations due to bow shocks and supersonic flows or we all know that these rapid fluctuations are actually a quite natural consequence of electrical double layers. So the Voyager data is

taking place far out from the Sun right,
so that's not us measuring close to our
anode that's measuring us far away
from the anode in our chamber. So again I
could ask Monty, I need a Langmuir probe,
it also has to have sub millimeter
resolution cause I need to see the
fluctuations in our chamber and compare
them to the data we're getting back from
Voyager and see if we see something
similar.

Next item

It's coronal, I call it the coronal jolt. So,
CME-s, coronal mass ejections, are
spectacular emissions off the surface of
the Sun, they're sometimes associated with
the solar flare, a solar flare is an
eruption that's very localized on the
Sun, very small spatial location solar
flare and one of the main unanswered
questions about CME-s is still, are they
large-scale events or are they
small-scale events.

Now the small scale camp says CMA-s start
from a solar flare, they start from a
very small part on the Sun which then

blasts out and fills space around the Sun and goes away and that's how you get your CME and they have some data that supports their model. There is another camp that says no CME's are actually a large-scale event that the eruption that we see is taking place over such a large area there is no way that a single point on the Sun can lead to all that and this camp also has data to support their theory. So now we're gonna look at, so this is the Sun in UV extreme UV and I want you to look at the lower right side of it.

Pulse,
pulse, pulse can you see how that, the outer atmosphere, can I draw on this, the outer, we're looking here primarily you'll see it here, the outer atmosphere of the Sun and I want you to look for pulse down pulse down.. So it, that may look like not much going on but that is billions of cubic miles of plasma that is behaving all as a single unit over about 40 minutes so that's actually a very big unified action from the Sun,

the coronal mass ejection is taking place on the far side of the Sun here, so we don't see the coronal mass ejection. We only see from the back side, we see the whole atmosphere of the Sun pulsing like that. So do we see something like this in SAFIRE, and yes we do and probably you've seen this a couple times over this weekend, this is our anode and then periodically there's a buildup of energy close to the anode, then it will release explosively and then the anode is notably dimmer afterwards ok, here's a little video which you saw already but it doesn't hurt to see it again, buildup, release and then dimmer.

So once again the commissioning phase of SAFIRE exceeded our expectations, not only can we resolve high-speed plasma discharges from the anode but we already have data indicating a direct correlation with existing NASA data. And lastly, comets. As many people in EU community have said, there are many aspects

about comets that only make sense if the electric Sun model is true. Here is a couple of photos of 67 P, so in conjunction with Franklin Anariba SAFIRE group working out some very specific experiments to examine the electric comet hypothesis. You saw this little while ago. This is one of the ways we're gonna examine it is to place different materials, possible materials on the end of our probe and then send those materials in various orbits around the anode. So that blue line is tracing out the orbit, just an example, sample orbit that we could send something on inside the chamber. This is one of the materials we're going to start with, more of this is again from Franklin's suggestions of type of material to start with and so for example, one set of experiments we could run, see on the left there, I have a column for what's the cometary feature that we are mimicking and in this case it's certain materials that we know are on comets, of course there's a lot of disagreement about how much of the

materials are on comets, whether comets are ice, whether comets are primarily rocky but on the left camp column there you see various rocky elements that we'll start with. And in the middle, it's kinda what what's the SAFIRE example of that, well it's it's a piece of rock, like you can see there in the photograph, and then what will what kind of measurements will we make that will mimic existing measurements of outer space. And so for example, and there's a lot of detail to this if you saw Franklin's talk, he'd predict to see the certain gases, certain organic compounds coming out of this, and in particular, you know, if we see a increase concentration of water in our chamber, as we're zipping this rock around, then we know it's from electrochemistry and not from a dirty snowball. So that would be an example of how we could mimic existing data with a different model. Dustification. I think he made up that word. Dustification of the comet nucleus is also something we can

look at. Here's a picture of 67 P so the fact that 67 P was rocky is not a surprise to EU theorists but the presence of dust, large amounts of dust, not so obvious. So if 67 P was blasted off of Mars, yes there would be a lot of dust created right, but it's so small the comet, would it really attract all of that just back to itself, you know, I don't think so.

So how would we explain something like this where not only do we have a lot of dust, these lanes of dust throughout the comet, but if you blow that up it actually looks like it's been a dust landslide ok, so this begs the question, maybe dust is being continuously created on the comet, OK. So this is another thing we can do, we can, over the course of time, look for the type of dust if any that's created. Franklin Anariba thinks that the electric discharge will break down the larger silicates structures into smaller silicat dust but this remains to be seen through an experiment. And hopefully the folks at ESA will

publish some data about 67 P's dust composition.

Another example of how we can look at our situation to examine comets, we're going to look at all the properties around our little comets, electron density, the temperature, elemental analysis and so will you see here this sketch on the, on the right here, this is an analysis of the comet Hale-Bopp, it was the Swan telescope in 1979 I think 97, returned some UV images of Hale-Bopp and then if you use a certain reasonable assumptions about the nature of the coma around the comet and you compare your observed UV emissions to your model you get this, these interesting set of plots for the temperature. As you move away from the comets, so here according to this model, the temperature should drop as you move away from Hale-Bopp and then go up and then drop and go up etcetera.

Now this is very reminiscent already of measurements that we are collecting inside the SAFIRE chamber, electrical

double layers have a lot of these kind
of oscillatory
qualities to them where something is,
like electron density, will go up and
down up and down as you move away.

And of course, the filaments. Here's a wonderful gallery,
I love this, of its different filaments
around 67P and I realized as I was
listening to my introduction that we
should, we should carve our little rocks
into the same shapes as various comets
and then see if we can replicate simply
the morphology of the discharge around
the comets.

Alright so that's the end of my
presentation, thank you very much for
sticking with me, couple of meaty ideas out
there, but it gives you a taste I think,
of the SAFIRE chamber and how
versatile it is. The number of different
questions we can ask and actually take
actual measurements to verify, so thank
you very much and wanna explicitly thank the
people who are making this experiment
possible.

Welcome to Space News from the Electric Universe brought to you by The Thunderbolts Project at Thunderbolts.info.

Quantum experiments have long demonstrated that subatomic particles somehow know about each other instantly and at great distances. Institutional science utilizes terms such as "quantum entanglement" and "spooky action" to describe the phenomena. But the Electric Universe theory offers a very different perspective. The speed of light limit to communication imposed by the Theory of Relativity is not a universal speed limit. Physicist Wal Thornhill describes how this can be observed in our own celestial neighborhood. He writes: "If gravity traveled at the slow speed of light, the Earth would be pulled to where the Sun appears in the sky and not the Sun's real position in space.

This would result in a slingshot effect and toss planets out of the solar system in short order. Observations of close binary stars where the effect would be extreme and quickly noticeable show that

gravity must operate at a speed in excess of 20 billion times the speed of light to prevent spiraling orbits. The Sun and the Earth have instantaneous information about their locations." In this Space News episode Nicholas Sykes elaborates the fundamental differences in this regard between the Electric Universe and standard cosmology. In my Thunderbolts' Space News video, "Are the Dominoes Falling?", it was argued that since the gravitational attraction between the Sun and the Earth must operate almost instantaneously or else the Earth and the other planets would be slung out of their orbits. This fact was, irreconcilable with the dictate of the Theory of Relativity that the fastest possible messenger between one point and another was light or, to be more accurate, the electromagnetic radiation of which visible light might be a component. This is because if the supposedly fastest possible messenger between the Sun and the Earth travels at the speed of light, then the gravitational attraction that

exists between the Sun and the Earth
could not be messaged between them any
faster than light can travel between
them. Since it is known that light takes
8.3 minutes approximately to
travel from the Sun to the Earth, it
would have to be presumed that the
gravitational attraction is messaged from
the Sun to the Earth and vice versa
within a period of time
no shorter than 8.3
minutes also.

However, such a deduction must inevitably
bear with it the conclusion that the
Earth is actually being attracted to
some point in space that was the
location of the Sun's center of gravity
8.3 minutes of time in the past, rather
than where that center of gravity
actually is when the Earth experiences
the attraction. But that conclusion bears
with it a number of fatal contradictions.

Contradiction Number One:

let us regard the planetary orbits of
the solar system as circular, which we may
do without prejudice to the argument. A

centripetal force upon the orbiting Earth must be orthogonal to the motion of the planet.

However, the gravitational force transmitted from the Sun to the Earth at the speed of light will, when it reaches the Earth, be displaced from the path it would have taken if the force had operated instantaneously. It is no longer orthogonal to the Earth's orbit hence is no longer centripetal and would influence the planet over an astronomically short time to leave the orbit, yet this does not happen.

Contradiction Number Two: there is no time lapse term in Copernicus' or Kepler's equations for their observed planetary orbits, which do not therefore anticipate any time lapse such as gravitational attraction functioning as slowly as the speed of light would necessitate. Neither is there a time-lapse term in Newton's Third Law, which we interpret as "Action and reaction are equal and opposite." In a Newtonian heliocentric

system, we understand the forces of attraction that the primary and its satellite exert upon one another to be equal and opposite. A reaction that was caused by an action 8.3 minutes beforehand, in the case of the Earth and the Sun, would no longer be the opposite that the law describes. The effect of this can be seen from my diagram of the Sun as the reference point or frame of reference for an orbiting Earth. The issue is very well dealt with in the Thunderbolts Forum of October the 22nd 2016, in which reference was made to work by Tom Van Flandern, in which Sir Arthur Eddington was quoted: "As having exposed, by 1920, the issue in terms of the couple, which a lightspeed gravity between Sun and Earth would exert." This is the same argument as I am using, employing a slightly different viewpoint. I have not actually read this work before my video was produced. It is left to others to account for the fact that Eddington became a great proponent for Einsteinian relativity, in spite of his work on this

issue. The connection then between the Sun and the planets should be envisaged as an ether tightrope. In the current EU Model, the ether of space is understood as Wal Thornhill describes it "to consist of a plenum of neutrinos." In our experience a rope may carry a transverse wave caused by moving one end of the rope, perhaps from one side to the other or perhaps up and down. After some time that transverse wave motion will reach the other end of the rope.

However, if the rope is made of barely extendable material and if one end is tugged, that tug will be felt at the other end, very much faster, almost by comparison, of the time the tug is made.

This comparison may be likened to the relationship between the transmission of light

by transverse electromagnetic wave and the very much faster gravitational attraction between two massive bodies.

Electromagnetic radiation is by its nature transverse but gravitational

attraction or, indeed if it is so interpreted repulsion, is longitudinal. Kepler's and Newton's laws may be thought to assume any time factor to be so vanishingly small that it can be neglected altogether. The EU Model of gravitation requires an almost instantaneity condition too, though that almost is not claimed to be collapsed into absolute instantaneity. There is, after all, the possibility of a correction of planetary orbits that start to go astray by extra Newtonian electrical attractions and repulsions for Newtonian physics does not account for the orbital stability that is observed or the small corrections that are from, time to time, manifest. Such corrections, however, could not prevent the first-order steady propulsion out of any orbit that a lightspeed gravity would inevitably produce. There are many other arguments against Einsteinian relativity, some of which declare that the great story of the ether drift experiments of the last

century is commonly misreported. The
light exceeding speed of gravity by far
is but one more falling domino
collapsing a credible Theory of
Relativity.

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On February 15th 2013, a large
meteor exploded violently
in the sky over the
Urals region Russia.

Thousands of homes and buildings were
damaged and more than 1,400 were injured
by the explosion which
produced as much energy
as two dozen Hiroshima
sized atomic bombs.

The object was the largest to
strike the Earth in over a century
since the Tunguska
meteor of 1908.

Astronomers tell us that meteors
are electrically neutral rocks
that sometimes explode due to heating
and pressure in Earth's atmosphere.

But when we examine the Russian meteor,
does this explanation fit with the facts?

Well, it was big, they say it was the biggest

thing to hit the Earth in 100 years.

It didn't really hit the

surface of the Earth

because it exploded

high in the atmosphere

and this itself raises

an important question

because it's not actually

understood how all this happened.

Ironically the event was caught on many

cameras because Russian drivers,

in order to defend

themselves in court

or to collect insurance, had

installed dashboard cameras.

So many were driving eastward in the

vicinity of Chelyabinsk, Russia,

February 15th, and suddenly

they and their cameras

had a perfect view of

an incredible spectacle

as this cosmic intruder

lit up the dawn sky.

Based on infrasound data from around

the world, NASA scientists now say

that the meteorite was more than 1,000

times larger than originally believed

this modified conclusion reveals

the difficulty for astronomers

in explaining the extraordinary

energies of the exploding meteor.

The evolving scientific interpretations

during the day are interesting

particularly the interpretations

of size based on visual data.

Initial estimates, coming from

the Russian Academy of Sciences

implied a small body

weighing perhaps 10 tons

but just a bit later in the morning

astonishing infrasound data

from stations as far

away as Greenland and Africa came in

at the low frequencies of infrasound

well below human hearing

the event was heard

around the world.

NASA then released new

estimates of size,

not 10 tons, but 10,000 tons!

The implied energies were

incomparably greater

than the visual trail in the sky had initially suggested.

In fact, that trail alone made it look as if the bolide was fully degraded before reaching the ground.

Complicating this question of size is the fact that the envisioned 10,000 ton body failed to create any impact site on Earth.

But if the picture is left in confusion that's because no one has addressed the evident electrical component of the event.

Infrasound is the efficient vehicle for sound transmission from electrical blasts such as lightning from the upper atmosphere.

It's electrical energy that fills in the missing pieces of the story.

Scientists loosely concluded that the rock was perhaps 55 feet in diameter arriving at 40,000 miles per hour, producing a trail some 125 miles long.

A huge explosion high in the atmosphere produced a shockwave injuring 1,400 people,

largely from flying glass.

That explosion makes this an
unprecedented event in modern times.

This entire display
occurred in just 30 seconds,
and it's been assumed that
the explosion occurred
because of internal
heat and pressure.

But how likely is it that in just
30 seconds the center of the rock
could be heated to the temperatures
required for it to explode?

When larger meteorites
have landed on the Earth
very quickly, they became stone-cold due
to the freezing internal temperatures.

If you're wondering about this
you might try an experiment.

Take an acetylene torch to a
good-sized rock for 30 seconds,
you'll create a surface temperature
over 1,600 degree Celsius,
more than 3,000
degrees Fahrenheit,
you'll see that the heat from melting

rock has not been transferred
more than a few inches at most.
But somehow due to energies
inside the Russian fireball,
it exploded so violently
and so completely
that only tiny gravelly
pieces could be found.
And incidentally it was
briefly thought that
a 20 foot hole in the ice of
a lake west of Chelyabinsk
was caused by residual
chunk of the bolide,
so divers investigated,
they could find nothing.
Disintegration began some
30 miles above the Earth
then in just half a minute
it released the energy
of some 20 or more Hiroshima
sized atomic bombs
including a blinding flash that was described
by one observer as bright as 10 Suns.
Onlookers had to turn
away from the glare.

It's hard to see how the common
picture could even work.

Heat the leading edge of the rock
just to a melting temperature
and every bit of melted rock would
continually be blown off the object
by the winds at thousands
of miles per hour.

How could this spectacular blaster of light
by this object be produced in such a way?

The blinding flare-up
saturated the cameras,
a perfect analogy to the electric glare
of an arc furnace or an arc welder.

One video in particular
requires closer examination,
because it's suggestive of exploding
material much like you see in arc welding
projected in the direction
of the objects flight.

We can't vouch for the authenticity of
this video, nor should we ignore it.

We can only hope it will be scrutinized
up to the level it deserves.

What is certain is that
the meteor did explode

and in the manner expected
of a charged body
disintegrating under
electrical stresses.

You see this in an
exploding capacitor
as non conductive material
violently breaks down,
that's the electrical interpretation
of this Russian meteor explosion.

Another example in the
electrical viewpoint
would be the sudden flaring and
disintegration of negatively charged comets,
as occurred in the cases
of the comet Elenin,
comet Holmes,
comet Schwassmann-Wachmann,
comet LINEAR and others
the demise of the comets occurred
not due to warming from the Sun,
but in response to charged
particles from the Sun.

Astronomers now suggest that the Russian
meteor should serve as a catalyst
for developing anti-asteroid

and meteor defense systems.

But to proponents at the Electric Universe,
the Russian meteor validates the notion
that the Earth possesses a natural
defense against impacting bodies.

Celestial intruders such
as asteroids and meteors
are more likely to produce catastrophe,
not from the kinetic forces of impact
but rather from electrical
discharge explosions.

Not to be forgotten in this connection
is the famous predecessor event,
the Tunguska explosion in 1908,
when a cometary or asteroidial
body exploded above Siberia
leveling 800 square miles of
forest, some 80 million trees,
breaking windows more than 100 miles away,
but leaving no appreciable impact crater.

Both the recent event and the Tunguska event
remind us of Wal Thornhill's suggestion,
that the Earth has a natural
electrical defense system,
one that would cause a larger
bodies to disintegrate

on entering the charged region
of Earth's upper atmosphere.

This wouldn't eliminate
the catastrophic effects,
but it would surely displace
the most popular image
of asteroidal catastrophe
on the Internet today.

So perhaps one fact is more significant
than has been acknowledged:
despite hundreds injuries, not a
single individual died in this event.

Something far more devastating
would surely have occurred
if the object had released the
energy of its explosive blast
by striking the
surface of the Earth.

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[Music]

Men are from Mars and women
are from Venus. Most modern
readers are familiar with this adage, but
very few, I suspect, are aware that such
ideas were already commonplace by the time of
Homer. Thus it is that a famous passage in the
Odyssey tells of the illicit affair
between Ares and Aphrodite.

In the song in question, the two lovers are
entrapped while making love in an invisible
net devised by the lame smith Hephaestus,
much to the amusement of the other gods
who are witness to the entire scene.

For well over 3,000 years now, scholars
and laymen alike have been scratching
their heads, trying to figure out whence
Homer derived this body tale, one
which the ancients themselves found
more than a little blasphemous. Was
the love affair between Aphrodite
and Ares a product of the
blind bard's vivid imagination?

On the contrary, there is much reason
to believe that this particular vignette,
like so many other famous scenes

in the Iliad and the Odyssey,
represents a vestigial remnant of an age-
old oral tradition and as such was deeply
rooted in ancient religious ritual,
especially marriage ritual. Our earliest
and likely most reliable witness of ancient
Greek wedding practices is the melancholy poet
Sappho, who wrote about 700 BC from her
island homeland Lesbos. For Sappho, Aphrodite
represented the archetypal bride. The raging
war-god Ares in turn, she describes as
the divine prototype of the bridegroom.

Thus a recently discovered fragment
reads as follows: quote,

"A bridegroom will come equal to Ares ,
bigger by far than a big man." According
to Sappho, the Greek marriage ritual held
that the bridegroom was somehow infused with
the divine charisma of the celestial goddess.

Gregory Nagy summarized the
available evidence as follows:

"In the wedding songs of Sappho, the god Ares
is a model for the generic bridegroom who is
explicitly described as 'equal to Ares' in
Sappho Song 111. Correspondingly, there
are many instances of implicit equations of

the generic bride with the goddess Aphrodite.

In Sappho Song 112, for example, the bridegroom is said to be infused with the divine charisma of Aphrodite evidently by way of his direct contact with the bride.” End of quote.

A number of questions present themselves at this point. The most obvious perhaps is the following.

To what extent, if any, were such traditions inspired by the actual appearance or witness behavior of the planets Mars and Venus?

To even pose such a query, is to risk ridicule in classical circles, not to mention in astronomical departments around the globe. As it turns out, Sappho’s peculiar report that Aphrodite imbued her Ares-like bridegroom with charisma, offers a decisive clue. For as we have documented elsewhere, analogous traditions surround the planet Venus and other cultures.

The testimony from ancient Persia is especially instructive here.

According to The Zend-Avesta, the planet Venus was identified with the goddess Anahita.

Anahita, who was intimately associated with ancient conceptions of sovereignty and kingship, was believed to invest the king with

charisma. Quote, "She legitimated the enthronement of the king, providing him with charisma."

Strangely enough, such ideas were surprisingly widespread throughout the ancient world. Analogous conceptions are commonplace throughout the various cultures of Inner Asia, where the charisma imparted by the planet goddess was a favorite theme among the Huns and the Turks, for example.

Quote, "To become a real ruler, the Hunnic supreme ruler had to possess sacral grace.

Through it, he ensured the welfare of his people, as well as fertility, successful military campaigns, etc. Among the Iranians, the notion of sacred charisma is expressed with the concept of *hvarna*, *farn*, and among the Turks with the concept of *qut*... Thus, the Iranians and Turks both believed that the most important quality a ruler need to have to be able to govern was the result of the blessing and support of the Great Goddess."

End of quote. To reiterate, in order to assume the throne and ensure general welfare and fertility, the king must first

receive the charisma of the Queen of Heaven,
the planet Venus. This is getting
curiouser and curiouser, as they say.

In what sense is it possible to
understand the planet Venus is infusing
the ruler or bridegroom with charisma?

What exactly is charisma?

The Greek word 'charisma' comes from 'charis',
a word often translated simply as 'grace' or
'splendor' but attested in a wide range
of different, albeit related meanings.

Thus 'charis' denotes not only the beauty
of Aphrodite, or any other young woman,
it can also describe the glory or
undying fame awarded to a winning
athlete after some great contest.

It is possible to be more specific here;
'charis' describes an effulgent aura or
corona-like crown, encircling another object.

Indeed, according to insightful analysis of
Richard Onians, Homer conceptualized 'charis' as "a
wreath or crown about things."

Additional insight into the luminous
charisma associated with the planet
Venus can be obtained from the religious
traditions of the ancient Near East.

For the earliest cultures of Mesopotamia,
the union of Inanna and Dumuzi
represented the paradigmatic model of
marriage, much as the union of
Aphrodite and Ares did for the Greeks.
In dozens of ancient hymns, Inanna-Venus
is represented as the exemplary bride
and Dumuzi as the prototypical bridegroom.
Famously, an archaic Sumerian ritual
found the king impersonating Dumuzi and engaging
in a sacred marriage with the planet Venus
as Inanna. In order to legitimate
his hold on the throne and secure
fertility throughout the land, according to various
early literary accounts of the right in question,
a key episode found the planet goddess imbuing
her royal bridegroom with radiant power.
This idea is evident in an old Babylonian hymn.
Quote, "Oh Inanna, a husband worthy of
your splendor has been granted to you... You,
oh mistress, you have handed over to him your power
as is due to a king, and Dumuzi causes a
radiant brilliance to burst forth for you."
Francoise Bruschweiler in her masterful analysis
of the symbolism associated with Inanna,
offered the following commentary on this particular

hymn. Quote, "This passage is interesting due to the way in which, in the context of a sacred marriage, the luminous essence of the goddess is passed over to Dumuzi." End of quote. It will be noted that sacred marriage culminates in the luminous essence of the goddess being given to Dumuzi. Equally instructive is a testimony provided by an early Sumerian epic poem entitled 'Enmarkar and the Lord of Aratta', described as quote, "...probably the finest piece of storytelling ever produced by the Old Babylonian authors."

In the epic in question Enmarkar is repeatedly brought into close association with the planet Venus.

Most telling for our purposes here is the following passage where an Enmarkar kingship is explicitly credited to the planet, quote, "The ever-sparkling lady gives me my kingship." End of quote. The word translated as ever-sparkling here is mul-mul-e="to shine, or radiate," a verb form from the Sumerian word for 'star' mul, and hence referring to the luminous splendor of the planet Venus itself. The clear import of this passage accordingly, is that kingship itself is a gift of the planet Venus.

Far from being figurative in nature, the

language of Enmarkar and the lord of Aratta,
is best understood in literal fashion.

It is the planet Venus who makes the
king by enveloping him with a radiant crown of
glory or charisma. With regards to the specific
astronomical details of the planetary conjunction,
commemorated in ancient traditions of
Aphrodite imbuing Ares with charisma, it is
important to understand that our model requires that
the red planet be positioned squarely
in front of the larger Venus within the
so-called polar configuration of planets.

It was this decidedly extraordinary
conjunction of planetary powers that was
conceptualized as Aphrodite enveloping
Mars with charisma during their sacred marriage.

Or alternatively, as Inanna's imbuing of
Dumuzi or Enmarkar with the luminous crown of
kinship. As a result of these awe-inspiring natural
events, the red planet was viewed as having
gained sovereignty as king of the gods.

Indeed it is precisely because the
marriage of Venus and Mars is
functionally analogous to the crowning
of Mars, that we would understand the
fundamental connection between the

sacred marriage right and kingship.

Thus it is that, from the standpoint of historical origins, to be king meant nothing less than to be married to, or conjoined with the planet Venus.

It goes without saying that the unique conjunction of planets described here is quite impossible in the current solar system due to the fact that Mars being a superior planet, can never appear in front of Venus, an inferior planet. Hence the bold challenge to conventional ideas of astronomy presented by a radical historical reconstruction based largely on the written testimony of the ancient sky watchers themselves.

[Music]

[Music]

today individuals who wish to learn about unconventional or unpopular theories face an enormous obstacle before determining the theories validity one must first gain an accurate understanding of what the theory actually proposes for individuals seeking to learn about the electric universe this task is remarkably difficult due to rampant misrepresentations of the theory both by uninformed or sensational would-be proponents and critics of the theory alike a surprisingly prevalent tactic against the electric universe is the characterization of its proponents as quote conspiracy theorists let us lay aside for the moment the question of the prevalence of actual quote conspiracies both throughout history and in the world today let us explore instead why is this accusation made specifically against proponents of the electric universe I want to talk today about why it is that people who believe that there is some

problem with scientific theory are frequently labeled online as conspiracy theorists what this talk is not about are people who actually talk about conspiracies I'm specifically referring to the situation where one person is talking about science and the other person is calling that first a conspiracy theorist this happens enough online that it demands some sort of an explanation I would argue that this practice is enormously destructive to society's ability to talk about lesser-known innovative ideas in science if every time that people want to talk about an idea in science which diverges from the textbook theory there is this societal reaction to isolate and label that activity is something it is not even intended to be I think there needs to be a very strong reaction to this subtly destructive behavior Michael as you very well know plasma cosmology is a topic that has been published in I trip believes transactions on plasma science for many years now in a sense it is

classical science insofar as the
theorists have traditionally sought out
inferences for astronomical observations
which pertain to classical physics
principles electricity magnetism plasmas
double layers and so on in the
methodology itself is really quite
scientific
insofar as observations within plasma
laboratories like tokamaks of
filamentary electrical structures have
inspired theorists to suggest that
cosmic plasma behaves in similar ways
it's a perfect example really of what is
meant by empirical science so why is it
that when people refer to the electric
universe are more more appropriately
plasma cosmology online these people are
commonly labeled as conspiracy theorists
the fact of the matter is that there
isn't a trace of conspiracy within the
thunderbolts groups publications these
theorists are talking about plasma
science astrophysics and cosmology and
their thesis is that academic
institutions should be modeling the

cosmic plasma to better match our observations of laboratory plasmas there should be no confusion that there are mistakes in the textbooks right now and history is just littered with spectacular examples of mistake and expertise and Michael they all have something important in common try to see if you can pick up on what I'm referring to as I run through four significant examples number one when radio waves were first observed coming from space by radio engineers the astronomical community assumed it was either a mistake or a hoax second when the maser the lasers microwave precursor was invented the world's most prestigious quantum theorists claim that the prototype which was already created was impossible due to the Heisenberg uncertainty principle third it wasn't that long ago that the scientific community regarded meteorites in the same way that modern scientists regard UFO abductions and psychic phenomena quaint superstitions only believed by

peasant folk and fourth rocket-powered spacecrafts were ridiculed virtually all the way up until 1944 when they started raining down on London during World War two the common aspect that people tend to miss with these stories is not the simple fact that the entire scientific community was wrong I think the most people generally understand that this is happened

the key aspect to realize is that the scientific community does not today strive to teach these stories as less which students of science and the public can learn from on the nature of scientific consensus and so they're evolved zipper dicta bollec perception that these kinds of fundamental mistakes are rare in our modern times one a quote bill Beatty

he says intellectual suppression has a long history involving an eccentric but revolutionary science throughout the history of science famous researchers who eventually created an entire new fields of science initially found it

nearly impossible to publish their
research some didn't succeed for years
even decades the scientific community
ignored them but eventually they were
heard
eventually they conquered the
suppression but only after a major fight
the journal editors rejected their
papers because the new research results
were in conflict with common knowledge
it was too eccentric yet the eccentric
ideas were right and common knowledge
was not skipping ahead note well that
nobody can inspire to silence these
revolutionary researchers editors and
fellow scientists simply assume that the
eccentric papers were misguided so that
is the vital context for the question
that I want to pose if we don't need
conspiracies to explain like experts and
textbooks have even in modern times been
wrong then why do people commonly
conflate those who disagree with
textbook scientific theory with
conspiracy theorists here is my
unexpected answer to this tricky

question the story more or less starts with Edward Bernays the relative of Sigmund Freud who showed American corporations for the first time how they could make people want things they didn't need by linking mass-produced goods to their unconscious desires quoting Pat Jackson Rene's colleague and public relations adviser what Eddie got from Freud was indeed this idea that there is a lot more going on in human decision-making not only among individuals but even more importantly among groups than this idea that information drives behavior so Eddie began to formulate this idea you had to look at things that will play to people's irrational emotions so where am I going with this the point is that here in the United States we are already accustomed and actively encouraged to behave irrationally all the time it's just an aspect of how businesses sell things so given this history which clearly has nothing at all to do with a conspiracy

here's what people need to ask themselves does this subconscious aspect of the mind simply shut up when the subject switches to science or alternatively can we think of this ideal of thinking like a scientist in part as a process of keeping these natural subconscious tendencies in check

fast-forward more than half a century to 2002 when Daniel Kahneman was awarded the Nobel for taking Bernays ideas to the next level for many years the practice of marketing weather for a product or an idea was considered a sort of fluffy black magic by CEOs and others because it lacked an actual model for what what was happening in the mind in regards to human decision-making that all changed with Kahneman's contributions to decision science whose work has come to affect all of the social sciences my own suggestion will be to propose that Kahneman's work can naturally explain this conspiracy theorist labeling and the implications are enormous if I'm right for the way we

talk about science online because it ultimately points the way to how we might design Future Sight social networks that aim to make online discourse more scientific Kahneman's claim is that when a person encounters complexity they will either consciously or implicitly realize they lack both the time and inclination to research this claim if he's right then that realization arrives as a feeling which makes it faster than any rational thought and therefore our initial reaction that feeling then Prime's whatever rational thought that follows the subconscious is a natural reaction to everything that happens to us based upon the patterns we've formerly experienced the key is to realize that you don't intentionally think it it happens to you this process more formally known as associative coherence appears to the rational thinker as believable narratives as probably most adults would acknowledge these seemingly fully formed

ideas just pop into our heads

the thing about associative coherence that is not widely understood by the public is that it benefits from a lack of detail as details are added in what happens more often than not is that the believable narrative turns out to be wrong so what I see a lot of online is that people have formed a system of beliefs about science which they subconsciously use as a filter to limit the effort of rational thought and this is a natural response to information overload these largely sub conscious decisions to refuse to learn about something can create significant ignorant of that particular thing and this can happen even if the person is extraordinarily intelligent in other aspects or activities much of the news media by the way actively encourages and reinforces this filtering behavior so here is the important bit this empty cognitive space becomes a playground for associative coherence people who have not actively sought to teach themselves

about certain things in science must
fall back onto these far simpler
patterning based processes for
evaluating claims about those things my
own personal observations online
confirms for me that Khan Amon is right
that this behavior is extremely common
even amongst academic researchers so
what I'm saying is that when a person
does not actively seek to develop a new
instance understanding of academic
research things like how it works the
limits of scientific methodology and
domains critiques by whistleblowers
critiques of peer review and historical
examples of failed expertise the people
who refuse to actively learn about these
things are more prone to simplistic
associations of those who disagree with
textbook theory - conspiracy theorists
I see it all the time people who label
others that are actually talking about
science as conspiracy theorists will
completely ignore the scientific
arguments being made and project their
own lack of understanding upon the very

person that is trying to educate them
about some innovative scientific idea as
Kahneman's model continues to
disseminate throughout our culture I
believe that it is just inevitable that
we will build communication systems
which help people to see their only
tendencies towards associative coherence
by exposing it in the others they are
talking - we cannot see in ourselves but
we can see it in others and in that
indirect way we can make online
scientific conversations more scientific

[Music]

[Music]

you

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

Human beings around the
world may be witnessing
one of the most significant dramas in the
modern history of the Space Sciences.

The European Space Agency's
Rosetta mission to the comet 67P
has shattered the theoretical
predictions of standard comet theory.

For many decades we were told
that comets are dirty snowballs
which formed billions of years ago, tracing
back to the solar system's origins.

If comets are indeed primordial
aggregates of ices and dust,
then they should have very smooth
nuclei covered with abundant water ice.

Several previously imaged comets had
already falsified this expectation.

Nevertheless, Rosetta scientists
fully expected the nucleus of 67P
to be cold, smooth and

covered with ice.

In November, the team will attempt
to use harpoons and ice screws
to secure a lander on the Comet's
dry, extremely rocky surface.

As millions of observers around the
world can see with their own eyes,
67P provides a stunning refutation
of the standard comet theory.

Not a single trace of water ice has
been observed on the Comet's surface.

Instead, it's burnt
black, as cold terrain
is tortured with numerous cliffs,
pits, craters, rocks and boulders.

It is as far from a dirty
snowball as one can imagine.

For decades, the prediction of the
Electric Universe has been that
comets, asteroids and meteors were excavated
electrically from planetary surfaces.

Consider this side-by-side
comparison of Comet 67P
and the Sawtooth
Mountains in New Mexico.

Let us ask ourselves, which of

the competing comet theories
most closely predicted
the features of 67P.

We asked Wal Thornhill for his
summary of the Rosetta mission to date,
beginning with the most fundamental
flaw in standard comet theory,
the notion that comets
are primordial.

The European Space Agency, ESA, named the
Rosetta mission after the Rosetta Stone,
a key discovery in human history
that allowed us to unlock critical
components of our own history.

ESA chose that name because they
wanted the mission to provide a bridge
to the past of our solar system.

The same way that the original Rosetta Stone
provided a bridge to an ancient culture
that had previously
not been understood.

Now, there's some irony in this because the
ancient Egyptians remain misunderstood
because we project onto them
our unquestioned belief
that their environment looked the

same as our environment does today.

As a result, many mysteries about their
astronomy still beg explanation
but are ignored.

The same is happening with comets where we
have an unquestioned belief about their origin,
which renders researchers
blind to anomalies
that should consign comet theory
to the trash bin of history.

A NASA news report in August titled:

'To Catch a Comet by the Tail'

'Rosetta's historic meet and greet

with Churyumov - Gerasimenko'

highlights the problem

in its introduction,

and I quote:

"Scientifically speaking,

comets are complex remnants

from the very earliest

times in our solar system.

They accreted, or grew, out of the same
spinning gas cloud that gave rise to the Sun."

End of quote.

This statement is

not scientific!

It's merely a, once upon a time long, long
ago and far, far away bedtime story.

No one has observed the stars or
planets forming in such a way.

In fact, the most recent evidence shows
stars forming non-gravitationally
along glowing filaments
in molecular clouds.

And thousands of exoplanetary systems make
our solar system look the odd one out.

We're also told, in this
report, and I quote,

"Because of their stealth and
seeming unpredictability,
comets have traditionally invoked terror,
suspicion and awe in human kind."

End of quote.

What research shows this?

All forensic investigations into
the earliest references to comets
identify the archetypal doomsday
comet with a highly visible planet,
Venus.

Space scientists know nothing about
history and so fail to learn from it.

Stealth and unpredictability are

no answer to our fear of comets.

The possibility that within human memory
the planetary system has been unstable
and nonetheless achieved clockwork
stability within that brief period,
challenges Newtonian dynamics and is
dismissed without a moment's thought.

But the singular defining feature
of a comet is its elliptical orbit.

Its motion toward and
away from the Sun.

It requires an electrical
model of the solar system
to explain a comet's appearance and
non-gravitational orbital changes.

Clearly, a comet nucleus
the size of Venus
would invoke terror, suspicion
and awe in human kind.

But NASA's misinformation
doesn't end there, and I quote,

"Previous comet-centered missions
have revealed just enough to allow us
to unseat prevailing theories, but
not enough to firm up new ones."

End of quote

This is pure spin doctoring.

There has been no change in the
prevailing theory of comets,
just ad-hoc adjustments
to a centuries-old story.

Tradition dies hard!

And as for new theories about
comets, what are they?

But for me, this statement
takes the cake, and I quote,
"In 2005, NASA threw a coffee-table-sized
spacecraft at comet Tempel.

The resulting Deep Impact explosion
was shallower than anticipated,
but nonetheless implied that comets may
be more porous than previously thought
and not armored with an
icy exterior or shell."

End of quote.

So the flash before the main
outburst didn't happen?!?

The ad-hoc explanation at the
time was that the impactor
must have hit a hard shell before
burying itself in softer material,
and causing an unexpectedly

dazzling outburst to follow.

I alone predicted both the initial
flash, the energetic outburst
and a shallow crater due
to hitting solid rock.

"The impact/discharge will be into rock,
not loosely consolidated ice and dust."

Now NASA scientists tell us
that the crater is shallow
because stuff fell back and
partly filled the crater.

This assumes a
half-witted audience
that thinks of the Earth's
gravity operating on the comet.

But even on earth, how much debris
from a massive ground explosion
falls back into the crater?

If NASA's researchers were asked to give
evidence in court as expert witnesses,
they would be a laughingstock.

Their stories make
no sense whatsoever.

So what of the Rosetta
mission so far?

The Rosetta mission to comet 67P

is providing us with unprecedented
close-up images of a comet's surface,
but the most remarkable thing to see is
the selective blindness of researchers
caused by prior beliefs about
what a comet is supposed to be.

A primordial ball of
dust and ice. And I quote,
"It was so surprising to see
that this is not a smooth,
hummel-shaped body as we've
thought it would be,"
said Holger Sierks, the lead scientists behind
OSIRIS, Rosetta's 4 megapixel camera.
The scientists are still putting together
why the comet might have such an odd shape.

"One possibility is that
67P is actually two comets
that have been fused
together," he says.

"Although it's also possible
the comet was somehow carved,
through impacts or some other unknown
force, into this strange figure."

End of quote.

It seems we're about to have

another concocted explanation
that leaves the scientists
comfortable with the old story
and business as usual...

That there is no surface ice is a
big surprise to the scientists,
many of whom expected to find a
glassy clean surface of crystal ice
to screw the lander
harpoons into.

But they say, the comet still
is icy below the surface.

- We see water coming out. So there
must be a way for the water to escape.

These are statements of faith in
the old dirty snowball model,
not facts as we shall see.

The rubber-duck-shaped comet
is clearly rocky and complex.

It shows stratification,
craters with fluted walls,
areas that seem to have been
formed by a flow of some sort
and peaks aligned like part of
a broken-off mountain range.

In other words, the comet looks more like

a scarred fragment of a planet surface
than a dirty snowball.

And despite the absence of ice, there
are faint jets just over the horizon,
that show the comet seems to be
suffering a form of surface erosion
at the neck of its odd
rubber-duck-shape.

But there are no signs on the
comet neck of neat holes
forming venturis needed to
produce narrow vertical jets
from sublimating
subsurface ices.

This complex scenario follows the tradition
of astrophysicists invoking hidden activity
within stars and planets, to
explain awkward observations.

Many features on the nucleus appear to
be the result of electric spark erosion
which forms scalloped or fluted cliffs
about an edge depression or crater.

This process can be seen clearly
in action on Jupiter's moon Io
but then there's the question of
why the jets seem to be issuing

preferentially from

the neck region.

Spark erosion takes place in the

form of vertical cathode jets

which are initiated where the electric field

is strongest, on sharp points or edges,

and where the surface composition

is most readily ionized.

This suggests that the mineral

composition in the neck of the comet

may be different to that

in the attached lobes.

And such preferential erosion

may be responsible in part

for forming the neck

and rubber-duck shape.

Talking about composition

of the comet.

The Comet's density measured by its gravitational

influence on the Rosetta spacecraft

will give an entirely misleading

idea of the Comet's composition.

The reason is simple,

although inexcusable

in the 21st century.

It's the confusion by physicists

of mass with quantity of matter.

For more than a century scientists
should have known, according to $E = mc^2$,
that the mass of subatomic
particles is an energetic variable
dependent on the local
electrical environment.

That is why the so-called
universal constant of gravitation
is so maddeningly inconstant.

The comet's environment
is quite unearthly.

As a result, I confidently predict
that the chemical and physical makeup
of the comet will
confound researchers.

The nucleus looks like solid
rock because it is solid rock!

The failure to observe a single trace of
water ice on the surface of Comet 67P
has not deterred investigators
from the assumption
that substantial water ice
must still be present,
but is hidden from view
under the comet's surface.

Proponents of the standard theory point to evidence of water detected in cometary comas as proof that comets are indeed icy bodies, slowly sublimating from solar heating.

However, what is spectroscopic analysis really telling us about comets?

A clue to this question may be provided by recent scientific papers.

In a 1998 paper on the formation of Mercury's ice deposits, the authors write:

"Oxygen-containing surface rocks could release water through sputtering by protons from the solar wind."

On October 7th of this year, phys.org featured the headline, 'Study shows most water in lunar soil generated by solar wind'.

The article states,

"A pair of researchers... has determined that most of the water in the soil on the surface of the moon was formed due to protons in the solar wind colliding

with oxygen in lunar dust...".

Institutional science has never
explored electrochemical processes
creating the signal of
water in cometary comas.

Indeed as Wal Thornhill tells us, the
science of electro-chemistry may reveal
that spectroscopic instruments
are not detecting water at all.

So what about the measurements
that are interpreted
as several liters of water issuing
from the comet per second?

The cathode jets strip and ionize atoms
of oxygen from minerals on the comet
and accelerate the negative
ions away in a fine jet.

The oxygen ions then combine with
the protons in the solar wind
to form the hydroxyl radical OH, which
is mistakenly assumed to be evidence
of an ultraviolet breakdown product
of water molecules from the comet.

Oxygen and hydrogen have both
been found in the comet's coma
by the Rosetta ultraviolet

spectrometer.

It should be noted that the earlier

Stardust mission supported this

by finding surprising high

temperature minerals in comet dust.

This fits the picture of comets as

highly modified planetary debris

rather than being primordial.

There is no need to invent ever

more special conditions and add-ons

to the age-old solar nebula

story of solar system formation.

That story has been discredited both

theoretically and with each new discovery

about comets, asteroids and weird

extrasolar planetary systems.

One planetary scientist

admitted that he needs

a separate theory for each

planet in our own solar system.

The double-lobed

form of Comet 67P

is considered one of its most

extraordinary and baffling features.

Indeed, this basic form has

been seen on several comets,

including comets Halley, Borelli and Hartley
and additionally numerous asteroids.

As described in several

previous videos,

this form is no surprise to

proponents of the Electric Universe.

Several years ago, plasma scientist C. J. Ransom

replicated this form in the laboratory

with a high-energy electrical

discharge to a mineral surface.

Scientists have proposed that

a low-velocity collision

between two comets

occurred in the past,

then mysteriously melded together

to create 67P's double-lobed body.

But as Wal Thornhill

explains, this ad-hoc theory

stretches credulity beyond any

reasonable breaking point.

According to the old

solar nebula theory,

comets are far-flung leftovers from

the birth of the solar system.

They are supposed to have formed by

accretion in a hypothetical Oort Cloud

but this imaginary Oort Cloud is
unlike any cloud we are familiar with.
The cloud is about 1,000 times
further out than the orbit of Pluto
and the mean distance between comets
is about 1 billion kilometers,
so collision and accretion
have negligible probability.

Yet we look at Comet 67P
and its surface cratering
would appear to require
countless impacts.

What's more, its shape is entirely
unaccountable by accretion.

The impact of two largest chunks
would rather disintegrate them
instead of somehow welding them
together to form a rubber duck.

The problem for planetary scientists is that
their expert advice from astrophysicist
is based on another old and
flawed story about star formation
that has also been discredited
by recent observations.

Stars form deep inside
molecular clouds,

like beads strung along

glowing cosmic strings.

The cosmic strings are the galactic equivalent

of earthly cloud-to-cloud lightning.

The powerful

electromagnetic pinch

acts to compress and heat matter

along the lightning channel.

The result on Earth is

merely a thunderclap

but you can't hear a thunderclap in

space. Instead, we see a string of stars.

Of course, smaller bodies

will form planets

which, when the lightning has subsided,

form gravitational partnerships.

This simply explains the

weird exoplanetary systems

with hot Jupiters swinging around

their star in hours or days,

and planets with backward orbits

and orbits over the stars' poles.

As Hannes Alfvén, the father of

modern plasma physics, remarked,

"Gravitational systems are the ashes

of prior electrical systems."

The old nebula accretion theory of planet
formation is long dead and must be buried.

As for Comet 67P,
arc welders know that an
electric arc can transfer matter
against the ultra-weak
force of gravity.

So if the Philae
landing is successful,
it will be important to examine the
mineral composition of the comet
and compare it with
Martian meteorites,
since Mars bears colossal
recent electrical scars.

Even with Rosetta information,
we will not understand
the Egyptians and their pantheon
of weird celestial gods,
much less what comets are,
until we leave our comforting
bedtime stories behind.

Newton's law of gravity
does not guarantee
a peaceful clockwork solar
system lasting for eons.

Astronomers know, but can't
accept the unsettling idea,
that Newton's solar system is
chaotic on a very short timescale.

The reason is simply that gravity
alone provides no restoring force
when one planet
disturbs another.

Astronomers also know
little about history.

Clearly, they are missing
something very important.

And ironically, the answer has
been hidden in plain view
of those who study the
oldest human histories
which tell of planetary wars
involving Thunderbolts of the Gods.

That these ancient stories did
not relate to everyday lightning,
is shown by the many images
of those Thunderbolts.

The implications for the recent history
of the planets are paradigm shattering.
It seems that charge exchange plays a
significant role in stabilizing orbits.

And in close encounters, the effect is
to electrically gouge surface material
from one planet and
transfer it to the other.

In the process, a great deal
of debris is lost to space
where it becomes asteroids,
comets and meteoroids.

Our special thanks to Ignacio Cisneros for his
analysis and pointers on several Rosetta images.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

Welcome to Space News from
the Electric Universe,
brought to you by The
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It has been one of the greatest
surprises of the Space Age -
powerful magnetic fields
pervade the cosmos.

Mainstream astronomy and astrophysicists do
indeed acknowledge pervasive cosmic magnetism,
but they did not predict it, and the
realization has come begrudgingly.

Some perspective into these ideas can be
gleaned from an early online NASA feature
from the 1990s, which
asked the question,

“Do magnetic fields exist
throughout space?”

It states, “On the
cosmological scale,
there is no data to suggest that
magnetic fields are present.

They certainly are not important
in the dynamics of the universe
for any reasonable range

of field strengths

consistent with present

observational constraints.”

Of course, like countless other

consensus ideas in cosmology,

discovery has shown no regard for

these commonly held beliefs.

The now unavoidable problem of

cosmic magnetism in astronomy

is acknowledged in a 2011 Universe

Today piece, which states:

“The mention of cosmic-scale magnetic

fields is still likely to be met

with an uncomfortable silence

in some astronomical circles

– and after a bit of foot-shuffling

and throat-clearing,

the discussion will be

moved on to safer topics.

But look, they’re out there.

They probably do play a role in galaxy

evolution, if not galaxy formation

– and are certainly a feature of the interstellar

medium and the intergalactic medium.”

The reason magnetic fields

in space are so problematic

for standard, gravity-only

cosmology is self-evident

– possibly apart

from bar magnets,

only electric currents

produce magnetic fields.

And for many decades,

plasma cosmology had proposed that electric

currents over vast cosmic distances

play a significant role in the formation

and evolution of stars and galaxies.

Plasma cosmology predicted that

stars would be found to form

along vast networks

of filaments,

like pearls on a string, an outrageous

prediction that discovery confirmed.

The plasma scientist Dr. Anthony

Perratt of Los Alamos laboratories

demonstrated experimentally

that galactic structures

can evolve under the influence

of electric currents.

Through what is known

as the pinch effect,

parallel currents converge to produce structures

identical in form to spiral galaxies.

And well over a century ago, that Norwegian experimentalist Kristian Birkeland predicted that electric currents from the Sun were the cause of our planet's auroras, a claim that astronomers almost universally rejected until it was finally proved in the 1970's.

In fact, with no official pronouncement, within some circles in the space sciences, the recognition and study of electric currents in space appears to be slowly growing.

Consider the recent article, published by the American Geophysical Union's Earth and Space Science News, entitled "Electric Currents in Outer Space Run the Show", which is a summary of the new book, Electric Currents in Geospace and Beyond.

The article states bluntly, "It is now understood that outer space is fundamentally electrical in nature," a type of statement that critics of the Electric Universe have long decried as preposterous

and pseudoscientific.

On the extremely challenging task of observing and measuring electric currents, the authors state,

“Since electric currents are comprised of moving charged particles, such as ions and electrons, the most direct way to measure currents is by probing and counting the individual particles.

Highly tuned instruments that fly on board satellites do exactly that.

While particle counting is quite challenging, as one might expect, one can also make use of the fact that electric currents generate a magnetic field around them, which in turn can be measured, more easily, by instruments, called magnetometers.

From these magnetic fields one can then infer using Maxwell’s equations the underlying currents.”

But the inference of underlying electric currents as the cause of magnetic fields in space

remains a shockingly rare practice
in the astronomical literature.
Thus, the processes astronomers
and astrophysicists have invented
to try to explain cosmic magnetic fields
have only grown increasingly weird,
encountering greater and greater problems in
the face of ever finer technological data.

Consider the discovery
reported last year
of galactic magnetic fields
with “astonishing order.”

As reported on Phys.org,
“Galactic magnetic fields are formed
through numerous stellar explosions,
the effects of which last for
hundreds of millions of years.

The energy bursts of all supernovas put
together produce a galaxy's magnetic fields.

Due to the fact that stellar
explosions are chaotic processes,
scientists had not expected them
to generate a magnetic field
with an orderly structure
on a large scale.

But this is exactly what they have now

proved to be the case in several galaxies

– even though the orderly structure did not manifest in every single object.

The underlying mechanisms have not yet been fully understood.”

However, plasma cosmologists have hypothesized for decades that the “underlying mechanism” is cosmic scale electric currents.

More recently, in 2018, retired professor Dr. Donald Scott published his scientific model of galactic scale Birkeland currents as the cause of so-called anomalous stellar rotation profiles in galaxies — an anomaly that astronomers to this day believe can only be resolved by the influence of invisible dark matter.

However, as seen in this graph, the predicted stellar velocities based on Dr. Scott’s model and the actual stellar velocities measured over nearly a century, compare remarkably well.

It is then not a coincidence that galaxies,

like stars, form along vast
networks of filaments,
the form taken by electric
currents flowing through plasma
which connect the bodies
across cosmic distances.

If electromagnetism
rather than gravity
is the organizational force
creating structures in space,
then both the imagined
need for dark matter
and the intractable problem of cosmic
magnetic fields can finally be resolved.

In our own celestial neighborhood,
in the solar system,
space scientists have had the
opportunity to more directly test
the long-held models of
planetary magnetic fields.

Let us consider NASA's recent
Juno and Cassini missions
to the gas giant Jupiter
and Saturn, respectively.

In both instances, the scientific
data has shattered the belief

that the source of the gas giants'
respective magnetic fields
is internal dynamos deep
within the planets.

As Juno principal investigator Scott
Bolton stated, of the findings at Jupiter
“I didn’t expect all the
theories to be wrong,
but there’s motion going on in the
planet we did not anticipate.”

In a 2017 report, New Scientist.com
outlined the conundrum as follows:

“Another shock is that
Jupiter’s huge magnetic field
is even stronger and much more
irregular than expected.”

However, rather than questioning
the theoretical foundations
that led to the
predictive failures,
the scientists propose the ad hoc theory
that Jupiter’s hypothetical internal dynamo
must simply be much closer to the
planet’s surface than was believed.

The New Scientist report states:

“The irregularity of the

field so far is a sign
that the dynamo driving it may originate
higher up in Jupiter's interior,
perhaps from a layer of
metallic hydrogen...."

... "the dynamo driving the field is close
to the surface over the entire planet,
not buried deep within
it like Earth's core."

But the most important clue to the actual
source of the planet's magnetic field
is in the incredible electrical
potentials at Jupiter
that have now been confirmed
by the Juno data.

As described in an Earth and
Space Science news report
on Jupiter's incredibly
powerful X-ray auroras:

"The data revealed particle signatures
of parallel electrical fields
over the poles of Jupiter that forced
electrons near the poles upward,
away from the planet, while protons and other
ions moved downward into the atmosphere.

This massive electric potential

- upward of a million electron volts -
provides a possible explanation of where
the X-ray auroras get their energy....”

In the Electric Universe, the
assumption that all celestial bodies
must carry no net charge
cannot be correct.

- a fact that scientific
discovery routinely affirms.

Jupiter is an electrically
charged rotating body,
and any such body can produce
its own magnetic field,
with no need for
internal dynamos.

Electric currents flowing from
the Sun impinge on its poles,
modifying its magnetic field,
inducing its stupendous X-ray auroras
and powerfully influencing its
super-fast winds and cyclonic storms.

As we’ve outlined
previously many times,
the aforementioned Dr. Scott recently
published his mathematical modeling
of the structure of a

Birkeland current,
which is identified visually as
counterrotating concentric cylinders.

Critically, this counterrotation
is clearly seen
at the poles of the gas
giants Jupiter and Saturn.

In fact, at Saturn, the crisis
for the standard dynamo model
for the planet's magnetic
field is even more brazen.

In 2018, Cassini scientists
were astonished to discover
that Saturn's magnetic field
appears to have virtually no tilt.

The crisis is explained as
follows in a phys.org report:

"It was thought that magnetic
fields around planets can only form
when there is a discernible tilt between
the rotation axis of the planet
and the magnetic field axis."

What the investigators actually found is
that the tilt of Saturn's magnetic field
is "smaller than a
hundredth of a degree."

As principal investigator Professor

Michele Dougherty lamented,

“...it looks increasingly likely

we will have to rethink the ways

different kinds of planets

can form magnetic fields.

As we’ve also noted

previously, in 2016,

planetary scientists were amazed to discover

that so-called magnetic ropes from the Sun

stretch nearly 900

million miles to Saturn,

and interact with the gas giant in much

the same as they do with the Earth.

We again note the aforementioned material

published by the American Geophysical Union,

which states that

“electric currents generate a

magnetic field around them...

From these magnetic

fields one can then infer

using Maxwell’s equations

the underlying currents.”

Make no mistake,

institutionalized science

does now recognize the

so-called magnetic universe.

If and when space scientists begin
widely inferring the electric currents
that pervasive cosmic
magnetism requires,
it can only be inevitable
they will reach the same conclusion
as the aforementioned authors:
That "outer space is fundamentally
electrical in nature."

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

In part 1 of this presentation,
physicist Wal Thornhill began his
analysis of the recent remarkable update
by the team behind the groundbreaking
scientific experiment,
the SAFIRE project.

For the first time, an
independent experiment has been
conducted to audit the Electric Sun
model, first proposed by the engineer
Ralph Juergens in the 1970s.

At the recent University of
Bath Electric Universe
conference in the UK, SAFIRE's principal
scientist and chief engineer Montgomery
Childs said of SAFIRE's results; in all
our experiments and discoveries, we have
found no disparities with
the Electric Sun model.

We believe the SAFIRE experiment validates
and supports the Electric Sun model.

Childs is president and founder of the engineering firm Aurtas International Incorporated, which was contacted by the International Science Foundation to experimentally test the Electric Sun.

As noted previously, Aurtas International Inc. is an independent body which has no affiliation with the Electric Universe or The Thunderbolts Project.

In this episode, Thornhill continues with his thoughts on some of the most stunning SAFIRE results to date.

This famous photo of settled science will be recognized in future as the moment we stopped doing physics in the 20th century.

Quantum theory discarded the physics principle of cause followed by effect.

Einstein didn't like it but he had already done the fatal damage.

He isolated his arbitrary inertial observers from the rest of the universe, discarded the absolute

standards of length and time, invented an
imaginary proper clock, which doesn't
exist, removed the ether, and the effect
of gravity became an illusion,
all unforgiveable nonsense to the
great physicists of the past.

We were propelled
back almost 2,000 years to
the Greek Ptolemaic era, when geometric
symmetry and mathematical beauty
dictated that endless ad-hoc epicycles
be added to perfect circular planetary
orbits in order to match appearances.

That dogma lasted for over 1500 years.

How long will we allow relativity
dogma and its taboos to persist?

It should be no surprise
that since that conference,
science has failed to produce
fundamental breakthroughs, anything like
the 19th century, when some of the finest
experimental physicists: Weber, Ampere,
Gauss, Faraday, were discovering the
secrets of electricity and magnetism.

For example, Wilhelm Weber produced an
electrodynamic orbital model of the atom

in the 1870s, 40 years before it was
experimentally discovered by Ernest Rutherford.

Weber's electrodynamic law will
form the foundation of future physics.

The Electric Universe follows the lead
of those experimenting electrical pioneers.

The SAFIRE project shows our
century-old understanding of
stars, and therefore the universe,
is fundamentally wrong.

There is no mention of electricity in space
in any textbook on astronomy or cosmology.

The Electric Sun model accepts and
extends electrical Plasma Cosmology,
the only experimentally tested and
predictive cosmology today.

The Nobel-Prize-winning
plasma physicist Hannes

Alfven developed it based on a universal
network of Birkeland current filaments
connecting and driving the rotation of
galaxies, which matches modern observations.

50 years ago, he predicted a crisis
in astrophysics because theorists
chose to misunderstand his
pioneering research in Plasma Physics.

The SAFIRE project

proves he was right.

Galaxies are an electrically powered phenomenon,

and electric stars light their spiral circuits.

It shows we have wasted

more than 60 years trying to produce

energy "like the Sun," based on the

unshakable belief that stars are

isolated thermonuclear-

powered campfires in the sky.

The SAFIRE project exposes the

complicated untestable life-and-death

story of thermonuclear

stars as fictional.

Plasma Cosmology has a long history

of peer-reviewed literature in

the nuclear and plasma sciences society

of the Institute of Electrical and

Electronics Engineers, the IEEE.

The dysfunction of modern

institutionalized science is epitomized

by the absence of astronomers

at the IEEE conferences.

In my experience, there was

one notable exception, the

radio astronomer Gerrit Verschuur who used

his expertise to map local interstellar
Birkeland currents.

He wrote, "The role of large-scale
currents may be far more important in
defining interstellar structure than has
generally been recognized within the
astronomical community."

Plasma Cosmology supports the Electric
Sun model in another crucial aspect.

It successfully predicted
that stars are formed by
powerful electromagnetic pinches strung
along Birkeland current filaments
inside molecular clouds.

The electrical formation
easily accounts for the
observed but unexplained flickering of
newborn stars, and witnessed in SAFIRE.

The electromagnetic accretion process
is called Marklund convection, which
deposits heavy elements at the cool
center of the star, and hydrogen and
helium in the outermost atmosphere.

There is no thermonuclear core in a star.
Of course, the evidence has always been
plain to see in the fact that sunspots

are dark and cool compared to the surrounding bright photosphere.

Astrophysics and particle physics are the two pillars of cosmology.

The SAFIRE project knocks down both pillars.

The two disciplines have fed off each other's misinformation for decades giving birth to futile and hugely expensive projects; fusion power unlike the Sun, the Large Hadron Collider in a futile attempt to explain mass independent of the matter exhibiting mass, and the baseless quest for imaginary dark matter and dark energy.

As one theoretical physicist admitted, we gratuitously blow the public's mind with our crazy ideas.

As for the Big Bang, it is plainly unscientific.

There is no idea how matter is constructed, let alone created, which defies a principle of physics.

And thanks to Einstein, mass and

energy are physically undefinable, and we have no physical idea how gravity works. Einstein's universal speed limit of light is applied to the electric force and gravity, despite the inverse square law applying to them, both being independent of time.

Introducing a speed of light delay renders orbital systems like those in the atom and the solar system incoherent and unstable.

This also reveals that gravitational wave detectors are not detecting gravity signals because their coincident detection assumes gravity operates at the speed of light.

As for super-collapsed gravitational objects like black holes and neutron stars, Plasma Cosmology explains in detail the phenomena associated with them, both by theory and experiment, and has no need of them.

The SAFIRE project exposes the misbegotten taboo by fusion researchers against low energy transmutation

and energy production.

That has held up progress in
nuclear power for more than 60 years.

In 1979, Juergens asked, "Could it be that
the search for thermonuclear energy is a
false trail that has been followed all
these years with no real hope of success?

If the Sun and the stars indeed succeed
in fusing lighter elements to form
heavier ones, are the relevant activities
carried out more or less in plain sight --
in their atmospheres?"

Supporting evidence has since
been found of an anti-
correlation between sunspot number, a
photospheric effect, and neutrino
count from the Sun.

In about the same year, 1979,

I read the work of a noted
French scientist, professor

C. Louis Kervran,

who in the 1960s published important
research demonstrating low-energy
biological transmutations of the
chemical elements which, surprise,
surprise, "...falls outside mainstream

physics and is not part of the
scientific discourse..."

according to Wikipedia.

However, the SAFIRE project is now verifying
low-energy nuclear transmutations.

In 1981, I read a small pamphlet
titled 'Electron Structure' by
Ralph Sansbury, an independent
researcher from New York.

He proposed an orbital model
of the electron which, when
applied to nucleons, provides a simple
alternative model of nuclear reactions
involving resonant catalytic
nuclear chemistry at low energies.

It provided a real physical basis
for understanding quantum mechanics.

It shows, the picture of fusion
requiring high-energy particle
collisions to overcome a high nuclear
Coulomb barrier is too restrictive.

Weber's electrodynamics shows a
short-range resonant attraction between
two like-charged particles,
such as two atomic nuclei.

With this in mind, I spoke

to Monty regularly in the design stage about the requirements for the experimental star and the detection of elemental transmutation.

My friend and Thunderbolts colleague, professor Donald

Scott also extended Juergens' Electric Sun model by recognizing the PNP transistor action of the anode tufts or photospheric granulations, which was successfully produced in phase one of SAFIRE's proof of concept.

This mechanism was important in the model to steady the radiant output of the Sun, while in X-rays the Sun is a variable star.

The steadiness of starshine from billions of stars is one of the disparities of the standard thermonuclear model.

Don also provided electrical engineering advice in the construction phase.

Don's most recent contribution to understanding the electromagnetic structure of Birkeland current filaments, promises a deeper

understanding of the connection
between an electric star
and its interstellar circuit, as well as
many mysterious phenomena in deep space
and within the solar system.

The Thunderbolts team are grateful to Monty
and a remarkable dedicated team who
successfully designed and built the
historic experiment, then devised and
performed the SAFIRE experiments
employing the latest Design Of
Experiments methodology to independently
test the Electric Sun model.

Their professional investigation and results
change everything we thought we knew
about our place in the universe.

That, I hopefully predict, will have
a beneficial effect on all of us.

It is a far more inclusive, coherent and
hopeful, big picture than we have ever had.

Best of all, responses show, it
inspires people and just makes sense.

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts.info

Today, to an unprecedented degree, technological advances are bringing the nature of our solar system's Sun into clearer focus. With ever finer data, the ability to test competing theoretical models, and hopefully to resolve mysteries, becomes greater and greater.

One such mystery is the unexpectedly hot temperature of the solar wind as it extends away from the Sun. Recently, a team of scientists from the University of Wisconsin-Madison performed a study to try to find an answer to the puzzle, and their search led them to the field of plasma physics.

A phys.org report describes the standard interpretation of the hot solar wind conundrum: “With more negatively charged electrons streaming away, the Sun takes on a positive charge. This makes it harder for the electrons to escape the Sun's pull. Some electrons have a lot of energy and keep traveling for infinite distances. Those with less energy can't

escape the Sun's positive charge and are attracted back to the Sun. As they do, some of those electrons can be knocked off their tracks ever-so-slightly by collisions with surrounding plasma." The lead author of the aforementioned study states: "There is a fundamental dynamical phenomenon that says that particles whose velocity is not well aligned with the magnetic field lines, are not able to move into a region of a strong magnetic field. Such returning electrons are reflected so that they stream away from the Sun, but again they cannot escape because of the attractive electric force of the Sun. So, their destiny is to bounce back and forth, creating a large population of so-called trapped electrons." At first glance, such language might seem resonant with the Electric Sun model first proposed by engineer Ralph Juergens and later developed, and in some respects modified by Dr. Donald Scott and physicist Wal Thornhill. However, the University of Wisconsin-Madison

scientists propose that a theoretical magnetic process is the mechanism behind the mysterious solar wind heating.

We asked retired Professor of Electrical Engineering, Dr. Donald Scott for an Electric Sun explanation of the aforementioned phenomenon. As time goes on, we here in the Electric Universe, are hearing more and more often about these "new astronomical discoveries" that are not really new at all. What is new is there's the recent increase in the inclusion of electrical ideas in these astronomical press releases. And a good example is what you just quoted from the University of Wisconsin's press release.

But, although more references are presently being made by astronomers, electrical topics like electrons and positive ions and their flows and movements and then separation, astronomers never used to admit that electrons and positive ions can be separated. But charge separation in space?

No, that can't be. But I still would remind everybody that the words "current", "electric current" and "electric fields", are

almost always completely absent. And a case in point is on our Electric Sun model, which has been around a long, long time now, we do have in the model, inherently, there is charge separation. And I thought, when I read what you just read, I whimsically went back in my mind and said, well how did all this Electric Sun thing get started? These guys never heard of it obviously. Actually it got started back in 1908, when Kristian Birkeland hypothesized that our auroras were caused by streams of electrically charged particles coming from the Sun. And everybody, certainly at least in the EU I think, knows that ad nauseam by now. He was adamantly opposed and ridiculed by astronomers for these ideas. This went on for decades, even after the poor man had died. But Birkeland was not forgotten, at least not by us. But this press release says that the solar wind was "discovered" in 1959. Now, that got my attention. I wouldn't mind if they'd said its existence was verified in '59, when we

sent some Rockets up and saw that, yes there indeed were charges floating around up there and coming into the North Pole of the earth. But they act as though Birkeland had never proposed it. They almost act as though Birkeland had never existed and nobody ever knew about it, and I kind of resent that. Our present Electric Sun model is the direct result of Birkeland's original insight, that the auroras are caused by cosmic flows of electricity. But this model is the result of the work of many researchers from Kristian Birkeland to Hannes Alfvén, and I humbly add my own name at the end of that as well. The prime organizer of these ideas about the Sun, was the late civil engineer Ralph Juergens; and he had carefully studied the earlier plasma research of the Scottish mathematician and physicist whose name is C.E.R. Bruce. Bruce had made the first major change in the theory of how lightning paths function, since their description by Benjamin Franklin, way

back in the dim distant past. And this work and then Bruce's attendance at Sydney Chapman's 1941 Kelvin lecture on the Sun, led Bruce to apply these ideas to cosmic phenomena, and to a new electric vision of the universe. And that has eventually developed into the Electric Sun model. In 1970, I read a paper by Juergens about the electrical properties of the Sun's photosphere and it was published, would you believe, in a chemical engineering journal by Juergens, who was a civil engineer, about an electrical phenomenon. Everything Juergens said there, in that paper, was completely consistent with what I had been taught earlier as a student, and then taught myself as a professor, about electrical engineering having to do with plasmas, a good portion of electrical engineers, at least in those days, were into plasma research. Anyway, reading that paper, I was hooked. I worked for several years, studying and adding, and trying my best to add to Juergens basic ideas, and the point being that the

Electric Sun model is the product of the dedicated work of a long, long string of many people for many years. And these people, like the ones who wrote this memo, never heard of it, I guess. Anyway, it turns out our present Electric Sun model inherently explains many, if not all, the solar phenomena that astronomers cannot explain. And they continue to absolutely ignore its existence. We often hear the phrase "That process is not completely understood". Actually, what they mean is, what they should have said is, "We have no idea why this is going on, but send us more money and we'll invent another invisible mechanism, or force, to explain it". A prime example of these processes that they don't know too much about, is the solar wind, which they do mention in this press release. But Birkeland suggested its existence and the Electric Sun models gives us a clear explanation of the structure and exactly where it comes from, and why it behaves as it does. And, for example, the article does

not mention the fact that the solar wind comes in - and it's well-known - two different varieties. There's the fast solar wind and the slow solar wind, and they're two different manifestations, two different varieties of the same animal, the solar wind itself. The fast solar wind is a flow of ions and electrons that has high velocity, but it's not very dense, there are very few ions in it.

And it comes out of the tops of the photospheric tufts, which make up the surface of the photosphere, which are highly charged regions that hold back the flood of ions that would otherwise result. In other words, you've got this bunch of things that are positively charged. They repel other positive charges and these positive charges within the Sun are trying to escape. These tufts line up, almost like a bunch of soldiers, and prevent the escape of these other inside ions. Ions that do get over the top of the tufts though, then fall through the energy drop of the voltage of the tufts, pretty much like the water that falls

over the top of an overfilled dam. There're not too many of them that manage to do it. to get over there, but the ones that do, fall the whole distance, all the way down the face of the dam. And this is what gives them their high velocity. But relatively few of them can make the trip, and so that's why the fast solar solar wind is very low density. On the other hand, the slow solar wind, has only about half the velocity of the fast wind, but it's quite dense; many more particles per unit volume. And it comes from sunspots and other disturbed regions on the Sun's surface, where there are no tufts to hold them back. So it's like somebody poked a hole in the dam, and therefore this flow is very dense, many ions per unit volume, nothing to really prevent their escape. But, since they're not accelerated by falling through a large voltage drop, their maximum velocities are only about half of that of the fast wind particles. Anyway, this explanation of the two varieties of the solar wind is inherent

in the Electric Sun model. It mimics the operation of a PNP transistor. I'm an electrical engineer and I understand that. It's no wonder astronomers shun our Electric Universe ideas and they find that the explanation of this mechanism is not well understood, because they don't know anything about electrical engineering. Anyway, I hope that everybody knows that the SAFIRE project, which most people, I think are beginning to have heard about, was organized, funded and manned through the kind generosity of the patrons who support the Electric Universe, for one major purpose. The purpose of SAFIRE was to test the validity of the Electric Sun model in every possible way. Montgomery Childs, the director of SAFIRE and chief investigator, has publicly announced that this has been done and that the Electric Sun model has passed each and every test they could throw at it. Yet it is ignored by astrophysicists. Also, some peripheral results from

SAFIRE are interesting to note.

For example, many astrophysicists have claimed for years, that there cannot be any strong electric fields within cosmic plasma. That they would be shorted out by the near-perfect conductivity of the plasma. Plasma is very highly conductive in certain directions. But one day, the SAFIRE team measured electric field strengths in the SAFIRE chamber of over 8,000 volts per meter; and they maintained it, it was were static, and it lived happily inside the plasma, held in the SAFIRE project. Anyway, this shows that the observed acceleration of the fast solar wind particles, which cannot be explained by any other mechanism, can easily be explained by an electrically charged Sun. And I make reference to that first sentence in that quote of the press release. It says, "With more negatively charged electrons streaming away, the Sun takes on a positive charge." Yes, yes, they got that right: it does take on a positive charge, not for the reasons

they suggest, but that positively charged Sun is responsible for the acceleration of the solar wind, which they didn't really mention. The strength of the required electric field to accelerate the fast solar wind, has been calculated - I did it, and other people have done it - to not be greater than about seven tenths of a microvolt per meter. Seven tenths of a millionth of a volt per meter and this only requires the solar voltage to be around 2,700 volts. So Juergens, in his first paper, was thinking about 10 to the 10th volts or some monstrous voltage on the Sun. From our observations, at least other than observations of the solar wind acceleration, it doesn't have to be anything even close to that. So, the Electric Universe ideas, of which the Electric Sun model is one of the most important, I submit, is getting to be like the elephant in the room. They know about it, they don't want to see it, and they don't want to discuss it. I hope that soon they will have to.

[Music]

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info in the previous space news physicist wal Thornhill discussed the recent report that giant filamentary networks pervade the Milky Way galaxy and these filaments are quote closely linked to the formation of stars we now turn our attention to our own celestial neighborhood and the electrical connection between the earth and the Sun it was more than a century ago that the Norwegian experimentalist Kristian Birkeland proposed that charged particles from the Sun were the cause of Earth's Aurora's for decades the astronomical mainstream including the renowned mathematician Sydney Chapman dismissed and ridiculed Birkeland's hypothesis decades after his death Birkeland's thesis was proven correct yet even today the significance of this confirmation has yet to fully register against a mountain of new evidence most discussion of the earth-sun connection

still assumes that the Sun and the earth are neutral bodies in space yet all that we have learned in the Space Age and confirmed through ever finer data defies this assumption electric currents flowing through the conductive medium of plasma represent the electrical circuitry between the Earth and the Sun this circuitry is routinely evidenced in science reports today from the 2007 discovery of so-called magnetic ropes connecting the earth in the Sun and driving Earth's Aurora's the 2014 discovery completely unexpected by mainstream scientists that intense solar activity causes increased lightning on earth protons storms from coronal mass ejections that sometimes reach the earth in a matter of minutes and today a new confirmation of the electrical relationship between our planet and our star an australian undergraduate student is now being credited with having proven the existence of so-called plasma ducks or oddly shaped tubular plasma structures above the earth the student

Cleo Loy says of these structures we measure their position to be about 600 kilometers above the ground in the upper ionosphere and they appear to be continuing upwards into the plasma. This is around where the neutral atmosphere ends and we are transitioning to the plasma of outer space. We found that the ionization patterns in the ionosphere are quite structured. They flow in these tubular structures that are aligned with the Earth's magnetic field and they can move of their own accord.

While Thornhill discusses the significance of this discovery for the electric universe theory, the second report concerns the earth and the discovery of electrons writing huge plasma ducts above the earth. The work supported by the Center for all-sky astrophysics sought to confirm sixty-year-old theories about these structures. Reading the original 1953 paper titled an investigation of whistling atmospherics, we find they are

thought to be due to waves which originate in normal impulsive atmospherics from lightning and travel through the outer ionosphere following the lines of force of the Earth's magnetic field and crossing over the equator at a great height during their journey they become dispersed so as to arrive as Whistler's measurements of the degree of dispersion of the whistlers have been interpreted to yield information about the density of electrons in the atmosphere at very great heights the paper concludes and I quote on the whole the evidence supports the view that the ionization through which the whistlers travel is of extraterrestrial origin it must be admitted however that the electron densities required at great heights are uncomfortably large and of quote this conclusion accords with the electric universe model of an electrical connection between the earth and the sun's circuit it is expected therefore that electrical activity in the Earth's

atmosphere like lightning and higher in the ionosphere is influenced by solar activity notably the ionization has been found to transition to the plasma of outer space below the ionosphere the conducting path for this external electrical power includes the upward lightning flashes called sprites and cloud-to-ground lightning below the clouds this supports the controversial discovery in 2001 by Professor Edgar Barry

a physicist at the University of Houston in Texas who said the charge that produces sprites is not below in the cloud it's in the mesosphere itself in July 1993 I said at a conference in Cambridge England the principal difficulty in understanding the origin of lightning is likely to be the assumption that the earth is a closed electrical system with no input from the solar plasma environment via the magnetosphere this new report seems to verify part of that circuit however once again the report defers any real

understanding by referring to these
magnetic field aligned Burkle and
current cylinders simply as unexplained
plasma duct for continuous updates on
space news from the electric universe
stay tuned to Thunderbolts dot info

Welcome to Space News from
the Electric Universe,
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NASA's Juno mission to
the gas giant Jupiter
has provided data
that could rewrite
much of planetary science.

According to NASA scientists,
the conventional theoretical models
on the planet's auroras,
its atmosphere, its interior
and its magnetic field
have found no support
at all in the mission's findings.

The consistent theme in all of the surprises
is the extraordinary and conventionally
unexpected electromagnetic
energies the spacecraft detected.

In this episode, Thunderbolts

Picture of the Day

Managing Editor Stephen Smith

offers a succinct overview

of the most significant discoveries

from this historic mission.

NASA launched the Juno mission
to Jupiter on August 5th, 2011.

After travelling out
past the orbit of Mars,
the spacecraft returned
for a gravity assist from Earth
on October 9, 2013, and then
headed out to deep space.

Although Juno was invisible
to the naked eye,
its arrival allowed scientists
a unique opportunity.

Since it was only 600 km
above Earth, NASA was able
to track its passage through
Earth's electric field using
the Van Allen probes.

Formally known as the
Radiation Belt Storm Probes,
the Van Allen satellites were
launched in an effort to understand
how the Sun and
near-Earth's space interact.
They do this by interpreting
the behavior of

Earth's radiation belts
and the way that high speed
electrons and ions, otherwise known as plasma,
are guided or confined by magnetic fields.

The two spacecraft are in highly
eccentric orbits, passing each other
and dipping in and out
of the belts many times,
allowing them to understand and
disregard effects of their own
presences in orbit as well as
filtering out spatial anomalies.

It was the small electrical effects
of the Juno probe on the belts
that allowed the Van Allen mission
to see it passing by.

Plasma is often described
as the fourth state of matter.

However, since observations
confirm that it makes up
more than 99% of the universe, it
should be reckoned the first state.

It is only been in the
last one hundred years
that scientists have given
credence to the possibility

that we might be living in a dynamic solar system where electricity plays an important role.

It is evident that the Sun's electric field extends for billions of kilometers influencing the planets in their motions as well as how they interact with each other.

Since plasma is a charged substance in motion, it generates an electric current.

An electric current flowing through plasma creates a magnetic sheath along its axis.

If enough current passes through the circuit, the plasma sheath will glow, sometimes creating a number of sheaths within it.

The sheath is called a double layer.

According to Electric Sun theory, an electric field focused on the Sun accelerates charged particles, the faster they move, the stronger the field.

However, the interplanetary electric field is extremely weak.

No instrument is yet able to measure the voltage differential across 100 meters

but the solar wind acceleration over
its tens of millions of kilometers
does confirm that the Sun
has an electric field.

The Van Allen detector showed that over time,
the capabilities of future space missions
will increase; taking detailed measurements
of interplanetary electric fields
may not be so far off after all.

Juno entered orbit around
Jupiter on July 4th, 2016.

Jupiter is the largest planet.

It is so large that all the other planets
could fit comfortably inside it.

Jupiter rotates in 9.9 hours,
causing its diameter to be
9,275 kilometers more than the distance between
its poles and this is due to centrifugal force.

Since there are radiation belts
around Jupiter similar to the
Van Allen belts that surround Earth,
but thousands of times greater in strength,
Juno's electronics are
housed within a titanium shell so that the
energetic particles trapped around Jupiter
won't interfere with its systems.

As previously reported, Jupiter's moon Io dissipates more than 2 trillion watts as it revolves through Jupiter's electromagnetic fields.

The electric charge flow creates lightning in the planet's upper atmosphere as well as intense aurorae at the poles.

Recently, mission scientists announced that Jupiter is even more electrically active than they predicted.

Instead of a 5-Gauss magnetic field, Jupiter measured levels as high as 9 Gauss and this is compared to Earth's 0.5-Gauss field.

The field is also quite irregular, suggesting to astrophysicists that there might be a non-conformity in Jupiter's core.

According to a mission team member Jack Connerney, "Jupiter's magnetic field is spatially complex, and there were deficits of up to 2 gauss elsewhere.

We may need many more orbits to resolve this."

Conventional theories assume that the universe is electrically neutral, so when observations confirm electrical activity, localized phenomena are invoked. So called 'tidal forces' and 'volcanoes' are said to cause the activity on Io, rather than the several million amperes charge flow between it and Jupiter. In the case of Jupiter's rings, charges detected in the ring plane were said to be caused by sunlight shadow rather than by an electric circuit between Jupiter and the Sun. According to a 2008 press release from JPL, Jupiter's rings are electrically charged. However, astronomers proposed that Jupiter's moon Io is kneaded like dough by Jupiter's gravity causing charged particles to be ejected by its volcanic plumes. The ion flow is an electric circuit, to and from Jupiter. More than 8 years ago, TPOD addressed Io's 'volcanic plumes'. It was shown that they're actually plasma discharges from the moon to the gas giant. Some planetary scientists have begun to acknowledge an electrical connection

after Io's footprint was seen in

Jupiter's polar aurora.

All four of Jupiter's largest moons
were discovered to leave their marks

in the aurora, in the shape of tails
flowing within the plasma column.

Later, when NASA launched New Horizons
on a mission to study Pluto,

the plumes of Tvashtar, a gigantic
volcano supposedly, were found to be
filamentary in structure with indications that
they are actually coronal arc discharges from
electric hotspots,
linking Io with Jupiter.

One of Juno's most important discovery
was that Jupiter's atmospheric bands are
deeper than previously thought.

Those cloud bands cannot be
penetrated by visible light.

However, microwave detectors allow Juno to see
as deep as mission coordinators want to look.

The satellite is currently searching
a little over 400 kilometers
below the surface of the cloud tops, and
as mentioned in other pictures of the day,
the slight differences in layers suggest

that they are dynamic and constantly evolving.

During the same flyby while
observing Jupiter's aurorae,
Juno's electromagnetic data began to
diverge from what NASA team members predicted.

It was much stronger.

Jupiter's magnetic field is far more
complex than they previously assumed.

That flow of electric charge
causes aurorae at the poles.

Since Jupiter is
obviously electrical,
the basic physics of charged
objects in motion
generating electromagnetism
should be the focus of study.

Jupiter's magnetosphere is so powerful
that it extends for nearly 650 million km
reaching even beyond Saturn's orbit.

The most energetic of the trapped
electrons in its magnetosphere
emit radio frequencies.

In 1955, that radiation led to the discovery
that Jupiter has a magnetic field.

It should be noted however, that the
maverick scientist Immanuel Velikovsky

predicted the electric field of Jupiter

in October of 1953.

As mentioned, rotating charged bodies

produce dipolar electromagnetic fields.

Whenever there are regions

of opposite charge,

double layers form and

electric fields develop.

An electric field, no matter how weak,

accelerates charged particles.

This could explain why the

atmospheric bands are so deep.

Jupiter's electric field accelerates

plasmas at different rates.

Rather than a theoretical liquid

metallic dynamo inside Jupiter,

it is more probable that the planet is acting

according to other well-known principles of physics.

Rotating charged bodies produce

dipolar electromagnetic fields,

whether they are gas giants

or rocky planets.

Why some planets like Earth and

Mercury possess magnetic fields

while Venus and Mars do not,

demands further investigation.

However, the basic physics of charged objects in motion is not debated.

What is debated by Electric Universe advocates is what drives the Jovian powerhouse.

According to a recent press release,

"...convection currents...stir the interior

and produce the swirling clouds and storms...

they are strong enough to generate Jupiter's

magnetic field by a process called dynamo action."

Dynamos were described more than a century ago

and fluid dynamic equations are inadequate when

electromagnetism and plasma

environments are considered.

Using models that are kinetic in nature,

with activity limited to induction of

the movement of solid matter, solves

none of the enigmas Jupiter presents.

Welcome to Space News from the Electric
Universe, brought to you by
The Thunderbolts Project at Thunderbolts.info.

Where does gravity fit in the
Electric Universe? Contrary to a somewhat
common misperception, the Electric
Universe does not deny gravity's
existence, nor its role in the cosmos and
our own world. Rather the Electric
Universe theory as proposed by
physicist Wal Thornhill suggests that the
fundamental mysteries of gravity may be
explained by the electrical structure of
matter. In his 2008 article "Electric
Gravity in an Electric Universe," Thornhill
asks, "When we apply force to a body,
how is that force transferred to
overcome inertia? The answer is
'electrically' by the repulsion between
the outer electrons in the atoms closest
to the point of contact. The equivalence
of inertial and gravitational mass
strongly suggests that the force of
gravity is a manifestation of the
electric force." Today,
Bishop Nicholas Sykes further elaborates

the query he first posed in his
previous episode:

"What is the speed of Gravity?" and he
elaborates the explanations for gravity
that the Electric Universe proposes.

My last Space News video about the light
exceeding [the] speed of gravity, titled "What is
the Speed of Gravity?" provoked some
reactions. Someone wondered if I have
never heard that gravity was not a force,
but the bending of the fabric of
Space-Time. Another argued that gravity
did not need explanation, because it was
something that was "just there"

Einstein's proposition that nothing can
travel faster than light, has become so
entrenched that even some of us
identifying with the EU model as a whole,
find it difficult to give fair
consideration to the claim that gravity,
operating as a real force, requiring a
real explanation, necessitates a real
transmission, far greater than the speed
of light.

Yet, even if we are only at the beginning
of providing such

an explanation, it is important for the integrity of the EU model, to adhere always to a simple force-based model for gravity, because gravity does, when all is said and done, manifest itself to our senses as a force. The Electric Universe model is constructed with explanations that invariably exclude “just there” formulations, which are in effect widely used agreements to discard the need for rational explanation. As a result of such agreements, the scientific landscape is littered with such follies as black holes, dark matter, dark energy, multiverses, and magnetic reconnection, all of them being “just there” formulations, without rational explanation, designed to plug the holes in popular science theory with the unexplainable. Sir Isaac Newton understood that he was unable to formulate an explanation for gravitational attractions, even while he described the behavior mathematically of bodies under gravitational influence over vast distances with astounding

accuracy. He speculated on gravity's cause, but decided to leave that issue to a future generation, who might bring better tools than his, to master the task. Our own generation does indeed have better tools than his, but we have become distracted from the task he and others bequeathed to us, by a multitude of follies. These consist of the extraordinary plethora of the "just there" formulations that prevent us from accomplishing what Newton and others bequeathed to a future age. If one reads the book "Relativity" by Albert Einstein published for example in 2004 by the Folio Society, one will see that he develops the concept of light or electromagnetic radiation, being the fastest possible messenger, merely by assuming that, since nothing was observed to go faster than light, then there is no credibility to the idea that anything could go any faster than light. In chapters 7, 8 and 9, for instance, he assumes that information from two simultaneous flashes of lightning could

never by principle, reach an observer any faster than light speed in a vacuum. From that simple idea, the whole theory of relativity was developed, starting with the deduction that two simultaneous events in one frame of reference, might not be simultaneous in a different frame of reference. The theory of relativity as conceived by Einstein depended therefore entirely on the idea that one could never make deductions about space and time that might ultimately rest upon anything going faster than the speed of light. It is, therefore, illogical to assert, without any other reason for doing so than the theory of relativity itself, that nothing can go faster than the speed of light. To make such an assertion would be to engage in a tautology, i.e. circular reasoning, because the theory of relativity is founded upon that assertion in the first place.

Only if the theory were independently and incontrovertibly verified by observation or experiments, might this be reasonable. And such is often assumed to

be the case as Einstein himself hoped that it would be. But so far as I'm aware there is not a single case of this theory's verification that may not reasonably be disputed. Under these circumstances therefore, it is entirely scientific to consider the possibility that there may well be something observable or reasonably deduced traveling at a speed faster than light. As has already been indicated in my videos, the motion of the planets in the solar system requires that the force of gravity between the Sun and its planets, assuming as we must, that this is a real force and not a mental construction of some kind, must be transmitted between them at a speed of many orders of magnitude faster than the speed of light. And the physicist Wal Thornhill shows also that such speeds of force transmission are just as necessary within what we call the fundamental particles of matter for the stability of those sub atomic structures, as it is for the stability of stellar planetary systems. Indeed, by such

concepts, the physical foundation of the mathematical structures of quantum mechanics may yet be revealed and made clear in a way similar perhaps to the clarification of the physical foundation to Sir Isaac Newton's "Mathematical Principles" of gravitational action that great task that he and others bequeathe to generations yet to come. In such manner, the Electric Universe model holds out a great promise; the promise of a physics and a cosmology that rest upon a secure foundation to replace what is taught in our prestigious schools, the current model, which as Einstein himself discerned, relies upon two foundations: the Theory of Relativity and Quantum Mechanics that are themselves mutually irreconcilable.

For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

[Music]

[Music]

Earth's Primordial Stellar Host

Dwardu Cardona

escaped the cage of answers

at about the age of 15,

growing up in Malta in a highly

defined Catholic environment,

he wanted more.

And so he entered into

a life of curiosity.

And he came to Canada,

now I got to know as an aside;

What's... How did we start

slipping up in the U.S.?

All these guys are

going to Canada!

What, what, what, it's...

Yeah, I mean I like Canada.

But, come on, really?

Well, he's in Vancouver now, and that's

still pretty close to the U.S. there.

Okay, was a little, we'll grant him that,

in between Alaska

and Washington.

But the former editor of the Journal

Aeon, co-editor of the journal Kronos,

author of many books, four of which are

available here on our, at our bookstore
and they are excellent,
really fascinating.

So this morning Dwardu is going to
pick up where he left off last year.

Welcome Dwardu Cardona!

EARTH'S PRIMORDIAL STELLAR HOST

Thank you!

Actually, I had no idea when I
prepared to talk I am about to give
that my good friend Wallace Thornhill
would be presenting a paper
that touches on exactly the same series
of events that I am about to discuss,
which he did yesterday morning.

That said however,
it does indicate,
actually it stresses
the importance of the
events in question.

As pointed out in the paper I
read at last year's conference,
there are still those on Earth who
are adamant in stating that the Sun
that shone above the heads of their
ancestors was not the present one.

And judging by the way it is described in
mankind's Universal mythohistorical record,
the ancient Sun that shone above
our ancient ancestors' heads
appears to have been much too
close, even if somewhat dim,
and yet exceptionally warm
for it to have been the one that
presently shines above our heads.

What such a Sun best fits is what
is known as a brown dwarf star.

There was a time when brown dwarfs,
who are believed to fail as stars
because their low mass prohibits them from
attaining internal nuclear reactions;
but if astronomical bodies achieved the stellar
qualities to spatial electrical energy,
bodies with lesser mass than normal stars
could still exhibit astral characteristics
even if in a minor way.

As it is, brown dwarf stars have now been
found to be produced in all possible masses
between planets and stars.

By the end of 2004 it could
be additionally reported
that there is no

longer any doubt

that these substellar objects

exist throughout the galaxy

numbering as much as

100 billion members.

In fact, brown dwarf stars

are as common as stars

and not only do brown dwarf stars look

like stars, they behave like stars as well.

On the basis of detections by

the Hubble Space Telescope

the conclusion has now been reached that

brown dwarfs form the same way stars do.

In fact, they are presently

considered to be bonafide stars.

There are various incidentally mythological

expositions from around the world

that proclaim the manner in which God's

creation is said to have unfolded.

In quite a few of these narratives, we

come across an attempted elucidation

of a mysterious substance

that seems to have existed

before whatever God commenced to create

whatever it was said that he created.

In the biblical book of Genesis, this

entity is described as "Tohu wa-bohu",
which is traditionally translated as
"without form and void" or "void and empty"
but which better translates
as "utter chaos".

And it was out of this very chaos
that God is said to have organized
whatever it was that he created.

This belief incidentally is not
unique to the Old Testament.

It was no different among the classical
Greeks as recounted by no other than Hesiod.

The Chinese called
this chaos "Tao,"
describing it as having
not only been chaotic
but also nebulous in its nature
while it constantly revolved.

To the Yuki Amerins it was
an indistinct something
that they likened to fog and/or foam
that will drowned in round continually.

A similar primordial foggy substance
is also mentioned in oceanic mythology
while the Pima compared it
to a fluffy bit of cotton

that drifted to and fro.

Others compared the material to a
stretch of whirling slime or mud,
an eddying of waters, a
whirling ocean in the sky.

One can brush these descriptions aside as
being nothing about the mythological ravings
that would have originated in
early man's ignorance of nature.

And, to be sure, I myself
was somewhat confused
as to what these mythological
reports were alluding to
until I happened to glance at one
of Chesley Bonestell's paintings
illustrating the placental
cloud of matters
surrounding Earth in its
early formative period.

Needless to say, man could not have been
around during that early time on Earth
so he could not have based his
reports on that manifestation.

However, similar so-called
placental clouds
now refer to as circumstellar disks

are also known to girdle stars.

Could ancient man have seen

such a circumstellar disk

whirling around Earth's

previous stellar host?

Do brown dwarfs even

harbor such disks?

In 2001, a team from the Harvard-Smithsonian

Center for Astrophysics

discovered what they

termed "Warm Dusty Disks"

around some of the

free-floating dwarf stars

that were by then being detected

in ever growing numbers.

A year later gas and dust disks

around substellar objects

were being written about

as a matter of fact.

And to be sure, as time went by

more than a hundred brown dwarf stars

were discovered in the Orion Nebula alone,

60% of which turned out to be surrounded

by nebulous clouds of warm dust.

That such disks encircle brown dwarf

stars is now universally accepted.

More than half the brown dwarf stars that
have been discovered display such discs
and the friction may
be as high as 80%.

In fact, brown dwarfs are girdled by
disks just as often as stars are
while their disks have been
calculated to last just as long.

As is usual in such cases,
astronomers were astonished,
not to say perplexed,
that these disks behave so
much like the ones around
much more massive
newly forming stars.

In the meantime, modern mythologist
should not be blamed for being at a loss
in attempting to understand what
our forefathers were alluding to.

Giving the nebulousity
of such a disc,
to say nothing of the difficulty
it must have presented
to being conferred to
terrestrial substances,
the vagueness of its various

descriptions is understandable.

Even so, judging by the overly dusty
and gaseous nature of such disks,
it is hardly surprising
that ancient man
would have described the one seen
around Earth's primordial Sun
as a nebulous substance comparable to
fog, foam, fluff, eddying slime, or mud;
all of which have been added to what was later
simply alluded to as a chaotic substance.

In addition to this circumstellar cloud,
ancient societies also described
what appeared to them as a twirling column
of wind associated with that very cloud.

This can be gleaned all the way from
the beliefs of the Canaanites,
across those of the Egyptians
to Buddhist countries,
the Americas as well
as the South Pacific.

Not only was this wind described
as having been cyclonic in nature
but to have also acted as a
column supporting the sky.

Such for instance was

the Egyptian Shu

as well as the

Mesoamerican Ehecatl.

Since this columnar entity was seen

emanating from Earth's primeval Sun,

it was also thought of as the

celestial gods' single-leg

as in the Hindu case of

the one foot of Brahma

but also Vishnu and the Daramulum

of the Australian aborigines.

To others this appendage was

remembered as god's supporting phallus

that was also surprisingly described as

the downward flow of light from above.

The most descriptive aspect

of this appendage, however,

was as a sky pillar that has gone down

among mythologists as the axis mundi

concerning which entire

books can be written.

Additional to that was the associated

description of the cyclonic wind,

single leg, phallus,

and other items

as having had the appearance

of a whirling ray from above.

What could this brilliant
whirling ray have been?

There has been and continues to be more
than one interpretation of the effulgent,
effulgent ray of light that
ancient man saw stretching between
the primordial Sun above
and the land beneath his feet.

One of these was Ralph Juergens.

Whose theory that the
column like structure
might have been in the nature
of a steady electric discharge.

As time went by, Juergens' concept was
lent validity through the discovery
of so called astral jets of plasma
that are ejected by galaxies
as well as stars, along
the rotational axis.

One can argue that the
colossal size of these jets
would eliminate their
possible occurrence
in association with the much less
massive brown dwarf stars.

But as I reasoned
right from the start,
if these jets can stretch in size
between galactic and stellar magnitudes,
the difference in size
of which is enormous,
what would keep them from
existing in lesser dimensions?

After all, the difference in scale
between brown dwarfs and regular stars
is much less than that
between stars and galaxies.

Or, if brown dwarf stars can be surrounded by a
scaled-down version of a circumstellar disk,
why cannot they emit a scaled-down
version of a stellar jet?

Wallace Thornhill, who was not
adverse to this concept,
indicated that this jet would have
been a sustained plasma discharge
in the form of Birkeland current,
which claim was upheld by the
plasma physicist Anthony Peratt.

The problem with all this stem from the fact
that at the time I came to this conclusion
jetting brown dwarf stars

were still unknown
and yet, when I discussed this problem
with the astrophysicist Doug Lynn,
his verdict was that jets from brown
dwarf stars were not only possible
but very probable.

Lynn's privately tendered personal
opinion was lent probability
less than a year after he had
voiced it, when spectral lines
that are normally
observed in stellar jets
were actually detected
in brown dwarf stars.

As time went by, other than spectral
lines, actual jets and even violent ones
were depicted spouting from
these brown dwarf stars.

As Emma Whelan from the Dublin Institute
for Advanced Studies has stated,
"Jets are confirmed to flow
from a huge range of objects
from the largest galaxies
to tiny brown dwarf stars."

Meanwhile, that brown dwarf stars
can be accompanied by planets

was proven in 2005 when a
planet was actually imaged
in association with
such a brown dwarf star.

Not long after that, more
of the same came to light,
not only that but an
entire planetary system
was eventually detected
forming around a brown dwarf
that is barely larger
than a giant planet.

That is therefore
nothing strange
in Earth having once been the
protege of a brown dwarf star.

As those who are familiar with the
thesis I am here submitting now,
Earth's primordial brown dwarf star
eventually turned into the gaseous planet
we now know as Saturn.

And yes, I do realize that those who are not
familiar with the astronomical evidence
that backs this up will
find it hard to accept.

That Earth had formerly been a

satellite of the Proto-Saturnian body
was first hinted at by
Oskar Reichenbach in 1884
before it was taken up by
Immanuel Velikovsky in 1971.
And that the planetary Saturn
had originally been deified
and adored as mankind supreme
god all over the ancient world,
was magnificently documented by David
Talbot during the same decade.
Indeed, as Talbot stated,
"The consistency with
which early astronomers
identify Saturn as the former
Creator King is extraordinary."
As he reported concerning his research
of Earth's primordial catastrophic history,
"Nothing came as a
greater surprise to me
than the sheer quantity of material bearing
directly on the Saturnian tradition."
And as I myself discovered during my own
investigations of the same traditions,
the Saturnian deity kept showing up in every
mytho-historical avenue that I followed,

despite the fact that I actually tried
very hard to get away from him.
Because of a major event, a turning
point in Earth's cosmic history,
to which I shall
get you in a while,
it was posited by Juergens that Earth and
this primordial Proto-Saturnian stellar host
had been traveling together outside
the demarcation of the solar system
before they were captured
by our present Sun.

And as unusual as that
may sound to some,
stars are known to wander
alone through space
vacating their systems
and/or invading others.

Nor are regular stars
alone in this class
since the conglomeration of these three
wanderers also include brown dwarfs.

Some of these dwarfs are known
to orbit sun-like stars
but most of them are actually
floating freely through space.

And free-floating
sub-brown dwarfs
similar to the one posited
as Earth's primordial Sun,
are more numerous than
their larger siblings.

What, however, was it that made Juergens theorize
that Saturn and Earth had been floating
outside the solar system demarcation
before their capture by our present Sun?

As with various other matters,
this too was based by Juergens
on yet another concept that had
been proposed by Velikovsky.

As Velikovsky had it stated in an
almost offhand manner back in mid 1973,
Saturn had somehow flared
up in nova-like brilliance.

It is unfortunate that Velikovsky
misplaced the event in time,
placing Proto-Saturn's
flare up just ahead
of what has come down
to us as Noah's deluge
when there is much better evidence for
placing it some 5000 years earlier

during that primeval event that lit
up the sky for the very first time
during mankind's
surging on Earth.

In the book of Genesis, this event came
to pass when Elohim gave the order to
"Let there be light."

But let this not be thought of as a
unique biblical event. On the contrary,
this sudden shedding of light
into what had been a somewhat
darkened world is

described in various ways
in the mytho-historical records
of just about all ancient nations,
from Mesopotamia and the
rest of the Near East, India
and the Far East including China
into Egypt down to Africa,

Greece and Rome,
North America and across the stormy
seas to the islands in their midst.

As far as Juergens was concerned, the
sudden flare-up resulted when the Sun
captured the Proto-Saturnian system
including Earth into its electrical domain.

Thus, according to him, Proto-Saturn's discharge
was diverted to the new ruling body
since Proto-Saturn found itself much too
highly charged for its altered environment.

This concept was later taken
up by Wallace Thornhill,
who pointed out that Proto-Saturn's
entry into the solar plasmasphere
would have required rapid adjustment by the
intruder to the new electrical environment
where the Sun was the main
focus of electrical activity.

So likewise, Donald Scott, when he spoke
of bodies like Proto-Saturn and the Sun
possessing different
inherent voltages.

Thus he tells us that when the
plasma spheres of such bodies
come in contact with one another, an electric
current in the form of an arc discharge
will fly between them to the
detriment of the lower voltage body.

In the case in question, the lower
voltage body was Proto-Saturn,
our primordial Sun, flared up in a
brilliant, blinding light that went down

in mytho-history as Day One.

But can brown dwarfs

freely flare?

You bet they can and do.

Very much like bonafide stars, brown

dwarfs also have a tendency to flare up.

The brightness produced

by their X-ray emissions

during these outbursts were originally

considered hard to believe

and said to have

shocked scientists.

Such rays have

even been detected

from what are considered to

be lightweight brown dwarfs,

strong radio waves

spiking at 10,000 times

stronger than what

astronomers thought possible,

indicating flare energies that have actually

been compared to those emitted by the Sun

have also been detected

from these stellar dwarfs.

There is an awful lot of

mytho-historical material

indicating the creative outflow emitted

by the Proto-Saturnian flare up.

As in other matters, toward the

world we come across this outflow

as having actually spiraled

out across the sky.

As in other matters, it is not easy to get

away from what has gone down in mythology

as the spiral of creation.

And here once again we find

that on a much larger scale

eruptive material from supernovae has a

tendency to expel electromagnetic detritus

in vast widening

spiraling streams

as can be seen in the eruptive matter

expelled by the giant red star

known as R Sculptoris.

While it's a sub-brown dwarf,

Proto-Saturn's discharge

would have been nowhere as

close to that of a supernova,

it should be kept in mind that within

the restrictions of certain parameters,

plasmatic occurrences can be scaled up or

down from microcosmic to macrocosmic extents

without losing their

intrinsic behavior.

It, therefore, seemed that what

our ancient forebears described

to have seen spiraling

out across the sky,

was an accurate report of what was

actually transpiring at the time.

That the planet Saturn is the end

result of brown dwarf degeneration,

has more than been

implied by orthodoxy.

As Glenn Schneider opined,

"Given a billion years of

cooling and evolution

and these objects may be

indistinguishable from planets."

Or, as Maria Zapatero

Osório stated,

"With time, brown dwarfs will

look like Jupiter and Saturn."

That's for that billion years

required for such a devolution,

how about that monster of a protostar

in the Sophias constellation

that has been claimed

by astronomers

to be able to develop into a high

mass star in about a mere 10,000 years?

Coincidentally or not, 10,000 years is

precisely the amount of time Sam Flamsteed

claimed it would take a brown dwarf star to

turn into a Jupiter- or Saturn-sized planet.

In fact, let us be quite honest.

As it has been pointed out, the line between

planets and brown dwarfs is rather blurred.

At present, planet Saturn radiates more

heat than it receives from the Sun.

Its total heat emission has

been calculated to be about

two or three times the solar

energy it actually receives

and, as it has been claimed,

an actual internal heat source

is definitely called for.

At present, it is believed that

helium, percolating toward the core,

is responsible for

this excess heat

that has turned Saturn into a world

that is hotter than it should be.

But, in view of what the

ancients had to say,
it is more than probable
that Saturn's excess heat
is a residue from when it radiated
as Earth's primordial Sun.

Besides its excess heat, Saturn
also shines with its own light.

At least to an extent.

As low as its illumination is, its glow, which
has been likened to a Chinese lantern,
is sufficient to back fly
to the planet's clouds.

But let us cut straight
across the lawn.

That the planet Saturn is the relic of what
had previously been a brown dwarf star
is now an accepted tenet
of mainstream astronomy,
and there are indications
or is there any evidence
that Earth did not always
belong to the solar system?

As a matter of fact,
NASA's Genesis spacecraft
made a hell of a discovery
when its instruments revealed that

the solar system's inner planets,
including Earth,
do not contain the same ratios of
oxygen and nitrogen as the Sun.

While the interstellar
boundary Explorer
found that the gases contained
within the entire solar system
are different from those
outside its boundaries.

What all this and other evidence
has been interpreted to mean
is that the solar system,
including Earth, came into being
in a different part of the galaxy than
the one in which it('s) presently located.

More importantly however, the Genesis
spacecraft readings imply that Earth
could not have formed out of
the same nebulous material
that is thought to
have created the Sun.

What all this boils
down to is that,
while the Sun seems to have shifted its
location within the Milky Way galaxy,

some of its members including
Earth had to have been captured
into its chaotic
family even later.

As it happens and this
is not at all surprising,
our ancient forefathers have been
telling us that long, long ago
the Sun was young, the
present Sun was young
and no bigger than a star.

They continued to
tell us as time...
they continued to tell of the time
when the Sun was originally very small,
hardly a nail's breadth across,
but as they also said, one day it suddenly
began to grow till it was a span across.

One interesting point about
these reports is that the Sun,
the present Sun,
was not merely remembered as having
been smaller than it is at present
or that it grew in size but
that it was known that
this resulted because it had

actually still been far away.

It, therefore, seemed that

our ancient ancestors

we are not exaggerating in their

descriptions of these primordial events.

So please, let us pay attention

to what they have recorded.

Thank you for listening.

[Music]

Our Milky Way is a vast structure containing millions of stars. It contains long-stretching spiral arms which connect to the center. At the heart of the Milky Way lies a vast bulge.

At the core is an object of mystery that is connected to how the galaxy functions.

The mainstream call this a black hole, assuming that somehow gravity is able to compress matter into a very small space.

In the Electric Universe we would consider this object to be a plasmoid, possibly similar to the ones Eric Lerner was able to produce in his experiments.

This would be a highly concentrated structure of plasma with intense electric and magnetic fields, compressing material into the torus and also streaming material out of the poles. Around this object sits a larger structure which stretches for about 700 light years. It is a dense zone of activity called the central molecular zone. Here you will find almost 80 percent of the entire galaxy's dense gas.

It contains many dense molecular clouds that would normally be expected to produce stars, but are instead devoid

of any. On top of this, the material is not stationary, moving at supersonic speeds of hundreds of kilometers per second. By comparison, the Maggie filament we examined in the last episode was moving at about 54 kilometers per second. If gravity was the only force shaping our galaxy, you would expect this central molecular zone to be centered on the black hole. And yet, this is not the case. The central molecular zone is offset; they are able to identify two large scale flows across this region, which suggests they represent one, or at most two, coherent streams of material. Scientists struggle to explain where the central molecular zone came from. Nor how it can maintain its structure. One major problem facing astronomers is that there is so much dust obscuring our view of the central molecular zone, making observations in the visible spectrum impossible. Luckily, infrared, radio, X-rays and gamma rays can penetrate the dust. Gamma rays are the highest energy particles; these are thought to be produced

when cosmic rays crash into ordinary matter.

When scientists mapped the gamma rays towards the heart of the Milky Way, it revealed that something near the center of the galaxy appeared to be accelerating particles to speeds approaching that of light, which in turn was creating an abundance of cosmic rays and gamma rays, just outside the galactic center. At the same time, something at the center of the galaxy seemed to be preventing large portions of cosmic rays from other parts of the universe from entering.

Scientists describe the effect as an invisible barrier wrapped around the galactic center, and maintains a significantly lower density of cosmic rays compared to the rest of the galaxy. Something is allowing cosmic rays to escape from the center, but prevents them from entering. The scientists are at a loss to explain it.

There may well be a simple explanation for this behavior, but we will return to this in a short while.

Twenty years ago, astronomers discovered a number of enigmatic radio-emitting filaments near the galactic center.

At the time they defied an explanation.

These filaments range from 10 to 100

light years in length and are no

more than three light years across.

Some of these filaments seem to be

connected to concentrated areas of

thermal emissions, which likely

identified areas of star formation.

They also detected upward streams

which were non-thermal radio filaments.

At the time they thought that these

two processes were linked somehow.

Wind forward nearly twenty years and new

radio images reveal it in even more detail.

Now they are able to see thousands of these

filaments. If we zoom in to where Sagittarius A is

located, we can see it as what appears as the

brightly glowing eye at the bottom of the image.

We can clearly see the large cloud structure

that lies to the side of Sagittarius A.

We can also see smaller filaments that seem

to stream in or away from Sagittarius A.

You will also notice the much larger

filament that runs across the image and

seems to bend around this structure.

The mainstream explanation for these

vertical filaments is now that cosmic

rays, streaming from the center of the galaxy, end up dragging the ambient magnetic field, compressing it and illuminating it.

What remarkable particles can move and compress an imaginary construct?

What could cause something to glow in radio? This is generally an indication that electrons are undergoing acceleration.

So why would these filaments emit thermal radiation, and others not?

It is important to understand that we really do not understand what causes thermal emissions, nor that we can really label something as being hotter than something else, simply by looking at the radio emissions. Here is an example of an explanation for thermal emission.

"The mechanism of radiation emissions is related to energy released as a result of oscillations or transitions of electrons that constitute matter.

"A consideration to make is that when electrons or other charged particles are exposed to an electric field, this will make them flow along the field lines.

This could cause smaller oscillations to

be removed, thereby de-thermalizing the particles, making it appear as if they are cooler.

If we are seeing the filaments glowing in radio, it does mean that there is an acceleration going on and I see two different mechanisms for this. The first is that they are being accelerated towards or away from the center due to an electric field.

The second is that the particles are following a helical path, causing a constant acceleration around the center.

As we see electrons, we are likely dealing with a plasma which is flowing along these filaments.

Now what about that barrier that seems to prevent cosmic rays from entering, but serves to accelerate particles from within the center outwards?

One alternative explanation for this might be something that Hannes Alfvén felt was a piece of the puzzle, that mainstream science continually ignored: the double layer. It was Langmuir who first discovered what is now termed as a double layer. A double layer is created in order to separate

plasma from its environment.

It can be considered analogous to a biological cell wall. Both streaming electrons, and ions can

also be present within these. So

how could this explain the magical

barrier? Cosmic rays are generally

considered to be high energy protons or

positively charged particles. So

why might the core be deflecting

these high energy particles, and yet

accelerating any that reside within it?

This could be explained if we consider

that the core of the galaxy is net

positively charged or electron-deficient, similar

to how we consider a star to be electron-deficient.

The double layer that forms around

this would therefore contain a positive

charge on the inside, and a negative one on

the outside. Any positive particles within the

interior which have enough kinetic

energy to overcome the initial repulsion

of the positive barrier, will then feel an acceleration

towards the negative edge of the double layer.

The edge of the double layer is a

dynamic zone which is constantly being

replenished, as ions get neutralized,

and neutral particles become ionized.

The existence of this double layer may also explain why we see the larger filament bending around this zone. If we examine the wider image with many filaments, we see that they seem to be spread across a wide area, and do not seem to congregate to the central point. How could this be explained, and why does everything not connect to the central plasmoid? I think at this point it is important to consider that there are a number of different models for how galaxies function, and probably none of them are entirely correct.

Anthony Peratt's concept was that two intergalactic filaments would twist together and at a certain point along these filaments a double layer would form.

This would collect material along the double layer and compress the material in between the filaments as they moved closer.

He never modeled this central area, but referred to the work that Eric Lerner had done on plasmoids as one potential for this central area. This would mean that the plasmoid that formed at the center may not directly

be connected to the larger filaments, but instead, the two filaments would connect to multiple parts, and this in turn would stream in towards the central area.

Halton Arp felt that galaxies were born from material ejected from active galaxies, which later turned into companion galaxies, as they moved further from the parent. Here we could consider that these galaxies are already within a filament and that as the material gets ejected into the larger filament, new connections are forged. Possibly this material is initially electron-deficient, so would draw streams of electrons towards it, which then later form the filaments that connect it.

Now, it's equally possible that these vertical filaments are not part of any mechanism to connect to the galactic filament, but instead are filaments that are part of the internal structure of a galaxy.

If we consider Hannes Alfvén's concept of a galaxy, he thought that there was a circuit which pushed material out along the axis and back along the equator.

There is much we still do not know and

many open questions that these images raise.

What is clear, is that the more we look,

the more we see these filaments, both in

the interior of our galaxy and spread throughout

it, as well as between galaxies on a vast scale.

This material is not dormant, but flows. Some

fast, some slow, powering our Electric Universe.

[Music]

[Music]

and what point is when recognized that
history is unfolding before one's eyes
usually takes the benefit of hindsight
to appreciate and events historic
significance but once in a great while
we find ourselves caught in the momentum
of a watershed moment countless millions
of human beings alive today have
witnessed the collapse of the berlin
wall the end of the soviet union and
astonishing human achievements for man
walking on the moon to landing a
spacecraft on a comet but other
watershed moments may come and go with
no immediate recognition in our
collective consciousness in the
theoretical sciences some of the most
profound and innovative breakthroughs
have come from individuals who are far
from household names for some of these
theorists even as science discoveries
have confirmed their models the
significance of their work eludes
institutionalized science in the early
20th century the Norwegian
experimentalist Kristian Birkeland

hypothesized that charged particles from the Sun were the cause of Earth's Aurora's although the scientific mainstream including the renowned mathematician Sidney Chapman ridiculed and dismissed Birkeland thesis several decades after brooklyn's death he was proven correct in 1970 the electrical engineer and plasma physicist hottest alphane received the Nobel Prize for his work on magneto hydro dynamics in his acceptance speech alphane decried the astrophysical communities theories about space plasmas he said it seems that astrophysics is too important to be left in the hands of theoretical astrophysicists who have gotten her education from the listed textbooks the multi-billion dollar space data from astronomical telescopes should be treated by scientists who are familiar with laboratory and magneto spheric physics circuit theory and of course modern plasma physics more than 99 percent of the universe consists of plasma and the ratio between

electromagnetic and gravitational forces
is 10 to the 39th power today
instruments measuring data across the
entire electromagnetic spectrum have
confirmed the theoretical predictions of
electrical pioneers such as Birkeland
and alpheaston's astonishing filamentary
structures permeate
the Milky Way galaxy rope-like
structures called Birkeland currents
connect the Sun to the earth driving the
Aurora's and profoundly affecting
Earth's climate and weather dry and
rocky comets discharge electrically as
they plunge to the sun's electric field
planets discharge like comets jetting
material into their upper atmospheres
the disconnected and electrically inert
cosmos of mainstream astronomy has been
falsified yet it seems that both
institutionalized science and popular
media have yet to receive the memo
countless billions of dollars continue
to be spent in the futile attempt to
confirm a falsified cosmology scientists
and ability to find elusive dark matter

particles or gravitational waves has done nothing to inhibit the astronomical expenditures yet history has shown that with no advance fanfare everything can change virtually overnight the space sciences may be on the cusp of a truly watershed moment we at the thunderbolts project are devoted to exploring the electrical nature of the universe among our chief principles are scientists highly trained in the fields of electrical engineering and plasma physics and every year our relationships with highly innovative scientists expand further into a truly interdisciplinary endeavor for more than a decade the thunderbolts project has operated with modest funding and primarily on the efforts of volunteers even with these modest resources we've produced for feature-length documentary films all of which are now available for free on the thunderbolts project YouTube channel we have created the ongoing video series space news from the electric universe we have developed scholarship programs that

enable students to attend our international conferences at little expense and now we present conferences which attract an amazingly diverse community of Inquirer's in growing numbers every day we receive thanks and encouragement from individuals who say that the adventure of the electric universe has transformed their lives today we ask for your help to assist us in improving and increasing our output on the Thunderbolts YouTube channel including more episodes of space news a regular podcast and video presentations on an increasingly diverse range of topics

tribute errors can subscribe for any amount with Rewards beginning at five dollars a month depending on the subscription amount our patrons will receive monthly rewards ranging from updates on the latest behind-the-scenes developments with the thunderbolts project to exclusive interviews with members or colleagues of the Thunderbolts team all contributions will

assist in our ongoing efforts to explore
and clarify the electric universe theory
around the bend or perhaps before our
eyes and too close to see a watershed
moment approaches together the electric
universe community may now have the
power not just to witness history but to
change

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info according to a new report the latest data from the NASA space probe Voyager 1 has left scientists without a working model for the outer solar system NASA scientists recently concluded that Voyager 1 may have reached the outer boundary of the solar system called the heliopause

however the scientists were met with a surprising discovery the solar winds surrounding the spacecraft had come to an inexplicable standstill this was a surprise to scientists who had expected the solar wind to be directed laterally like water hitting a barrier

why is this discovery so surprising to NASA scientists and how does this affect our understanding of the Sun

the news came out that NASA's Voyager 1 indeed had gotten through the the boundary of the solar plasma which most people call the heliopause what they discovered was that the wagger was no

longer seeing any rapidly moving solar
wind particles the the particles that
they were observing had essentially died
out to almost zero and there's a very
interesting plot that they issued with
their news and I don't think there is
anything in the standard model that
would account for that they expected the
solar wind maybe to go reach into some
reaches some sort of a wall and then
divert change direction go off in a 90
degree angle or something but they
didn't expect it to just stop the
electric universe model predicts a
reversal of the sun's electric field as
a space probe approaches the
Heliospheric boundary this boundary acts
as a virtual cathode in relationship to
the Sun as the anode in a electrical
exchange the charged particles from the
Sun will not be deflected laterally as
the standard model predicted but the
solar wind will simply cease the e model
certainly predicts there to be an
electrical virtual cathode out there at
the in that neighborhood and the all of

the data that NASA has just released
this week absolutely confirms that I
mean they couldn't be more consistent
with what our predictions have been
the electric universe model of the Sun
has been developed over many many years
is essentially that the what we are
living in is something very analogous to
almost akin to a plasma discharge that
has been done in plasma laboratories for
the better part of a century now with an
anode at one end and a cathode at the
other and you have certain
plasma structures in there like the
anode glow and the and the corona and so
on and that's exactly what we are seeing
the the standard model says no no this
is not electrical this is all having to
do with winds and pressures and
atomic energy and that sort of thing but
they really don't want to talk very much
about electrical processes and we do and
this latest data says that no I can't
put it any other way that the electrical
model is correct there indeed is an
electrical boundary out there consisting

of a wall of electrons which is what we
have been wall and I and several of us
have called a virtual cathode we've been
calling it that for years and I think it
turns out that we are we are correct if
the Sun is at the center of a
Heliospheric electric field many of the
sun's most puzzling features may now
have a coherent explanation this may
also explain why so many recent
discoveries have presented mysteries for
solar physicists one of the most
important ones because of a paper that
was published by a fella boy whose name
is Hana Shoji and he had two or three
cooperative workers and with him
essentially disproves the idea that
there can be a convection zone on the
Sun

the standard model of the Sun says
there's a there's a fusion reaction in
the middle and there's a radiation zone
where energy is radiated away from that
fusion zone and then after a while about
halfway out to the surface of the Sun
the energy becomes transported by the

convection process which is matter moving in response to a temperature gradient and Hannah Soaky's investigation absolutely says if mankind has learned anything about fluid flow over the last hundred years about convection especially convection is not possible in that area of the Sun so that was a dagger through the heart of that vampire I mean there is no way that that standard model can survive the if Hannah Sookie and his colleagues are are correct the other one is how round the Sun is it's almost a perfect sphere and if it were as the standard model predicts it to be it should not be that round the course they see it's always been a problem for standard model is so why does the Sun rotate so much more rapidly at its equator than it does at its poles one of the big problems seems to me that has never really been answered by the standard model is why does the Sun have a corona at all why is it there in the first place it serves no useful function if the Sun is just a

fusion furnace I mean it's their their
model is if the Sun is like a big wood
stove except it isn't burning wood it's
burning hydrogen and turning it into
helium and so fine if that's the way it
is then what is that glowed we see out
there that electrical plasma discharge
that we call the Sun's corona why is it
there

for continuous updates on space news
from the electric universe stay tuned to
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on the surface of today's most
well-studied comet we see fields of
rubble everywhere from great boulders
down to gravel sand and dust a surface
littered with debris but was not
supposed to be there is just to boldly
present why would an evaporating clump
of ice and dust look more like the
debris strewn surface of Mars than any
comet that scientists ever dared to
dream of the debris of 67p will force a
confrontation with fundamental
assumptions for proponents of the
electric comet this is an open
invitation to pose the unasked question
is there a logical evidence-based
connection of the 67p rubble field to
the origins of the comet as to its birth
as a comet it's only reasonable to see
the rubble field in such terms because
the tiny nuclei of comets are not
appreciable attractors the vast
emptiness of interplanetary or
interstellar space picking up just one
Boulder in a million years would be a
remarkable feat but those who have

explored the electric comet hypothesis
know quite well what the rubble field is
telling us the comet was born in intense
electrical exchanges between planets
when planets moved on vastly different
paths than they moved today within the
electric universe community researchers
have across several decades explored
pervasive evidence for planetary
instability and violent close approaches
of planets in the not so distant past
seen in electrical terms at it's very
birth 67p was immersed and debris from a
planetary surface even the nucleus
itself looks like a jumble of debris on
a large
scale what we see are massively
disordered and fractured blocks
constituted of rock and apparently no
ice at all along the towering cliffs of
67p we see the telltale signature of
geological strata of course that would
be one of the first things to look for
wants the idea of violent removal from a
planetary surface actually registers the
visible straight has seen so clearly on

separate fragments of 67p have no consistent alignment with that of other fragments by all indications massive blocks of material some of it looking very much like mountainous terrain were removed from a rocky planet to form a conglomerate on a grand scale and that's what the electric comet hypothesis has always maintained crustal material torn from a planetary surface and intense electrical exchanges between planets with extreme selective heating and significant electrical fusing of the removed debris it's the planetary origin of the comet that underpins our prediction of a host of complex silicate and clay materials that would not be expected or even possible in the deep freeze and vacuum of remote space such materials would be common on the surface of a rocky planet in particular a planet in the habitable zone of the Sun that's why we so eagerly await the reports on ejected dust from 67p we expect the presence of complex crystalline structures not the rudimentary Stardust

of popular comet theory not the residue
of an imagined nebular cloud a billion
years ago but rather the residue of
planetary catastrophe recorded just a
few thousand years ago by humans on
earth
you

well thank you once again for enduring
me I guess this is three times now
it is a privilege to talk and to have an
opportunity to address you about the Sun
I'd like to dedicate this talk to my
mother checking in and actually she
maybe like a lot of our mothers taught
me the most important lesson and we're
all trying to learn lessons here but the
lesson she taught me on her knee was to
love now when we consider the Sun
currently it's viewed as the gaseous
plasma and I'm going to advance that
from the photosphere down or - after
hearing David's talk last night from the
photosphere in I didn't hear the whole
talking force which is the part but from
the photosphere in the Sun is condensed
matter and in the corona and the
chromosphere you have a combination of
condensed matter and plasma now the
first proponent actually of the gaseous
Sun was Herbert Spencer he was a very
prominent evolutionist his works were
largely ignored by astronomers but he
got into quite a few little scuffles and

if you're interested in the history of how the Sun became a gas the citation is listed here but the real person who gave us a gaseous Sun actually was father Angelo secchi he was a just a spectacular astronomer and if anybody has the chance online you can see his books lissa lay there in french and but even if you can't read the French look at the figures they're phenomenal and also LV Fay so the Sun really became a gas in the minds of these men in the 1960s and many prominent men of the figure of the time in physics so we can say that around 1965 is when the idea that son was a gas was really born now for Herbert Spencer it wasn't fully a gas it was a kind of a bubble was a gas inside it was condensed matter outside for Fey and secchi the Sun was a gas that had floating solid particles on the photosphere because they wanted to have the thermal emission spectrum but what happened with Fay is something quite important it's here that the Sun lost

its surface so when you talk to an astronomer they tell you well the Sun doesn't have a real surface it's an optical illusion and of course we can use mathematics to justify that but the idea actually goes all the way back to LV Fay in an article he wrote a name owned in 1865 which I translate here for you so then the exterior surface of the Sun which from far appears so perfectly spherical is no longer a layered surface in the mathematical sense of the word the surfaces rigorously made up of layers correspond to a state of equilibrium that does not exist in the Sun so surfaces do not exist in the Sun this limit is in any case only apparent so since in 19 1865 we've thought that the Sun does not have a surface now actually some observational astronomers didn't agree with that and there were arguments about the Sun did it have a real surface or not you could find papers into the 1900s until then there were papers by Schuster Schwarzschild and of course Eddington and the Sun then

became fully gaseous or been viewed mathematically as fully gaseous and the observational astronomers just lost that biodome so today if you look at the present model of the Sun we have a core and in the core it's thought that all the photons are produced and why do we know that because of kirchoff's law of course I just showed you that that is no longer valid you cannot produce photons in the core of the Sun and then we have other layers of the radiation zone the photons are leaving the core and they're radiating out then we have convection zone and eventually for the gaseous on it takes millions of years so photons to finally escaped here and give us an emission spectrum now this can be justified using Stefan's law the center of the Sun being very very hot if you say that the amount of photons that you get moves with temperature to the fourth and you really believe that the surface here is at five thousand Kelvin and that's temperature to the fourth you'll see there's an enormous amount of

photons produced here so this has to be considered enclosed and that's how they felt that the Sun could follow kirchoff's law that it could be considered enclosed now the question for us is does the Sun really have a surface and there's so much evidence about it and people have said it a long time ago there's no question the Sun has a surface and as soon as it has a surface it cannot be a gas so we have prominent prominences and coronal mass ejections that can rise from the surface and come crashing back down they represent real structures and they are not optical illusions so this is a little movie here and you're going to see a coronal mass ejection it comes back down and it crashes onto the Sun and when it does you see all these bright points lighting up so this is a collision that's taking place there is a boundary there it's not just an optical boundary it's a real boundary so I'll let you see it again now here's another line of evidence that the Sun has a real surface we have

Carrington rotation on the Sun we've known this since the 1800s so the Sun exhibits differential rotation on the surface as first highlighted by Carrington when he was observing sunspots but the corona winds are orthogonal to this direction and because there are transverse flows in all this requires a physical boundary so this is one of the simplest proofs you have because you have this orthogonal displacement of matter you must have condensed matter there a gas cannot do this so another example was high-energy flares where it was discovered that if you look if you get a very very high-energy flare like greater than 10 mega electron volts they always occurred they were found to occur always towards the limb so this shows that this is an anisotropic process and again evidence so in it anisotropic means it doesn't occur in all directions in other words you're not sending x-rays out in all directions in space its preferential in one direction

and that requires that you have a surface now to explain this the gaseous models say well look we have magnetic field lines that are coming in and then we have a mirror plane and then the mirror plane causes a reflection and then this gives us our directionality of course they're mirror plane is my surface now here this is an example from x-ray so if you look at the Sun and x-ray what do you see if you look at the line intensity the line intensity is about one over the entire radius of the Sun over the entire disk except at the limb exactly at the limb as soon as you cross a surface the line intensity doubles and if you think about that that means you're sampling twice as much atmosphere all of a sudden and this shows that you have a discrete surface when the disc ends so we see it an x-ray basically at every frequency band we see it now this is a nice simple line of evidence and some of you know that I took an ad out in The New York Times in 2002 and said the Sun was a was a liquid

people really got a laugh out of it and
I took a lot of heat
of course the article the New York Times
article I did that under the advice of a
very
senior professor which chooses to remain
hidden from history but this was one
thing that I cited in that New York
Times article this particular figure and
this figure is important because it
shows transverse waves on the Sun so this
is a Doppler image you're seeing a flare
coming out in white at you in the upper
left
so the as the flare comes out you start
seeing transverse waves produced on the
surface and transverse waves can only
exist in condensed matter gases cannot
sustain such waves and this by the way
is over millions of meters and so the
wavelength here is millions of meters
this is definitely not the gas now one
of the things is so they're physicists
are troubled by limb darkening and how
do they explain it and I'll show you
that in a minute

but the Sun is brighter at the center
and then it darkens as you go towards
the edge as you go towards the edge of
the disk it looks darker to us okay for
the gas models we justify this using
optical depth but I'm going to explain
to you that this is actually a lattice
effect caused by directional spectral
emissivity which is well understood in
the laboratory we don't need optical
depth to explain this so in the gas
model what are they saying
when you're looking straight at the
center of the disk you're looking deeper
into the sun so it appears hotter
because of the laws of emission tells
you that that's going to look hot if you
look deeper so therefore it's brighter
but when you look at the edge of the Sun
you're not looking as deeply so now it
looks cooler okay so this is the optical
depth argument which doesn't work and
you could read this paper again one of
the reasons this doesn't work is because
Kirchhoff's law is not valid so you can't
get blackbody spectra the fact that you

can see differentially into the Sun
shows that Kirchhoff's law cannot hold
so anyhow you could read this paper now
I've explained it this way by saying
that the Sun has a true lattice so when
you look at the photosphere it actually
has not only a true lattice I want
specifically this lattice
I want a lattice where the hydrogen
atoms so the Sun is primarily made out
of hydrogen and I want to arrange the
hydrogen in this structure and the
reason is is because this is the
structure the graphite adopts so
hexagonal layers one on top of the other
now I didn't propose this structure in
2002 but I have been saying the Sun has
been a liquid since 2002 at least the
photosphere and that has been as I first
said in the New York Times than other
articles and papers most of the work
you'll find from from 2011 until present
I think I produced 20 papers last year
all I did was sit on my computer and
just write write write so you can find a
lot of papers and the most important

paper to read which condenses everything
is this paper on a building block for
liquid Sun and another paper 40 lines of
evidence for condensed matter so what is
directional spectral emissivity well
this is actually important to this
society the emissivity of a material
depends on whether or not it's a
conductor so if it's if it's a
nonconductor it's it's normal emissivity
will start high so it's up here and then
as you increase the angle of viewing the
emissivity drops if it's a conductor the
normal Mississippi is low and then as
you increase the angle the emissivity
goes up and then finally drops you could
read about that in the papers described
below now here's an example from the
emissivity of granules now granules of
course are substructures on the Sun and
they're there what really what most of
the surface is made out of and granules
are best explained by Baynard convection
that's a surface driven process so if
you don't have a surface you're not
going to get Baynard convection so you

have convection up flow coming through the center of the granule and then it recedes on the edges okay so it looks like a little mountain so what does that mean well if we go back to our plot again what we know is that on the angle when it goes down we're increasing the angle so I it goes down it's going to be dark so we're going to have these dark inner granule lanes and that's exactly what you see it looks dark you have these dark inter granular LANS now in the gas model they say well that's because the temperatures are different this temperature is different than that one these are all different temperatures every time you see a different color I say no the temperature is pretty much the same or the energy content is pretty much the same but the emissivity changes because you've changed the direction that you're looking at it here's an example from sunspots now for hundreds for a hundred years now they've been telling us that sunspots are cooler the

Umbra of sunspots are cooler now the first thing about sunspots is there a manifestation of a real structure they're not optical illusions so the surface is an optical illusion you surely don't can't have a real structure they are magnetic in nature this is well known and that's indicative that they're highly conductive they're emissivities are best explained by directional spectral emissivity in conductive materials not solely by temperature so you're not really looking at a temperature effect here the reason that the sunspot appears dark is seen in the book in the lower figure here see these materials are at the same temperature but this one's a conductor so it's emissivity is going to be low just like silver has a low emissivity right so that's why the sunspot appears dark it's not because it's cooler it's because it's more conductive now this one is going to be harder for you to see I couldn't find a good slide of a faculae but for you know what a faculae look like

you know that we see the FAQ you lie you
can't see them on this on the center of
the Sun and they start appearing more as
you move towards the limb they become
very obvious towards the limb you look
at this figure carefully even on the web
you will see it so faculy our
manifestation of real structure they're
not optical illusions they have elevated
magnetic fields which also indicates
that there are there are formed from
conductive materials there emissivities
are best explained by directional
spectral emissivity again in conductive
materials so again we're looking at the
sunspot at the center you don't see it
much but all of a sudden its emissivity
increases and now it starts looking
white to us and then as it goes towards
limb the emissivity drops now to explain
this the gas models have to say that
faq' lie I have hot floor
hot balls and cool floors well the floor
can't be cool because you're it's
supposed to be hotter as you go inside
the Sun when you look at the limb

darkening argument and also how do you get a hot wall in a gas so it's very very simply explained just by going back to solid state physics and let's look at how conductors and non-conductors emit and this general rule can explain all these phenomena using a single explanation now as I've said in my talk on kirchoff's law the Achilles heel that the gaseous Sun is this spectrum there is no way that gaseous Sun can produce a continuous solar spectrum but nonetheless even in 1865 people were saying that the continuous spectrum of the Sun can be produced by a gas and remember ball firts Stewart he's the person who did Stewart's law so remember Kirchhoff was wrong about his law Stewart was right but Stewart wrote this paper saying that a gas could produce the continuous spectrum of the Sun so from all this it was inferred that the luminous photosphere is not to be viewed as composed of heavy solid or liquid matter but rather of the nature of either a gas or a cloud so he says a gas

can account for this that spectrum and

that's not correct

here's another one from 1869 Franklin

and Lockyer I mean for people who know

their signs they know that these are big

names the gaseous condition of the

photosphere is quite consistent with its

continuous spectrum and this condition

has the possibility of this condition

has already been suggested by Stuart

Lowry and delivery now I have this slide

the father of the gaseous son one of the

fathers of the gaseous son now it's

interesting that I call him a father of

the gaseous son because if you read this

quote you'll see that Kirchhoff actually

believed that the Sun the sun's

photosphere was either solid or liquid

he didn't believe it was a gas at all

but the problem is is that Kirchhoff

gave kirchoff's law and when he did when

he wrote this law which we just

discussed in the previous talk he

permitted the astronomers to make the

son of gas

so according to Kirchhoff's law as long

as the Sun can be considered to be enclosed then it must contain black radiation even if it's gaseous obtaining a thermal spectrum is not a difficulty okay

yet was kirchoff's law actually valid do arbitrary cavities really contain black radiation and if so why are all the laboratory black bodies always constructed from nearly ideally absorbing materials so clearly this wasn't right as we discussed in the previous talk now I didn't give this little experiment just turns out you know this this talk was ready first and then I was able to give the talk on Kirchhoff and I was only going to discuss this one in this talk so I'll discuss it now so here's an experiment proving the kirchoff's law is not valid so what we're going to do is we're going to have an inner box and an outer box in the inner box we'll make it out of a perfect conductor its emissivity is going to be zero its reflectivity is going to be one we leave that box open

in the outer box we're going to make it
out of a perfect absorber its emissivity
is going to be one now we're going to
take that outer box and we're going to
plunge it into a helium bath now the the
inside box is sitting on the floor or
the outer box now when I put that outer
box into the helium bath what happens
the whole thing is going to go to 4
Kelvin now the outer box being a perfect
emitter is going to give me photons at 4
Kelvin so I'm going to get a blackbody
spectrum at 4 Kelvin now what do I do I
close the inner box I get rid of the
helium what happens everything goes up
to room temperature now when it does
what's going to happen through
conduction the inner box using
conduction is going to go up to 300
Kelvin but now that door is closed and
it's got 4 Kelvin photons trapped in it
it cannot produce 300 Kelvin photons
because it's emissivity is 0 the outer
box of course will produce 300 Kelvin
photons and so it'll become filled with
black radiation but remember kirchoff's

law said both boxes were supposed to contain black radiation at the temperature of interest and now they don't

so kirchoff's law is broken arbitrary cavities do not contain black radiation and of course as I mentioned my Kirchhoff talk these papers have all been submitted and the last one is not just submitted now it was I submitted it this week and it was immediately published so that's already published so the gaseous model of the Sun cannot account for the thermal spectrum that is the only proof that's required to establish condensed matter I don't need I wrote 40 but you actually only need this one I really don't care about the others because this one has a lot of physics in it but we'll throw in the others because sometimes people can't understand this one but they see the ripples on the Sun and they can understand that one now who are the notable advocates of a liquid Sun the first was Kirchhoff himself and

unfortunately his law undid it Lord Kelvin was also a prominent advocate of the liquid sun and this is reviewed in this paper it's why I think you guys would enjoy the history paper of how the Sun became a gas but the most notable advocate of a liquid Sun was James Jeans and he was a phenomenal scientist and the story of James Jeans of Sun is described in the follow-up paper to the first one now there was an interesting character called Hastings and Hastings he wrote in 1881 he wanted graphite on the Sun but he knew he couldn't get it so granting this we perceived that the photosphere contains either solid or liquid particles hotter than carbon vapor and consequently not carbon because he knew he he couldn't get carbon but at any rate we are sure that the substance in question as far as we know it has the properties that are similar to those of the carbon group so he wanted something that behaved like carbon but he knew he couldn't have it in 1881 so this guy was pretty pretty

smart back then now genes he had a different approach why did the liquid Sun die he thought all the stars were liquids and the reason it died is that he thought the Sun was made of uranium or radium well when it was proven that the Sun was mostly made out of hydrogen of course he was out of a building block but he did properly recognized the phase and he says there's only two possibilities for stars they can only be liquids or gaseous there's no intermediate okay one of the first points to make is that the Sun is condensed matter it has a true surface and solar emissivity must be accounted for by the presence of a true structural lattice and here's my nice New York Times article cited for you guys now remember you know I was trained as an inorganic chemist and you learn in chemistry that hydrogen is the little cousin of carbon so isn't that convenient now right at the time the genes was losing his building block in the 1920s and had to abandon his liquid

son if he had read Whitner and
Huntington's paper he would have had the
solution because Wigner who is a Nobel
Prize winner in physics said that at
high temperatures and pressures hydrogen
will become metallic it'll assume a
structure which will be condensed so
let's let's read exactly what he said
the objection comes up naturally that we
have calculated the energy of a
body-centered metallic lattice structure
only and that another metallic lattice
may be much more stable we feel that the
objection is justified it is possible
however that a lattice like lattice has
a much greater heat of formation and is
obtainable under high pressure Diamond
is a valence lattice but graphite is a
layered lattice so here what happens is
Wigner and Huntington in 1935 tell us
that hydrogen can assume the graphite
form then Neil Ashcroft which is one of
the top condensed matter physicists in
the world and a great authority on
metallic hydrogen wrote a paper which he
forwarded to me in 1991 and in that

paper Neil wrote on a little reflection
it is apparent that all the quantitative
remarks just presented on the band
overlap state in dense hydrogen by the
way he just recently forwarded to me
on a little reflection it is apparent
that all of the quantitative remarks
just presented on the band overlap state
in dense hydrogen could have been made
with minor modifications about graphite
the tetravalent hexagonal band
overlapped one atmosphere semi-metal
accordingly it is instructive to examine
the known optical characteristics of
graphite in the visible range graphite
appears black to some extent these
characteristics are reported to be
shared by very dense hydrogen one
possible choice for the structure of
dense hydrogen consistent with hexagonal
symmetry is actually a graphite like
arrangement and then lo and behold some
people are working while the rest of us
are sleeping and this person this group
actually recently created dense hydrogen
with a with a graphene structure so the

spectral signature of the strongly interacting hydrogen molecules is consistent with the presence of graphene like sheets a configuration predicted in early calculations on dense hydrogen so now we have something quite close in the laboratory so again this is the structure that we're looking for now what have I said I said the photosphere is comprised of metallic hydrogen which has assumed graphite which has assumed the graphite like layered hexagonal lattice the inter nuclear distance is within this lattice or such that the material is semi metal not very metallic not highly conductive so this photosphere cannot be highly conductive why do we know that we know that from its emissivity remember its emissivity is high at normal and then drops with angle so that means you can't make this a conductor okay but as you go inside the Sun then there's compression and so the lattice gets compressed and sunspots fac' lie and the convection zone are comprised of metallic hydrogen

which has adopted the same graphite
light layered structure but this time
it's type 2 in this case the inter
nuclear distance is decreased
much the material such that the material
becomes highly conductive and able to
support both strong magnetic fields and
the solar dynamo which cannot be
correctly explained in the gas model so
we have a solar dynamo how do we get it
to get a dynamo you need a combination
of conductors and insulators you can't
get that in a gas the solid solar core
is likely to be composed of metallic
hydrogen which has adopted a body
centered cubic this was first proposed
by Professor Sewall issue Maru the
corona possesses both free ions and
atoms and sparse distributions of
metallic hydrogen which are type 1 which
have been ejected from the solar
atmosphere into the solar atmosphere
from the body of the Sun so there's
emissions I just showed you a coronal
emission in I mean a coronal mass
ejection in the movie so the Sun is

sending stuff up into its atmosphere the chromosphere possesses both free ions and atoms and sparse distributions of dense hydrogen but that is not metallic hydrogen its molecular in nature and it results from the condensate and it results from condensation reactions in this region and the transition zone does not exist so this is what we're saying in this model the center if you look at the center of the Sun I think the body centered cubic makes the most sense for the structure and of course this is open to debate you can come up with your own ideas but I think this one makes the most sense now in the photosphere we have the hexagonal layered structure with hydrogen if you go inside the sun in the sunspots and the convection zone we have the same structure but now it's compressed see this this the inner nuclear distance is larger here than here so this is more compressed when it goes compress the conduction gets very good the quantum conditions are fulfilled for good conduction so this

becomes a conductor whereas here the quantum conditions are not fulfilled and this could even be an insulator or semi metal now in the chromosphere we'd have a structure that might be something like this this is isn't

- crafts and paper not for the Sun but generally in reviewing dense hydrogen so he has a hexagonal structure again but now the hydrogen's are molecular in nature so what happens in the Sun is that you're actually fighting to recapture the hydrogen in the chromosphere and then that enters the Sun and it gets recompressed into metallic hydrogen so the continuous spectrum so the chromosphere has a continuous spectrum and because it does that's direct evidence that this region contains condensed matter the chromosphere is likely to be a site of hydrogen recapture and condensation in the solar atmosphere as evidenced by its emission spectra the chromosphere thereby acts to help conserve the mass of the Sun by harvesting some of the

atom hydrogen atoms and protons which have been released into the solar atmosphere so here's an example of I just love stumbling on just a beautiful paper you know you're not really looking for it but it just falls right into your lap like this paper by Earl who won a Nobel Prize in Chemistry I don't think for this work but here's an example of condensation reactions and clusters so you have two metal clusters with different amounts of atoms in them and when they combine they make an activated cluster that's why there's a star there and then it relaxes that activated cluster relaxes by emitting a lone atom within activated state and then that atom then is deactivates by emitting a photon so we know that in the chromosphere we have light emission okay we have emission lines from many many types of cations and atoms and it will adopt the same ideas so what we're going to say this is the simplest idea we can adopt we have hydrogen's of different numbers of hydrogen's in both groups

they come together in activated form
that gets deactivated you lose a
hydrogen and the hydrogen you lose is is
active and then that activated hydrogen
then gives rise to the light now this
can be if you read the paper where this
is described you will see a very
beautiful explanation

why we have helium triplet lines in the
Sun that are so intense and and in order
to get a helium triplet line remember
you need about 55 electron volts to get
those lines and the chromosphere is only
supposed to be at 5,000 Kelvin so how do
you get 55 electron volts there well
what they what the current models say is
that well

the triplet lines of helium are excited
by photons coming from the corona
they're selectively the selective
photons come just with the right
frequency and excite triplet helium but
if you read my paper you will see that
helium is a great way to harvest
hydrogen and it's known that if you have
helium and hydrogen mixtures when you

have such mixtures you get ions you get
helium hydride cation and you can get
activated helium hydride and I believe
we have both in the Sun these things are
ubiquitous in mixtures of hydrogen and
helium now here's an example for
magnesium you might ask well why is it
that it's magnesium two lines that we
see why do we see calcium two lines why
don't we see the calcium three lines
which of course the calcium three lines
correspond to calcium having lost two
electrons right so why is it that we
don't see the calcium three lines why do
we see calcium two well here's an
explanation from condensation reaction
the same kind of scheme with magnesium
so now we know magnesium hydride is
known to exist in the Sun on the disk
and in the sunspots so what happens is
that magnesium hydride then condenses
with a condensed hydrogen structure and
then donates a hydrogen that structure
becomes active it kicks it donates a
donates a hydrogen it kicks off the
magnesium the the hydrogen structure

grows by one hydrogen atom the magnesium
is now active and now you get an
emission line this by the way I had
missed something very important in these
reactions and my young son who's an
undergrad at OSU said dad and I didn't
listen to him he kept telling me dad
you're missing something and three times
he tried to tell me until finally he
convinced me I was missing something you
could read my son's paper
it's a beautiful addition to this
problem now

how about the corona well we know that
the corona has white light it emits an
white light now how do they explain that
in the gas model well what they say is
we have relativistic electrons in the
corona and those relativistic electrons
are scattering the photosphere 'ok light
now in reality we know that the que
corona is becoming the spectrum of the
que corona is indicating that the
temperature is dropping with distance if
you look at the continuous spectrum of
the que corona its reddening with

distance that means the temperature is dropping away from the sun but all of you know of course that we can have iron 25 up there let's say quite high up one radius up from the solar surface you can have iron 25 you have these enormous ionization states how do you get them so first the continuous spectrum of the corona does not represent photosphere 'ok light scattered by relativistic electrons it constitutes direct evidence that the corona is both self luminous and relatively cool an apparent temperature associated with vibrational degrees of freedom which are no greater than that of the photosphere and which decreases with elevation not increases the presence of highly ionized species in the corona are not associated with temperatures in the millions of degrees but with the presence of condensed matter in the corona which possesses an Alve ated electron affinity which can strip the electrons which can strip the atoms of their valence electrons so you've got metallic hydrogen there it's

starving for electrons and if you're an unfortunate iron atom that comes near it you're going to get stripped of all your electrons the corona is the site of electron recapture and it works to help maintain a neutral solar body now one of the big problems in the Sun has to do with the solar wind and I want to say on time here has to do with the solar wind and the solar activity if you ask your solar physicists why does the Sun go active why do we have a solar wind now the solar wind I discuss it in my paper and I consider the current explanation a violation of the laws of thermodynamics and you could read the paper so basically what we have is is that somewhere outside the Sun in the corona in the atmosphere of the Sun you have to drive energy processes onto the Sun so you get flares why because you have magnetic energy transfer onto the surface so now I got energy flowing towards the Sun but in the solar winds I have to have heat going away from the Sun well you can't have the heat going

in both directions it's either going towards the Sun or it's going away from the Sun so their explanations for solar wind doesn't work but if you read this paper liquid metallic hydrogen 3 what do you see I also wrote a paper on helium in the Sun because of course the solar physicists are telling us that the Sun actually has a reasonable amount of helium and as you know helium is one of the three pillars for the big bang right so the microwave background is one the redshift is another and helium is the third so helium in the Sun is very important to the astronomers because it's also linked to cosmology but look at what the Sun is doing with the cycle what is it doing when it's quiet so you look here and at the at the top here the top of the figure in 1996 and 2006 that's when the Sun is quiet so when the Sun is quiet there's hardly any helium two lines on the outside it's quite silent but when it goes active it starts expelling helium so when why does the Sun go active because it's degassing

it's non hydrogen elements it wants to
kick everything out so when the Sun is
quiet at the poles you have coronal
holes at the and in those coronal holes
material is leaving the Sun at constant
rates and so now the Sun is degassed
it's able to de gas its poles when it's
quiet but when it goes but it can't do
anything about the equator any any atoms
that are made that are non hydrogen made
in the equator of the Sun they're
trapped they can't get out why and I'll
show you this in a minute so because
they can't get out I'll show you in a
minute so because they can't get out the
Sun has to go active to D gas the
equator and so that's why we see the Sun
going active so here's an example
we know from graphite again graphite can
make intercalate compounds since I'm an
inorganic chemist I know this okay now
how does an intercalate compound work
well what happens is you have your so
we're going to assume that our metallic
hydrogen which can have the same
structure as graphite also can do this

now what I'm saying is that because inside the Sun you want to keep these metallic hydrogen bands conductive you want to you want to keep these layers conductive we've got electron flow going through there so if you have a nuclear reaction you can you create an atom that's non hydrogen what happens is you kick it into the intercalate region so you end up building these atoms in the intercalate zone and then you have these hydrogen sheets well now what you have now you have your insulator that you need for your for your Dynamo and you have your conductor okay but the Sun if you look at the elements that are in this region these atoms they can't translate in this direction they cannot go through the planes so what but they have almost free motion in this region so in the poles if you orient the poles this way now those atoms can go out and so now during the corona went during the when the period when the Sun is quiet you have atoms escaping at the poles and in the

equator you can't do that because now
you say so I almost have to draw this
for you but in the in the equator the
the hydrogen planes are on the surface
of the Sun they're aligned parallel to
the surface of the Sun so now the atoms
are trapped inside so what happens is
that when you get activity these atoms
can change from a solid phase to a gas
phase and when they do that pushes the
layer up so that's why we get solar
activity and the atoms leave okay so the
Sun tries to D gasps its equator and
that pushes the layers up and this is
why we were getting the sunspots now
there's something very interesting about
this and that is that it this idea very
easily explains why do we get red giants
the reason you get red giant
says you have a star it has a real
lattice it has a hydrogen lattice and
that hydrogen lattice doesn't want the
other elements so it starts making these
layers and all of a sudden all these
layers decide to go in the gas phase at
once and all of a sudden path you're

going to get a red giant now if you had
all these atoms in one region of the Sun
so let's say for instance the Sun has
managed to put these atoms in one layer
there's a lot of non hydrogen atoms in
one layer that are in the solid state
and all of a sudden these go to gas
phase

now you'd get a supernova so I'd like to
acknowledge some people my son Luke he
does all the drawings for my papers and
all so that the one paper where he
corrected his dad we didn't correct me
he added a new idea that I had missed
and so I'd like to acknowledge my son
Luke I have another son also who
contributed the paper to this Bernadette
Carson cenar 'test and she's done lots
of sketches for me all the Graphite's
that you see of course my own department
as you know this started from the a
Tesla scanner and I went into this hard
for a lot of people to understand but my
department has kept supporting me for
all these years and I'm grateful for
them and of course the editors of

progress in physics without that journal
I would have never been able to publish
many of these ideas and they have come
up with a book inside stars and of
course there's a lot of astronomers that
are working out there and they're
getting fantastic data for us and I'd
like to recognize the data that I used
both from Soho and the Swedish solar
telescope thank you very much

For thousands of years, we humans have
gazed up at the sky and wondered,
looked for messages, looked for
keys to deeper understanding.

But perhaps the
cosmos is laughing.

Do we really see the universe as it
is or as we thought it should be?

Throughout the space-age,
astonishment and surprise
have been the hallmark
of scientific progress.

Everywhere we've looked, whether
close to Earth or in remote space,
we've uncovered things
forbidden by our theories.

What we expected to
find, we've not found.

And things beyond all expectation
have become commonplace.

In science a surprise
is always good news.

It prods us to see things differently,
to ask more pointed questions.

One discovery in space
inspires another,

and beneath it all today is the
encounter with the one thing
our theories didn't allow --
intense electromagnetism.

Electrical and magnetic
energies in the vacuum of space
beyond anything
astronomers expected.

That's what has happened as astronomers,
physicists, and planetary scientists,
have come face to face with
the Electric Universe.

Please join us in this journey to
the frontiers of discovery
at Thunderbolts.info

Breaking News: EU Update

Well, they say that if you have
a dream, the universe provides.

And I must say, the universe
has provided us here tonight
because of the Rosetta mission
and the things that have been
broadcast in the last day or so.

So some of the material

here was actually,

I copied off the web
yesterday morning.

So this is really breaking news.

And it's not your usual breaking news
because it is critical of the news.

Before I give you

those news headlines

which you can see flagged by the
image here of the comet 67P,

I'll give you a little
bit of introduction.

As all of you know now, Dave Talbott,

Don Scott, Ev Cochrane and I

got our initial inspiration

from Velikovsky's thesis

that the solar system has

a recent dramatic history.

And that unimaginably

powerful electrical events

were observed in the heavens

by modern prehistoric humans.

The evidence for this

is now overwhelming.

My own passion since reading

'Worlds in Collision' in the 50's,

has been to understand the

science needed to explain

the mytho-historical evidence assembled

by Dave, Ev and Dwardu Cardona.

Dwardu is not with

us at this workshop

but his voluminous research and

treatment of evidence is a must-read.

It's difficult these days to keep

up with the pace of new discoveries

across all the sciences

but it's necessary due to the Electric

Universe's interdisciplinary foundation.

And the fact that

a real cosmology

must be more than mere astronomy

and mathematical speculation.

So it's satisfying to see
increasing numbers of scholars,
engineers and volunteers willing
to join the Thunderbolts Project.

The principal aim of this Electric Universe
workshop is to inspire and encourage
those who may become future
leaders in this great adventure.

Some say it is perhaps the
greatest adventure in history
because by recovering the
real history of mankind,
we gain a clearer view of ourselves
and our place in the universe.

And that clearer vision shows the powerful
role of electricity throughout the universe.

I can't stress enough how important that is
for our future in this Electric Universe.

So welcome all to the adventure
of the Electric Universe.

Robert Stirniman

Robert Stirniman says, "Of all the forces we
know there is none stronger than a paradigm."

And now we have the
power of supercomputers
to reinforce a paradigm

through virtual reality
to the extent that it enshrines established
myth and blinds us to other possibilities.

Nowhere in science is this
more evident than in astronomy
where a modern creation
myth has been forged.

Science has made the fundamental error of
discarding myths only to produce new ones.

The fact is that science can
learn a great deal from myths
and mythologists can learn
a great deal from science.

That has been the foundation
for the Thunderbolts Project.

Here's a topical example of
computer generated mythology
on behalf of the European Space Agency
for the Rosetta mission to comet 67P
Churyumov-Gerasimenko.

It shows that the aim is to
confirm what we already believe.

It is not testing a hypothesis, it
isn't considering any alternative
so the data will have to be
force-fitted into the myth.

That isn't science!

Once upon a time...

- Really?

This is a good one, I promise.

What is the key

to life on Earth?

- Water.

Water.

For a long time, the

origins of water

and indeed life on our home planet

have been an absolute mystery.

We began searching for

answers beyond Earth.

Where could all this

water have come from?

In time we turned to comets.

One trillion celestial balls of

ice, dust, complex molecules,

left over from the birth

of our solar system.

Once thought of as messengers of doom

and destruction and yet so enchanting,

we were to catch one.

So there's the myth.

Of course, the Electric Universe version

is wildly different and more interesting
as you will learn
over this weekend.

And the Electric Universe story has been
able to predict surprise after surprise
from space probes,
particularly comet probes.

This is crucial to verify the insights
of the pioneers of the Electric Universe,
Ralph Juergens and Dr.

Earl Milton
who proposed the basic model of electrical
interactions between a comet and the Sun
back in the 70's.

Now, what follows is a brief
statement from Jean-Pierre Bibring
who is the lead scientist
for the Rosetta lander.

Which shows the overwhelming
attachment to the myth of icy comets,
in the face of images of a comet
that looks like solid rock.

Oops, sorry, wrong way.

There is no ice at the top, so it's
covered by a mantle that we consider
is essentially made of organic

material. That's why it's very dark.

And this material is one of the key things
we would like to explore and analyze.

There is no ice on top

so it must be buried

under a thin crust.

Have you noticed how many astronomical
mysteries are buried out of sight

inside stars, planets,

moons, black holes?

Where you can speculate all you like

and postulate anything you like.

But I have some sympathy

for Jean-Pierre

because he has been misled by his

teachers and colleagues into thinking

that the mass of the comet equates

to the amount of matter in it.

Of course, because the measured,

so-called, mass of the comet,

suggests that it has only about a tenth to

maybe 0.25 the density of water.

But mass does not equate

to the amount of matter

as I'll discuss in

a later session.

Eyesight is our most important
sensory input in science.

If the comet looks
like a tortured rock
then that should be the first
assumption to act upon.

We've had plenty of prior warning
from looking at earlier comet nuclei.

But such is the power
of the paradigm
that we are incapable of seeing
what is right before our eyes.

It's a case of; it's not the things you
don't know that caused the problems,
it's the things you don't
know you don't know.

Before dealing with comet 67P...

Where are we?

Here, done that one, sorry.

Here we go.

Let's just go back and see what was found in the very
first comet samples from the Stardust mission.

It was full of
surprises, as usual.

In the "Science" journal of
the 25th of January, 2008,

Richard A. Kerr reported that
first, "Not a single speck of unaltered pre-solar
material was found by the Stardust mission."

Two, "Wild 2 seems more related
to asteroids than comets",
said cosmochemist Larry Nittler.

Three, "It's changing the
way we think about comets",
said John Bradley of Lawrence Livermore
National Laboratories (LLNL).

But it hasn't changed at all, as you
can see from the earlier material.

Stardust chief scientist

Don Brownlee said,

"Rather than preserving the
original ingredients of planets,

Wild 2 seems to be

loaded with materials

first altered by the great

heat near the young Sun."

It doesn't seem to occur

to these people that

they've always thought the

planets were built from comets.

It never occurs to them that comets

may have been built from planets.

Comet theory hasn't
changed one bit.
It hangs on to the
solar nebula model
but now with an ad hoc mysteriously
modified composition to match the data.

Because here, they shoveled the
hot material from near the Sun
out into the outer reaches where it
could be incorporated into comets.

This is a pretty messy
kind of theory.

But comet 67P here, from
10 kilometers distance,
looks nothing like an
ice and dust aggregate.

It looks like a piece
of a rocky planet!

Which is what I said some weeks ago on the
Space News on the Thunderbolts website.

And note the bright
spots up here,
towards the center
and upwards a bit.

The Electric Universe model of
comets says that comets are

complex bits of planets,
as you saw in that graphic
from Dave Talbott earlier.

The conjunction of two planets,
if they come close enough,
the electrical effects are to strip
part of the surface into space.

The talking of bright spots.

Here's comet Hartley 2 in 2010,
the comet rotates
every 18 hours.

It was reported... or before I do that,
I'll go through this list here.

This is some of the
things that were found.

The jet seemed to be issuing
from those bright spots.

The bright spots seem to be atop boulders
or surface projections — not fissures.

The bright spots are generally featureless
— not just high albedo surfaces.

And the jets issue orthogonally,
that is vertically from the surface.

Some jets on this comet you
can see on the dark side.

And one jet there where the arrow is,

seems to start and stop abruptly.

All of these are simple effects that you would expect from an electrical discharge but not from material issuing from inside the comet through odd-shaped vents and fissures.

It was reported also, the amount of water changed dramatically night by night and even within a single night in some cases, doubling in that time.

What surprised the researchers was this;

As the amount of water went up so did the amount of the other gases and as the amount of water went down the others did too.

The fact that the gases all varied together is somewhat puzzling because a large variation was found in the release of carbon dioxide relative to water, said the head of the science team, Michael A'hern.

Researchers think that chunks of water ice are glued together in the Comet's core by the

frozen carbon dioxide

which evaporates

before the water ice.

The carbon dioxide gas drags,

with it, chunks of ice

which would later evaporate to provide

much of the water vapor in the coma.

This is an extremely

complex model, and ad hoc.

In the Electric Universe

model, the gases in the jets

are produced by spark machining

of surface materials,

surface minerals rather.

So the gases all vary together.

The variation in carbon

dioxide, relative to water,

could be expected from the movement

of discharge points or jets

on a non-homogeneous

comet nucleus.

And it is that same

surface electrochemistry

that may account for the

extremely blackened surface.

It may be hydrocarbons

or even carbon itself,
but it doesn't have to be.

This is an opportunity for
garage experiment as to test,
using clay and rock as the
target for a discharge.

So here are some of the very
preliminary findings about comet 67P
that were announced early yesterday
morning at a press briefing
at the landing of the...

...the craft that was supposed to
fix itself to the comet's surface.

Hi, Eric Hand,

Science Magazine.

I was hoping to ask a question, I guess
maybe for Jean-Pierre or maybe Holger.

A geology question. We are getting
slightly conflicting information.

We were told, upon landing, that
we landed in very soft stuff.

And, you know, we see from
the rover's picture
you know, this very soft stuff with mobilized
dust right in the middle of site J.

But then we see these Shiva

pictures, maybe near a cliff wall,
and things that really
do look like rocks.

So I was hoping, one of you could
explain what these materials are
and how they can be explained by being
made by comet processes, thanks.

OK, what you are asking for is to try
to be ahead, one year ahead of us
because we made this mission essentially
to answer the question you're asking now.

So it's normal that we
don't have the answers
and probably the answer will demonstrate that
the question is not really well formulated.

When you say a cliff for example,
it has some resonance in our head
that the cliff is terrestrial
sort of cliff analog.

We don't think that we
have that sort of cliff
because the material is
very low density anywhere.

The density is 0.,
less than 0.5 globally.

So the idea of having a very porous

material at the very top came from that
to the idea that there is no reason to believe
that the crust is really a strong crust,
as we thought in the past, on a
very low density material there.
So that's why we thought that finally
with the first images we had
plus the Cosima measurement showing that the
floating grains were very fluffy, very porous
that we might have
that when we land it.

We are not saying that actually it's not
the case, it might still be the case.

You might still have some really
fluffy powder out of which
you were, after rebounding, again, the
ejection velocity is very low there.

So I will not be more
accurate, that's what I said.

What we have found has not
demonstrated that we don't have a crust,
it has not demonstrated
that it's a crust.

Are you satisfied?

Thank you.

I am very happy when you

seem not satisfied.

So I would follow you on that thought

that the rebounds of the lander

is an indication of a higher strength

material that was a surprise to us.

So with this picture of dust falling back

to the surface, building high porosity layers,

I would think we fail to

explain the rebounds.

So, but we have seen the variety of

surfaces there, this snowfield soft stuff,

and we have seen this rocky-

like but no rock stuff which,

which is perhaps a

higher strength material,

we also see stuff shining

through a dust layer

where the dust is wiped away

or following the gravity field

and exposing a higher

strength material

and this is something that we could

consider be the reason for the rebound.

So bounce in there, find a

higher strength material

and then get going for

the next landing.

So there you go.

It was low density everywhere,

this is the big hang-up.

There are two things about that. One

is that gravity is not understood.

I'll be dealing with that

later in the weekend.

All we have is a mathematical description

which is no help in understanding.

Also, there is the possibility that

the comet may have a hollow center.

Also the floating grains

were very fluffy.

Well, electrical ablation of

surface minerals can cause that.

A higher-strength material

that was a surprise to us,

based on this erroneous assumption that

mass equals the quantity of matter.

With this picture of dust

falling back to the surface,

forming high porosity layers, we

fail to explain the rebounds.

Well, dust is being removed from the

comet and moved around electrostatically

as it is on the moon.

It's probably superficial

in most areas.

It's rocky-like

stuff, but not rock!

Because it's impossible, according

to the very low density estimate.

This aspect is central to the Electric

Universe explanation of gravity.

Mass is not equal to the amount of

matter, a fundamental error in physics.

The electrical model as I said,

even suggests hollowness.

And then there was this

interesting thing that was said,

we also see this stuff shining through

where the dust layer is wiped away

or fallen off following

the gravitational field.

And exposing a higher

strength material.

And this is something we could consider

could be the reason for the rebound.

Well, the shining stuff may be the

coronal discharges from the comet.

If so, they would be featureless

glows like St. Elmo's fire,
perhaps with bright points
at the active cathode spots,
leaving behind a darker, blackened surface
that had been modified electrochemically.

Anyway, congratulations to the Rosetta
mission team for a fantastic effort,
shame about the
science mythology.

It was interesting, the
following morning
there was an ESA blog where geologists
posted the following comment,
and since it was an ESA
blog we had to log in.

I assume, he was
somewhat of an expert.

He said: "It looks like the shrinkage
patterns of clay on the surface..."

And this is the image from the lander
looking at the surface nearby.

"It is quite possible that clay is
among the most abundant minerals
on the panoramic
landscape of the comet."

Well, this is pretty

outrageous thing to say

because clay includes

pyroxene and olivine

which are high-

temperature minerals.

Also, to make clay you require water and

a, more or less, planetary environment.

He says it is, this form of clay is

quite common in nature here on Earth.

He said, weathering causes erosion of topographic

highs and their deposition in basins,

shallow seas and oceans.

The effect of heat and

pressure changes the minerals

like olivine into

clay and even cement

and in the process captures and

sequesters atmospheric carbon dioxide.

This last point is interesting

too because they could be

the source of carbon dioxide as well

as the water in the comet coma.

So we switch to the

Mars MAVEN mission

which ducked out of the way

when that comet shot past.

Just recently, comet

Siding Spring's flyby,

which was 87,000 miles above the
planet or about 140,000 kilometers.

Debris from the comet added a temporary and
very strong layer of ions to the ionosphere,
the electrically charged layer high
above Mars, this was the report.

Such an electrical disturbance is
expected from an electrified comet
with a different potential
to that of the planet
and the closer the approach, the
more severe the electrical effects
up to a Tunguska-type
event, or worse.

In more recent news, it
calls into question
our beliefs about how
planetary systems form.

The caption for this
artist's rendition says:

"Astronomers have discovered an exoplanet
that is 10 times as heavy as Jupiter
but orbits its star
in less than a day."

However, such a sighting should be a relatively rare occurrence suggesting that physicists may have to reconsider their understanding of how stars interact with their planets.

The existence of huge, Jupiter-sized planets so near to their stars is a long-standing puzzle, since they cannot form near to the star where it is far too hot.

So the standard response is to say they must form much further out, where it is cool enough for ices to freeze out of the proto-planetary disk.

This hypothetical protoplanetary disk circling the young star, hence forming the core of a new planet.

And then, something then must move the planet into a close orbit, and one likely mechanism is an interaction with another planet or star.

Well, it was the astronomer

Tom Van Flandern

who showed how unlikely these kind of occurrences are.

So this is a highly speculative
and unlikely scenario.

And given the number of hot Jupiters
discovered, this last point seemed strained.

What's worse, exoplanets have
been found orbiting backwards
and over the poles of the star.

The Electric Universe model
of star and planet formation
follows the plasma cosmologists',
which is all

peer-reviewed material,
whose theory has been supported by
recent infrared images of stars
formed along glowing Birkeland current
filaments in molecular clouds.

As Hannes Alfvén wrote:

"Gravitational systems are the
ashes of electrical systems."

But the Electric Universe
models adds an...

[a model, sorry]

...adds an electrical fissioning mechanism
for forming hot Jupiters like this one
that results from a new understanding
of the electrical nature of stars.

This planet may be recently born,
instead of facing annihilation
by crashing into the star, as
the article later suggests.

And this recent report shows the
dogged application of the myth
about planet formation
from a dusty nebula.

It says,

"These dusty disks, likely
created by collisions
between leftover objects
from planet formation,
were imaged around stars as
young as ten million years old
and as mature as more
than 1 billion years old.

It's like looking back in time to
see the kinds of destructive events
that once routinely happened in our
solar system after the planets formed.

This is the kind of response you
get from one of the scientists.

Here we see the myth of solar
system history stated as fact.

But no two "disks" of material

surrounding stars, look the same.

The report says the features
around the star HD 181327,
which is the one on the
right top corner there,
resemble the ejection of a huge spray of
debris into the outer part of the system
from the recent collision
of two bodies.

But when all you have is
gravity and explosions,
your options are
extremely limited.

The disks look far more
like corona discharges,
which I've, you can
see below there.

Which makes sense if we're looking
down the barrel of a stellar z-pinch
which is something that we'll
be discussing in more detail,
especially after Don Scott
has given his presentation.

Also we only hear of accretion disks,
yet stars regularly expel matter.

So the notion of expulsion disks

should be considered also.

And here we have problems
with stellar evolution theory.

And it's a recurring theme in science
reports over the previous months.

But here's the latest one about
stars in globular clusters.

It's generally believed that all stars belonging
to the same globular cluster were born together,
from the same interstellar
cloud and at the same time.

Strangely, however,
this is not the case.

It appears that the more information astronomers
acquire about the stars in Omega Centauri,
the less they seem to understand
the origin of these stars.

The evidence discounts the
stellar evolution model.

Globular clusters have
multiple main sequences.

This is pretty odd.

Two groups of stars with, either, an
age difference of 1 to 2 Giga years
or a significant difference in their
carbon-nitrogen-oxygen content

and a difference in

helium abundance.

Astronomers found that the bluest stars contain more heavy elements than those of the redder population.

And these are all supposed to be the same age.

This was exactly opposite to the expectation and they led to the conclusion that bluest stars have an overabundance of the light element helium.

They are in fact the most helium-rich stars ever found.

But why is this so?

The team suggests that this puzzle may be explained in the following way;

First, a great burst of star formation took place during which all the stars of the red population were produced.

These stars transform their hydrogen into helium by nuclear burning.

This is a standard story.

Some of them with masses of 10 to 12 times the mass of the Sun,

soon thereafter exploded as supernovae
thereby enriching the interstellar medium
with blasting it everywhere
in the globular cluster.

Next, the blue population stars
formed from this helium-rich medium.

This is really a crackpot
theory, when you look at it.

It's incredibly
unlikely and complex.

It's not been shown that the dispersal
of heavy elements by supernovae
can be enough to form second-generation
stars in significant numbers.

The EU says, the
Electric Universe model,
there's a tight alignment of the normal
vector to the disk of globular clusters
with that of the disk of
satellite dwarf galaxies.

So they're tied together
in some interesting way.

They seem to have had the same birth process
by ejection from the core of the galaxy,
based on Halton Arp's observations of
ejection of quasars or nascent star clusters

from the galactic core in

the plane of the galaxy.

And this meets neatly with plasma
cosmology models of spiral galaxies.

So globular clusters appear to be a
form of nuclei of dwarf galaxies.

I won't go on about the
stellar ages and composition.

The Electric Universe model of stars shows
it to be incredibly complex and untestable,
and it is invalid.

When I got the news on April
23rd, earlier this year,
that a flare had been detected
by Swift and it was coming from
a nearby flare star called DGCVN,
I was initially very surprised.

Swift doesn't normally detect
flares from nearby flare stars
and DGCVN is a
relatively unknown star.

There are a few things
we know about DGCVN.

It is an M-class star,
also called a red dwarf,
and is located only about

60 light-years away.

It's a dim little red star.

It has a luminosity that's about one thousandth the luminosity of the Sun.

It has a mass that's about

$\frac{1}{3}$ the mass of the Sun

and a radius that's about

$\frac{1}{3}$ the radius of the Sun.

The largest solar flare ever recorded, happened on November 4th, 2003.

It was so powerful that it overloaded the sensors measuring it but later calculations put it at an X45.

Flares are classified according to their strength, the smallest ones are B-class, followed by C, M and X, the largest.

And X45 flare is a very powerful flare.

DGCVN's flare, however, was much larger.

We can estimate how big the flare on DGCVN was with respect to this solar scale.

It would have been an X100,000.

So this is several orders

of magnitude larger
than the biggest solar
flare we've ever seen.

The flare that Swift
triggered on from DGCVN,
was only the beginning of what turned out
to be a fairly extended series of flares.

A flare event, if you will,
that lasted almost 20 days.

This was a very different
star than the Sun
so we don't really have to worry about
this happening in the present day Sun.

The young Sun, such large
events may have occurred.

In the present day Sun, the
activity levels are much lower.

The fundamental reason that
DGCVN is more active than the Sun
is, it's a very young
star, 30 million years,
it's rapidly rotating, young
stars are born that way.

And rapid rotation is one of the key
ingredients which powers activity.

The faster the rotation,

the greater the activity.

While not a threat to us, the massive flares of red dwarf stars can help us better understand the flares produced by our own Sun.

They are also of interest because red dwarf stars are often orbited by planets.

Some data suggest that 40% of red dwarfs have super-Earth-type planets orbiting in a habitable zone, where liquid water is possible.

If this is true, then they are good candidates for supporting life.

However, the habitable zone around a cool dim star like DGCVN is much closer to the star than the Earth is to the Sun.

When planets are closer to their star, they're more susceptible to anything the star does.

For instance, if the star flares, the planet is much closer to the star and it can be hit by the radiation or the particles that get ejected from the star when this

flare process happens.

If you happened to be on a
planet around an M dwarf
when one of these
large flares went off,
you'd be having a very bad day.

I wanted to finish on this slide
because this has significance
for what we will be talking about
when we discuss Proto-Saturn,
later on the weekend.

Because all of the story about the ages
of these stars and how they behave
and that the, our own, Sun is not
likely to do this kind of thing,
is based on erroneous science.

None of it is valid.

However, there are certain aspects
that I just want to point out
before my time is
completely gone.

The light curve that you saw there
showed rapid onset and slow decay
followed by lesser
pulses gradually falling.

And that's typical of lightning

or an electrical discharge.

Red stars don't have the photospheric granulation to regulate their discharge so this is the only way they can respond to changes in their environment.

And they do so by changing in size and by expelling matter.

And I would suggest that that red dwarf was actually giving birth to a satellite.

It may have been of planet size.

I think this is the way in the Electric Universe that these things happen and it has significance for the story of Proto-Saturn which we'll discuss later.

Thank you.

Thunderbolts.info

Welcome to Space News from the
Electric Universe, brought to you by
The Thunderbolts Project™

at Thunderbolts.info

NASA's New Horizons mission has recently shared pictures of the most distant object in our solar system ever imaged by a spacecraft. It's nicknamed Ultima Thule, a relatively tiny body, just 19 miles long, located more than 4 billion miles from Earth in the so called Kuiper Belt. As we can see, like countless asteroids, some moons, as well as the majority of comet nuclei imaged to date, Ultima Thule is made of two distinct lobes which are joined by a thin neck region. Unsurprisingly, the only process by which planetary scientists can imagine the object forming is a collision between two bodies, both of which had accreted in the solar system's conjectured infancy, supposedly more than four billion years ago.

However, for over seven years on this series we have outlined the amazing failures, both experimental and

observational, of the gravitational accretion hypothesis to explain objects in our solar system and the universe beyond it. This crisis is outlined in a 2018 news report which states, "According to the traditional story of the origin of the solar system, the planets formed slowly from accretion, as particles in the circumstellar disk clumped together to great pebbles, then slightly larger spheres, on and on until they reached their current size. But when scientists tried to re-create this story with computer models, it breaks down. Rather than growing, these incipient planets tend to splinter after reaching pebble size." Based on the abundance of small double-lobed objects in our solar system, it would seem according to astronomers, that collisions between these bodies have not been particularly rare but have been relatively commonplace in our solar system's history. These objects have routinely floated together and then fused, incredibly sometimes

forming a neck region in the process. In the case of the comet 67P, Rosetta mission scientists had favored the speculation that such a low-speed collision between two comets had created the double lobed nucleus. But more recently, a team of scientists acknowledged that 67P does not appear to be billions of years old. They performed simulations to try to prove that, a mere millions of years ago, two comets were destroyed in a high-velocity collision and then re-coalesced rather than dispersing in the vacuum of space, as depicted in the computer animation on your screen. In contrast, the Electric Universe has always proposed that comets, asteroids, and meteoroids, did not form from accretion billions of years ago. Rather, they were recently torn from planetary surfaces by interplanetary electrical discharge. In fact, as we have shown dozens of times, the double-lobed form is easily reproduced in experiments with electrical discharge creating a stunning analog for countless celestial

objects. Today, physicist Wal Thornhill explains why Ultima Thule appears to be yet another resounding victory for the Electric Universe theory. NASA and the Space Age is the gift that keeps on giving. This last week we've had the New Horizons spacecraft arriving at a tiny body in the so-called Kuiper Belt in the outer reaches of the solar system. The nickname given by NASA scientists to the object is Ultima Thule; in classical and medieval literature a name given to a distant unknown region, the extreme limit of travel and discovery. Ultima Thule is a Kuiper Belt object or 'KBO' also known more specifically as a trans-Neptunian object or 'TNO' since the Kuiper belt occupies an enormous doughnut shaped volume in the cold outer reaches of our solar system beyond the orbit of Neptune. The New Horizons spacecraft is sampling this region from the orbit of Neptune at 30 AU out to a distance of 50 AU. According to the Nebular Hypothesis of formation of the solar system, astronomers believe

there are millions of small icy leftover objects out there including hundreds of thousands that are larger than 60 miles or 100 kilometers wide. Some, including Pluto, are over 600 miles or 1,000 kilometers wide. When the first pixelated image of Ultima Thule arrived - showing an elongated object, I wrote, "This discovery, based on the double-lobed appearance, fits perfectly with the Electric Universe scenario. See for example my recent YouTube space news on 'Seeing Double.' Close-up images should probably show a non-icy rocky appearance like Comet 67P." A NASA web site tells us, "A fairly large number of Kuiper Belt Objects, or KBOs, either have moons -- that is, significantly smaller bodies that orbit them -- or are binary objects. Binaries are pairs of objects that are relatively similar in size or mass that orbit around a shared center of mass that lies between them. Some binaries actually touch, creating a sort of peanut shape, creating what's known as a contact binary. Pluto, and other minor planets;

Eris, Haumea and Quaoar, are all Kuiper Belt objects that have moons." Formation by gravitational accretion didn't predict a double lobed shape for planetesimals, asteroids, or comets. In fact, it has difficulty in keeping small colliding particles together without some form of stickiness or electrostatic clinginess.

Then there's a problem removing angular momentum from closely orbiting bodies. It requires a number of smaller objects to be slung out of the system to remove the excess momentum. But we run into a problem that was identified by the astronomer Tom Van Flandern. He said, "The most difficult objection for the gravitational condensation theory is to overcome how such objects could form in the first place." The mean distance between small bodies in the vast volume of the Kuiper Belt is so great that collision and accretion has negligible probability. So, the leftmost image from NASA JPL is fanciful, to say the least.

Then there's the problem of attaching and forming a neck between two bodies.

The impact was proposed in the NASA TV presentation as equivalent to a bump in a car parking lot. But that doesn't explain the neck. Ice can be treated as rock at the very low temperatures at that distance from the Sun and rocks don't fuse together when they collide at low speed. More significantly, why do we only ever see two objects fused together? In later more detailed images, it seems Ultima Thule has significant cratering which implies many high-speed collisions between objects in the Kuiper Belt despite the fact that they should be orbiting the Sun with low relative velocities and an infinitesimal probability of collision. Given their vanishingly small cross section in the unimaginable immensity of Kuiper Belt space, NASA's story only survives because diagrams, like that shown, give a false impression. But that's not all.

Gravitational accretion is a hypothesis, not a fact. Calling rings of material around distant stars 'accretion discs' is merely an assumption. We routinely see

stars ejecting matter, yet it is never considered that such discs may be equatorial ejection discs like a mega coronal mass ejection. Such is the mesmerizing power of a paradigm, a story told over and over so the brain goes into neutral. And it is remarkable how the disciplined mind shuts out, to quickly forget discordant data. For example, here is one discovery that shows there is not enough material in nebular disks to make planets, let alone minor planets at vast distances from the star. Only last October, Quanta magazine published an article 'Planets Found to Be Larger Than the Disks They Come From.' It reads, "...a new research paper suggests that planets may be forming in ways beyond our understanding. In system after system planets are much larger than the universe's biggest star-skirts. This seems to defy maths, or at least reason; planets shouldn't be larger than the stuff they're made from." Of course, this defies understanding because the model is wrong. Powerful long-range

electromagnetic forces could form all condensed objects in the universe. Gravity has nothing to do with it. Only after the electromagnetic forces have subsided, does gravity, the weakest force in the universe, take over to produce orbital systems. Galaxies are star birth engines and they show the electromagnetic forces in action. That's why Gravitational Theory doesn't work for them. Modified gravity, black holes, and dark matter, are unnecessary fictions once this simple fact is understood. We can stop spending billions chasing imaginary particles and objects in deep space. Plasma cosmologists have known the answer for half a century. But the crabbed spirit of specialism has denied astronomers this understanding. Science as it is practiced today, is dysfunctional. The alignment of spiral galaxies, like Catherine wheels strung along a wire, and their common rate of rotation regardless of size, is all simply explained if the wire happens to be in the form of galactic-scale

rotating Birkeland current filament pairs. Birkeland currents are formed by two parallel current filaments which attract each other according to Ampere's law. As they draw closer, the magnetic attraction between them is overcome by electrostatic repulsion caused by charge separation within those filaments. As a result, those filaments circle about each other to form a twisted pair, a configuration well known to electrical engineers. And it is this pairing that tends to concentrate matter in toroids and closely orbiting bodies. The galactic toroid gives rise to the observed peanut cross-section of the central galactic bulge in spiral galaxies. Plasma behavior is scalable over an enormous range; from the galactic down to the laboratory on Earth where this has been tested. So the process that forms stars and galaxies also forms planets and smaller satellites in the same process. That process has been seen by infrared telescopes to produce stars in pairs, like beads on a necklace, along

interstellar Birkeland currents inside molecular clouds. At present, smaller bodies like planets can't be detected in molecular clouds by our infrared telescopes. So, what evidence do we have for the formation of planets in pairs?

There was a report from the Keck Observatory in January last year titled 'Planets around other stars are like Peas in a Pod.' It reads, "...the team found that exoplanets tend to be the same sizes as their neighbors. If one planet is small, the next planet around that same star is very likely to be small as well, and if one planet is big, the next is likely to be big. They also found the planets orbiting the same star tend to have a regular orbital spacing." So, it is very interesting that the astronomer Tom Van Flandern drew attention to the possibility that Jupiter and Saturn can be considered as twins. Even more so if Saturn ejected a lot of matter recently leaving the evidence behind in that planet's ephemeral rings. Also, Uranus and Neptune make appear with similar masses,

compositions and solar distances. "Each pair is notably dissimilar to its adjoining pair or pairs. Now there is no particular reason under the 'primeval solar nebula' hypothesis of planetary formation why this should be so. The nebula from which the planets allegedly condensed should have been rather homogeneous in most respects, and planet masses should have had a smooth radial gradient with solar distance." Sometimes in moments of lucidity, science writers state the obvious.

Richard Kerr in the Science journal in 1999, addressed this issue. "The four terrestrial planets nestled closely to the life-giving Sun make an unlikely family. Little, moonlike Mercury is mostly iron, covered with a bit of rock, and has no atmosphere. Venus, Earth's twin in size and composition, is smothered by a most un-Earth-like inferno of an atmosphere and is drier than any desert. On Earth, which is nearly drowning in water, continents drift across a surface

infected in every crack and crevice by life.

And Mars - 1/10 the mass of Earth -- has an ancient, immobile face, now dry and lifeless but with hints of an earlier, more hospitable era. A single family? More like a bunch of unrelated adoptees from alien planetary systems." The centuries-old nebular accretion model is long overdue for retirement yet every space mission is launched with the benediction that it will show us how the solar system was formed. It can do that but not while reciting the nebular hypothesis as a fact. It has been discredited again and again during the Space Age but all that happens is that computer models are adjusted to provide the virtual reality which passes for science in this unenlightened age. So far, observers have catalogued over 2,000 trans-Neptunian objects. Importantly, those objects are not evenly distributed through space. Once astronomers started discovering them in the early 1990's, one of the early surprises was that they could be grouped according to the shapes

and sizes of their orbits. This led scientists to understand that there are several distinct groupings or populations of these objects whose orbits provide clues about their history. The expectation was that if there were objects beyond Neptune, they would be in relatively circular orbits that aren't tilted too much from the plane of the planets. Instead, many KBO's are found to belong to families, some with significantly elliptical and tilted orbits and associations with the planet Neptune. Pluto's orbit is in a stable repeating pattern with Neptune's. For every three orbits completed by Neptune, Pluto makes two orbits. These features suggest capture episodes rather than leftovers of a primordial nebula. Dr. John Hewitt wrote in his report to the Royal Society 'A habit of lies', "To be of any real value, a new idea must compete with existing suppositions used to explain the same data set. It is diametrically wrong to demand of a new hypothesis that it be consistent with

the ideas it sets out to replace." The Electric Universe is a distinctly new hypothesis. It uses forensic evidence from the entire span of man's experience of the sky to replace the old theoretical belief in the orderly nebular hypothesis -- that the planets orbit now roughly where they were formed primordially. This idea is centuries old and formed the basis of the uniformity principle, beloved by mathematicians because they believe they can feed in the movements of the planets today and announce where the planets were thousands or even millions of years ago. This has allowed scientists to propose gradual evolution and climate cycles based on slight wobbles of the Earth. It is merely wishful thinking. The geological record shows otherwise with clear evidence of paroxysms of extreme violence. The solar system has a recent dramatic history which we will only begin to understand when we give up the nebular hypothesis and look for family resemblances instead, because the Sun has

a blended family. As Tobias Owen of the University of Hawaii recommended in considering random events in shaping the solar system, "...it behooves planetary scientists to decipher the patterns..., looking for the ties that unite even the most dissimilar siblings into a single family." Only then may we understand Ultima Thule and that knowledge will change everything.

[Music]

Previously, in playing with new thinking,
the first episode of this seven arc
series, I talked about how the new
discoveries of the space age were
changing the ways in which we thought about the
cosmos. We're making observations that had been
undetectable by our biological senses.

They are now confronting us with
evidence that doesn't fit with the ways
of thinking that have become so familiar
that we take them for granted. The night
sky isn't dark and empty to electronic
sensors, but bright and full. There's no
precedence for this in all of human existence.

The universe of our senses is radically
changed, but it's still human minds who try to
make sense of it. Making sense is a
creative act and that works best when we
don't take it too seriously. In this episode
we'll be playing with historical thinking.

Knowledge tends to progress incrementally for long
periods, as popular theories are developed and
adjusted to fit each other and discrepant evidence. But
occasionally the inevitable contradictions and ad-hoc
additions become a hindrance to further progress.

Hatching the popular theories becomes cumbersome and ugly. Entirely fresh foundational ideas become necessary. New metaphysical assumptions that underlie any theory are required. The worldview, the paradigm, changes. For example Ptolemy's geocentric model of planetary movements with perfect circle epicycles, spinning on perfect circle deferents, was geometrical, no orbits, and kinematic, no force. It was good enough for casting horoscopes, which was the goal at that time. Its practitioners didn't worry about the little inaccuracies relative to the precision of the instruments they used, but they did worry about the linear element, the equant that corrected for the greater inaccuracies. They presumed the heavens of the gods were perfect and therefore operated only with perfect circles. Copernicus's heliocentric model was not that much of a cognitive revolution. He kept the epicycles and deferents. He only discovered that centering them on the Sun eliminated the equant, thus making the system more perfect. He revised the structure of the

Ptolemaic model, but not the way of thinking on which it was founded. The physics changed, but the metaphysics didn't.

The cognitive revolution began with Tycho Brahe building more precise measuring instruments. Kepler then realized that Brahe's more precise locations could be better matched with ellipses than with perfect circles.

But the perfect heaven's world view didn't allow ellipses. At the same time Galileo's telescopic observations confirmed the existence of imperfections, spots on the Sun.

Other observations also contributed to doubting the perfection of the heavens.

Newton's idea of a central force, gravity, acting on orbiting masses, not only allowed, but required ellipses. The revolution was the replacement of a kinematic and geometric way of thinking with a dynamic one. At first, people objected that Newton was promoting an occult, spooky action at a distance. But the accuracy of his results eclipsed the uneasiness.

Soon gravity displaced circles. The theories changed; the math changed; calculus replaced geometry; many of the assumptions changed; and

the ancient world view changed with them.

But one underlying assumption of the perfect heavens of the gods persisted.

Alexander Pope wrote, "Nature and nature's laws lay hid in the night. God said, Let Newton be! and all was light!"

The underlying attitude of belief in one absolute perfect reality, independent of cognitive operations, persisted.

Perfect circles were replaced with perfect clockwork. A reified natural law, mistaking an abstraction for a physical entity, became the new god. Metaphysics never changes 100 percent.

It's still human minds with their inertia of prior beliefs, that make the new sense.

The progress of instrumentation wouldn't reveal discrepancies between Newtonian theory and evidence for a couple of centuries.

Even then, and still to today, the idea of gravity was good enough for the ballistic goals that the invention of cannons and rockets had made more important than the goals of casting horoscopes.

But in the 19th century Michelson and Morley's observations of the invariance of the speed of light, along with other

difficulties, generated a crisis for Newton's model.

Time was independent and absolute in Newton's theory, but more precise observations seemed to indicate that it varied with velocity, especially as velocity approached the speed of light.

Fast moving objects seemed both to weigh more and to shrink, and their clocks ticked at different rates. Einstein resolved the difficulties in the next century by returning to geometry.

The non-Euclidean geometry of a curved coordinate system made more accurate sense of those new observations.

Celestial bodies were no longer propelled along orbits by a distant spooky force, but coasted along geodesics.

Yet still in this age of relativity, people still talk about gravity as a force and the speed of light is the new absolute.

Now, new instruments observe the heavens in ways that have been inaccessible to our biological senses. Radio waves, infrared, ultraviolet, X- and gamma rays, in-place measurements of bodies in space and of that space itself, orders of magnitude more precise observations

and data. The resulting evidence reveals notions, forms and compositions that are generating a crisis for the conventional models.

The night sky is no longer dark and empty, but bright and full of plasma. And the experimentally discovered behaviors of electrically active plasma make more accurate and direct sense of the evidence than the predictions of the gravity and gas models.

For example, both Herbig-Haro stars and active galaxies exhibit thin, twisting threads of plasma from their poles that extend many light years into space.

Condensations, or blobs, are often scattered along them. They give off synchrotron radiation from electrons spiraling in strong magnetic fields.

These are impossible in a purely gravity and gas universe, but are expected in an electricity and plasma one. In the Standard Model, plasma is often called an ionized gas and then the discussion relapses into gravity and gas descriptions.

Million degree hot gas, shock waves, jets, gravitationally collapsing clouds, but plasma doesn't behave like a gas and descriptions based on gas theory

fail to describe the matter accurately.

Any substance at a million degrees is fully ionized and behaves as a plasma, not as a gas.

Even cold molecular clouds contain enough charged dust particles and ions to act like plasma.

Concepts of pressure and volume are supplanted by the Bennett pinch and double layers.

Those particles and ions have extremely low densities. If they were electrically neutral, as assumed by the Standard Model, they could travel long distances before colliding with another particle. They would be unlikely to generate a shock wave with billiard-ball-like collisions.

But they are carrying an extensive electromagnetic field. They constitute plasma and display typical plasma behavior. Filaments, cells, double layers and the like. Shock waves are the closest thing astronomers can imagine to the electrical effects they deny. If the threads of plasma spiraling out of the poles of stars were jets, subject to gas laws, they would soon dissipate in the vacuum of space. But they remain coherent for long distances, spiraling around each other like, well, like Birkeland currents.

Gravitational collapse in the Standard

Model itself is actually very difficult,

if not impossible to achieve.

Any rotational motion in the original

cloud will be amplified as the cloud

collapses, like spinning ice skaters drawing in

their arms. The centrifugal force will soon reach

equilibrium with the gravitational force and the

collapse will stop. Plasma, on the other hand, requires

collapse: Bennett pinch and spin, the

response of moving charged particles in

a magnetic field and those forces can be much stronger

than gravity. They can also repel, not just attract, as

with gravity, as seen in the long-range

attraction and short-range repulsion

that keeps Birkeland filaments twisting

around each other without merging.

To explain, or to explain away the new

evidence, the gravity and gas theories

have been patched with hypothetical,

unobservable and untestable phantoms-

collapsed matter, dark matter, dark energy-

the phantoms must be there to save the

theories from falsification and the need

to change deep-seated habits of thinking.

Theorists overlook that they have

inverted empirical methods, assumed that their theories are the touchstone of truth, and are judging the acceptability of evidence by its conformity with their prior beliefs. But as the patches proliferate, the stitches have begun to obscure the theories and to weaken the underlying metaphysics and empirical methods. The Standard Model of the gravity-and-gas paradigm, no longer provides a straightforward explanatory structure, but has become a nuisance.

Gravity and gas don't allow for electricity in space. Plasma requires it.

That's the fundamental distinction between the Standard Model and the EU Model.

From a historical point of view, it's time for another conceptual revolution.

[Music]

[Music]

[Music]

In 2012, I began an online video series with The Thunderbolts Project called Space News from the Electric Universe.

The purpose of this series was to explore the role of electromagnetism and plasma at all scales in the cosmos.

It was my opinion that the most interesting and effective way to present this material would be to do so in the context of discussion of space discoveries.

Beginning in the late 1990s through my father David Talbott's relationship with physicist Wal Thornhill, I was in the privileged position of having direct access to the chief proponent of the Electric Universe.

Now, when one looks at space discovery through the lens of EU theory, it cannot help but transform one's perspective on the nature of the universe.

One thing I learned quickly is that, generally speaking, celestial objects simply can't form the way that gravitational theory proposes.

The hypothesized collisions, explosions,

and slow gravitational accretion processes
simply do not match what we observe,
nor do these processes work experimentally.
As any astronomer knows, over decades
of planetary formation simulations,
gravitational accretion only achieves an object
the size of a pebble before it breaks down.
Ironically, mysterious magnetism has
more recently been added to accretion
experiments in an ad hoc effort
to make them actually work.
Of course, star formation is an equally
mysterious process for mainstream astronomy.
In his recent Thunderbolts presentation
on the James Webb telescope,
Wal Thornhill has offered a definitive treatise
on the creation of stars in an Electric Universe.
Thornhill has contrasted the predictive
success of the standard hypothesis of
stars where they formed by gravitational
collapse and accretion, versus the
Electric Universe and plasma cosmology
view of stars where they formed by the
electromagnetic Z-pinch. Over the last
decade, I've done my best to articulate this
viewpoint when reporting on the relevant

scientific discoveries. For a moment now,
I'd like to again don the hat that I
wore at the helm of Space News
and present a recent scientific finding
In light of the Electric Universe theory.
Earlier this year, scientists using data
from a number of space telescopes,
studied over 300 so-called protostars in
a star-forming region called the Orion
complex. What these scientists found is
that so-called gravitational cavities do
not play their expected role in
quenching the growth of a star.
Conventional theory had proposed
a type of so-called stellar feedback
where the combined force of
astrophysical jets and stellar winds
pull gas from a star and trap it in its molecular
cloud, thus eventually halting a star's growth.
However, as is so often the case, what the
scientists actually found sent them back
to the drawing board.
Astronomer Nolan Habel of the
University of Toledo says in a science alert
report quote "In one stellar formation model,
if you start out with a small cavity, as the

proto-star rapidly becomes more evolved,
its outflow creates an ever-larger
cavity until the surrounding gas is
eventually blown away, leaving an
isolated star... Our observations indicate
there is no progressive growth that we can
find, so the cavities are not growing until
they push out all of the mass in the cloud.
So, there must be some other process
going on that gets rid of the gas
that doesn't end up in the star."

However, the problem for astronomers is
truly fundamental. How can one hope to
resolve the mystery of how star
formation is quenched if one doesn't
understand the formation process itself?

Theorists' reliance on convoluted,
inefficient and unproven processes,
should be the first signal to us
that something is wrong with
their gravity-only approach.

Now, our suggestion that astronomers
don't understand such an important
cosmological process as star formation,
might seem outlandish to some.

But again, we have to consider the evidence.

In fact, through the entire space age, scientific discovery has completely confounded conventional theories about stars, from a star's birth until the end of its life in a supernova. I've often cited the quote of economist Milton Friedman which states, "The only relevant test of the validity of a hypothesis is comparison of prediction with experience."

Gravitational theory did not predict the landmark discoveries in stellar science.

In contrast, technological leaps have provided increasingly stunning confirmation of the predictions of plasma cosmology and the Electric Universe. Again, in standard theory gravitational collapse and accretion lead to the creation of both stars and planets over many eons of time.

However, both the Electric Universe and plasma cosmology propose that the electromagnetic phenomenon called the Z-pinch, also known as the Bennett pinch, is the powerful organizational force governing the rapid formation of

stars. We have to remember that the gravitational accretion model never expected polar jets. They had to be accommodated with a cover story involving the usual suspect, which is magically generated magnetic fields, when scientists discovered them coming from some bright stars. Now, the scientific paper cited in the aforementioned Science Alert report states, "The mechanism for creating these cavities, whether by jet precession, wide-angled winds or jet entrainment is still debated." But what's really observed is hourglass shaped cavities centered on the protostar. This is precisely the same pattern that we see in planetary nebulae, where the star's vast electric circuit is clearly lit up. So, to say that the cavity is lit up by quote "scattered light from the star" is merely a convenient assumption and its constant size is easy to understand, since the circuit is unrelated to the developmental stage of a protostar. And the authors of the paper admit. quote, "... several evolved protostars with

relatively small cavity sizes are identified.”

In fact, the aforementioned Nolan

Habel states in the scientific paper,

“An HST Survey of Protostellar Outflow Cavities:

Does Feedback Clear Envelopes?” states,

“Understanding the factors that govern

the evolution of the envelopes - and

thereby influence mass accretion

and the properties of nascent discs -

is a problem in star and planet formation studies.

Now many decades ago, it was the father

of plasma cosmology, Hannes Alfvén,

who made the outrageous prediction that

stars would form by cosmic Z-pinches

along vast networks of filaments, with an

electromagnetic scavenging effect in

molecular clouds in each current filament.

Alfvén wrote of Willard Harrison

Bennett's discovery of the Z-pinch in

the first half of the 20th century, quote,

“Important fields of research, i.e., the

treatment of the state in interstellar

regions, including the formation of stars,

are still based on a neglect of Bennett's

discovery more than half a century ago...

present-day students in

astrophysics hear nothing about it.”

A great opportunity to test these
opposing theories is found in these
remarkable images of a stellar nursery
in the aptly named “Snake Nebula”.

Here we see a number of stars forming
along the filament and the stars
themselves break up along a cylinder.

This is not expected at all by
gravitational theory, which predicts that
a center of mass exists toward which all
of the surrounding material in the cloud tends to
move, and to congregate to eventually form a star.

What's more, just as a fatal deficit of
matter has been observed in the discs
about stars, required to form a typical
number of planets, scientists studying
the Snake Nebula found that the material
needed to be drawn in to form massive
stars, is far less than gravitational
models predict. In 2014,
the Harvard Smithsonian Center for
Astrophysics issued a press release
which stated, “Previous theories proposed
that high-mass stars form within very massive
isolated ‘cores’ weighing at least

100 times the mass of the Sun.

These new results show that that is not the case. The data also demonstrate that massive stars aren't born alone but in groups...

The team also was surprised to find that these two nebular patches had fragmented into individual star seeds so early in the star formation process. They detected bipolar outflows and other signs of active, ongoing star formation.”

The dramatic absence of the required material to form stars is not surprising if such objects are formed by the electromagnetic Z-pinch

As Alfven noted, the electromagnetic force is exponentially greater than gravity and is scalable up to the cosmic magnitude.

Dramatic confirmation of the star-forming electric currents came more than a decade ago when the Herschel space observatory imaged an “incredible network of filamentary structures seen in the constellation of the Southern Cross.

A 2009 ESA report stated, “That a dark cool area such as this would be bustling with activity, was unexpected.

But the images reveal a surprising amount of turmoil: the interstellar material is condensing into continuous and interconnected filaments glowing from the light emitted by new-born stars at various stages of development.”

The conventional explanation for these filaments was the dissipation of some quote, “large-scale turbulence involving exploding stars.” However, such explosions would be expected to impose some radial curvature on the filaments which we simply do not see.

And the claim that the filaments are quote “glowing from the light emitted by newborn stars” simply cannot be tenable, because the filaments glow steadily along their length, demonstrating that the light is intrinsic to the filaments, which is exactly what one expects if the light output is provided by electric current.

Moreover, in 2011 even finer images from Herschel provided the conclusive evidence that cosmic scale electric currents flow along the filaments.

An ESA report at the time states,

"The filaments are huge, stretching for tens of light years through space and Herschel has shown that newly-born stars are often found in the densest parts of them... Such filaments and interstellar clouds have been glimpsed before by other infrared satellites... but they have never been seen clearly enough to have their widths measured.

Now, Herschel has shown that, regardless of the length or density of a filament, the width is always roughly the same."

The lead author of a paper on the discovery stated, "This is a very big surprise..." And the ESA report concludes, this consistency of the widths demands an explanation." Any attempt to explain the filament's constant width by explosions is also untenable.

Explosions will cause the filaments to vary markedly in brightness and width depending on the density of the interstellar dust and the perspective from which they are viewed.

Several years ago, Thornhill wrote of this groundbreaking discovery, quote "The constant width over vast distances is

due to the current flowing along the Birkeland filaments, each filament constituting a part of a larger electric circuit. And in a circuit the current must be the same in the whole filament although the current density can vary in the filament due to the electromagnetic pinch effect.”

The evidence I’ve just cited is as easy to understand as it is compelling. It's consistent with the universe governed by efficient mechanisms that are easily replicated in laboratories on Earth.

From my perspective as a curious layperson, the overwhelming predictive success of any scientific hypothesis demands urgent consideration from institutionalized science. And yet, a fair and thorough scientific hearing on the Electric Universe or plasma cosmology, has yet to occur.

Alfven’s statement that students of astrophysics are unfamiliar with even basic concepts of electric currents in space is as true today as it was decades ago.

It is important to remember that scientists are human beings, and although the

scientific method is devoid of bias,
humans are not. Science
is not a static collection of
pronouncements from authorities or quasi-
authorities. Nor is it a set of unassailable dogmas
established by a show of hands. Science
is an ongoing and never-ending endeavor,
and by its intrinsic nature, makes accurate the
prediction that inevitably, the truth will out.

[Music]

welcome to space news from the electric
universe brought to you by the
thunderbolts project at under bolts dot
info in his recent space news interviews
comparative mythologist EV cochrane
introduced his extraordinary
decades-long research into ancient
testimony of catastrophic celestial
events witnessed on earth as cochrane
explained in countless ancient cultures
the identities of familiar planets and
myth including Mars and Venus cannot be
explained in terms of anything seen in
our world today the planet Mars a
distant pinpoint of light to the unaided
eye today was globally identified as a
warrior hero the planet Venus a bright
pinpoint of light to modern sky watchers
was identified in various phases as a
great comet a goddess with flowing hair
a feathered serpent and more in this
conclusion Cochrane begins by explaining
the painstaking methodology he and
colleague David Talbott developed over
their decades-long collaboration which
ultimately produced their reconstruction

of recent planetary catastrophes
witnessed on earth I often compared the
researcher David myself to that of James
Watson and Francis Crick and
reconstructing the precise helical
structure of DNA initially we were
presented with just a giant jigsaw
puzzle as it were with with very few
clues as to where the respective planets
belong in addition to the complex nature
of the puzzle itself this was an ever
evolving planetary configuration in
which the planets change places and
appearances over time so consider for
example the eye of heaven most scholars
prior to us just simply identified the
eye with the Sun and never thought twice
about it

Dave and I very early on discovered a
link with the planet Venus for example
ancient traditions around the globe
identified Venus as a tie
the same is true in certain ancient
languages like Maya and yet at the same
time we found that the planet Mars was
specifically identified as the pupil in

the eye and so as Dave and I thought about this situation we quickly arrived at the idea that Mars must have stood in front of Venus whereas the smaller body it would appear as a dark dot or pupil inside the Venusian eye now of course in today's sky Mars can't appear in front of Venus since it's an outer planet but Mars is significantly smaller than Venus so if it could stand in front of us it would present this image that we had reconstructed of what the AI must have looked like

so this finding this let's say hypothetical finding early on it generated a host of other deductions Mars must have formed the axle of the Venusian wheel Mars was the child at Venus's breast as depicted in numerous artworks of anna and isis we could supply hundreds and hundreds of other examples in none of those examples however would the myth hold if Mars was behind Venus like it is in today's sky because of course you couldn't see it you just see Venus so it has to be in

front of Venus so that's just one case
of countless dozens we're slowly but
surely we pieced together the evidence
and arrived at the conclusion that
during this particular phase in the
evolution of the polar configuration
Mars must have been in front of Venus
and thus closer to the earth than the
other planets
looking back on our long relationship
I'm I'm firmly convinced that whatever
success we achieved and I'm confident
that our success is substantial and will
stand the test of time it required
endless hours of research detailed
analysis theoretical reasoning followed
by years of trying to model and
visualize this polar configuration
and it would have been difficult for
either of us to find success without the
input and insights and encouragement of
the other on this series we have
outlined the growing scientific evidence
that the catastrophic event is proposed
by Cochran and his colleagues did indeed
happen this includes the experimental

analogs achieved by electrical discharge
in the laboratory for countless
planetary features and of course one of
the greatest crises in space science
today is the astounding failures of the
standard theories of planet and star
formation as scientists discover
increasing numbers of quote impossible
exoplanetary systems the question of our
own solar system's origins in history
grows increasingly muddled
we asked f how he might address
scientists who have an unwavering faith
in our solar systems four and a half
billion year history well first and
foremost astronomers must give up their
collective fixation on the idea that
planets have moved peacefully on their
current orbits since the solar system
was formed billions of years ago that
dogmas long since become a fundamental
impediment to an accurate understanding
of the solar system's recent history
secondly I would refer astronomers to
Tony peratt's
groundbreaking researchers into the

celestial origins of the primary patterns of prehistoric rock art as Tony documented in great detail using his vast knowledge of plasma under experimental conditions the forms found in ancient rock art are virtually identical certain forms generated in high-energy discharge experiments so for example the ladder to heaven squatter man the Queen cooks you could cite again dozens and dozens of different structural forms or quote symbols in the final analysis

Tony's findings demonstrate that incredibly powerful electrical magnetic forces formerly played a significant role in the history of Earth role in the solar system and this is well within the last 10,000 years and it's undeniable that such events were catastrophic in nature and provided much of the inspiring imagery encoded in ancient myth and religion and yet those electromagnetic plasma forces are nowhere seen in today's sky except in the relatively diminutive rural images

you know that we occasionally get that most people on earth don't even see just within our lifetime the astronomers opinions of Mars and Venus have been forced to change just because of the findings that have been coming in from these various space probes so when Dave and I originally were talking about massive volumes of rock falling down for Mars and hitting the earth the astronomers were unanimous in their decision or in their idea that meteorites or large rocks could never get off the surface of Mars and yet now we know that dozens of Martian meteorites have indeed made their way to the earth and similarly in our theory where Mars is thought to be located during the polar configuration relatively close to the earth it stands to reason that it had a more temperate environment during that time possibly had a massive atmosphere possibly had plenty of water this naturally leads to the conclusion that it could have had various life forms and yet none of those things makes

any sense whatsoever if Mars has always orbited countless millions of miles away from the Sun where it's freezing and water would never form and never flow and it would be difficult to have an environment like that an atmosphere and so we believe that the water and the atmosphere and if there were previous life forms those were all extinguished within the last 10,000 years Mars lost its atmosphere it lost its water if it indeed had it it obviously lost a ton of its surface geology is Walland Dave of documented

detail and so what is true for Mars is also true for the planet Venus to some extent Venus was a participant in these unbelievably spectacular exchanges of electromagnetic forces and so you would certainly expect to see scarring on the Venusian planet just like you see a ton of evidence of scarring on Mars in our view that didn't happen countless millions of years ago at the dawn of the solar system's history it happened well within human memory so we fully expect

that when an if were ever ever able to
reliably date some of these geological
events it will it will stun the
astronomers of how recent this these
events were

[Music]

Is General Relativity: A Case Study
in Numerology? Now, I mean that both
facetiously and literally. Because
I'm going to show you today, using
mathematics and numbers, that general
relativity and all it's associated things,
such as black holes and big bangs, are really
nothing other than some kind of numerology.
But that's exactly what the black hole event
horizon has. In fact, they tell us that the
black hole event horizon - the escape
velocity, or the escape speed, of a
black hole at the event horizon - is the
speed of light. That's why nothing can escape.
Really? If the light is traveling
at the speed of light, and that's
the escape speed of light, wouldn't
you expect light to escape? I would!
I'm social scientist and I'm here at this
conference as a sociologist of science,
and as a sociologist in general, I'm
interested in social groups,
and collectivities and communities.
As a sociologist of science,
I'm interested in scientific communities,
and so, I'm interested in you.

Now, I suggested this was a change of subject matter for me and that's true, but it's also misleading because sociology, as I've said, social groups of communities of collaboration of collectively held knowledge, of shared values of the way in which communities mobilize to maintain and defend their boundaries of the social determination of what is acceptable, and what's unacceptable. And so these are topics common to pretty much any sociology, including the sociology of science.

Something happens very similar to this party example, to the chemical elements on the Sun, and a certain group of elements are much more likely to be found outside the Sun than on the surface of the Sun. For example, on the Photosphere, we see about 35 magnesium atoms for every million hydrogen atoms, but in the solar wind leaving the Sun there are four times that many magnesium atoms. Another example, we see about 47 iron atoms for every million hydrogen atoms on the photosphere,

but a solar flare might have
a hundred times that much iron.
So, you come and you take a look at a
satellite image of a hurricane on Earth.
And you guys can do this. Just pop on
Google, and type in 'hurricane'. You're
going to see the eye, just like the umbra
on the sunspot. You're going to see the
swirling clouds that we've all come to
know in a hurricane, just like you would
see in the corona on the Sun. But, if you
get to look at one of the new Rapid Scan
images that GOES is taking of the
weather, or you take a look at some of
the hurricane or typhoon images on NOAA's
Environmental Visualization Lab, you will
see that amidst those swirling clouds
you can see lines.

That's about one quarter of the story,
and it's seems strange that they stop there.

Stig Lundqvist who did this model
before me for about 50 years
before I got there, he'd stop there.

Even good old Hannes Alfvén,
where you ask him to draw a
picture of a Birkeland current,

he'd draw you something that looks
like that. That's a very incomplete picture
because you can just think of being
continuing on. Go out to the next little
distance out from the center of this
... what do you think happens, nothing?!

The lure of what we think we know, the
comfort of the accepted wisdom versus
the fear of not knowing. We have to
recognize that this love of certainty is
a very, very innate and undeniable human
attribute. It would be disingenuous, if
not foolhardy, to propose that
there's some group of humans somewhere,
somehow that are somehow immune to,
or above this level of certainty
- it's an integral component
of our collective psyche.

They have now shown that the neutrino
has mass. Now, the very idea that it
didn't have mass meant that it couldn't
have been a real particle, anyway,
because there is no such thing
as a particle with no mass.

The problem then was, that according to the
Standard Model of subatomic particles,

the neutrino doesn't interact with the
'Higgs field', as it's called.

That meant that there was something
seriously wrong with the standard model.

So, what has happened? They've said,
this gives us the opportunity to
modify the standard model,
in other words, please send more money.

It's all moving, right? Nothing ever stops
moving. A gust of wind and a cosmic jet are
manifesting a single power - that's the
world we were given. The objection to
perpetual motion machines is one of
those absurd capitalists parsimonies;
it is no free lunch. It comes from a mindset,
a metaphysics that privileges neutrality,
stability, equilibrium. But what the world
gives us as facts, are polarization,
unstable equilibria, and explosions.

This world is in perpetual motion.

But, of course, you don't always have to
stay in that position, you become
a tenured professor at some point, and you
can push out and innovative. And, if that
were not the case, there would be no new
science. So, somehow it does happen that

new science does get developed. People that are radicals in their field are able to do something about their radicalness - they are able to take bold steps.

There's not just rigor in the choice of statistic. Not just rigor in the kinds of designs that we use. It's not just rigor even in the language of how we write about interpretations and alternative explanations, and limitations of experimental design, in formal scientific papers that we write.

We are told to stick closely to the data and not let our emotions, or even our humor, get in the way. And that, I think, is the single biggest problem in physics today is that we worship the discipline of mathematics as science, and it's not.

It's an important adjunct and a tool.

It's a kind of shorthand describing what we observe, and then you can manipulate the symbols to try and get more information from that data. But it's rather like handing over the control of a company to the typing pool, the shorthand readers.

Very few people can read shorthand, and very few people can read all of those

mathematical runes on the blackboards.

In fact, it's become a cliché for 'genius'.

So, we accept it's breakthrough

one crack in the door at a time.

It is working, if you actually follow

what's going on as our communication

with real scientists, feet

on the ground researchers.

You'll see that,

give us a hearing personally,

give us an opportunity to just

engage you on the basis of fact,

and implications of fact, the EU material

is very persuasive with people.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info for many decades few scientists have challenged the mainstream theoretical model of the Sun most in the general public today probably believe that astronomers have a good understanding of the Sun and no reason exists to question the solar model we learned about in school but in truth countless seemingly unresolvable mysteries of the Sun continue to haunt scientists today is the electric universe the key to a new and better understanding of the Sun here is Cameron Mercer with the Thunderbolts picture of the day managing editor Stephen Smith as they provide a brief introduction to the electric Sun Theory over several hundred years astronomers studying the Sun have amassed a laundry list of anomalies but these apparent contradictions arise only if the solar system is electrically inert take into account the sun's electrified environment and its

connection to galactic currents and the anomalies disappear well the general premise is probably thousands of years old that we could be living in a dynamic solar system where electricity plays an important role but it's only been in say the last hundred years that scientists have given serious credence to the possibility and since electric universe theory assumes that celestial bodies interact through conductive plasma and are connected in circuits the Sun is also assumed by electric universe theorists to be electrically connected with the galaxy as well as earth so the Sun can be thought of as an electrically charged object seeking equilibrium with its environment and the charge is flowing into and out of the Sun increase and decrease to the point where it releases plasma discharges called solar flares or coronal mass ejections and sometimes it doesn't display any sunspots or any major coronal activity at all and after all the sun's electric field extends for billions of kilometers

in

fluency the planets and their motions as well as how they interact with each other

now if the environment of the Sun is electrified then we would expect tangible effects on all other charged bodies sharing the same environment this effect is testable we suggest that this effect can explain many anomalous behaviors of the solar wind

including behavior so outrageous it defies kinetic explanations entirely yeah on January 20th 2005 a coronal mass ejection achieved velocities greater than anything any astronomer had ever seen it often will take 24 hours or more for charged particles from a solar explosion to reach earth but this one arrived in under 30 minutes after the explosion so energies to propel a proton storm 96 million miles to earth in just under a half an hour is pretty unbelievable that's an incredible amount of energy back in the day when NASA scientists were talking about this one

of the quotes was for reasons no one understands these fields exploded and leashing as much energy as 10 billion hydrogen bombs so one wonders what drives the Sun to throw off billions of tons of solar material and accelerate it to thousands of kilometers per second the sun's heat and radiation pressure can't explain how charged particles accelerate out past the planets no one expected acceleration prior to the discovery of the solar wind and in the electric universe the obvious explanation is that there are electric fields in space and since particles continue to accelerate out into the solar system since they don't have little onboard rockets on these particles then something must be drawing them onward and the only thing that can accelerate charged particles is an electric field since these charges flow through the solar system then it seems reasonable to conclude that the dark mode solar plasma or the so our wind is affected by the electro

dynamic fields of the Sun and by the
fields of the planetary family solar
flares the corona of the Sun and all the
other solar phenomena result from
changes in electrical input to the Sun
the Sun trans acts with all the family
of planets in the solar system and it
probably is transacting with the
interstellar medium as well since it's
powered externally and not internally it
must reach an equilibrium with the
electrical environment to the galaxy for
continuous updates on space news from
the electric universe stay tuned to
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Welcome to Space News from the Electric Universe,
brought to you by The Thunderbolts
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What does the future hold
for the space sciences?

interest in space exploration was
remarkably high among the general public,
as humanity's attention was held
rapt by the race to the moon.

However, in the 21st century, the public
face of space science is less the astronaut
than the physicist and astrophysicist.

When young people wish to learn of
space science, they learn of big bang,
gravity-centric cosmology. They hear of
the respective works of Newton and Einstein
and they must try to make sense of
concepts such as warped space-time,
infinities and singularities.

They're told of a universe that is
96 percent dark, comprised of
matter and energy that are unproven,
invisible and “poorly understood”. To find
that a scientific foundation exists for any
different way of seeing the universe, the
young and the curious have little choice

but to seek outside the confines
of institutionalized science,
and beyond the narratives its celebrity
spokespersons promote in popular media.

On such a journey, one has a chance
to discover that an astounding scientific
foundation exists for another cosmology,
a cosmology which recognizes it is not
gravity that governs the universe,
but rather electromagnetism. The
forefathers of this cosmology are
not named Newton and Einstein.

They are the giants of
electrical and plasma science,
the renowned experimentalist Kristian
Birkeland and the Nobel prize winners
Irving Langmuir and Hannes Alfvén.

A universe filled with electrically
conducting plasma is not 96 percent
dark. It is alight with electric currents,
and the physical mechanisms that
spark the phenomena we see,
are both understandable and easily
replicable in laboratories on Earth.

Recently, we spoke with a member
of the Electric Universe community

who has made it his mission to introduce the young and the curious to the ideas of the Electric Universe. His name is Benjamin Hyde and he is a science presenter on the news station, Fox 13 out of Salt Lake city, Utah.

We asked Ben to introduce himself and to describe his efforts to spark inspiration and interest in the sciences among today's youth.

This is Benjamin Hyde and I have been studying physics, specifically quantum physics, for the better part of two and a half decades. It's been a passion of mine, it's something that I love and I really enjoy and now, two and a half decades later, I realize that the reason why I was so fascinated with it, is because I like understanding the fundamentals of things. Reality and quantum physics from my old understanding was that where that explanation was going to come from, you know. I wanted to know what everything was made of

and so I studied it and I did what
everybody in this field did. I
just took what was given
to me and accepted it, and
because I didn't have
anything different at the time,
I just said OK, this is what it is.
And it didn't really dawn on me
that it didn't make sense, and
if it didn't, I'm just like, well
I'll just roll with it. I remember
specifically a few years ago,
when dark matter and dark energy
really hit the stage, and I learned
that 96.5 percent, or whatever
it is, of the known universe
was either dark matter and dark
energy. And I thought wow,
that is a profound amount of stuff in the
universe that we don't know anything about.
So I justified it in my mind that,
basically anything was possible, because
most of what we knew
we didn't know. So, as I'm studying
quantum physics, particle physics,
cosmology, I

of course ran across videos from the Electric Universe.

Because I would go to YouTube and I would watch, you know Brian Greene, the World Science Festival videos; loved those for a while.

And of course the Electric Universe videos would pop up every once in a while. And I'm like, great

I'll watch those too,

and I did. But, what

happened, and this is funny,

every time I would study physics,

I would get to a burnout mode. You know, I would study it for a few weeks and I would just get so frustrated, I just would lose interest in it. And now, looking back on it, I realize that was because I was studying nonsense. And I was trying to bang this garbage stuff into my head; and there was a part of my head that was just saying, you know Ben, this isn't real you know, this is a mistake. So, after one of these up and down times with quantum physics,

I went into the Electric Universe and
became enthralled.

You know, I learned who David Talbott was,
I learned who Wal Thornhill was,
and I learned what they had to say and
it was just captivating.

And, as we all know, I mean all of us who
are in this, understand this feeling
of like, oh finally all the stuff we've
been studying our whole lives,
now finally makes sense. And
I've never stopped, and what
was interesting is, that I never
went back into that up and down
pattern of studying it and then
not studying it, studying it.

I've just been constantly
studying Electric Universe stuff
because, you know,
we don't know everything.

And there's still questions clearly,
but it feels like we're on the right path.

For a person with a previous focus in
mainstream physics and cosmology,
we asked Ben what might have caused his shift
in interest toward the Electric Universe:

I think what it was, is that
I got to the point with particle
physics and quantum physics,
where it was just so absurd
that I couldn't help but drop it.
But you know, drop particle physics,
I mean the whole idea that a thing
can be both a wave and a particle,
is just so colossally absurd
that it begs to be dropped.
The fact that the Electric
Universe, I think the first thing
that really got me into it, is the
fact that they were talking about
that everything in the universe is
basically moved and affected by charge
differential. I mean,
I played with a battery. I've
rubbed my feet across the carpet.
I can create a charge differential.
You can see it and the lightning discharge
between my fingertip and a wall socket,
when I rub my feet across the floor,
is just a scaled-down version of
lightning, what I see in the sky. And
then, when the Electric Universe talked

about scaling, I'm like, scaling

yes, I understand scaling.

Because one of the things I found out
that was just absolutely absurd. Another
one of the absurdities

in the current model,

is that quantum physics wasn't scalable. I

was like, wait a minute guys, if there are
fundamental principles of the universe,

they would by definition have to be scalable.

But quantum physics, by its own definition,

says that our rules, the quantum physics
rules, only work up to the

scale of maybe a molecule

and everything smaller than that.

And above that, they don't work.

That's just silly in every sense.

I mean it just defies common sense.

And I have to tell you that, this is

getting a little personal, but at the

time I was going through a

faith crisis, a faith transition,

and I just learned that

everything I had been taught

you know, religiously up until

that point in my life was also,

it was just a story.

And all of a sudden,

when I allowed myself to think that,

everything in my life suddenly made sense.

All the ideas and questions I had

that religion was supposed to

answer, but didn't answer, I realized

I had just been making justifications

for. And so, when I lost the ability

to justify what I had been told,

that skill leaked out into science and

all of a sudden I saw the same things

with quantum physics and with science in

general, that I had been just assuming and

justifying and rationalizing what

these teachers of science have told me

my whole life. And so, it was

easy in that respect, to go into the

Electric Universe because

they had very simple concepts

that were easily identifiable.

Stuff that you could do at home

in a very simple sense,

which is what I've done,

to show the principles.

See, I could never show

quantum principles here at my house,
or to the kids that I teach. You could
never do that. I mean the closest it came
was pointing a laser at a double slit and
saying, "look you can see refraction
patterns," but
you know even then you're not
demonstrating that light is both a
particle and a wave.

You're just telling people that that's
what's happening.

And that's as close as I could ever come
to demonstrating the principles of
quantum physics.

And I'm thinking, if there's actual real
fundamental laws of the universe, they
should be demonstrable and
they should be scalable.

And that was one of the first things
that Wal Thornhill talked about,
you know and mentioned I think, that
Hannes Alfvén said that the effects
of the plasma cosmology were scalable
to like you know 10 to the
 19^{th} or 10 to the 16^{th} .

I'm like, great, perfect,

that envelops the
macroscopic world that I can interact with,
and the cosmological world. Perfect, let's
go. After beginning
his research into the
concepts behind the Electric Universe,
Ben began performing his own experiments
on Electric Universe Geology,
that is, reproducing the familiar
features of planets and moons through
electrical discharge to a solid surface.
We asked Ben if he could identify the
catalyst for his own experimental research.
Of course, it was Valles Marineris and
you know Wal and David talking about how
that there are
scalloped craters and that electrical
discharges could do this.
I'm like,, you know, I was just fascinated
because it was so brilliant to see
Valles Marineris and realize
how big it was and the thought that
electricity could do that,
was just captivating. So, I'm of course
looking for how to do this.
It was really funny, I was so blind

by this, it's amazing because I
had in my possession a transformer
that took, you know 120 volts and bumped
it up to 12,000 volts. And I've had that
for years, but it never dawned on me that I
could play with it, until I
told one of my co-workers
about the Electric Universe and he
said, you know what Ben, I've got a
transformer at my house that I use to
create Lichtenberg patterns in wood. I'm
like, yes, yes, yes, yes, that's
what I'm talking about. He
said I'll give it to you and
so I'm like great I'll take it.
But I didn't even realize that I
already had one in my possession.
I'd been using it to create a Jacob's ladder
for my science experiments for the kids
that I do with spark science.
And so I ran out and dismantled
the probes or the two electrodes
from my Jacob's ladder and just put them
on the dust plate,
like, what you say, the little
metal plate and then I just created an

electrode out of a screwdriver. And bam,
I started throwing different powders on
there, different dust and just creating
you know, the butterfly effects
that we see, the lightning scars,
everything. Everything that the
Electric Universe Geology folks
deal with. And it was just fun
and so I've just been out there
for the last month, throwing
different powders on there.
As a side note, I'm actually
a licensed pyrotechnician
which means that I build fireworks
as well. So, I've got a whole
arsenal of different compounds
and I'm really curious to see how they
all react to an electric field. And
so, I've been putting each one of
these in the different fields,
and I found that boric acid works
and [that it] creates some really
interesting effects. Baking soda
creates really interesting
effects, and charcoal
creates really interesting effects and

I have not gone through and tested all of my powders yet. But I'm in the middle of that. That's what I do and then I post a lot of this stuff to Facebook Live and to my Spark Science channel.

And it's so fun and anybody can do it.

Like many other members of the Electric Universe Geology community, Ben himself resides in the American Southwest.

We asked Ben if his locale provides unique opportunities for exploring electrical geology concepts. Yes, oh absolutely. It literally feels like I'm at ground zero for the supposed electric discharge phenomena that happened between the earth and Mars, as we understand it. Now I realize that the earth has a couple different places on it that have, you know, just striking features, but Utah is one of them.

Now I live in Utah Valley and the Wasatch mountain range is to my east. I mean I'm literally five minutes from it; I can walk to the mountains.

Well there is a canyon just like 10 miles

away, that was featured in Andy Hall's episodes and he's taken pictures of it, and he talked about it and I've always noticed it.

it's just startling, because you have the mountain range that's basically smooth. And then all of a sudden there's this horrible jagged crack, right there, and then the mountains get smooth again. and I've gotten out, I've taken pictures of it. I've actually hiked up this canyon. My father-in-law lives right at the base of it right, at the mouth of that canyon and we've just explored it. And then seeing that Andy Hall thought it was significant as well, I finally went up there and climbed up there and have taken pictures.

And I told you this before, but the rock cliffs up there, there's one of them that has a hairpin turn in it. Now, regardless of whether that was electrically made or or lava made or whatever, it was something catastrophic and well worth investigating.

When I learned about these different features, I started

looking at Google Earth in my local neighborhood, and everything that everybody talks about, you know these wind-driven triangular buttresses, I can see in my own backyard. It's amazing, I mean just right here in Utah county. You know how Andy Hall describes triangular buttresses and supersonic winds, is right here. I mean I don't even have to go to Google Earth; I just could literally walk outside. So, I've been pulling out my astronomy binoculars, looking at the mountains. We just got back from a family vacation down in southern Utah. We were 30 miles away from Canyonlands and a lot of the features that Andy Hall has talked about. And so, this is what I did, and this is what I'm doing right now. In fact, I'm glad that I have this platform to talk, because I want people to send me rocks and soil samples from wherever they live. Because I want to put them under

my arc and see what they do.

Because I just brought

two samples back of rock

that looked very volcanic, rock from southern

Utah and soil samples. And as soon as I'm done

here talking to you, I'm going out and

I'm putting them under the arc to see

what they do. And of course I'll

film it and share it with everybody.

I'm going to show you here what

the arc does with baking soda. And

you can see right here,

that as I turn on the arc,

this butterfly pattern just erupts. I

mean you can see that as it comes

down to a point, it creates a chevron

here and the moment that I turn it

on, you'll see the poof of dust

going around it, which tells us that

there are particles of the baking soda

that are ionized. Not all of them,

but enough of them are, to where they're

immediately expelled from the region.

And if I do this just

right, and if I position the

electrode in just the right area, you

will see

that the arc will form. It'll strike

the powder and create a little

nodule, I guess is what I call

it. But as the arc dissipates, or

if I make the arc, if I bring it

further away from the dust plate and

just go back to the electric field

effects, you'll see that that little nodule

remains. It stays in place and you

can touch it, and of course you

can smash it with your

finger, it doesn't take much,

but what's interesting is that it's like

that instant petrification that we

hear about, that Peter Jupp

talked about. It literally looks like

something like that is happening: it

forms a little column, a little bead,

that holds itself in place, even though

all the dust around it, as you can see,

is flying away, is being excavated.

Now this one is barium,

(not barium, I'm sorry, barium

also makes green in fireworks),

this is boric acid and as you can see, if

we apply the arc to it, boric acid also burns green. But as you'll notice, it also can create these beautiful butterfly effects and these are the same ones that we see in different places all over the planet.

Andy Hall has pointed them out: very, very stark examples of them in southern Utah.

People in the group have talked about the ones in Russia, but they're everywhere and you can create them in the lab right here.

The last one I have is just charcoal which, of course, is just burned wood. It's carbon and as you can see, as I turn it on to strike the arc, you get a big cloud of dust of just excavating the dust and then as we let the arc continue, it will form that familiar chevron shape or butterfly. It just depends on how long you leave the arc. If you leave it on for a few minutes, you'll get the full butterfly wings, as

you can see. If you leave it on for just a couple seconds you'll get the formation of the chevron, which you can see.

So I'm not done; those are just the three most interesting ones that I've found.

And I'm going to do more; I'm going to use just regular dirt. I've got clay I'm going to use and try and create that effect that Wal Thornhill and Dr. Ransom created, but that's still up and coming.

I don't have that done yet.

Given the significant differences between the Electric Universe and standard cosmology, we asked Ben for his thoughts on the best approach to introducing the subject to newcomers.

Well, there's two things that strike me.

The last time I was in public talking about this, I said the following. I said science is all about learning and progress and if anyone ever tells you that we have decided, and we've finally landed on it, you know that that's not science. And everyone you know, they know that. And so, I start off my conversation

with them and I tell them that,
and then I say, our old knowledge
is that comets were icy snowballs,
but we have since sent out probes that
have landed on comets, and we've seen,
they've taken pictures, and we've
seen that they're not icy snowballs,
and here's those pictures. So, the icy
snowball was the old thinking, you know
from Fred Whipple in the 1950's and the
new knowledge that we're gaining is this.
That's palpable, that's a spoonful
of sugar right there. You know
that's not saying that all science is wrong
and scientists are stupid and they're
egotistic maniacs that are just
chasing the dollar. I was able to explain
it like that and the
people responded very well.
It was palpable to them and that was the adults.
Now the kids are actually a lot easier,
because kids especially at the age that
I deal with mostly, you know, right around
10 years old, they are naturally curious.
They have big questions and I know this,
because I have eight kids myself and I've

got five of them in that range right now;
they ask me about where
did the universe come from?
You know just big, big questions and it's not
because their dad is really into science,
it's because they themselves are
interested. And so, when I tell them
that the things they're learning
in school, are stories,
they are an explanation based on
our best knowledge at the time,
it's easy for them to say, oh what else
is there? And I say, well here's what else
is there. So, kids, it's really easy to
introduce them to the stuff, because
they're naturally curious. So you
don't have to come up with clever,
soft ways of telling it. You
just answer their questions.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by

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How big is space?

Of course the question
demands refinement

since the term 'space' merely describes a
region that is empty of visible content.

When we consider for instance the
space between the Earth and the Sun,
it's a distance of just
over 90 million miles.

When we consider the distance between the
Sun and the outer edge of its influence
called the heliopause,
it stretches to a degree that the
human mind finds hard to comprehend,
to about 11 billion miles.

The nearest star system
beyond our solar system

Alpha Centauri is about 24
trillion miles from Planet Earth.

Within the Milky Way galaxy, at
least 200 billion stars inhabit

the roughly 100,000 light-years of
space the Milky Way encompasses.

And beyond the Milky Way,
the Hubble telescope has already revealed
an estimated 100 billion galaxies
with many billions more
waiting to be discovered.

In other words, space
is a big place.

One might think that within
that unfathomable vastness
for objects to suffer the same fate
as automobiles in busy traffic
would be an exceedingly
rare occurrence.

Nevertheless, a cosmic
collision is a process
that astronomers and
astrophysicists routinely propose
to try to explain countless data at
all scales throughout the cosmos.

In our own solar system, the ravaged
surfaces of planets and moons
supposedly testify to random
impacts over eons of time.

We do see types of craters that are

reproduced in impact experiments.

However, we also see endless varieties

of so-called 'anomalous' craters,

including straight-edged

polygonal craters,

pristinely graded and spaced

chains of highly circular craters,

craters made of concentric rings,

aligned craters,

so-called bull's-eye craters,

and the consistent preferential

appearance of smaller craters

on the rims of larger craters.

That all of these craters are routinely produced

in experiments with electrical discharge

remains a fact completely unacknowledged

and unexplored in planetary science.

A cosmic collision is a process that

institutionalized science has sanctioned for decades.

As is sometimes said: if

your only tool is a hammer,

you see every problem as a nail.

Thus, today in the

astronomical literature

objects smashing together for

some reason is routinely proposed,

even in vast rooms of space where
the odds of such collisions
are almost incalculably remote.

One of the clearest examples of
this can be seen in comet science,
in the ad hoc theories that astronomers have
proposed to try to explain a growing enigma.

When the nucleus of Comet 67P was first
imaged by the ESA's Rosetta spacecraft,
scientists were puzzled by its
double-lobed or "rubber duck" appearance.

The two lobes of the comet which
are joined by a neck region
raised questions about the
comet's origins and history.

The ESA team considered
two hypotheses.

One was that localized erosion of a single
object formed the distinct narrow neck.

The other was that a low-speed collision
between two fully formed comets,
each of which formed from accretion
in the "early solar system,"
produced the distinctive shape.

Scientists eventually settled
on the collision hypothesis

in part because of the extraordinary layering of the nucleus's rocky material which in many regions appears indistinguishable from sedimentary or igneous rock on Earth.

As investigator Matteo

Massironi stated,

"It must have been a

low-speed collision

in order to preserve such ordered

strata to the depths our data imply."

Investigator Bjorn

Davidsson said,

"...the striking structural

similarities between the two lobes

imply that despite their

initial independent origins,

they must have formed through

a similar accretion process."

However, a more recent

scientific study in 2018

argues that 67P's formation

was much more recent,

a mere millions rather

than billions of years ago.

As reported by phys.org,

"Comets which consists of

two parts, like Chury,
can form after a catastrophic
collision of large bodies.

Such collisions may have taken place
in a later phase of our solar system,
which suggests that Chury can be much
younger than previously assumed.

This is shown through computer simulations
by an international research group
with the participation of
the University of Bern."

Unlike earlier proponents
of the collision hypothesis,
the investigators believe that
67P could not have survived
for billions of years in its
current double-lobed shape,
so they suggest that a catastrophic
collision destroyed a number of comets
from which some of the material immediately
coalesced in the vacuum of space
to produce 67P's
double-lobed nucleus,
as illustrated in the virtual
reality animation on your screen.

In response to this hypothesis, these

major points must be emphasized.

First is the truly
incredible failure,
both experimental
and observational,
of the accretion hypothesis to explain
the rocky bodies in the solar system,
from planets down to
asteroids or even comets.

As briefly described in a
recent Washington Post article,
"According to the traditional story
of the origin of the solar system,
the planets formed
slowly from accretion,
as particles in the circumstellar disk
clumped together to great pebbles,
then slightly larger spheres, on and on
until they reached their current size."

But when scientists try to re-create this
story with computer models, it breaks down.

Rather than growing, these incipient planets
tend to splinter after reaching pebble size.

How could this process result in bodies
the size of those in the asteroid belt,
let alone whole planets?"

The next problem is the incredible improbability of cometary collisions. This improbability is highlighted on an official NASA webpage entitled 'Where Do Comets Come From?' It states of the Kuiper Belt and the hypothetical Oort Cloud, "Each of these regions contain billions of comets, but they have so much room in the vast room of space that they get no closer to each other than we on Earth do to the Sun." A comet nucleus is typically no more than a few to several kilometers in diameter. If comet 67P's double-lobed form were a lone or even rare occurrence, then perhaps one could be tempted to accept the collision conjecture as a miraculous one-time event. However, it is an astounding fact that the double-lobed appearance does not appear to be rare at all. Although relatively few comet nuclei have been imaged to date, the number of bodies that have similar shapes

to 67P has grown increasingly daunting.

As noted by University of Arizona

investigator Stephen Schwartz to space.com,

"Although the number of comets for which

we know their shapes is still few,

the tendency so far is for them

to be bi-lobate or two-lobed."

The comet Halley,

comet Borrelly,

comet Hartley,

and more recently radar images

of the Comets 8P Tuttle

and comet 45P/HMP have all been

suggested as so-called contact binaries.

And of course, comets are not the only rocky

bodies to display the double-lobed shape.

Numerous asteroids are

also double-lobed.

As described by Lance Benner of

NASA's Jet Propulsion Laboratory,

"Radar imaging has shown that

about 15% of near-Earth asteroids

larger than 600 feet have this

sort of lobed, peanut shape.

There must be a process that forms

the double-lobe naturally."

And two of the five moons of the dwarf
planet Pluto, Kerberos and Hydra,
also display forms which
astronomers can only imagine
resulting from the
collision of two objects.

In this view, relatively
routine collisions
in the unfathomably vast rooms
of interplanetary space
caused colliding
objects to stick together
rather than fragmenting or
simply repelling each other.

However, as longtime viewers
of this series are well aware,
experiments with electric arcs routinely
produce fused or double-lobed spheres
as seen on the screen in Dr. C.J. Ransom's experiments
to replicate the trillions of spherules
called blueberries on the surface of Mars.

The similarity to Comet 67P and other
double-lobed bodies is self-evident.

Of course every high-resolution
image of a comet nucleus to date,
as well as the more recent

radar images of comet nuclei,
reveal that comets are as far from
"dirty snowballs" as one could imagine.

Their terrains are dry, rocky,
blackened and geologically complex.

The complex layering
of Comet 67P,
which astronomers can only attribute
to accretion and collisions,
has also been seen on
other comet nuclei,
including Tempel 1 in 2005.

This was an explicit prediction
of the Electric Universe theory
which also proposed that comets, as
well as asteroids and meteoroids,
were electrically torn from the
surfaces of planets and moons.

It's not the position of the Electric Universe
that cosmic collisions simply never occur.

We do see examples of craters
on planets and moons
that may be best explained
by kinetic impacts.

But given how common the appearances of
double-lobed rocky bodies in our solar system,

including and
especially comet nuclei,
astronomers must confront the actual probability
of collisions forming those tiny bodies.

Again, a comet nucleus is a
minuscule celestial object
and as noted by astronomer and specialist
in celestial mechanics Tom Van Flandern,
"The mean distance between comets in the
hypothetical Oort cloud is 1 billion km,
so collisions and accretions
have negligible probability..."

Again, the double-lobed
appearance is stunningly common
among the comet
nuclei imaged to date.

Just how commonplace could
cometary collisions have ever been
at any time in solar system history
to produce this prevalent form.

This strange and
unfounded conjecture
is now the standard
interpretation in comet science
while no effort nor resources have
been devoted to even examining

the genuine alternative hypothesis
that the Electric Universe has offered.
In a forthcoming episode,
physicist Wal Thornhill will
explore "doubleness cosmology"
where stars and planets will
tend to be formed in pairs
and galaxies begin life with two "plasma
sumps" in close orbit about each other.

It seems that objects formed in
interplanetary Birkeland currents
will also begin life in
pairs which may coalesce,
like the central bulge
in a barred spiral
which has a peanut-
shaped cross section.

So asteroids and comets may
be expected to be found
with the same double-lobed structure
due to their electrical birth.

The world of astronomy may inevitably
confront a collision of cosmic proportions.

Not a collision between tiny bodies
in the unimaginable vastness of space
but rather a collision

with reality.

Good afternoon.

This is a great conference,
it takes a huge amount of work and an
effort to organize an event like this,
so, to all the organizers,
thank you very much.

I'm glad...

I'm glad to be here today and talk
to you about the instrumentation,
data acquisition, data
transformation and analysis.

My job with the SAFIRE team is to not
only collect data from the experiment
but the collect it in such a way
so that it can be used after
an experiment has been done
for our team to more easily see
relationships between various events
that are occurring
during the experiment.

Further to this point is to also be able
to pull the data from an experiment,
so we can do detailed analysis
on those relationships.

In these data and the integrity...

it is these data and the

integrity of these data,

which is vital to the quality

of the work that we do.

But first, I would like to talk to

you about what is an experiment,

how experiments were done in the past

and how the SAFIRE team does them today.

An experiment is a procedure to

test a concept or hypotheses.

The reasons why we do

experiment is to gain insight

into what causes are involved

in an observed effect,

which may support the hypothesis or

show that the hypothesis is false.

Galileo's hypothesis was that on Earth

all object fall at the same rate,

but prior to these most people thought

that the heavy ball should drop faster.

Galileo found that his

hypothesis was correct,

but the big question

became, why?

Why are they dropping

at the same rate?

It was not until Sir Isaac Newton

defined the law of gravity,
that scientists started to understand
why the balls fell and the same rate.
So, as science progresses and
experiments become more sophisticated
the causes of effects become
more difficult to determine.
This also means it is more important to
conduct a robust or repeatable experiments
and use measurement devices capable
of high degree of accuracy.
It also becomes more challenging
to clearly show to everyone
the causes of a
particular effect.

I want to introduce the important
concept of time in an experiment
we start over the beaker of cold water and
we are going to heat the water one way
and then we will hit the
water by any another method
you need to add a stopwatch
and the thermometer,
so we can see how long it
takes to boil the water.

Now if you added the heat

we will watch and document how

long it takes the water to boil.

After approximately 10 minutes,

the water comes to full boil.

But then I ask myself, is there more

effective and quicker way to hit the water?

I had the idea that if you could use

the afterburner of an American F18

that might be a more effective

method to heat the water.

I discovered that,

in fact I was right.

It took approximately 0.05 nanoseconds, to

not only hit the water, but vaporize it.

and the beaker with it.

I suggested to Monte that

we should keep the F18,

but he was mumbling something

about budget constraints.

Now, back in today, when

scientists work in the laboratory

they had to document

everything manually,

as experiments got more complex

it required more scientists

to record and collect data

they created procedures on

how to collect the data.

Aligning the data to the same time

line was a challenge in the past

as it is today.

Then plott of the data and

finally do analysis of the data

to determine the

cause of the effects.

So, as experiments

become more complex

the necessity of more sophisticated

methods of measurement

become vital to the

success of the experiment.

Let us have a look at the

progress of the data acquisition

specifically in this case

capturing of what have seen.

This picture of the Egyptian Sun was most

likely creative with a hammer and chisel.

In the mid 1800's an astronomer

and physicist Warren de La Rue

design and built the first cube photograph,

used to photograph the sun's corona.

For his time this was a major

scientific breakthrough,
since up until this time no known photographs
of the sun's corona ever existed.

But as we all know advances in the technology
of the ions have help humanity in many ways
and we now have through the hard
work of Lockheed Martin and NASA
the Solar Dynamics Observatory.

What we are looking at
is a full disk multi-wavelength Extreme
Ultra Violet image of the Sun,
taken by SDO on March 30th 2010.

For scholars trace different
gas temperatures,
and these temperatures are
represented in their own images
as the Olight spectrometer
returns this light spectra.

At the top of this graph we are looking at
the SDO broad light spectrum from the Sun.

Below we are looking at
the actual light spectra
converted to specific
light wavelength peaks,
every element and it's very specific light
spectral signature, when it is ionized.

And it is by using optical
spectroscopy you can tell
what elements make up
the light from the Sun.

or, in our case, the light
is coming from SAFIRE
this is a SAFIRE plasma
discharge and the light we get.

And this is an example of spectral signatures
we get back from the optical spectrometer.

The SAFIRE experiment is based on Monte's
announces of the electric Sun model
of charged plasma affecting the matter
of a different electrical potential.

So, we introduce electrical power
in the form of voltage and current
than chamber pressure
and plasma gas types.

And when these factors are
introduced into the experiment,
then we measure these responses:

Plasma voltage and current;

Chamber pressure;

Plasma gas types;

Light spectra;

Langmuir probes voltages;

Temperature;

Video capture;

Photography.

Here is a picture of

phase one of SAFIRE

showing the array of many instruments

we are using to acquire data.

As each instrument

is acquiring data

we also recorded video of each

instrument computer monitor.

This is the mass spectroscopy,

this is a screen of voltage

current and pressure gauge,

this is a screen of

the light spectra.

And we also conduct

synchronize video recording

of the changes in the SAFIRE

chamber in real time,

this then consolidate all the video

feeds into one master video,

as a video recording

of each experiment.

This is the grand tour of the video, it

helps our team very effectively recognize

the points of interest that
happened during the experiment.

Let us investigate how data
acquisition devices work.

You have seen some of the results, now let's
take a look at the vorish under the root.

There is an analog-to-digital converter at
the heart of each data acquisition device.

The controller connects the data acquisition
device and collects the digital data.

The computer communicates
with the controller,
reach the controller's
data and stores the data.

The data acquisition path follows
from the data acquisition device
through the controller into the
computer where all the data is stored.

A data transformation engine takes
all the data from the experiment
and transforms the data into
comprehensive graphical overlays
and this is to help the SAFIRE
team to analyze the data
looking for causes of the effects
the observer of the time.

Here we have thousands of data points of the plasma current, now be overly the voltage, and high pressure measurements, and high vacuum pressure measurements and these are just a few, there are thousands and thousands of data points.

But what we see is that in this region, for example, after the pressure drop in the chamber, there is a huge spike in voltage and current.

The data transformation engine allows us to zoom into these regions with extremely high resolution and we see that both, the voltage and current, are discharging out in this region of the graph.

What we discovered was quite profound, that during a short time SAFIRE had an intense plasma discharge that measured over 2 million watts.

What is so profound is that we limited the input power to only 1800 watts.

The transformation engine
allows us to zoom in
and examine in extremely high
detail these points of interests.

It is these kind of information
that helps us determine
what factors need to be used
in the design of experiments
that Dr. Paul Anderson
will present now.

Thank you.

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Welcome to Space News from
the Electric Universe,
brought to you by The
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On this series, we have explored the
significance of the filamentary
structures seen at all scales
throughout the cosmos.

From the streaming filaments
seen in the ion tails of comets,
to the giant snake-like filaments
reaching from the surface of the Sun,
to the dark cores of sunspots.

To the stupendous filamentary
networks intimately linked
to star formation in
the Milky Way galaxy,
to the web-like filaments along which
galaxies form, like pearls on a string.

Filaments in space are the
expected features of a universe
where electric currents connect celestial
bodies across cosmic distances.

Electrical circuitry pervades interplanetary,
interstellar and even intergalactic space

which can be seen when electric currents meet regions of dusty plasma and pinch the material into visible filaments.

It's therefore no surprise that the discovery of huge filaments in space continues to send mainstream scientists searching for answers.

Recently, astrophysicists using the Very Large Array telescope have made what for them is a completely unexpected discovery near the center of the Milky Way galaxy.

What they have found is a nearly two-and-a-half light-year long filament that is "probing the hypothetical Black Hole at Sagittarius A".

The December 20, 2017, Phys.org report describes the discovery as follows, "The center of our galaxy has been intensely studied for many years, but it still harbors surprises for scientists.

A snake-like structure lurking near our galaxy's supermassive black hole

is the latest discovery to
tantalize astronomers."

The leader of a study on
the discovery stated,

"With our improved image, we can
now follow this filament
much closer to the Galaxy's
central black hole,
and it is now close enough to indicate
to us that it must originate there.

However, we still
have more work to do
to find out what the true
nature of this filament is."

The investigators are only
considering three possibilities
to explain the
mysterious filament.

One is that the hypothetical black hole
"kicked away" high-speed particles
somehow forming the
light-years long filament.

This would involve the black hole's
rotation pairing with spiraling gas
to produce an incredibly
powerful magnetic field.

Another possibility
they've entertained
is that the filament is a mathematical
conjecture called a cosmic string,
which theoretical physicists have proposed
may have formed in the early universe,
but which have never been discovered.

Ironically, as described
in the phys.org report,
it's believed that
hypothetical cosmic strings
"... are long, extremely thin objects
that carry mass and electric currents."

The final notion the scientists
have considered is that
the alignment of the filament with
the galactic center is coincidence.

However, as the
phys.org report states,
such a coincidence is quite
unlikely to happen by chance.

Unfortunately, the investigators are not
considering other more promising possibilities,
namely, that the hypothetical black hole at
the galactic center simply does not exist.

As we noted in the recent episode

'Black Holes Behaving Badly',

in astrophysics today the black hole
has become an unfalsifiable concept.

In our own Milky Way it

appears that no discovery,

including the recent observation

of star formation occurring

much too close to the

hypothetical black hole

where tidal forces must rip the gas and

dust apart before it can form stars,

will force any doubt of the

black hole's existence.

As we've outlined many times,

the position of Plasma Cosmology

and the Electric Universe

is that it is not a black hole

at the center of galaxies

but an ultra-high density

energy storage phenomenon

demonstrated for decades in

laboratories, called a plasmoid

which is a kind of load in the

Galactic electrical circuit.

The plasmoid concentrates

and stores energy

and is connected to a larger network of electric currents.

When the plasmoid reaches a threshold density, it discharges, usually along a galaxy's spin axis.

This is in fact the source of stupendous galactic jets.

The discovery of a vast filament, such as that recently observed, is expected and is in fact required if it is a plasmoid at the galactic core.

As we've noted several times recently, the role of magnetic fields in sustaining cosmic filaments is now being discussed with increasing frequency in astrophysics.

Earlier this year, scientists reported the first-ever measurement of the "magnetic bridge" linking the Milky Way's two nearest galaxies.

Known as the Magellanic bridge, the filament stretches for approximately 75,000 light-years connecting the Large and Small Magellanic Clouds.

One of the researchers stated,

"Not only are entire

galaxies magnetic,

but the faint delicate threads

joining galaxies are magnetic, too.

Everywhere we look in the

sky, we find magnetism."

The lead author of

the study stated,

"In general, we don't know how such

vast magnetic fields are generated,

nor how these large-scale magnetic fields

affect galaxy formation and evolution.

Understanding the role the magnetic

fields play in the evolution of galaxies

and their environment,

is a fundamental question in astronomy

that remains to be answered."

But of course, magnetism is

only a part of the story

and will always remain mysterious without

the recognition of the electric currents

required to produce and

sustain the magnetic fields.

However, we do see increasing signs that this

inevitable recognition is beginning to occur.

The December 25, 2017, issue of 'Astronomy
& Astrophysics' published the paper,
'The jets of Active Galactic Nuclei
(AGN) as giant coaxial cables'.

In looking at the properties of
stupendous parsec-scale jets,
the authors conclude that,
"...our results have now yielded firm
evidence that many — possibly all —

Active Galactic Nuclei jets have
inward currents along their axes
and outward currents in a more
extended region surrounding the jets.

It also indicates that astrophysical jets are
fundamentally electromagnetic structures,
which must be borne in mind when
interpreting observed features
in the distributions of both their
intensity and linear polarization."

We note the counter-rotating
magnetic fields the authors depict
in this diagram of the
jet's environment.

As those in the Electric Universe
community are well aware,
the counter-rotation has

special significance.

In recent years, Dr. Donald Scott has developed the mathematical modeling of a Birkeland current whose influence can be seen visually in the form of counter-rotating shells as observed in Earth's cylindrical auroral sheets and at the north poles of the gas giants Saturn and Jupiter.

Dr. Scott will discuss the role of Birkeland currents in galactic jets in a forthcoming Space News.

Another scientific paper published in October, 2017, also proposes that giant electric currents flow through the Galactic jets.

The author states:

"Several researchers have reported direct evidence for large-scale electric currents along astrophysical jets.

Quite unexpectedly, their directions are not random as would have been the case if the magnetic field were generated

by a magneto-hydrodynamic dynamo.

Instead, in all kilo-parsec scale detections,
the inferred electric currents
are found to flow away
from the galactic nucleus.

This unexpected break of symmetry
suggests that a battery mechanism
is operating around the
central black hole."

However, we again note the futility of
scientists looking to colossal gravity
as the cause of stupendous
electromagnetic cosmic phenomena.

The question is, what can any so-called battery
do that is not connected to a circuit?

The central object in an
active galactic nucleus
must be an electromagnetic
energy storage circuit element,
the aforementioned plasmoid in a far
grander galactic and extra-galactic circuit.

Plasma cosmologists
recognized this decades ago
and it was explained excessively in the
book 'The Big Bang Never Happened'.

Yet, these concepts are nowhere to

be found in mainstream astrophysics,
leaving working scientists to ponder
undeniable electrical phenomena
with little hope of resolving
the underlying cause.

And so as we enter
the New Year of 2018,
our basis, at The Thunderbolts Project, for
optimism and confidence has never been stronger
as groundbreaking discoveries lead
scientists closer to our Electric Universe.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

Welcome to Space News from
the Electric Universe,
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A team of scientists on
Earth have made a surprising
and perhaps a very significant
discovery on the Sun's magnetic field.

The scientists were utilizing a solar
telescope to study the Sun's corona,
and through good-fortune were
able to observe and analyze
an exceptionally
powerful solar flare.

The team focused on estimating
the magnetic field strength
of features called coronal loops,
which are glowing arcs
of electrified plasma.

What they found is that the
coronal loops' magnetic field
is ten times stronger than solar
physicists had previously thought.

The lead investigator
of the study stated,

"This is the first time we have been able to measure accurately the magnetic field of the coronal loops, the building blocks of the sun's magnetic corona, with such a level of accuracy."

However, the description of coronal loops as "building blocks" of the Sun's magnetic corona reveals enduring beliefs about the Sun and its magnetism that may demand reassessment.

Today, retired professor of electrical engineering Dr. Donald Scott, author of the book 'The Electric Sky' shares his analysis of the real processes behind the Sun's magnetic field, based on the Electric Sun model.

In regard to that that press release about the Sun's magnetic field being measured as 10 times stronger than what they thought before, I think that's, that's very good.

That's very, I'm very encouraged that they

are measuring magnetic fields on the Sun.

The lead investigator,

Dr. Kuridze, I believe it is, said,

"Everything that happens in

the Sun's outer atmosphere

is dominated by

the magnetic field,

but we have very few measurements of its

strength and spatial characteristics.

This is the first time we have been able

to measure accurately the magnetic field

of the coronal loops",

that's important,

"the building blocks of the Sun's magnetic

corona, with such a level of accuracy."

So he says that the coronal loops are the

building blocks of the Sun's magnetic corona.

Well, that's just not so.

For several reasons.

If the astrophysicists have little or

no knowledge about how magnetic fields

are created within

the Sun to start with,

then it's, there's a little doubt,

there's a little surprise on our part

as to why they are always

surprised by what they measure.

In any event, the corona is
mainly an electrical phenomenon.

It's an electrically

driven plasma

and it's not primarily

a magnetic one.

There may be some magnetic

fields within it,

but the corona is mainly an

electrical phenomenon and

astrophysicists have gone

right to the precipice

of allowing their theories to

incorporate magnetic fields - magnetism

but not electrical ones.

Well, Hannes Alfvén pointed

out a long time ago that

the coronal loops are examples

of an electric plasma discharge

and he pointed out that these

loops are inherently unstable

because they incorporate or can

incorporate a magnetic electrical structure

called a double-layer.

And I said magnetic, it

happens within a plasma
and so there is a magnetic
field within that plasma
but the double-layer itself is
primarily an electrical phenomenon.

And the whole idea is
that the double-layer is,
can be, it tends to be at times
unstable and it can explode,
and that the explosion of that double
layer in that prominence, in that loop,
is what gives rise to what we
now call coronal mass ejections.

The material of which
the loop is made, plasma
is spewed out just like it would be from
any other explosions into space.

But anyway, astrophysicists
have now seized upon the idea
that anything they can't fully explain
was to be due to magnetic fields.

So for example, if you
ask an astrophysicist
what causes sunspots?

They'll usually answer
something to the effect that

the sunspots are cooler than the
photospheric surface around them.

Well, why is that?

The typical standard

answer is that

well, the Sun's magnetic

fields sometimes gets twisted.

Over time all that messy

an uneven twisting movement

distorts the Sun's main magnetic field in the

same way that your bedsheets get wrinkled

and bunched up when you

toss and turn in your sleep.

I kid you, not that I actually read

those words in a recent press release.

Then they go on to say, sunspots are

cooler areas of intense magnetism.

Oh, say that again? Cooler

areas of intense magnetism.

So intense that they inhibit the flow of hot

gases from the Sun's interior to its surface

and that's their explanation

of what causes sunspots.

That the magnetism has

stopped the flow of hot gases,

and having presented that

as a well-established fact

they immediately move on to the discussion
of what they see the sunspots doing.

But wait a minute!

Since when does magnetism push
gas around or inhibit its movement?

Can we move or halt gas flow by
putting a bar magnet at its path?

No, of course not.

But without explanation for their
assertion they continue; quote,

"The bunched up spots ...

have so much magnetic power
that they push back the
hot gases beneath them
and prevent the heat from
rising directly to the surface.

And so, that supposedly causes
a cool sunspot to occur.

If you're, I asked for example,
what causes thunderstorms?

The answer is not clouds.

It's much more

complicated than that

and that's the kind of level of explanation

that we're getting about sunspots.

It's that magnetism

cools things down.

Anyway, several years ago, Stanford University

announced that they had been studying

what they called flows

below the surface of the Sun.

They discovered jet streams or what they

called rivers of hot electrically charged gas;

OK, translation -- plasma;

flowing beneath the

surface of the Sun.

They also found features

similar to trade winds

that transport gas beneath

the Sun's fiery surface.

Well obviously, rivers of plasma

are rivers of electrical charges

and that is by definition

an electric current.

And currents cause

magnetic fields.

So it doesn't take much of a leap of imagination

to realize that flows of charge

within the Sun currents

are what cause

these magnetic fields.

That's why the magnetic fields
exist in the first place.

Well anyway, seeing their work, seeing
the work that the Stanford people did,
I began to think about, I hate to use that
word flows of gas and that sort of stuff,
so I said well, let's
put the real language on there.

If we label that with currents,
how could those currents result in
what we see on the surface of the Sun?

These magnetic loops.

Well, I realize I have a
picture there you can put on,
that is in my book,
that's my picture.

I'm very proud that other people have
borrowed it and use it from time to time
and I've seen it several times
in other people's papers.

And that's great,
but I want to emphasize that is
only my idea, my supposition
of what might be going
on within the Sun.

I think it explains the

magnetic loops sufficiently.

Now is this the only
arrangement of currents
and magnetic fields within
the Sun that can cause these?

No, of course not.

But it is one of
the possibilities.

So if you take a
look at that picture,
you can see that entering down
into the North Pole of the Sun
and entering up into the
South Pole of the Sun,
I have labeled there the main current
and it's increasing in strength.

OK well, let's presume, you know, there
is a sunspot cycle, 11-year sunspot cycle,
actually the whole
cycle takes 22 years,
but it's, half of it is up on the
upswing and half of it is on the downswing.

And so, during the
part of that cycle,
which is the active
Sun is growing,

I don't know but I
think it's possible,
what we're seeing is that the
main current into the poles,
those red currents, are
increasing in strength.
So I've labeled the diagram
'increasing in strength',
and as a result if you use
the right hand rule, you know,
put your thumb in the
direction of the current,
and let your fingers show you where
the magnetic field is going to be,
you can see that there circulating
around those main incoming currents
are some magnetic fields.

I think they've done
them in blue there.

And also if the current is increasing, the
magnetic field is increasing in strength.

And so, if we go down,
proceed down into the Sun,
these four concentric
circles are there to show that
those magnetic fields are

increasing in strength.

Well, transformers. Every

transformer on Earth

relies on what's called

transformer action

and that's what

we're seeing here,

is that if the current is increasing

in the transformer magnetic core,

the magnetic field is increasing

and there is that magnetic core links

an output winding in a transformer,

and here there is no

magnetic core,

but there is the possibility of

magnetic field being inside the Sun.

And the Sun inside

the Sun is a plasma.

And a plasma is conductive.

And so therefore the plasma which links

those increasing blue circles, they are

those increasing magnetic fields,

there's a possibility

for current to be formed

by the changing strength

of that magnetic field.

So let me say that again.

One of the basic rules of electrical science is that if there's a conducting path through a magnetic field and the magnetic field is changing, in this case increasing in strength, there will be induced in that conductor, a current, a secondary current.

And you can see, I've sketched it lightly but I've labeled it secondary current.

So that's the main input current, it's the primary winding, and the secondary current is the output winding, of a solar transformer, if you will.

Now if you look at that, there's light little secondary currents.

If you put your thumb in the direction of that secondary current, your fingers will be in the direction of a magnetic field which is produced, which is the result of those secondary currents.

So very lightly there in the northeast
quadrant, I've shown a magnetic loop
created by that
secondary current.

Well, we've observed for years
the fact that these magnetic
loops do indeed come from sunspots.
And where the magnetic field leaves the
Sun, that's by definition a North Pole,
and where it enters the Sun,
that's by definition a South Pole.

And if you look and compare what happens in the
North hemisphere with the South hemisphere,
you see that if going from, let's
say, east to west in the north,
you get a North Magnetic Pole
and then a South Magnetic Pole.

And if you go from east to
west in the southern hemisphere,
the first thing you come upon
is the South Magnetic Pole
and then you come
upon the North Magnetic Pole.

And so as the
sunspot cycle goes on,
these magnetic loops,

these coronal loops,
they change their location and
latitude. In the other half of the cycle,
those north-south
pole positions reverse.

And so this, I claim,
is a possible model
that explains several things.

One thing that is certainly
consistent with reality of these two,
the way these North Pole
and South Pole configurations
and the magnetic
loops change around.

Also that main current, you can
see it coming out at the equator,
I labeled it, main current
increasing in strength.

That's a well-known
current sheet.

In one of the press
releases they say,
"When solar physicists talk
about solar field reversals,
their conversation often
centers on the 'current sheet'."

That's the only time they actually
mention current but they do at that time.

"The current sheet is a sprawling surface
jutting outward from the sun's equator
where the sun's slowly rotating magnetic
field induces an electric current."

Huh? The magnetic field
induces an electric current!

Yeah well, the magnetic fields
can induce electric currents
but I suspect and suggest
to you at this point,
what's going on here is that that
current is producing the magnetic field.

That's just the reverse of what's
actually, what they say is going on.

I think it's actually
what's going on.

But anyway, when you see a
picture of a coronal loop,
that's not a magnetic
field you're looking at.

Magnetic fields are invisible.

They're invisible
to the human eye.

What we can see is electrically

excited glow- or arc-mode current,
plasma forming those loops.

The plasma is coincidental with the
way the magnetic field is moving
and certainly with the directions
the current is moving.

Mainstream physicists
try to avoid explaining
how the Sun's magnetic field
gets formed in the first place.

Electric currents which are
the only cause of magnetic fields,
they don't come
from anyplace else,
they don't come by mixing
gases or anything else.

They're coming from, they're
caused by electric currents.

They're almost never mentioned,
with one or two exceptions
like this current sheet
that comes out of this
equator of the Sun.

Magnetic fields
don't get twisted up
and they don't cool things down

unless they're, and they don't move unless their
formative currents produced that movement.

They certainly are not
able to modify sunspots.

They're the results of an
electric process that creates them.

Anyway, it's good to be able to
measure solar magnetic field strengths
and I'm very happy that
these people have done that
and with increased
accuracy, that's wonderful.

But it's kind of like improving the accuracy of
measuring exact length of an elephant's tail
while ignoring the
rest of the animal.

[Music]

It's time to put to bed the fairy tale of dark matter, something so dark of course it's invisible, and so mysterious that it remains undetected after decades of searching for it with sophisticated instruments, scanning all the known cosmos and the entire electromagnetic spectrum. But how can something be falsified that's this imperceptible?

Of course, there are many other invisible non-existent astrophysical entities, such as dark energy and neutron stars that have been invented and disseminated using disingenuous methods of measurement and interpretation onto a naive unsuspecting public.

But those are battles for another day.

Being a scientist is like being an explorer who's attempting to hack a pathway through a dense jungle, snarl of weeds, vines, trees and undergrowth.

But the scientist's jungle consists of natural ignorance and also a lack of knowledge and grown false beliefs which may be long time officially accepted misconceptions. Real scientists try to produce hypotheses, that is to say logical descriptions

of real things and how they interact.

All scientific hypotheses of course have to be testable. If it can't be actively tested, a hypothesis at least must pass the so-called test of time. Incoming new data has to fit comfortably into any proposed hypothesis or model without too much tinkering with it, or massive back-to-the-drawing board modifications, and certainly without inventing imaginary ecological, non-measurable forces and non-observable entities, such as strange matter to explain the new data.

In the past few years I've been studying Birkeland Currents. Those are the strong, stable flows of electrically charged particles that connect from one place in the cosmos to another. What their form and structure is and how they affect objects they connect with. Originally discovered by Kristian Birkeland early in the 1900s coming from the Sun to the earth. They deliver the electric power that lights up our auroras and I wanted to develop an accurate, realistic model of their structure.

A complete description of what I did is thoroughly detailed in chapters 10 and 11 of my latest book "The Interconnected

Cosmos," published by Stickman on Stone,
and I urge you to pick up a copy. Anyway,
here's a brief description of what I did.

My starting point was at the edge of the
scientific jungle, astrophysics and cosmology,
which supposedly is the scientific study
of cosmic space and those things that
inhabit it, but it really is a jungle of
contradictions and warped, bizarre,
impossible processes and imaginary
forces. But I had to begin somewhere.

At that time I had completed the
derivation and interpretation of a
mathematical model that had been started by Stig
Lundquist in 1950. He had determined two equations that
describe the basic shape of the magnetic
field that is inside a Birkeland Current,
but that's where he stopped. I completed his model
to include five major equations and also interpreted
what they implied about the physical shape
of the Birkeland Currents and their behavior
and that was not explained fully by Lundquist.

My model predicted that Birkeland
Currents uniquely produce coaxial
counter-rotational motion of their
internal plasma and are able to carry electric

current in both directions at the same time.

Let me emphasize, this is a unique behavior. A coaxial cable here on Earth cannot simultaneously carry current in both directions. As far as we know, true coaxial counter-rotation is created in nature only by field aligned, that is to say, Birkeland Currents.

For example a pair of tornadoes, located near each other, rotating in opposite directions, is not an example of coaxial counter-rotation simply because they're not coaxial, they're not inside one another.

So when NASA recorded those coaxial counter-rotating cloud bands on both Jupiter and Saturn, my model had passed its first test.

That was the extent of my first foray into this cosmological jungle and at that point I figured we'd pitch camp for a rest.

But then the announcement of the discovery of counter-rotating stars in the faces of several spiral galaxies, was even stronger evidence that was headed in the right direction. In

2014 it was reported that a vast network of plasma filaments, Birkeland Currents really, had been discovered that connect many, if not all, the galaxies in the

Universe in what has been called the
Intergalactic Web, abbreviation IGW.

The discovery was quickly confirmed and
a rush of scientific papers followed.

All this strongly suggested that
Birkeland Currents not only connect
objects within our solar system, but
there are much larger and stronger Birkeland Currents
arching across the vast distances between galaxies.

I assume that those galaxies within the
Intergalactic Web must be sending and
receiving electric currents via the plasma
filaments to which they are connected.

Also, I thought if galaxies actually form
on those Birkeland Current filaments in
the web, they probably inherit their
rotational profiles from those filaments.

If that happens, then the stellar
velocity profiles ought to be the same
as the velocity profiles of the
Birkeland Currents on which they form.

Remember that the typical stellar velocity profile
in a galaxy, a plot of the star's velocity as a
function of its radius r , how far out it is from
the galaxy's center, has been totally baffling to
astrophysicists. Actually they typically look

like a plot of the function the square root of r .

This shape cannot be explained by Newtonian physics and almost all astrophysicists deny that electrical effects could possibly produce any of what we see in the cosmos. So, that's why astronomers like Vera Rubin and her colleagues postulated the existence of dark missing matter in the 1940s. Their repeated unsuccessful attempts to explain this rotation of those stars is what set astronomers off on their decades-old quest to find dark matter.

So, I wondered if the plot of the rotation speed of the plasma in my model Birkeland Current, might be similar to the ones that baffled those astronomers.

I set out to determine what that velocity profile might be. My model yields information about the magnetic field strength and the current density in a Birkeland Current, but it doesn't directly yield any information about the velocity of the charges that make up those currents.

The key to determining the velocity of the stream of charged particles in a

Birkeland Current was the realization that the current density in any plasma has two components, the charge density and the velocity of those charges.

The charge density is how much charge you have per cubic meter and the velocity of course is how many meters per second does that box of charges travel with.

Therefore, if we know any two of these three quantities j , ρ and v , we can find the third one.

We obviously know from historical astronomical observations what the typical velocity profile of stars within the galaxy looks like, and it's approximately the square root of r .

And we know from the equations of my model that the current density j , varies with radial distance r , out from the BC's, that is the Birkeland Current's central axis, as one over the square root of r .

So, I was able to solve for the third quantity, not very hard, the charge density ρ that must exist inside my model BC, using all this data, the data from galaxy NGC1620, it turns out to be a simple inverse relationship, one over r . This clearly demonstrates that an electrical process exists, that can

produce the heretofore inexplicable stellar velocities, that prompted astronomers to search for dark matter in the first place. In other words, the refusal to accept the existence and effects of electrical charges in space, is what began, and maintains to this day, the dark matter wild goose chase.

But is there any evidence that this particular distribution, this one over r shape, is the way charge really is distributed inside an actual BC?

I took a short side trip off the logical journey we had been on, to find that out. Did the velocity profiles of other galaxies also require this same charge density in the BC's they connected with? That was the question.

Other galaxies may have slightly different velocity profiles. Using any of those other velocity profiles with the same expression for current density from my model, yielded slightly different charge density curves.

But the main point is that there is always some charge density curve, that will exactly reproduce any arbitrary velocity profile.

So, I repeat myself. We have now shown, and as I said

recently, presented in a greater detail in my new book, that a purely electrical process does indeed exist that can produce a hitherto inexplicable stellar velocity [distribution] that prompted astronomers to search for dark matter. And that's the end of the story.

The charge densities may be slightly different from that one over r -shaped distribution in different galaxies but the BC curve, that Birkeland Current velocity curve will always match the actual one.

By the way we know that BCs often show coaxial counter-rotation. So, when we observe coaxial rotation of the stars in a galaxy that is connected to a BC, that's additional evidence that we're correct that it is the Birkeland Current that's producing the velocity of those stars in those galaxies. The twisting motions of the galaxy's Birkeland current are what produces the velocities of those stars.

If we assume that the charge density distribution that exists within a typical Birkeland Current filament is, as a function of radial distance r , the distance out from the Z-axis of the

Birkeland Current, is proportional to one over r , as it is for the one particular galaxy I show there, NGC1620, we can solve mathematically for the electric field that particular charge density plot creates. In other words, we know what the charges are, where they are, we can solve for the electrical field that results. In turn, knowing the properties of that electric field, allows us to find the voltage that will occur at every point within the Birkeland Current's cross-section as a function of the radius value of that point. It turns out that under this assumption about the charge density, that the maximum voltage occurs exactly at the center of the Birkeland Current, that r equals 0, the central Z-axis. Out from there, the points of increasing radius, the voltage plot is a simple linearly decreasing function of r . This voltage distribution is exactly what's needed to produce Marklund convection. Okay, but so what? What's Marklund convection? Well, in Marklund convection, it's a process that occurs in a Birkeland

Current, atoms of the various elements present are sorted according to their so-called ionization potential. This results in the easily ionized, that is to say the heavier atomic weight elements such as iron, being found at the center of the filament, and the lighter elements such as hydrogen and helium, being found in its outer regions. This process works, because positive ions accelerate down the voltage drop that starts at the center of the Birkeland current, and ends at its outer edge. They go faster and faster, until they collide out at the edge of the Birkeland Current with any matter, atoms, ions, dust, any other stuff, and this releases heat. Those collisions release heat. The temperature is hottest at the collision site, just at the Birkeland Current's edge. And that's why the elements that are the most difficult from which to strip off an electron, such as hydrogen and helium, are found out there. So the center of the Birkeland Current is its coolest region and contains the heavy elements such as iron, and its outer edge is the hottest region

containing elements such as hydrogen.

This is intriguingly the same sorting arrangement found in stars including our Sun, which are formed in Z-pinches in Birkeland Currents. Our Sun has a heavy concentration of hydrogen at its outer surface.

Therefore, if the Sun was created at the center of a pinch, such as a Birkeland Current, then its center ought to be relatively cool and its outer surface, the photosphere should be quite hot and it is.

We know that the dark center of a Sunspot, the umbra, is much cooler than the surrounding photosphere and it's a window into the inside of the Sun.

But the question still remained. Was my assumption that the distribution of electric charges, the charge density ρ , one over r , correct? Does it really occur?

The answer came when a noted astronomer, professor Michael Merrifield of the University of Nottingham, reported that the outer rim of a galaxy, this one was NGC4550, mysteriously had a collection of counter-rotating, hydrogen-rich stars at its periphery, at the edge of it. He complained

that there was no known way for this to ever occur. His announcement unintentionally provided supporting evidence that I considered strong evidence, for my claim that a Birkeland Current had been, or was connected to this galaxy. This might easily have been the cause, not only of the hydrogen-rich collection of stars along its edge, but also why that band was counter-rotating with respect to the other stars in NGC4550. I assert that my assumption was thus shown to be valid, at least in this particular case. And once again, we see that an electrical process is the explanation that eludes all these expert astrophysicists that still say yes, yes, we know electricity exists in the cosmos but it doesn't do anything. Well, the Sun's heliosphere is a node, a pinch in a Birkeland Current. According to our model, the only place in a Birkeland Current that involves energy loss, would be the outer edge of the Birkeland Current where positive ions falling radially down that linearly decreasing voltage profile, recombine

with electrons just outside. This recombination process will emit a low level of visible light. It releases energy in the form of light. The newly formed energetic neutral atoms called ENAs, energetic neutral atoms, then diffuse back into the Birkeland Current. Being neutral, they're unaffected by any of the electromagnetic effects there. This visible light was discovered by the NASA Lockheed Martin IBEX mission. The announcement said in part, IBEX's all-sky map of energetic neutral atom emission reveals a bright ring of ENAs that encircles the entire heliosphere.

David J. McComas, IBEX principal investigator and assistant vice president of the Space Science and Engineering division at Southwest Research Institute, said quote, "The IBEX results are truly remarkable, with a narrow ribbon of bright details.

This is a shocking new result.

We had no idea this ribbon existed, or what has created it. Our previous ideas about the outer heliosphere are going to have to be

revised." But if history is any guide, it will not be revised. NASA and the astrophysics power structure never admit they were wrong about anything. We'll see what they do in this case. In any event the Marklund convection process may well be occurring all along the vast length of the Birkeland Current that extends on either side of our Sun's heliosphere. And that Birkeland Current is not visible from Earth, probably because it's an aging normal Birkeland Current that has a weaker charge density along its length than will be found at the Z-pinch, the heliopause, the heliosphere.

The current density will be weaker, the plasma will therefore be in dark mode quite likely, and I think it is, from observation, and any light generated by recombination along its periphery will be even weaker than that observed by the IBEX mission.

But the Marklund convection process, in which the positive ions inside a Birkeland Current are accelerated outward, directed by an E-field from a high-voltage central axis, is exactly the same process that we now know occurs just above the

edge of the Sun's heliosphere, when the solar wind positive ions coming from the Sun recombine with incoming electrons to produce the light seen by IBEX. It's also similar to what happens just above the Sun's photosphere, where accelerating positive ions, escaping from inside the Sun, collide with other matter, which creates the high temperatures of the Sun's coronal temperature anomaly. It's the same process, just with higher current density at the pinch than along the BC's length, and highest of all just above the Sun's photosphere. So, the evidence strongly indicates that stars are connected to their planets and to other stars. All galaxies are connected. The more we look carefully, the entire Universe is interconnected by plasma Birkeland Current filaments. And the electrical interactions at all locations are fairly similar, just with differing strengths and sizes. The process seems to be scalable. I have long wondered why cosmologists, who claim the Universe is created by a

Big Bang explosion, never try to explain
where all the rotation comes from.
Just about everything we see in the
cosmos rotates, or twists, or spins. Why?
How did it get that way from a Big Bang explosion?
Birkeland Currents rotate and they counter-
rotate. Is that the source of all the rotation?
I claim yes, it is. At least until I hear of another
natural process that can cause the rotation and
coaxial counter-rotation we see
everywhere we look in the sky.
We all have to realize that no one can ever disprove
the existence of something that doesn't exist.
In order to maintain or renew
the sources of their grant funding,
astrophysicists who now refuse to put
an end to their fruitless and wildly
expensive dark matter quest, are
challenging us to do just that. In
maintaining their assertion that dark matter
still exists, they're saying something like,
"There's a big vicious dog under this
table. He's invisible, untouchable,
unsmellable and makes no sounds, but he ate my
homework last night. Prove to me he doesn't exist."
Now, this is a dishonest, illogical

unreasonable, childish challenge.

Anyone seriously making such a demand is a shyster, a snake oil salesman who is intentionally trying to swindle his audience, or perhaps he's an intellectually lazy astrophysicist fearing misinformation. Either way, the evidence is indisputable. The theory and most importantly, the rationale for the existence of dark matter has now been systematically debunked.

An accurate understanding of the cosmos is impossible in the conventional science of astrophysics, simply because they refuse to expand their tool set.

Limited to the force of gravity in either its Newtonian or Einsteinian format, gravity only attracts. Magnetic forces can attract, but they can also repel.

Electrical forces can also attract and they can repel. And then there's the Lorentz force that exists between electrical charges moving through a magnetic field. Including all of these essential forces of nature when cracking the secrets of the Universe, then the concept and necessity of dark matter is outright ridiculous.

Another key difference between the Standard Model and the Electric Universe model of cosmology.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

The surfaces of the rocky
bodies in our Solar System
testify to events that planetary
scientists have never considered.

The interpretive manual
of standard geology
limited to processes
such as random impacts,
wind and water erosion
and volcanism,
has never successfully explained countless
of the features we see on rocky planets.

For decades, experiments with electrical
discharges in the laboratory
have reproduced some of
the most puzzling craters
and other features seen
on planets and moons.

Within the Electric
Universe community,
a growing number of enquirers are

exploring the surface of our planet
identifying the indelible marks left
by high-energy electrical discharges.

In this episode, Thunderbolts
colleague Andy Hall
continues his remarkable
series of presentations
with his two-part exploration
of the 'Lightning-Scarred Earth'.

The blue-white arc of a
lightning bolt stuns the senses.

Blinding radiance, elemental
beauty, awesome power
and primordial danger flash
into existence from thin air
and vanish before
the mind catches-up.

We stare, immobile,
unthinking and awestruck.

In that moment, a channel of air the
diameter of a quarter heats 50,000 degrees,
as trillions of electrons
cascade to Earth.

The volume of air blows-up, radiating
energy across the spectrum,
and sending sonic

booms across the sky.

Lightning also pummels the land, creating pressure waves exceeding 70,000 atmospheres -- that's 1 million psi.

It can create a layer of shocked quartz and vitrify surrounding rock into glass.

Lightning is an interaction between the Earth and sky.

Its cause is an electric field between the electric storm above and the ground beneath our feet.

'Ground' in this case is also a technical term, meaning the ambient voltage potential of the soil.

Earth is a negatively charged body in space and current flows up from ground to atmosphere, normally in a drift of ions and electrons that is invisible.

Storms reverse this current flow, causing electrons to avalanche back to Earth.

The Earth and sky are part of a circuit.

Storms result from

capacitance in this circuit.

The atmosphere stores energy
in the form of ionic charge,
and releases it through
lightning, among other effects.

The ground is one plate of the capacitor
where positive charge collects.

As negative charge
builds in the cloud,
it is repulsed from the ground below,
and positive ions are drawn in.

The ground reaches up
with plasma tendrils.

They collect especially around tall structures,
pooling densely at sharp projections,
surrounding them with a halo of charge the
cascading electrons target for connection.

When a connection is made, the arc
touches Earth, spreading current
in horizontal arcs across the
surface as much as 20 meters away.

This is a death zone.

If you're in it, you are part
of a 200,000 amp circuit.

The horizontal arcing
is a side flash --

a scatter of arcs tendrils that follow
surface conduction across the ground,
radially away from
the point of impact.

The ground potential,
type, and shape of the surface
influences the character
of the side flash.

Dry sand acquires
charge very easily
and so lightning attracts charged
particles and will sweep sand to it
leaving a display of the
entire strike zone.

Sand in the strike zone where
current surges across the surface,
pulls inward leaving a shallow crater
with a cone of sand in the center.

It's like grabbing a
bedspread in the center,
pulling it up and
dropping it in a pile.

The following photos were
taken near Kayenta, Arizona
on desert plains to the
south of Comb Ridge.

The form is like an anthill,

but these are not anthills.

Ants dig rock from below ground

and pile it outside the hole.

These are built

just the opposite way.

The sand is swept-up from the surroundings,

leaving a pile at the center of a crater.

Besides, these don't

have ants or antholes.

The mounds of sand are composed

of fine, almost powder sand.

But the tops of the mounds

are dusted with pebbles.

The pebbles are sand that was drawn

into the lightning channel and fused

before falling back to Earth

when the flame extinguished,

falling to cover the mound, like

candy sprinkles on an ice cream cone.

Nothing grows inside the

craters, or on the mounds.

It's as if the

soil is sterilized.

PH tests show the soil

to be highly alkaline.

What meager growth
there is are low, ground-
covering grasses and weeds around
the perimeter of the craters.

The desert in this region of Northern
Arizona is carpeted with lightning strikes
that left crater and mound
features like these.

The land is on the Colorado Plateau,
just south of Monument Valley.

They form what some call 'fairy
rings' when seen from the air.

The next images show clusters of them.

The craters vary in size from 15
to 30 feet in diameter, or larger.

The size of the central cone is
proportionate to the size of the crater,
ranging from about 8
to 18 inches tall.

The strikes especially cluster where
black rock crusts over the sand.

The lightning seems to have
punched through, scattering rock
and leaving the craters
bare, where nothing grows.

Whether the lightning is

attracted to the rock
or the rock was made with
the lightning isn't known,
but the rock provides a clue.

It appears the lightning
came in a coherent event
that peppered the land, punching
through and shattering the rock.

That, at least, is how it appears.

It's as if there were two events.

One that torched and melted the surface
of the land, creating the cap rock,
and a subsequent one that shattered
the rock with lightning.

What amazes is the number of them
clustered in particular areas.

They rarely overlap, spaced
fairly even, but randomly apart.

There are hundreds of thousands,
if not millions of them
scarring the land just
south of Comb Ridge.

There are regions
around the world
where features like these carpet the
land for hundreds of square miles.

They are seen in desert

lands especially

since there is little

undergrowth to obscure them.

The next image is from Namibia.

Here the features connect

with filaments of stream beds.

But note how they connect in linear arrays

and branch radially like little stars.

They are electric discharge patterns.

Each feature seems to be a shallow

basin or spring where water collects.

Map resolution doesn't

allow better detail

but these features are larger

than the Arizona features.

Many cover several acres.

Much of the country of Uzbekistan is

also carpeted with similar features,

as the following images from a small

portion of eastern Uzbekistan show.

The Uzbekistan features are

larger and more numerous still.

They also appear to be shallow basins

where the geology is distinctly changed,

and there appears to

be a source of water.

In the last image, there appears
to be a home, or ranch
with a livestock tank, well,
or catchment at the center.

It makes sense that water is
found where lightning has struck.

Subsurface water is a
source of ionization
that intensifies charge density,
and therefore the electric field,
attracting lightning
to its location.

Standing surface water won't do that
because ions have no point to collect --
they spread evenly over
the surface of the water.

But subterranean water
is trapped in the earth,
where ions can collect
and build concentration,
locally intensifying
the electric field.

Pits, craters, and rilles
formed by lightning
leave depressions over aquifers that

are natural for springs and wells.

But what about larger features --

bigger than pits and piles of sand.

Can lightning make a mountain?

Volcanoes form mountains by extruding

molten rock to the surface

from hot pools of magma

beneath the crust.

This is conventional understanding, and it

isn't in dispute in the Electric Universe.

After all, volcanoes can be

witnessed doing this in real time.

The resulting strato-volcanoes, cinder cones,

lava flows, ash deposits and lahars

are seen across the globe.

What creates magma chambers and causes

them to erupt is not understood.

Consensus science has a number of speculative

theories based on conventional beliefs

about the make-up and dynamics

of the interior of the earth.

It's these theories EU

has a problem with.

EU theory proposes the mechanism

for heating and erupting volcanoes

is electrical discharge

beneath Earth's crust.

But our theories are

also speculative

because there is no way to look

inside the Earth to be sure.

One type of geologic feature

attributed to volcanism

can be challenged by

EU Theory, however.

These are buttes believed by the consensus

to be the ancient throats of volcanoes,

where a magma plug

froze in the throat,

and later erosion exposed them

leaving a hardened pinnacle.

Archetypal of these is Shiprock, a

tall butte that lies near Four Corners,

where the U.S. States of Arizona,

Utah, Colorado and New Mexico meet.

It lies in the heart

of Navajo lands

Some Navajo traditionalists argue

Shiprock is the work of the 'Star People'.

Could it be they know more about it

than our consensus scientists do?

We can use this butte and

the surrounding landscape
to discuss how such features were actually
formed by lightning in the distant past
when lightning was a
'Thunderbolt of the Gods'.

But first, let's look at
some of the absurdities
in consensus theory
concerning its formation.

Shiprock does (not) sit near a
region of true volcanic activity.

Northern Arizona has volcanoes
along the Mogollon Rim
that lie to the South and West
of the Four Corners region.

This is part of a super-volcanic
complex much like Yellowstone.

Yet Shiprock itself, and
a number of similar formations
are well removed from
those volcanic fields,
standing alone on the
high desert plains.

They are attributed to an ancient volcanic
complex called the Navajo Volcanic Field
but are not surrounded by

lava flows, ash deposits,
or any other features provably
volcanic in origin.

In fact, for these to be considered
the throats of ancient volcanoes,
the consensus assumes it formed 2,500
to 3,000 feet below Earth's surface
and became exposed after
millions of years of erosion.

In other words, 3,000 feet of vertical surface
lands had to be completely eroded away,
leaving just the butte poking out
of the flat, sandstone desert floor.

Shiprock is 1,500
feet of broken rock,
meaning 1,500 feet of
surrounding plateau washed away,
in addition to the 3,000 feet of overburden,
along with the lava fields, ash deposits
and other traces of volcanic field,
without washing away the butte.

Let's just say that it's hard
to conceive how wind and water
could have washed across the land carrying
away trillions of tons of other rock
but left this shard standing.

It's not made of kryptonite. It's no
harder than the surrounding sandstone.
Exposed to millions of
years of such abuse,
it would have dissolved like a
popsicle in an Arizona summer.
Nor is there any evidence of how, or
where this material disappeared to.
There's no deposit of silts, or
remains of past river channels,
anywhere in the western hemisphere
to provide evidence of this.
How any river or inland sea could have
washed the land away without a trace,
leaving these 'volcanic
plugs' is a mystery
that the consensus can only explain
by invoking billions of years.
It's the only excuse they know
and they feel it safe as long as
they ignore the Electric Universe.
Shiprock and its
neighboring buttes
are made of sandstone and a
similar material called Minette.
Minette is chemically the

same as the surrounding stone
except it is highly potassic and
apparently fused together by heat.

The composition of the rock is not
hard, highly compressed, or consolidated
such that it could withstand
the kind of flood waters
required to wash away
the surrounding land.

Nor is it like any rock we can witness
being produced by volcanoes today.

A more plausible and
responsible theory
is that they were made the way
the Navajo say it was made.

In part two of 'Lightning-Scarred
Earth', we'll look closer at Shiprock
and other features caused by lightning,
and their role in mountain building.

Thank you.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you, there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you,
and there is nothing to fear.

The Labyrinth

Window to the Ancient Archetypes

In previous Discourses, we followed
multiple paths of evidence to describe
the mythic labyrinth, the dancing ground
of the legendary mother
goddess and warrior hero.

Our claim has been that
this enigmatic theme has its archetypal
origins in extraordinary celestial phenomena.

Events did not occur down here
on any local landscape but in the sky, in
the original theater of the gods.

And so, as we gain insight into the most
fundamental archetypes, we unavoidably
encounter the phenomenon of
localization, a universal aspect of
storytelling in ancient times but only

rarely discussed in modern day

treatments of mythic traditions.

Localization refers to the ancient habit

of projecting the original mythic

archetypes on the familiar and

accessible local landscapes, to the

extent that a thousand local symbols

came to be confused with the celestial

forms and events of the original

myth-making epoch.

Every sacred mountain

on Earth, named after a cosmic prototype,

came to be remembered as a place where

the Creator God himself

stood in primeval times.

Every sacred city came to

be celebrated as the city of heaven,

the original dwelling of the gods.

This pattern of confusion was repeated

thousands of times around the world, the

later symbol came to be seen as the

thing originally symbolized, and that's

the pervasive mistake we're required to

recognize and to unravel in any

investigation of mythic origins.

As for later symbolic elaborations, a good

example is the appearance of
commemorative knotwork, the connection
fitting perfectly with our earlier
identification of the labyrinth
as the original Gordian knot.
In seeking out the later
echoes of the mythic theme,
many useful clues will be found in the
symbolic knotwork of Ireland and
Scandinavia, with striking
parallels in the labyrinth.
I'm now fully satisfied that
at root, the two mythic threads arose
from precisely the same human experience.
And so, it's no coincidence that familiar
themes we've covered in these Discourses,
show up in the complex
knotwork of Northern Europe.
From entwining twin serpents to
the symbolism of the ram's horns.
The labyrinth and sacred knotwork also
overlap in the Chinese image of the
Pan Chang called the endless knot or
knot of happiness and here too we
discover that the knotwork theme can't
be separated from the mythic

intestines of the labyrinth.

Chinese legends

described the entwined Pan Chang as a

knot formed from the intestines

of a slain enemy.

All of which remind us again

of the so called Fortress of Intestines

to which Humbaba, the enemy slain by

Gilgamesh, gave his name.

As we've discovered so consistently, it's

when seeming absurdities fall into line with

an inherently logical expectation, that

we know we're on the right track.

I should hasten to add that the most

common association of the labyrinth

revealed by cross-cultural comparison

was with the famous cave or cavern

entered by the hero, as we should also expect.

Dorothy Norman in her book "The

Hero" writes, "In those cases where the

ritual has been preserved, the labyrinth

itself, or a drawing of it, is invariably

situated at the entrance

of the cave or dwelling."

Of course, that pattern is

entirely logical if the labyrinth

entered by the hero meant precisely the same thing as the famous cavern of the hero's initiation.

And so our conclusion; the predicted symbolic equations noted here can be fully verified by any independent researcher who will follow the available keys.

The hero bound within a knot, as observed by the comparative symbolists Chevalier and Gheerbrant, is equivalent to the hero being swallowed by the monster, another universal motif, and so the disgorging of the hero by the monster is simply a variant on untying the knot, signifying at the same time the god's release and the defeat of the Chaos monster.

So the labyrinth is a challenge to the hero and conceptually it's only a short distance to the mythic riddle or paradox, a common folklore variant of the critical juncture in the biography of the hero for his victory is synonymous with meeting a test.

In other words, the test turns out to be the critical turn

in the biography of the hero, meaning
that it gives the hero his defining role.

When Oedipus answered the riddle of the
Sphinx correctly, what happened next?

He was not only saved, but the devouring
goddess plunged over the precipice.

Among those comparative symbolists who
discovered the essential connections,

though certainly not accounted for them,

I would list J.C. Cooper who writes in "An

Illustrated Encyclopedia Of Traditional

Symbols", "The labyrinth is related to the

symbolism of the cave and with

initiation rites, it also shares the

symbolism of the knot in binding and

loosing, restricting but uniting... The

labyrinth in a square depicts the four

cardinal points and the cosmos and may

be connected with the swastika."

Yes indeed, the very symbolic relationships

we've already noted, but while Cooper's

summary of associated symbols is

generally accurate, it offers no clue at

all on the origins of the pervasive

labyrinth archetype.

For us that is a giant shortcoming, since

uncovering the integral origins of world

mythology is our overriding purpose.

But now we can confidently say that the

labyrinth theme did not arise from

anything in today's familiar

natural experience.

The cavernous form was

entirely celestial, towering over humanity.

Of course, that's been our

message all along; it's only by seeing

the named mythic powers as planets close

to Earth, that we're able to bring the

global patterns to light.

And as we're now prepared to

demonstrate, that means a

concrete explanation for all of the

acknowledged archetypal personalities of

world mythology, a coherent ancient story

unfolding in an extraordinary phase of

solar system history.

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the Electric Universe,
brought to you by The
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The following presentation is an
adaptation of the Mel Acheson,
Thunderbolts Picture of the
Day article, 'Back to Basics',
the link to the article may be found
in the description box of this video.

Newton, Einstein, Darwin and the
other early explorers of science,
discovered the new world of
fundamental laws of reality
and the scientists will come
after them are mere colonists.

Continuing this line of thought,
John Horgan writes in the end of science
that the late comers have only two choices,
to apply those fundamental discoveries in
the construction of derivative theories
or "...to pursue science in a
speculative post empirical mode
that I call ironic science...

Ironic science offers points of view,

opinions, which are, at best, interesting,
which provoke further a comment.

But it doesn't

converge on the truth.

It cannot achieve empirically verifiable
surprises that forced scientists
to make substantial revisions in
their basic description of reality."

Horgan classifies most modern
theories as ironic science.

Super string theory
and the inflationary Big Bang,
and punctuated equilibrium.

This interesting opinion provokes me
to make a couple of further comments
a "basic description" of reality is not
the same thing as fundamental laws.

Fundamental laws or generalities
reality is concrete.

A description of reality
asserts among other things
which fundamental law applies
in which real situation.

Between the laws and reality
lies the description
in which scientists select

which laws to apply.

The accepted description
of reality in astronomy
asserts that only the law of
gravity applies in space.

The law can be Newton's
or it can be Einsteins,
but it cannot be Darwin's
law of evolution.

A description of astronomical
reality based on Darwin's law
probably wouldn't make any sense.

But the point is that one law
is selected and another is not.

Even the particle physicists who
lately have invaded astronomy
select only certain
fundamental laws

on which to construct their basic
description of atomic reality.

This business of selection is so
simple as to be not worth mentioning.

But not mentioning it leads
to not paying attention to it
which leads to skipping over it
in the occasional circumstance

when it may be important.

My next comment of course

is that it's important now.

Horrigan and the scientists he interviewed
for his book have overlooked a deeper irony.

While the theories of ironic
science have been unable to
"achieve empirically
verifiable surprises".

Experimental and observational
science has produced a flood of them.

Nearly every discovery
of the space age
from the Van Allen radiation
belts around the earth
to the high velocity
winds around Neptune
has been pronounced
as a surprise.

And the surprises have been
surprising precisely because
they haven't verified the prevailing
basic description of reality.

One might think a reasonable
plan in this circumstance
would be to take a second look at the

fundamental laws selected for one's description.

One doesn't have to resort to anything as ridiculous as consider in Darwin's law.

For instance the laws of electromagnetism have been lying around for over a century mostly ignored except by a few electrical engineers because you "can't get charged separation in space".

The problem is that scientists are like the horse led to water, neither the failure of ironic science to achieve empirical surprises nor the failure of achieved empirical surprises to verify the accepted description can force scientists to drink basic provisions if they don't want to.

Selection is the result of wanting to choose and if you want to defend a theory you can always find expedient excuses.

Almost nothing outside the solar system and a lot of things inside it don't obey either Einstein's

or Newton's law of gravity.

e.g. The stars in the arms of spiral galaxies revolving about the same velocity instead of slowing down with distance as gravity predicts.

To make these observations fit the gravitational description of reality astronomers have chosen to hedge the fundamental law with a thicket of ironic opinions and points of view that are not empirical.

There might be appropriately configured halos of unseen dark matter outside the galaxies that produce the observed velocities.

This avoids the necessity of questioning fundamentals, but it turns the basic description of reality into an imaginative fantasy that is explanatory but neither verifiable nor falsifiable.

Modern theories with appropriate adjustments can explain everything

and anything

just as psychoanalysis

with childhood trauma.

The dark matter of the mind

can explain any behavior.

However the point of science

is not merely to explain,

but to find out which explanation

is actually the case.

For that you need more than one

explanation from which to choose.

This object might

be a black hole,

that object might be dark matter,

having disallowed competition from

fundamentally different theories.

There's no way to tell if those

objects might be something else.

Verification alone is inadequate.

You need to search for alternatives

and to test them to gain reliability.

Planting more hedges of ad-hoc hypotheses

around the fundamental law of gravity

may appeal to ironic scientists.

But other scientists

mostly outside astronomy are more

inclined toward empirical results.

The new field of plasma cosmology has
admitted Maxwell's laws of electromagnetism
to the description of
astronomical reality.

The properties of electrical discharges
applied to the phenomena of space
by such pioneers as Birkeland,
Langmuir
and Alfvén explained the new
discoveries without ironic fantasies.

The revised description
expects the observations
that are surprising to the
standard gravity only version.

And this electrical description is
directly verifiable in plasma labs.

Dark matter and 10 dimensional
super strings are not.

The reality we think we see
is constantly being revised
by what we actually see of
a partially known reality.

Usually the revisions
are superficial,
but there have been times

in the history of thought

when the revisions have

reached to the basics.

Plasma cosmology hasn't

discovered a new fundamental law

it merely replaces one law

- gravity -

with another

- electromagnetism -

but the effect on the basic

description of astronomical reality

is as great as if a new

law had been discovered.

We think we see an

entirely new reality

this shouldn't be a surprise!

The Space Age has brought substantial

revisions in instrumentation

allowing us to sense the entire

electromagnetic spectrum.

From radio wavelengths

to gamma wavelengths.

For the first time

in human history

we are not restricted to an

anthropocentric sensory viewpoint.

The Space Age has also brought
substantial revisions in location
allowing us to sense the cosmos from
positions off the Earth's surface.

For the first time
in human history,
we are not restricted to a
geocentric positional viewpoint.

We should expect these
revisions in basic viewpoint
to be accompanied by a revision in the
basic description of the reality viewed.

The ultimate irony would be that
in the face of our liberation
from an anthropocentric
and geocentric viewpoint.

We would be unable or unwilling
to liberate ourselves
from a traditional way of
thinking about reality.

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts.info

In part 1 of this presentation,

Electric Geology, investigator Robert Hawthorne explored the stupendous geological feature in the American Southwest known as Upheaval Dome. As Robert explained, while standard geology favors the interpretation that Upheaval Dome was created by a kinetic impact, the hypothesis that the feature was created by interplanetary lightning finds great support in the geological evidence. This includes recent experimental research which shows that chemical changes in rock, normally attributed to impact, such as “shocked quartz” are also produced by powerful lightning. Robert introduced an unusual rock associated with the Upheaval Dome site, called the Obsession Stone, whose discoverers were able to submit the rock for professional chemical analysis. In this conclusion, Robert explains why such analysis only strengthens the electric discharge hypothesis. I would like to talk about

analcime now and this is a picture of analcime from Wikipedia and you can see that it kind of resembles a golf ball-shaped, white, milky white kind of spheres with trapezohedronal faces on them, according to their crystal structure. However, when we got to show you the picture of the Obsession Stone, you'll see that it's quite different. But analcime is classified as a zeolite. That means, "zeo" meaning to boil and "lighting" or "lite" mean rock, and the Cassidy and Zolensky letters mentioned previously, suggest a secondary processing of the mineral where all the strata layers in the stone were processed in this manner. That was something that I wanted to try and find out. Because like I said, we have multiple rocks at different colors and luster, and then in these graphs here, I just show that, these are the X-ray diffraction of the purple sample, the rock that was in the previous slide. This is the result of that sample. If you were to look at the bottom X-axis line, that is your angle, your two-

theta angle and that's what they measure and if you can imagine, like a substrate or just like basically any flat surface, and you aim an X-ray at it, the beam should actually reflect off like an angle on - angle off- kind of principle. But if you were to imagine the ray actually penetrating the substrate and continuing on through in a straight line, and reference that to the actual reflected angle, that is actually your two-theta angle. And that's what they actually measure in X-ray diffraction. And the intensity of that beam that's absorbed, that's how they understand your charts here. So, on the results chart, you have listed in numerical order, from first to last, all the peaks that are listed. And then you have in the column below that, you have your intensities that are ranked which one is the tallest, all the way down to the lowest. And from there they actually do their calculations and that's what they came up with, is the analcime

calcite. I though wanted to go a little bit further and try to prove that the multiple layers had this electrical discharge machining performed on multiple layers, simply because of the different colors of the rocks that we have. So, I was given the opportunity, while I was attending the Salt Lake Community College enrolled in their electronics engineering program, one of my classes offered a microscopy lab. So, I was given the opportunity to take these samples, and again, I took two samples, one purple and one brown and put it under the scanning electron microscope. And here are the results. This first one is from the brown sample and I found this one rather peculiar because it had like this brush stroke, or a paint swath that's made almost entirely of molybdenum. And I to this day, I have not been able to research if they have any kind of traces of molybdenum in that area of southern Utah. That's kind of when people always asked me about if a possible transmutation has occurred.

I'd like to say that, according to the NASA paper, that they can't really tell what the original mineralogy was. But did an actual transmutation occur? I really can't say, because I don't have that kind of technology to perform such a test. But I could say that molybdenum in these traces and in the next couple slides you're going to see, trace amounts of elements that are in there, aren't really dominant in the area of southern Utah. And this graph is just the Energy Dispersive X-ray spectroscopy, or EDS. And this is the chart, just similar to the X-ray diffraction, but this uses the spectral line of the element itself, and that's what it reads. So, your bottom X-axis here is your energy readout from the spectral line, and each number is a signal to the actual element that it belongs to. So, you can see here the results that you got. You have your sodium, aluminum, silicon are rather dominant, and your oxygen. But then you also have your calcium and

your carbon and your oxygen which is your calcite. It's just that one part of molybdenum that's just sitting there, which I wanted to use this for. In this picture is just the distribution of all these elements and their concentrations in our area. Now move on to the purple sample that I used. Actually, I did take a lot of samples, but like you can see in these images, there's just a lot of gray dots and stuff. It's when you come across something white and reflective, that you kind of want to focus on because it's something interesting. So, as in here, you can see that this is a purple sample and there's a lot more elements in this sample than in the previous one, but it still has the dominant analcime features with calcite. However, this also has some iron, some potassium, looks like ruthenium and tantalum in it. And again, here's your EDS chart. Distribution of the elements, there is quite a lot of them in this one. That's one of the reasons why I use this. Oh, I also took a third image. This

one had some tantalum and some indium in it as well. This was the other side of the purple, because the purple sample had a fused outer crust, from I guess being scorched. And of the interior I took another sample as well, and this is the interior. Now on the outer fused crust, there was no indium at all in all the places that I looked.

But on the interior, there is copious amounts of it, of indium inside.

That's why I found it interesting and put it into this report. Again, your EDS chart for the sample, and the distribution of the elements. Tantalum looks like it's just been peppered on. It doesn't look like it's been agglomerated to any other atoms in there. Just dot after dot; there's no really clustering in it at all. Almost with the indium, but it does look like it's a bit concentrated on the left-hand side of the image. So, in conclusion this presentation, I hope, that I made the argument that electrical discharge can form craters and eject material. I hope it

has provided evidence that the electrical discharges can generate the temperatures and pressures required to shock quartz crystals, and shown you that fulgurites and a sample from the mineral analcime from Upheaval Dome is presented evidence of electrical discharge do to its properties. And I feel that this presentation has presented the argument which suggests another mechanism for planetary crater formation. Now I'd like to take this time to thank the many people that have helped me with this project. And I would first like to thank again the Thunderbolts staff, Susan Schirott, for giving me this opportunity, especially for being at the Electric Universe conference in 2017. I'd also like to thank the International Multi Conference for Complexity, Informatics and Cybernetics and their staff. I would also like to thank Bruce Leybourne and Andy Hall for their helping me understand electrical discharge theory and how it applies to

geological formations. And I'd also like to thank, last but not least, the Salt Lake's Community College's many departments and staff. First, Salt Lake's microscopy lab coordinator, Glen Johnson and my instructor, Wesley Sanders for allowing me to use their labs for this presentation. I would also like to thank Jason Roberts in the writing department for helping me with the editing of this paper and lastly I'd like to thank the Salt Lake print shop for recovering the faded X-ray diffraction papers, because by no means was that an easy task.

Thank you.

[Music]

Solar Gravitation and Solar Plasma

Wave Propagation Interaction

Dr. Ed Dowdye was a popular

speaker at the 2012 EU

and he's back.

An electrical engineer with degrees

in mathematics and physics formerly of NASA,

the originator of the

extinction shift principle,

which challenges the general and

special theories of relativity,

let's welcome Dr. Dowdye to the

stage to challenge us a bit.

The title of this is a continuation

of what I have done before

and this talk, we talked about

Solar Gravitational Gradient

interacts indirectly with

Electromagnetic Waves propagating

in the solar plasma limb.

And when I say the gravitational

gradient, for an example,

we know very well that when you

put up satellites in a deep space

you put atomic clocks

on-board these systems,

in order for the GPS
system to work properly,
then each one of these platforms
that are orbiting about the Earth
has to be timed, a time reference
has to be onboard the system
in order for when you receive
a pulse in your vehicle
when you're moving on the ground or in
the air you know your exact location
because when you receive that
information from the GPS systems
they time-tag it.

And the clock running
onboard the satellite
has to run at the same
rate as that on Earth.

But the problem here is, when
you put these systems in space,
the gravitational gradient
acts on the atomic clock;
and actually the clock on Earth will actually
run at a slower rate than the one in space.

So let's talk about this.

So in the next 19 minutes, I'm just
going to give you a split on this.

So I'm going to go to the next slide

here which is similar to this slide.

My title is actually the Solar Gravitational
Gradient acting on Electromagnetic Waves.

It turns out that the solar

gravitational gradient

interacts directly with

the solar plasma limb,

but the solar plasma limb interacts

directly with the electromagnetic waves

However, the gravitational

gradient, the first one,

interacts indirectly with

the electromagnetic waves.

So, that's the gist of what

I'm talking about here.

And there's enormous

evidence for that

and relativity, the people who support

relativity, are fighting against this.

So let's go on to next one.

Here's a picture of what I

mean in the first two slides.

See, you have the solar

limb of the Sun

and it turns out that the solar limb

of the Sun contains hot plasma gases.

We've been talking about plasma
all day here and partly yesterday.

The plasma is actually
totally ionized,
ionized at the Sun.

The ionized limb of
the Sun is such that
the particles in this limb
ripped off all the electron clouds.

So you have only nuclei,
positive and negative nuclei.

So it's actually a plasma
about 5,000° to 6,000° C.

And it turns out that
that plasma limb
is being acted on by the
gravitational gradient of the Sun.

And it has a
gravitational profile,
and when light propagates
through that or
microwaves, or whatever
wave propagates through it,
you can determine the path of the
waves propagating through that.

And there's a calculation

that allows you to get that.

And what happens, this plasma limb of the Sun

acts directly on the electromagnetic waves

propagating along the

minimum energy path.

It turns out that you

send your students,

you get your students' assignment in

undergraduate and graduate classes

and you guys you know this, because

I'm preaching to the choir here,

you talk about the minimum

energy path, or the least-time path for waves

propagating in an atmosphere, or some

medium, along a minimum energy path.

And it would be defined by the

gravitational gradient field of the Sun.

And it turns out that the gravitational

gradient field of the Sun

interacts only indirectly with

the electromagnetic waves.

So it's going and we see what

we're talking about here.

Here we find out, if you go above

the Sun or solar limb in space,

going above that solar limb
as long as you're in the limb
there's bending taking
place in the limb.

But above that several of even
a fraction of a solar radius
or many solar radii above it,
it turns out that electromagnetic waves
propagates in the plasma free space,
the space where you have no
plasma at all, there is no bending.

And these light rays are going
along a straight line pair

So the next slide, continuing on,
Showing a picture again you have
the solar limb and it turns out,
you have the Sun, the radius of the Sun
proximately, what is it, 600 or 650,000 km radius.

So actually what happens above
the solar limb and beyond that,
engulfing almost all the
planets orbiting about the Sun,
there is an electron profile
that's known as the solar wind.

I want to talk about
that later on, very briefly,

because we only
have very [little] time here.
So what's happening if you
have a satellite system,
a system moving down,
if I can have a pointer,
and I'll point to you what
is meant. I point here,
going down, let's say you
have a system moving down,
a satellite system moving down,
it could be the Earth or planet
moving from here on down.
What happened, this system
contains antennas on board.
And the antennas are such that
they're spread apart
so you can have a wide beam;
what is called a wide-beam interferometer,
a wide-beam interferometer system.
And this system will detect the rays
of light coming from a distant source
and this distant
source is so far over here
that these rays are almost
parallel to one another.

And what happens when
one of those rays interacts
with the solar plasma of the Sun,
there's bending that takes place.

And in a star, like the Sun, that has one
solar mass and (is) one solar radius,
will bend 1.75 arc seconds.

So that's just bending
down 1.750 arc seconds okay,
and those at the other
side of the Sun would bend up.

So it turns out, that it's bending
such that the Sun acts like a lens.

And it acts pretty much
like a lens here,
if you go far enough away from
that, way out here someplace,
these rays will come together
and come to a focus.

But that's a long distance,
let's talk about that later on.

But what's taking place here, you can
detect the bending: this one would bend up
and this one would bend down, but in
the middle here there is no field.

And so this information is

coming from this distant source.

It could be a radio source,

or some satellite system,

or a distant quasar system that

is emitting actual microwaves,

these rays are noticed to bend.

And the astrophysicists have

measured always this 1.75 arc seconds.

However, there has been no

information up here at all, or down here.

That means the bending always take

place at the plasma limb of the Sun.

That is in itself a direct

violation of General Relativity.

And there's enormous evidence for

that and I'll show you, the evidence

this can take

place after this.

Let's take a look at what we

mean by gravitational gradient.

If you look at the gravitational

gradient of the Earth

in comparison to

that of the Sun.

If you look at the

Sun for an example,

if you are just above
the surface of the Sun,
there is a gravitational potential, a
very strong gravitational potential.
And if you're over here up above,
you go to 0.38 Astronomical Units (AU)
and 0.72 AU there you have
Mercury and you have Venus,
and at 1.0 AU there's
the planet Earth.

On the Earth's surface it turns out that
the gravitational potential of the Sun
is almost a factor of 14 times greater than that
of the gravitational potential of the Earth.

But that is the gravitational
potential of the Sun;
this yellow line indicates the
gravitational potential of the Sun.

However, that little box where
you have the Earth 1.00 AU
if I blow that box up.

I have the planet Earth here
and you calculate what is known as the
gravitational potential of the Earth.

The green line represents the
gravitational potential of the Earth,

but down below you
have, blown up in this box,
the gravitational potential of the Sun,
indicated by the yellow line down below,
that's 14 times greater
than that of the [Earth].

But it's not the gravitational
potential that we are concerned about;
we are concerned about the gravitational
gradient, not the gravitational potential.

The gravitational
gradient is the key here.

So let's take a look
at this next slide.

If you note the gravitational
potential of the Sun and the Earth
at any given point in space
the Sun always wins over.

But the gravitational potential
gradient, that's a different story.

But you have the Sun, the
gravitational potential of the Sun,
is equal to approximately
14.14 times that of the
gravitational potential of the Earth.

That's key, keep that in mind.

Next we look at
the gravitational potential gradient.
If you calculate the
gravitational potential gradient,
what you have to do is take
the first derivative of the Sun,
the gravitational potential
of the Sun along its Z axis,
and Z coming from the Sun where you
have the radius of the Sun is 1 AU,
the radius of the orbit
of the Earth is 1 AU,
if you look at that
at the Earth, right?
you'll find that that is much smaller
than the gravitational potential of Earth
along a radial path which
is the radius of the Earth.
So that's significant
because you find that
why is it that atomic
clocks run slower,
when you put the atomic
clock in space, than on Earth.
It turns out the moon has a profound
effect on the Earth's tidal effect.

The tidal effect causes the waters
to stand up on a hill (slope) when
the moon passes
above the Earth.

It is the moon that wins over, when it comes
to gravitational gradient of the moon,
(it) is greater than the
gravitational gradient of the Sun.

However, the gravitational gradient
of the Earth is far more than that.

So, going on to the next slide, I'm going to try
to sum this up in the next ten minutes.

So, making a picture short,
taking the Sun, the gravitational
gradient plasma limb of the Sun,
you'll find that history
for the last 100 years now,
the scientists have been able to
measure light-bending of the stars
in the gravitational
limb of the Sun.

But if relativity were factual,
according to General Relativity,
light-bending should be everywhere
where you have gravitation.

But that is not the case.

The scientists who
support relativity,
this is bad news for them.

They don't want you
to know about this.

So this next slide,
this is the prediction
of General Relativity.

Relativity says there's
bending at the limb of Sun.

At the limb of the Sun you have
1.75 arc seconds bending,
but above that, if you go a radius
or twice the solar radius above that,
the bending should
be one-half of that.

In other words it is one half of 1.75 seconds,
or possibly 0.85 arc seconds.

And above that, 3 solar radii
above that, it's $\frac{1}{3}$
and then you get $\frac{1}{4}$, $\frac{1}{5}$ and so
forth, that's General Relativity.

But what happens here is that
relativity fails this experiment.

So you take the great
General Relativity equation

which is the light

bending or $4GM/Rc^2$,

that is the bending predicted

by General Relativity,

and in units of a radians.

You can convert that to arc seconds, but

2π radians is 360° and 1° is 3600 arc seconds.

You work out the mathematics: that first

equation will get you 1.755 arc seconds.

But you take the Earth and the Sun, the mass of

the Sun and let that be M ,

and no matter what the

potential, what the

density of that mass happens to be,

using Gauss's law, you should

get exactly the same bending.

So using Gauss's method, you can find

a lot of objects out in

deep space where relativity has failed.

And going forth, we can use the principle of

reciprocity and the principle of Gauss

showing these two

principles that are in textbooks

all over planet now.

We teach this stuff in

astrophysics and general physics,

undergraduate physics, the
students are learning this stuff;
however they're not tying it down to the
failure of General Relativity. They keep that silent.

So this is our job, to point
this out to these guys.

You point out the
failure of relativity.

So going forth and summarizing
what I just talked about:

you have three different masses,
if these masses

are the same,

they could be more dense,

enclosed within a Gaussian sphere,

they come up with the same light bending and

the optical reciprocity is illustrated here.

So let me move fast, and this summarizes what
I just talked about in the previous slide.

So I'm just going to move forth

if I'd ever summarize this

in the next couple of days if

you want a summary on this.

So let's look at this, summarizing

again the principle of reciprocity

what we just talked about.

If you have bending of a star,
and so you have a star that is a
distance beyond the mass that's
responsible for light bending,
and you observe at the
telescope you should not see,
according to General Relativity, you
will not see a point light source.

In other words, you should
see bending all around.

And this is looking at
it in two dimensions;
looking at in two dimensions you see
the bending for light coming from the star
bending up and then going
down to the telescope.

The light beam could also
go in the other direction
and go down first and then
bend up toward the telescope.

If that happens according to the
prediction of General Relativity,
the observer should
see an Einstein ring.

And the Einstein ring should be visible
in the time you have this picture.

So let's go forth and
take toll of what we have here.
I decided to put in picture an
animation of what actually takes place.
When you have a distant light
source out in deep space,
and that light source could
be a red light source,
and where you have photons of light,
or wave packets coming from light,
(if you don't need the word
'photon', we can use 'wave packets'),
or we can use just 'emissions' of optical
waves coming from a red light source.
And if in the center between that
light source and our telescope,
there is some object
in the center,
that according to General Relativity
could cause bending of light,
that light should be reflected
or amplified, or actually magnified,
by the massive light
source halfway in between,
and the observers should see
in that case an Einstein ring.

And down below, just below the
observer and his telescope,
this is what the observer
should be seeing in his telescope.

He should see a red
ring around that red X,
instead of seeing a
point light source.

So let me move on and try to
summarize this as we go past.

The main key here is the gravitational light
bending as a function of the impact parameter
in plasma free vacuum space.

This is the main thing we
want to talk about here.

So what I did, we talked about the light
bending as a function of the impact parameter.

The smallest impact parameters you can have
would be the exact radius of the Sun.

So I can go to 2 solar radius,
or I can go to 3 solar radius,
or 4 solar radius,
or 5 solar radius.

If you go on beyond, the light
bending should get less and less.

So let's take a look and

see what we have here.

So you take a look at what the reality
tells us. For the last 100 years of observation,
we have observed virtually no
bending at all of a star light,
beyond the solar limb of the Sun.

So you go back and look
at relativity again,
relativity predicts bending, whether you
are at the solar rim or beyond the solar rim:

However, the

reality tells us this:

the impact parameter, beyond the Sun
there is no bending whatsoever.

Here relativity has a problem.

so looking at this, summarizing
what we are seeing in the picture,
the solar limb of the

Sun causes 1.75 seconds of bending,
while there's no
bending above that.

So if we take a look at the light bending,
as reality tells us, in deep space
modern astronomy shouldn't
be able to explain this at all.

So we have $2R$, $3R$ or $4R$, nR ,

there should be a bending always,
according to General Relativity.
So, and going back again
what we talked about,
if the Sun bends light rays,
and it has always been the dream of some
astrophysicists to go into deep space
and take a spacecraft and travel
out and find a point in space
where the Sun bends light
rays and they come to a point.

It turns out that you take the 1.75
arcsec and the radius of the Sun
and go out beyond in space, you should
go at least 550 AU
that is 550 times the
orbital radius of Earth.

And that's not likely right now, because
of the space program we have right now.

It's not a silent isn't it maybe
in sometime in the future

I'm not going to be here,
maybe my kids or your kids.

We need some of you guys
younger than I am. You will be here.

So that's not

going to happen right now.

So here is the data.

For the past couple of years

I have managed to publish some papers

in a refereed journal, calculating the impact

parameter at the solar radius.

You calculate a minimum

energy path; you find

then an equation that

will tell you at one solar radius

what the bending would be.

And I come up with the very same

equation as General Relativity,

but it has nothing to do with

General Relativity at all.

So let's go forth and I might try to summarize

this in the next 5 minutes and I'm done.

There's a principle known

as the Shapiro Delay

and Shapiro was a scientists

who used Mariner satellites

that were put up by the government,

and they used microwave transmission

in communication with

these Mariners satellites.

And we had orbited

around Venus.

There are some orbiting

satellites around Venus

and when I was at NASA

I had a neodymium YAG laser

and one of my

projects got canceled.

These guys took my laser and used

it at the astronomical observatory

to try to hit Venus with that

microwave neodymium YAG laser.

I had this 1,000

milli Joule YAG laser,

and people wouldn't come in my lab

because they were afraid this energy

would burn a hole through.

They used the same laser to cut steel.

So I was working in this lab

and my boss told me if I had an accident that

they just would take the body and do away it.

So this guy didn't

care about me at all.

So I had this laser,

this guy took the laser and tried to

hit Venus with this laser beam, right?

And what happened, you can

always hit these planets

with a microwave beam, right?

It turns out when you go past the Sun and try

to hit a planet out in the solar system,

what happens, they found out that

microwaves will always have a delay.

When you get close to the Sun the delay

would be on the order of a millisecond.

That's a drastic mistake.

What happens, it turns out that this delay

is a function of the microwave frequency

however, for shorter wavelengths

or microwave links at higher

frequencies you get more delay.

So let's go forth and to summarize this picture,

I'm gonna summarize this, and then I will be done.

What happens with the microwave, you'll

get a delay, with the Shapiro effect.

However, microwaves that came in the limb

of the Sun, you'll get light-bending

This is what happens

with microwaves.

The question here is, if Einstein is correct

then, where are the Einstein Rings?

If you have many stars out in

the star-filled skies at night,

you see all these stars right?

And many of those stars are
pretty much like our Sun.

So as we know, all these stars have
a plasma rim associated with it.

And if there is (any) light
bending whatsoever,

we should see Einstein

rings all over the sky.

It's not here, it's not there,

so the question is, where are they.

So reality tells us that light rays

are passing by these stars in deep space
where there's no plasma.

So there's no bending
of the light at all.

So let's go forth and

I'll just skip this part

about the mathematics and you can

see me, this is on my website,

so you can go to the

mathematics that I calculated

the solar minimum-energy

path and the light bending,

coming up with this equation that general

relativity used. Just a derivation

of the same equation of
relativity, without relativity.

This is bad news

for those guys.

So here's the major event that's going on at the
center of our galaxy known as Sagittarius A

this device, whatever

this thing is,

is estimated at about four million
times the mass of the solar system.

So what happens is, there's
orbiting stars about this thing,
about 17 some stars orbiting about
this thing all along Kepler paths.

This has been observed for the
last, probably 20 years now.

And this star, S2 is

now on its second orbit,
almost a perfect elliptical
path about this thing,

where the red X is. There's
this super massive object there
and there's no light bending
in this thing at all.

This is bad news for relativity;
so what (would) happen if relativity were

factual? This is what you should see.

You should see light amplification

or light scattering

somewhere around,

according to the textbooks.

if relativity were actually the case, this

Sagittarius A should look pretty much like that.

You don't see this.

So therefore, where (are) the Einstein

rings and where is the scattering?

You don't see it and this

is what's in the textbook:

a star orbiting about a black hole

should be amplified when it

passes behind the black hole.

You don't see that,

you see it in the textbooks,

but you don't see it in space and

you don't see it in cosmology.

This is what you do see.

This is what you see, here you

see no bending whatsoever.

So, summarizing what I just

talked about all this stuff,

let's this finish up, just skip

over to the summary and conclusion.

And in conclusion you
have the light scattering
and light bending according
to General Relativity
and all these things here.

Let's just summarize
and then I finish. In summary
the gravitational gradient field of the Sun
acts only indirectly on the plasma limb of the Sun,
and there is no bending
whatsoever outside of that.

And you take a look at all electromagnetic
waves propagating (in space) free of plasma,
there's no bending whatsoever.

Even Einstein
said in his own words,
quoting Einstein, he said
if the velocity of light does depend
on the velocity of the light
source, then all my theories are wrong.

So I'm quoting him right now [reads the German text],
"If the velocity of light is even only a tiny bit dependent on the velocity
of the light source, then my whole theory is wrong". That's what he said.
I just use his own words, okay?
And this is Einstein, okay?

This is it.

You have just entered the
theater of an alien sky.

If the words and images seem strange
to you, there's a reason for this.

Our world was once a
vastly different place.

To experience this
won't hurt you
and there is nothing to fear.

The City of Heaven

When exploring ancient
myths and symbols
the first rule is to follow recurrent
themes back to their earliest occurrence.

That means as close as possible to the
original provocation in the natural world.

At the dawn of the
great civilizations,
what natural events occurred
with such impact on humanity
as to produce an explosion
of storytelling,
obsessive reenactments and
monumental construction?

Uncovering that catalyst
becomes essential

and there's no other way to make sense of
the vast human response in ancient times.

The greatest challenge the researcher will
face is the confusion of surface detail.

There were far too many cultural
interpretations and elaborations,
too many self-promoting
cultural claims,
all leading to fragmentation
of the archetypes.

By localizing the stories
the ancient chroniclers could only introduce
a flood of regional contradictions
as every culture asserted its own
special place in the stories told.

A good example of this
fragmentation occurs
with the historical emergence and
evolution of the archetypal Primeval City,
the mythical homeland affirmed by
so many cultures the world over.

We introduced that theme in our
previous segment on the Atlantis myth,
a story with a hundred claimed origins
in different parts of the world.

Though no one disputes the

primeval city archetype,

the critical question is

too frequently missed.

Why the persistent connection

of the sacred city

to the story of creation and its

subsequent catastrophic destruction?

In fact, it's this very connection

that confirms a global archetype

beneath the surface confusion

of localized variations.

We see the paradox in the creation

myths of ancient Egypt for example,

where certain foundational concepts

persisted for thousands of years.

Every sacred city in Egypt identified

itself with the celestial world

created in the beginning.

But what did that mean?

Despite their diversity, the regional

myths converge on a special place,

a land

said to have emerged from an undifferentiated

prior condition in the creation.

That primordial environment meant

no visible stars, no Sun or Moon,

just a diffuse glow most often reported
as all-encompassing waters of chaos.
Always remember that the condition
so often translated as chaos
did not convey any modern sense of
agitation or something out of control.
The literal meaning was the absence
of any discernable activity
and any discernible form.

Egyptian priests repeatedly
declared that in the Zep Tepi,
the first occasion or first time,
the island of beginnings arose
from the celestial waters
and all Egyptian traditions agree
that it was this remembered creation
that gave to humanity a model for
sacred construction on Earth.

In fact, every temple and every city
identified itself with a prototype.

It was in the Zep Tepi that
the wandering creator Atum
found his resting place
and from that place the
drama of creation began
with the triangular or pyramidal

form of the Benben stone

at the center and

summit of the sky.

From the first appearance of Atum

as the Benben, the work of creation

progressively unfolded with the

emergence of the island of creation.

It was through this collective

memory that ancient kingship rites

could name the Creator himself

as the exemplary ancestor,

the first in the line of Kings,

"I came into being of myself in the

midst of the primeval waters."

The god states in the

Book of the Dead

or the God declares: "I was

alone in the primeval waters"

or again: "I had no companion when

my name came into existence."

By following this theme to its roots

we can see the critical distinction

between the ancient symbol and the

celestial reference symbolized.

The original act or

object was cosmic

while the symbol was its
commemorative expression locally.

The irony is that by virtue
of the inherited symbolism,
every sacred land or sacred place proclaimed
itself to be the original location.

By this identification
the Creator could be said to have stood on
the very spot of the local temple or City.

You can see this in the titles
of cult centers from Heliopolis
to Memphis,
from Hermopolis
to Edfu
or Thebes.

Each celebrated its own special
identity with creation
leading to multiple variants
of a single underlying memory
as in this declaration
of The Coffin Texts,
"The Great God lives, fixed
in the middle of the sky
...dweller in the city."

The cosmic city is the primeval place
symbolically duplicated throughout Egypt,

"I have come to this city, the
region of the first time,
to be a dweller in the land,"

The Texts say.

Thus the Egyptians invoke
a celestial Memphis,

"the divine emerging
primeval island"

a celestial Thebes,

"The island emerging in Nun,"
the cosmic waters

"which first came into being."

A celestial Hermonthes,

"The high ground which
grew out of Nun"

a celestial Elephantine called

"The city in the midst
of the waters"

and a celestial Abydos,

"The Ta Ur, the primeval 'Great Land'
rising from the same cosmic waters."

So too, Chinese tradition

declared the local Kingdom

to be a copy of the

celestial Empire

and each capital city

imitated the same plan.

The integrated symbolism
even when growing complex
never departs from the underlying
idea of a visible place or land,
the first form of the created world
emerging from a primeval ocean.

Of course, as we've seen so many times,
the localization of an archetype
invariably introduced
regional contradictions
even as the archetypal substructure
persisted across the millennia.

The ancient memory of a lost
island preserved around the world
consistently harked
back to a prior age,
an age of innocence and wonder.

For the Greeks this was the age
of the first sovereign Kronos
whom the Romans knew as their
own ancient ruler Saturn.

Here are the words of the Latin
poet Dionysius of Halicarnassus,
"Haste to the realms of
Saturn shape your course,

where Cotyle's famed
island wandering floats."

The cross-cultural
accord is remarkable.

Japanese legends recall the ancient
cradle of life as a floating island
called "the drifting land"
congealing out of
the primeval waters.

Its original location was
said to be the North Pole
later localized to become Japan.

That's the localization
of the cosmic archetype.

So too, the legendary
floating island of Delos
which Poseidon stabilized
by his cosmic trident.

Pointing to the same archetype would be
the floating islands of the Argonautica,
called the Strophades,
or "Islands of Turning."

In the voyages of the Celtic
divine hero Maelduin
the adventurer encounters a fabulous
Isle in the midst of the sea

"Around the island
was a fiery rampart"
"And it was ever wont to
turn around and about it."

Examples are plentiful,
all reinforcing our
most fundamental claim
that every archetype stands as a
contradiction of our natural world.

The primeval revolving
islands of Rhodes
or Corcyra, spun on
the cosmic spindle.

The primeval Isle
of the Cyclos, the wheel,
which gave its
name to the Cyclades.

The white island of Zeus
in the midst of the sea.

The floating Hindu white
island Shwetadvipa
located at the axial
center of the sky.

The lost Toltec white
island of Tula,
also called the

center of the world.

That is the fundamental
quality of the Sumerian Ekur,
the "pure land" or "great land"
always venerated as the
model or prototype
and we see the same exemplary
role in the Assyrian Esara,
the "supreme place"
founded by the gods,
remarkably similar to the
pure land of the buddhist.

Rather than familiar geography,
the terminology always takes us
back to the place of mythic origins
subsequently localized through
commemorative practices.

The greatest mistake a
researcher could make
is to confuse the original
inspiration or first form
with its local symbol.

No mythic archetype has ever been
explained by a local experience
but with that reminder
it's also worth noting

that the historical localization
of universal traditions
by bringing the
gods down to Earth
was the primary means by which
humanity consecrated
and passed on the archetypes
across the millennia.

And that is why in our comparative
study we are invariably led
to the universal substructure
of storytelling the world over.

In the process, we observe how through
localization of an inherited story
every tribe and every nation
asserted its own identity
as the children of
the creator himself.

What then is this
connection telling us?

As we've repeatedly observed,
it was intensely remembered events that gave
each culture its sense of divine origin,
its mythic connection
to the gods
and it's this connection that requires

us to follow localized mythology

back to the archetype

of creation itself.

The truth is that a

single archaic idea

could never confirm a cause

in human experience

but the existence of

just one archetype

does pose the question of cause

and how will we address that question

as we encounter hundreds of archetypes

all connected to each other in an underlying

agreement of the ancient cultures.

Welcome to Space News from
the Electric Universe
brought to you by The
Thunderbolts Project™
at Thunderbolts.info.

In Part 1 of this presentation,
Thunderbolts contributor Andrew Hall
explored the role of electrical
discharges in earthly volcanism.

Hall compared the physical
characteristics of volcanic fields,
called the Maars of Pinacate, with
strikingly similar features on the moon
and found in both evidence for
high-energy electrical discharges.

In this episode, Hall considers the
evidence to be found in earthly volcanism
for the electrical circuitry
connecting the Earth and the Sun.

[Andrew Hall] In Part 1 of the
Maars of Pinacate [Thunderblog,]
we looked at rim craters and their
resemblance to craters on the moon.

In Part 2, we'll
ask the question:
If lightning can occur in the

sky why not in the ground?

A capacitor stores electrical charge

up to a point and then lets go,

like a dam breaking.

It's called dielectric breakdown,

and sparks are the result.

Sparks are the flood of

current through the dam.

Lightning is one example

of a spark we've all seen,

but there are several types of

electrical discharge to consider.

Each type represents a flow of current,

electrons and/or ions in an electric field.

What primarily differentiates

the type of discharge

are polarity and surface

features of the electrodes,

the voltage and current density, and the

medium the current travels through.

Our atmosphere carries

an electric field.

The atmospheric field varies widely -

from night-to-day and summer-to-winter:

between 100 volts per meter

vertically in clear weather,

to orders of magnitude

stronger during thunderstorms.

Normally the atmosphere carries

a minor fair weather current

of one picoamp per square meter.

This tiny current is thought to be a return

current caused by lightning around the world,

diffused throughout

the atmosphere.

We don't notice what's happening

electrically in our atmosphere normally

because we live on the Earth's

surface in an equipotential layer.

We don't notice, that is,

until a thunderstorm arrives.

Lightning from a thunderstorm

has no 'electrode' in the sky.

It comes from accumulations

of charge in the clouds:

pools of electrons or ions, like the

accumulated charge on a capacitor plate.

Temperature and pressure moved by

shearing winds take the place of plates

in segregating

regions of charge.

A study using interferometer

and Doppler Radar
to correlate lightning with
updraft and downdraft winds,
showed that lightning
avoids the updraft core,
and forms in regions of weaker
winds around the updraft.

As a storm intensifies and
the updraft speeds up,
lightning frequency dramatically
intensifies around the updraft.

James Dye, researcher
on the study
from the National Center for Atmospheric
Research in Boulder, Colorado,
said the findings
were a surprise.

The massive accumulation of charge in
thunderstorms is believed by consensus science
to result from static build-up
caused by ice formation
and collisions in the
fast updraft region,
so they expected to
see lightning there.

Instead they found the lightning

surrounds this updraft.

Consensus science always requires collisions of some sort to explain electrical phenomena.

Physical processes

such as induction,

don't seem to be included in

their scientific toolkit.

However, fast updraft winds

are likely motivated

by electric current in the

storm in the first place.

So, it is not surprising in an

electric atmosphere that positive ions

in a powerful updraft would collect

negative charge around the updraft column,

which is where they found

lightning to initiate.

The study indicates updraft winds

won't produce much lightning

until they reach 10 to 20 mph.

Then strike frequency

escalates with updraft speed.

From 20 to 50 mph wind speeds,

the lightning frequency might

be 5 to 20 strikes per minute,

but above 90 mph the flash rate

can exceed one strike per second.

In a consensus scientist's minds

this can only mean one thing:

the ice is colliding faster!

But back in the real world, the updraft

should be recognized as a current,

with faster winds producing

higher charge density.

In any case, the charged layers in the

cloud, and the thin, flashing filament

we see in common cloud-to-ground

lightning, is only part of the event.

There is also a buildup of

positive charge on the ground.

The ground charge forms as a pool of

positive ions over the surface of the land

and its features, accumulating in the

highest concentration at high points.

The positive ions form when electrons

are stripped away from air

and surface features

by the electric field.

The lightning bolt initiates

when the negative charge

invades the air below with filaments

of charge called leaders.

They zig-zag downward
in stepped segments,
while the ground charge reaches up in a
filament of positive ions called a streamer.

When leader and streamer meet,
the channel is complete
and dumps the negative
cloud charge to ground.

The ionic ground charge follows, ions being
heavy and therefore slower than electrons,
rushing up the channel at 60,000 miles per
second in what is called a return stroke.

It's the return stroke we see emitting light
from particle collisions in the channel.

Return strokes often repeat as
new charge pools and discharges,
producing multiple flashes
until charges equalize.

It all happens very fast.

You can't see these charges moving
around and pooling, but you can feel it.

It's called wind.

Another type of lightning
is positive lightning
from a buildup of layers of positive
ions in the tops of thunderclouds,

which create arcs more
powerful by a factor of 100
than the common lightning between ground
and the negatively charged cloud bottom.

Positive lightning
also travels farther.

A typical lightning bolt
is about 3 miles long.

A storm in Oklahoma produced
a record lightning bolt
that travelled 200 miles
across a blue sky.

The longest-lasting lightning was
recorded in France at 7.7 seconds.

Typically, lightning will
pulse several times,
but the total duration is less
than two-tenths of a second.

These record setters show that lightning
can scale by orders of magnitude.

In fact, we know no limit
to how large it can scale.

So, what does all this
have to do with volcanoes?

Lightning is seen not
only in thunderstorms

but in snow storms, hurricanes, intense
forest fires, surface nuclear detonations
and, you guessed it,
volcanic eruptions.

There are two regions to
consider in electric volcanoes.

Above and below the ground.

Above, they are integral
to the Earth-Sky circuit.

A volcanic plume is a dusty plasma:
pyroclastic ash mixed with ionized gases.

How such a plume might increase the charge
density between Earth and sky is unknown,
but powerful volcanic lightning
is a known occurrence.

Volcanic eruptions throw hot,
pyroclastic material into the sky.

The volume of scorching hot
cloud that erupts upward
is not filled by the
erupting gases alone.

Ground wind necessarily flows inward
to fill the cloud from below.

This is a depiction of how a nuclear airburst
detonation is designed to destroy a city.

The sudden expansion of gases created by the

blast rise up, leaving a rarefied region.

Inward flowing ground winds reach
the speed of an F-5 tornado,
300 mph, filling the vacuum created
beneath the rising fireball,
and leveling anything
in its path.

A very large volcanic plume
can have the same effect,
drawing winds inward
at ground level.

This seems the more likely
explanation for the lopsided rim
and even circular aureole
of Cerro Colorado.

It may also explain why
maar craters in general
have characteristically small amounts of
'ejecta' concentrated around their rims.

But beyond the kinetic
effects of the plume,
the rising column
of ionic material
will act in the same fashion as
the updraft in a thunderstorm,
generating lightning

around the column.

At the mouth of the erupting vent
one can imagine the current flow
drawing ionic charge to it
from the surrounding land.

This may be why rim craters
occur where they do,
at the boundary of
the rising plume.

Consensus science has concluded there
are two forms of volcanic lightning.

Researchers led by
Corrado Cimarelli,
a volcanologist at Ludwig Maximilian
University in Munich, Germany,
studied Sakurajima volcano in Japan and
concluded ash particles are responsible
for building static electricity
that discharges near ground level,
as they reported in the journal
Geophysical Research Letters.

A separate study, also published
in Geophysical Research Letters
of the April 2015 eruption
of Calbuco volcano in Chile,
discovered lightning striking 60 miles from

the eruption, from 12 miles above Earth.

The scientists concluded that
thinning ash clouds formed ice
that rubbed together to produce lightning
like they say a thundercloud does.

The consensus narrative always needs a
collision and static buildup of charge.

Why this is so, is
hard to understand.

No doubt rubbing and
static charges do occur,
but there is already an atmosphere
with an electric field to work with,
moving electric charge and oodles
of ionization in these events,
whether volcanic
or thunderstorm.

They occur in the dielectric
atmospheric layer
between ground and the charged
plasma of the ionosphere.

By assuming electrical discharges only
occur due to localized static charge,
is to miss the big picture, that Earth
is just one device in a circuit.

Whether discharge comes only from the

plume, or also within the ground,

is the second part of the

electric volcano story.

We don't know much about the currents

within Earth's inner regions.

We know the crust

carries current.

Ground current is why we

'ground' electrical devices,

so a voltage potential can't build between the

ground and the device and generate spark,

or worse, a dead person whose last act

on earth was to touch the device.

Ground Induced Current, or GIC, is

current in soil, rock and water,

as well as metal fences,

pipelines, and wire.

It's induced by the atmospheric

current because the two are coupled.

Solar activity is a forcing

influence on atmosphere current,

increasing the dangers of

GIC during solar storms.

The Carrington event of 1859 was a

solar flare that, among other things,

produced especially energetic aurora's

and induced current in telegraph wires.

Many lines burned-up, telegraph operators were shocked and showered with sparks.

Some reported the telegraph had so much current, they continued working without a power source after the generators were disconnected.

GIC may not be the only source of electrical current on and under the ground.

After all the rush of lava and gases through vents in Earth's crust would seem to require a lot of things rubbing and colliding.

It seems necessary that this would build static charge and cause discharges deep within the Earth, even by consensus reasoning.

Even more likely, it's electrical discharges deep within the Earth that heats the magma, vaporizes rock and causes eruptions in the first place.

It's entirely unknown what the voltage drop is across the layers of crust and mantle to the center of the planet, but given those huge auroral

currents at the poles
and the puffed-up
magnetosphere around Earth,
one should assume
it is rather large.

Pinacate and other volcanic
fields display features
that the Electric Universe Theory has
ascribed to electrical phenomena
on other planets and moons
in the solar system.

Since they appear
on this planet too,
they need to be interpreted in the
context of an Electric Earth.

One look at the
Delta-Wye configuration
at the bottom of this maar in the
image below, and the question

- Is the Earth Electric?
- is perhaps answered.

In three-phase electrical
transmission, Delta-Wye connections
are used to connect an ungrounded system,
such as an overhead transmission line,
to a grounded system,

such as a transformer.

The Delta configuration is the ungrounded connection of three phases of current, whereas the Wye connects the three phases to ground at the center of the Wye.

A geo botanical feature at the bottom of a volcanic crater imitating electrical circuitry may be an astonishing coincidence.

Or not.

It may be a physical expression of how sky and ground currents 'couple', the same way we couple a transformer to a power line.

Lest we forget the Moon and the physics of electrical scarring, we can look there for hints at how subtle electrical scarring can be and since this information comes from NASA, it's all the more astonishing.

Deep craters at the polar regions of the moon never see sunlight.

Within these eternally dark and frozen craters cosmic rays are bombarding the surface, creating a double layer of opposite charge,

because it is theorized, electrons
penetrate to the subsurface,
while positive ions hit and
collect at the surface
- it's always the
collision thing.

The double-layer discharges
tiny sparks that vaporize dust
and launch them up to float the
thin atmosphere above the surface.

This dust atmosphere was first
noticed by the Apollo crews
and remained a
mystery for decades.

There is more evidence of electrical
influences in the Pinacate volcanic field
and the surrounding Altar Desert
than rim craters on the maars.

Some maars that don't have rim
craters appear as doublets
or multiple craters with
consistent floor depths.

These too are features similar to the
usual shapes seen on the Moon and Mars.

Tuff rings are the volcanic
rims surrounding a maar crater.

Tuff ring forms as hot ejected
tephra falls back to Earth
and lithifies into a
ring of welded tuff.

They are typically low relief, with a gentle
slope of less than 10 degrees on the outside.

Several tuff rings in
Pinacate are exposed,
but the crater that
formed them is buried.

These next four images
show, in order,
lunar like features of tuff
rings in the Pinacate.

The first is a concentric
tuff ring inside a tuff ring,
with rim features
at three o'clock.

The next is a concentric tuff
ring inside a tuff ring,
with rim features
at nine o'clock.

Third is a tuff ring with the
rim crater at five o'clock
and an east-to-west crater
chain at 12 o'clock.

And the final picture is a
polygonal tuff ring doublet.
Chains of raised tuff, craters and cinder cones
can also be found throughout the Pinacate.

The following pictures show
chains of various features,
including tuff rings
and cinder cones.

And then there are unusual erosion patterns
that seem to begin and end without reason.

These are stark patterns of apparent
erosion across playa that are dead flat;
there is not one-foot
elevation change.

They appear to be
lined with black rock
and then the Pinacate is
covered with fractal patterns
and lightning bolt rilles of
feathery ash and tuff deposits.

Fractal patterns appear
everywhere across the Pinacate
from lightning bolt rilles to
feathery ash and tuff deposits.

We'll look at the electrical nature of
volcanic fields more in future articles.

Thank you.

For continuous updates on Space

News from The Electric Universe,

stay tuned to

Thunderbolts.info

The SAFIRE technology was designed and built to replicate the atmosphere of the Sun in a laboratory on Earth, and to test the Electric Sun model.

These are the factors we control.

These are some of the things the SAFIRE lab is now capable of.

These are some of our recent discoveries.

In our tests and experiments, we have found no disparities with the Electric Sun model.

In fact, all the evidence to date indicates that electricity is the primal force in the universe.

Michael Clarage arrives from Boston.

We have just completed our latest experiments in the lab and were confronted with mountains of information and imagery from a score of data recorders.

The plan is to park ourselves in my garage for two weeks and prepare for the upcoming conference in the UK.

Analyzing the SAFIRE data is like going through a

door only to discover

another door beyond.

Doors upon doors opening

to unfamiliar territory.

We're looking for a coherent story

that we can present at the conference.

Something that happens in a few seconds

in the lab can take weeks to analyze.

Turning those analyses into a

45 minute PowerPoint presentation is

another challenge all together.

A year ago, the SAFIRE review team set

the agenda for the next 12 months.

The plan was to focus on three things: energy,

transmutation, and finding parallels

between the SAFIRE Sun in the

lab and the Sun in the sky.

During the year, we also gave

talks at the Electric Universe

UK conference in 2018, the New England

Venture summit, and MIT in Boston.

It is two days away from the conference in

Bath, and we still don't have our story yet.

Scott Mainwaring and I go over the

material to be presented at the

conference tomorrow.

Scott was responsible for our original mandate which was to test the Electric Sun model by replicating the atmosphere of the Sun in a lab on Earth.

Given the discoveries of the last 12 months, Scott states that we fulfilled our research objectives and our mandate.

The International Science Foundation has given us the amazing luxury of doing pure science for the last five years.

Now it is for us to turn what we've learned into something useful, something beneficial to humanity.

I realize the story Michael and I've been struggling to articulate is only partly about what we've discovered this past year.

The more complete story needs to include our new mandate.

Ladies and gentlemen, Monty Childs and Dr. Michael Clarage, the SAFIRE project.

You can hear everything can you?

I even hear myself.

So we're gonna start from the beginning,

there's two fundamental components to thermodynamics when you're heating something up.

If you have a pot of water and you have a candle underneath it, it might take an hour to heat it up to bring it to a boil, then it stabilizes at that temperature.

So that's what we call steady state.

What's important is that if you take a blowtorch from the mine down the road, OK, that they use to melt steel, and put underneath the pot; that rise in temperature is gonna happen maybe within a couple of seconds, and the water will come to its steady state or maybe it'll go on and just vaporize.

So I want you to keep that in mind as we walk through this section.

In the lab, when we're running that particular bright ball, so Ben's there, he's capturing his video, we're capturing video on our screens and the computers...

The anode, you heard me saying that 'bring it back, bring the power back, bring it back, bring it back back,

please bring it back!'

Reason is because we're reaching the reactor maximum temperature and we weren't able to stop it.

Dr. Lowell Morgan, myself and a guy named Tommy Mello who actually works in development of computational fluid dynamics code, and that code is used by NASA and Lockheed and others, all kinds of corporations to do thermodynamic analysis, in other words rocket engines, cooling systems and the transfer of heat and energy.

It's very complex, very expensive, but it's very powerful software, and that's what we use today.

So we can predict very accurately, if we understand that the factors involved, how something should perform.

And that's how they design your car engines, so they don't overheat any more.

Our calculations showed that we needed, in order for us to reach maximum reactor temperature, our power supply

had to be at 100% power output.

So just imagine a hundred percent, means that you've got a blowtorch underneath the pot.

The max. temperature of the chamber should be about 113 degrees Celsius.

The other numbers we just kind of tested at different levels of what kind of temperatures that the chamber should respond to.

The seven percent, we're gonna get into in a few seconds, is actually where the power was set, when you see that anode and where we're actually creating the transmutation of elements.

This is a model, some of you may have seen it from 2016, when we did the analysis.

When it's cooled, with the cooling systems at full power, shouldn't reach much higher than about 110-113 degrees.

At a full power, cooling system on, steady-state, 110-113 degrees.

When we did our calculations, each of us did them separately, we were all within 50 degrees of each other.

Without cooling the chamber, it

would heat up to 500 degrees Celsius.

So that hundred degrees, or 110, actually represents 500 degrees Celsius without cooling.

So when I say 50 degrees,

you might say well that's 50%

but it's actually 50 degrees of 500 and

then we put cooling on it and it should come

to this, so for three years we've been

running the experiment and SAFIRE has

responded predictably, until now.

We have on our SCADA system, you see here in

the screen above, it's at 113 degrees,

we have thermocouples, we have 12

thermocouples all around the chamber,

measuring to make

sure that it's stable.

And we can monitor these

things cause it's important.

So what this graph

is, is a video.

The red line represents the infrared

camera, that's the one we're

looking at the anode to tell what its

temperature is, so it doesn't, it's not

compromised thermally or melt.

The blue one is called a

bolometer, it measures,
you might say, a relative energy
measurement of what's coming off the end.

It's not a total measurement of energy
as such of what SAFIRE is putting out.

The Gold Line is
actually the thermocouple.

So this is a day's worth of experiment
sped up a couple of thousand times.

That's what our day looks like, we
work very quickly, as you can see.

Isn't that interesting,
we're at the peak.

So it's climbing and falling, we're
changing chemistry, you might say the gas
composition, power settings, and we're
monitoring the thermal temperature of
the anode and the chamber.

Yes, that is the anode melting.

We didn't know it at the time, because it was
happening so slowly, but we realized what
was happening, we had to shut
SAFIRE down, it got too hot.

What I want you to observe here is the
angle of that yellow line and that is
real-time rise in

temperature over time.

This is the real-time, and the rise in temperature over time is identical to what we calculated at hundred percent max power, but we're only at 7%.

The fall here represents after we shut it down, as you saw in the video, we couldn't control at that point of time so we start dialing the power back.

And we were only at 7%.

For me, doing mechanical engineering and what I do, everybody gets excited, well, it's all this heat, probably it's like, can we run the reactor?

Now, this next picture is not a black and white, this next picture shows you when we change the composition of the catalyst, it actually takes heat out of the system to a point where the anode, if you can see it here, doesn't even register and that's at max. power, dials turned up to 11, OK?

And that's what we get, so we can cool it down.

So we can introduce certain compositions and things and take energy out of the system.

100 percent max power gives
you a hundred percent maximum
thermal stable state energy
or heat in the chamber.

Seven percent gave us a hundred
percent plus because we couldn't
track where it was going to stop.

I don't like to boast about our error so our
calculations were only off by 93 percent.

I'm 62 and I'm telling the truth,
I've never been off 93 percent of anything
in the engineering I've done in the
past, and that's a big number.

It's not just me, it was Lowell, it was
Tommy, chamber shouldn't be doing this.

SAFIRE can create, control, contain, and
repeat any number of plasma regimes.

For five years, SAFIRE has performed exactly within
the limits it was designed for, until now.

This recent catalytic event was not
predicted and according to plasma
physics, it should not
have happened but it did.

This is calling into question our
understanding of plasma physics and will
require a new math and a collaboration

of complementary disciplines to resolve.

These recent catalytic events have not been observed before, they're new and show the potential for a clean, energy-efficient reactor.

Transmutation -- finally!

2017, we had some interesting results but we weren't in a place to talk about it with confidence.

Today we are.

So this is before, this is during a plasma discharge.

What's interesting about this is that the plasma double layers have collapsed down and become very intense around the anode and now it's giving a uniform coronal glow.

Just keep this in mind as we go through this presentation.

And this is after, and we said well, that's interesting.

In other words, so we decided it was time to subject it to what's called Scanning Electron Microscopy (SEM) and EDAX.

They kind of go

hand in hand.

Technology's been around for thirty years
and scanning electron microscopy is just
a very powerful microscope.

EDAX basically is technology where they
energize the elements that are on the
sample and they can tell you
definitively what those elements are.

And they use it for forensic sciences, all
kinds of things, and it's a standard
piece of equipment, it's about a million
bucks for one, I would say, standard or
common, but it's very good.

So this is June and
another lab that we work with
and what we did with the sample so, when
you go over a sample like this on
scanning electron microscope, it's almost
like scanning over top of a planetary
surface, so just imagine that you're
in a satellite or a rocket, and you're
saying well, that's interesting!

So pretend you're in there, zooming in with
the microscope, things get interesting...

And then we said, what
are you doing there?

A ball and then you can get into
all kinds of discussions about how a
sphere can form in
an experiment like this.

And there's a lot of people who would agree
that to get a sphere like this has to
form in a non-gravitational environment,
so if you want to make spheres you throw
particles up that are heated and as they
glide through the atmosphere they become spherical.

We don't know what it was, we
didn't know why was there.

There's better pictures of this, but just
take a look at something, there's some
almost like tectonic
thing happening here.

We can't tell you some of the
things that we did to get there
but we can show
you the results.

So if you see some of the elements missing,
that's some of the elements that we
can't discuss, but what's interesting is,
these elements that you see were not in
the chamber before, and SAFIRE is
making lanthanum and it's making cerium.

It's making carbon,

it's making oxygen.

So we went and scanned another region and

said well, that's interesting, that

doesn't look like the

base materials at all.

And this is what we found, we found

phosphorus and silicon and titanium and

oxygen and magnesium and calcium and

sodium and potassium and aluminum and

carbon and chlorine and sulfur.

Those were also not, we know

definitively they were not in there.

What you see here in

the previous slide is that these

formations are actually

growing out of the surface.

Growing, that's

what it looked like.

This looks like actually a

fish egg sack full of particles.

So we said well, nobody's gonna

believe us, because well, we're the

SAFIRE team and of course we're

completely biased, that's how they're

gonna see it so we said, this particular

agency said, we have a lab for you if you
want to validate your results
and send it down to this lab.

And it's a lab that they use
and Lockheed uses it and others...

We say OK, why don't you go on scan
the sample and tell us what you find.

And this is what they found.

Wow, that's a really interesting ball,
and what is going on there. It's like these
particles forming in here
and they confirmed the
fact that the predominant elements of
that ball are cerium and lanthanum.

These are heavy elements.

And they scanned another area,
and they came up with
titanium, chromium, zinc,
phosphorus and carbon.

What we did is, because our EDAX machine isn't
as good as theirs, they have a bigger budget.

They can resolve for carbon and
some of the lighter elements
and they resolved some of the predominant
elements there, in fact SAFIRE is making
carbon, zinc is not there

and neither is phosphorus.

So this is some of things that it's making but there's even more coming.

What's interesting is the topography and this is as close as we're gonna get.

This is basically, you might say it doesn't look like crystals but in metallurgy you use the word crystalline structure.

You can see how the top surface of the main nodules in the material have been eroded.

What's also interesting is the vent holes that are here in this material.

So we said well, that's interesting, let's go and take a look down in between these mountains or these guys and we found other things like calcium and chlorine and carbon and potassium, and these are certified materials, so we got them from a certified company, certified spectroscopy done on the materials before we actually put it in the chamber.

So we want to make sure we're doing right science before we start making claims like this, especially

these kinds of claims.

We start with the periodic table of elements and we're using the word catalyst because we can't think of a better term to use for the types of gas constituent or composition and the materials that we have that the anode is being exposed to.

So we're just saying these are catalysts, we introduced those into the chamber and when we fired it up and that nice bright anode that you saw that looks like a Sun, this is what it returned, these are the new elements minus the catalyst.

The aluminum and silica we wrote off because well, our probe is alumina, so we figure well, maybe this is contamination meaning it may be making it, may not be, we're just going to say look, let's just dismiss it.

But you have a pile more that SAFIRE is making.

Now, what's cool about this is that we can repeat the experiment.

OK, and get the same results and we've dialed it up, then we dialed it down, and we

can, you know, it's tuned that's what Wal was talking about, you know, good technology bringing to bear modern technology that Birkeland didn't have.

Well, this is what modern technology can bring us, it can bring us some answers or actually many more questions.

So, optical spectroscopy; this is Michael's thing, I'm

his Padawan, OK, when it comes to optical spectroscopy, but he's going to talk to you what we found in the atmosphere.

The optical spectroscopy is used to study the atmosphere of the discharge.

What Monty was talking about is a surface analysis of the metal.

Optical spectroscopy is used again to study the atmosphere around the anode.

I'm gonna have to go over there, okay. This is wavelengths of light coming out of the chamber and optical spectroscopy is like a really fancy prism that shows you the rainbow colors that are in your glowing sample.

It's a wonderful science, it's been perfected for so many decades that

it's one of the most reliable tools that
an astronomer or a plasma physicist has to study.

When you light up the chamber
at low discharge with a simple
atmosphere, you might see that line and
maybe one more here, OK, because it's a
very simple discharge, it's
easy to know what's in there.

When you turn up the power and
you get things really rolling
in there, you get this
whole sea of lines.

A lot of elements
produce similar lines.

When your circuits are complicated, it's
not so easy but it's a wonderful game, it's
like Sudoku on steroids, if you try
to find out what elements might be
producing the lines that you're seeing.

It's part of the art
of the science there.

And it took us a while but then we
noticed this triplet here, this a triplet
of lines that are
very close together.

This triplet here and this triplet here,

and our intuition said,
let's focus on those because that's so
unique of a fingerprint, no group of
elements would make that,
it's got to be one.

That was the
intuition at least.

And if you ask your optical spectroscopy
software to match the known lines of
different elements, after a lot of
hunting, we came across manganese and
manganese lies exactly on this triplet,
this triplet, and this triplet.

It's basically impossible that that could be
any other, statistically impossible, any
other element or
group of elements.

These other ones, we don't
know yet, we're still
hunting, it takes a
lot of hours to hunt
this sort of a diagram.

So that means that we have
manganese, which is another
metal that is in the atmosphere but not
on the surface, right, we don't know why

but it's very clear

that that's happening.

We also saw in the atmosphere the green ones here, the lithium is also in the atmosphere that was not on the surface, the manganese and then the sodium, the Na there that appears in both, the surface of the anode and in the atmosphere.

One of my challenges when we designed SAFIRE was that, okay, we can do post-experimental analysis on lots of materials, but the real challenge is, when is it happening?

So if you do see transmutation, do you know when or under what conditions these reactions are happening?

And so what we can tell you today is, we know now when it's happening.

It's because the spectroscopy tells us, we can dial it up and we see it come up, then we dial it down and it disappears except for the prominent lines of the particular gas constituent we have in there.

So what we can tell you is that manganese is not one of the gas, part of

the gas compositions, we know that, and this is laboratory quality stuff, and not with that kind of signal.

You're gonna enjoy this.

So always when we're running these experiments, part of my job is to keep in mind the connection with cosmology.

Cosmology allows you to place everything that you might experience as a human on this planet into some framework, and that has definitely been at the start of the SAFIRE project as well.

Here is some framework to put some of these results in.

This is his normal rate, speed, Monty, keep up!

Planets, very dynamic electrical systems, currents flowing in and out, and from what we know now, it's not as simple, it's not simply a current like flowing through a wire into something and out the other end, current flows in and out of the North Pole, current flows in and out of the South Pole.

I just drew one of the ring currents up there,
I think we're up to about four or five now,
that we know about, it's
very complicated stuff.

So let's take that starting point
as what we know about our local
environment, put it inside the solar
system, so stars also, they do have and we
will eventually measure currents going
in and out of their poles as well.

The numbers are a little tough to nail down
but a planet might have ten to the
seventh, so ten million amps, more or less
flowing in, a star might have a billion
amps flowing in and out of it.

You start to see the pattern when you
draw the pictures, this is a cosmic
blueprint, if you will, for how electrical
structures are formed.

Each star is also following this blueprint but
then its sub members also follow the blueprint.

The planets are receiving their energy
from their star, the star is connected to
its source of power, the planets are
connected to their source of power and
their source of

power is their Sun.

So you have to imagine if not direct
currents flowing between them, at least
some sort of resonance or induction, but the
planets only get their power from their Sun.

If you imagine one of those
being Jupiter, say one of those
planets there, and we look at the sky,
we see Jupiter as a dot, pretty small dot,
right, but the magnetosphere of Jupiter,
the body, the real body of Jupiter is
huge, it would take up, if you did this
with your arm to the nighttime sky,
that's how big the body of Jupiter
would look if we had eyes to see it.

OK, so composition of planets, as Wal
so well said years ago, we understand
planetary formation so little currently,
that we need a different theory of
planetary formation for every
planet in our solar system.

One of the patterns
that we see in electrical systems
throughout all of nature
is membranes, boundaries.

The plasma naturally forms

its own version of a membrane or a boundary.

So we'll start with our star,
shorthand it, right, and then we'll ask
how does the star fit in its world, the
neighborhoods that it comes from and lives in?

So that green there is an
interstellar filament which you can kind
of see in the background of the slide
here, and the stars are set up on those filaments.

Before the advent of the
Herschel and Planck Space Telescopes, we
honestly believed that the stars were
randomly distributed in the sky.

We believed that, right, and then once you see
the filaments, every star we see in the
sky is on a filament, there's
no randomness to it
if you can see the
underlying structure behind it.

There's also these other blobs that we
see now and as a scientific community
we're bounded by what we already know about and so
they have a name, they're called protostars.

Any time somebody uses the word
proto, you know they don't know
what they're talking about, right?

So I don't think they're stars, they might be,
I don't know, the point is, they might be
something else, they don't have to be on
this track that we call be a star, right,
they could be something else that is
needed in the interstellar medium.

We have found, to date, over 200 organic
molecules in the interstellar medium.

I'm sure that number will continue to
grow exponentially as we study more and more.

One of the big questions, of course,
is where do they come from, how do they
form, how do they get there?

Now what about the inorganics
in the interstellar medium?

Again, the number keeps growing but these
have been known about for quite a while.

That group right there, of 11
elements -- inorganics, metals,
are known to be out there
in the interstellar medium.

How did they get there, why are
they there, big questions, right?

We thought well, wait a minute, we
have a list to compare this to,
why don't we compare this known list

from stars and interstellar medium,
why don't we compare that to which
ones we find in SAFIRE, right?

Yeah, so pretty good, right?

I think the evidence
speaks for itself.

I think the evidence speaks for itself,
might even demand a verdict, yes, right.

Dark mode plasma, this is something
that, for our research, started
from Scott Mainwaring who quoted that
wonderful line from Edgar Allan Poe
about there being dark
stars in the sky.

I don't know the exact quote, but
it was in the back of our
minds all this time as to well, what's
going on in a plasma environment that's
under tension but
it's not discharging?

That's an important question, right, and
even though it was on our docket for
exploration, when we found it
we weren't looking for it.

Life in the lab.

Yes, so here's an image of dark mode

plasma, yeah, this is our anode, right,
and so just to give you a picture that's
in the center of the chamber, but the
probe, our voltage probe comes in from
the outside and measures the floating
potential of the plasma as it's
moving around in the chamber.
And at a certain point, the probe
started going crazy but
there's no discharge in the chamber, and
we spent some time studying the spatial
extent of that
strange phenomenon.

It varies in size depending upon the
parameters in the atmosphere right, how
big that that boundary is.

What's amazing about
this is that we have
a very sharp voltage drop just
off the surface of the anode,
a plasma double-layer and there's
no visible plasma, voltage goes to almost
zero and it goes right back
up to, almost, anode potential.

And there's no plasma.

So I want to contrast it to the glow

mode to see, you get a reference, we would call that a form of glow mode and at the middle, a very clear atmosphere, very clear boundary at the edge of the discharge.

When you run the potential probe through that, you see that chart on the left, so that's electrical potential, that's the voltage at that point in space, at that point in the plasma, and you can see when you come up, there's that sharp boundary coming up from the left side, that's sharp boundary, that's that outer edge of the blue ball, glowing mode, and as you come in, the potential rises very steeply, you'll notice the potential drops down basically to zero, right before you touch the anode, and then, when you touch the anode, it jumps up to the voltage we set the anode to.

This is what we saw running the probe in and out of the dark mode so we had the chamber under tension, a lot of volts, you don't see anything going on, but then you can see

that's the chart of what the probe is
telling us is in the chamber.

There's a lot of arguments about what it is
this is telling us, and as a contrast you can
see some stack over each other, very
different behavior, very different shapes,
very different sizes of potential in there...

I want to emphasize that we don't
know what it means, OK, there's some
previous research on this sort of thing
where the probe you're running in a
chamber discharge shows this kind of
really rapid and intense pulsations,
but no one's studied it spatially.

It brings you right up against the problem
we've known since the '20s which is, you
can't actually measure anything
without affecting it.

There's this idealization that
you can somehow measure something
that's really there even if you're not looking at
it, OK, but that's not the truth of nature.

So we know it's an interaction
between our probe and the anode, but
nature is always that way.

If you think about the solar system and the

electrical distribution in the solar system, it's not just a Sun sitting there in isolation, there's planets, there's comets, and all of those, you could say, serve as the probe in the solar system and so they're going to be experiencing something like this.

I'll talk tomorrow about some of the astronomical implications of that.

The SAFIRE team is now developing the new mandate for SAFIRE.

We're going to take what we've learned and turn it into something useful.

For the immediate future, we are focused primarily on clean energy generation.

We have already designed a prototype energy generator.

But some of these things really came together in the last, maybe three weeks, and we're saying, what's the SAFIRE story?

OK, so we want to change the conversation from zero-point energy and free energy to efficiency.

We're gonna be talking about that a little bit more tomorrow, because there's

no free lunch.

If you think about your cars, the oil is out there and it's in the ground and it gets sequestered, then it gets pulled and it's put into tanks then it's refined and then it's pumped into your tank where it's actually focused and you burn it, you harvest the energy that has to offer.

Actually the same thing happens with a hydroelectric dam, now you've got this river running through it, put up a dam, focus that potential energy into one particular place, we do the same thing with uranium.

We want to, on our SAFIRE team, change the conversation from zero-point energy and these kinds of things out there, because we don't believe they happen like that. We don't see it in nature.

Energy generation is all about efficiency, how one determines efficiency is much debated, but the Wall Street Journal factored in the cost of the fuel itself, the cost of production, the cost of damage that fuel and oil production does to the

environment; and came up

with a picture like this.

Ultimately, nature itself shows us
the most efficient way to do things.

SAFIRE will fit somewhere
in this picture.

The fact that the main fuel is hydrogen,
the most abundant element in the
universe, and that the process is clean
and produces no negative side effects or
waste products makes SAFIRE a very
attractive energy generating technology.

Elemental transmutation occurs both in nature and
in the laboratory and is not a new phenomenon.

Studies done at MIT have shown
that when radioactive waste
is exposed to hydrogen isotope nuclei,
the observed decay rate of the
radioactive material is
effectively increased.

SAFIRE produces copious amounts
of hydrogen nuclei that interact
with other elements, creating self-organizing
spherical plasma double layer shells.

Within these shells, electrons,
ions, and molecules, are trapped by

powerful electromagnetic fields.

This is where radioactive material would be exposed to the hydrogen nuclei to remediate the radioactivity of that material.

One of the confusing aspects, if you only think that gravity and turbulence and heat are your causal factors, none of this is ever, you can never explain this how there's so much structure.

We see a spatial structure there, right, one of the benefits of the current suite of telescopes around the Earth is that you can also see elements and energetic states of elements, and those are segregated also.

So what you might be looking at here is a center region of hydrogen that has been collected in the middle, and then that bright boundary might be a layer of excited hydrogen.

Right outside of that, that orange boundary might be cold carbon monoxide just sitting right there, right next to that inner shell, and then right outside of that you might find energized calcium

sitting right next to those other layers.

How that happens?

We see that naturally in the SAFIRE chamber, all those double layers and different structures you see, those are segregated and separated different elements, molecules, and energetic states.

And we're not trying to force it to do that.

We don't have a giant billion-dollar ITER machine that uses 20 mega-watts of energy to try to just contain the plasma so it doesn't blow apart.

We're not trying to force anything in our chamber, we are studying what nature shows us, what it gives us naturally of her own design.

So, summary.

So we have energy, we have transmutation and we have the Sun and interstellar medium.

We see a cohesive picture.

The Electric Sun model gave us the premise with which to engineer the SAFIRE reactor.

Once constructed, the proof of concept bell jar version of

SAFIRE was up and running within minutes.

Likewise, once constructed, the

44,000 part SAFIRE reactor was also up

and running within minutes.

At every step of the way, the Electric

Sun model's predictions proved accurate.

What if the process used to

create the SAFIRE Sun turns out to

be similar to the process that

creates the real Sun and stars?

The scientific community would

have a field day with door opening.

That would be

the big picture.

In all our experiments and discoveries, we have

found no disparities with the Electric Sun model.

All the evidence to date points to

electricity as the primal force in nature.

We believe the SAFIRE

project validates and supports the

Electric Sun model.

SAFIRE's new mandate is to create

beneficial and commercially viable

transformative technologies

for Humanity.

That's what tomorrow's talk will be

about, it'll be really the story and
where do we go from here, and what should
we do with SAFIRE, should we stop the research?
Caesar, up -- down, OK,
off with their heads.
So I guess, we'll leave that
with you, I hope you've enjoyed it.

[Music]

The endeavor of science can, and should
be seen as a noble effort to bring humanity
out of superstition, but it has its limitations.

Most importantly, it must stand on some
metaphysical principles. Alas

instead, it has spawned its own

high-end mysticism and myths. The

word 'science' means knowledge, but

knowledge can come in two types: true

and false. The premise being posited

here, is that any scientific thinking

that violates axiomatic metaphysical

principles cannot be valid.

The worst thing we can do is to

know and rely upon something that is not

true. This would be like stepping on a lily pad,

thinking it would hold your weight.

I'm going to quote J.P. Claybourne,

author of 'Why an Ether is Positively

Necessary': "The belief persists in some quarters

that the concept of an ether as a medium

for electromagnetic waves has been

completely discredited. Although it is true

that the mathematics of electrodynamics

and Einstein's special relativity operate without

reference to details of a transmission medium,
in neither case is the ether concept
contradicted; it is simply not addressed.

Also, I quote from another physicist,
James Owen Weatherall. "If physicists
can't agree on the properties of empty
space, they won't be able to explain the
physics of planets or particles either."

Now, the EU thinking has been primarily
focused on the things that we
can apprehend with our senses,
from the microscopic level to the telescopic
level, but mostly on the normal,
visible level. On just these three levels,
there is an overwhelming abundance of
phenomena and structure that show the universe
works electrically, from galaxies down to
cells, down to atoms. Much, if not
most of this should be obvious
and would be, if a wrong paradigm
didn't obscure the thinking.

For instance, welders and
machinists familiar with electrical
discharge machining (EDM), get the electrical
cratering and scarring aspects immediately,
usually exclaiming that it's obvious.

Electrical engineers often find other aspects to be easily assimilated and accepted, but many plasma phenomena on this triune level are not that familiar to scientists. For example Birkeland currents, double layers, cells and Peratt instability formations have not been widely understood. And plasma phenomena can be very complex, as well as being outside of our normal experience.

Let me remind us about our limitations.

It should be understood that below the level of the various microscope tools, or beyond the various telescope tools, when thinking about the material universe, aspects and attributes of phenomena and structure, cannot be apprehended directly by our senses, our sight nor by the other senses.

We can only do experiments and get clues as to what we are dealing with, and then we can only build models for and/or project metaphors or analogies from our tangible experience on these aspects. I suggest that our ignorance is profound.

We don't know what we think we know.

This restricted domain on the lower level

includes the basic atomic particles and we can only get blurry visual patterns of nuclei shape and where they are located and arranged in material. To this point, theory has claimed that atomic nuclei must be symmetrical in three dimensions, either spherical, flattened or elongated spherical, as in a discus, or a rugby ball shape. Now we can confirm that some nuclei are pear-shaped and oriented in a specific spatial direction. This development actually sweeps away much current cosmological theory. Even the orbital model of the atom has not been confirmed and part of the time it must be discarded in atomic model thinking. On the other end of the spectrum, we should be mindful that we have only electromagnetic radiation given off by radiating bodies or structures that we can access through our telescopes. Sound, tactile sensation, smell and taste are not available for analysis or consideration. Nothing else comes through, just light. No direct chemical analysis to

determine material or molecular structure, no physical analysis to determine density, specific gravity, index of refraction, hardness, viscosity etc.

No application of tape measures, scales, hydrometers or reagents. Just and only patterned radiation to work with.

Thus on the lower levels concepts that we have can be little more than pure speculation.

We have a tendency to project the orbital metaphor on atomic structure, but this is probably unwarranted. Mainstream thinking has imagined quarks on the lowest level and the EU, the Electric Universe model talks about sub-sub-atomic particles as positive or negative 'subtrons'. The point is that beyond sensationalism there is little justification to present these physics flights of fancy to the public as knowledge. Let's be mindful that all our relevant observations have taken place from a platform within familiar distances within our own Sun's heliopause and essentially within a platform perpendicular to the axis of the Sun.

When considering bodies outside of our platform in more distant outer space,

we are usually projecting from our own environment and then speculating.

We don't know enough about the true distances, the true sizes and the attributes of the regions, such as any charge differential, ether density, field strength etc. We can't confidently extend meaningful values on the decrease of force with distance of the 3-distance squared formulas. Thornhill is even suggesting that the attractive force that we call gravity, actually turns into repulsion at some point.

The Electric Universe model lays a theoretical foundation for all of this on the atomic particle level by positing just and only two electric charge carriers; negative and positive matter particles.

And just and only two forces: electric attraction and repulsion.

These foundational things, along with sequence, motion, and the aspects and constrictions of the geometry of three dimensions, account for or undergird all other physical phenomena, including polarity.

Also, in my understanding of the EU model,
the definition of energy is that
it is always matter in motion
in relation to the rest of the universe.
Not something mystical, nor even a thing
in and of itself. Early theoretical physics
accepted the existence of an ether, and
it is only a modern scientific failure
to detect it, that has precluded it.
The famed Michelson-Morley type experiments and others have so far not given
positive results that are expected, if an ether
is present. However, the problem is probably in
carrying aspects of the wave-in-water analogy,
or metaphor, along for light waves that
are not applicable. On the
other hand, the Earth may carry
along an entrained cocoon of ether
with it. Because of some assumptions that
may not be true, science will
tell you it has disproved this,
but it hasn't. The measured decrease in
the speed of light over the last century
or two, does indicate an ether that is
getting denser in the vicinity of the Earth.
Given that there cannot be voids

of nothingness in the universe,
the Electric Universe model, because of both sound
evidence and reasoning, has confidently settled on
the conclusion that the volume of the
physical universe is filled with an ether.
In other words, the existence of
an ether is next to being axiomatic.
Currently, the thinking is that
this ether is composed of
polarizable neutrinos. Where these are matter
particles that have a vanishingly small
amount of mass-energy and dipolarity in their empty
state. These dipolar particles can spin axially,
rotate radially, and oscillate. The
internal mass-energy would be some
combination of these three internal
motions. There would be no skin of course.
If you build a universe of three dimensions
that can't have any voids, then you have
only two regular polyhedrons
that can fill or tessellate a volume,
those being tetrahedrons and
cubes. So, if we must think of
shape, it may be we should think of ether
particles having one of these two forms.
On the other hand, neutrino-based particles

probably are asymmetrical in shape.

At this point we have crossed

the border into a different realm

and are deep into projecting a topological

shape metaphor onto it. But, since other more

substantial particles and objects

apparently move without friction

through this ether medium, the particles

must be quite flexible, if not compressible,

and their surfaces must be without friction.

Their vanishingly small mass would

generate vanishingly small viscosity.

In conclusion, science is far from perfect

and has a serious problem in being intellectually

responsible on these foundational levels.

[Music]

[Music]

[Music]

so he come to comets an electric
discharge model of comets was not even
on the table at the beginning of the
Space Age allowing astronomers to
embrace Whipple's dirty snowball model
as the scientific consensus but images
of comet nuclei show us God and created
rocky surface and usually you go by the
appearances if you haven't had a chance
to actually scoop some of it up in it
and examine it in the laboratory
meanwhile gravity measurements suggest a
comet is a fluff ball very low density
so what I'm suggesting is there is
something seriously wrong with consensus
understanding and I showed this slide on
the opening knife it's my opinion that
of all the bodies in the heavens perhaps
none will approve more definitive in
confirming the electric field of the Sun
than the comet because the cometary
display relies on there being a weak
electric field centered on the Sun it is
clear that at least by the second half
of the 19th century many scientists
believe that comet tails are

fundamentally electrical they looked and they could see the commonality with electric discharge experiments in low pressure gas and they made the connection for example in August 1882 English mechanic and world of science wrote of Comet tail's there seems to be a rapidly growing feeling among physicists about the cell flight of comets and the phenomena of their tails belongs to the order of electrical phenomena and there are other papers from that era that I could easily add to that when comet Halley was flown first it was a surprise because the nucleus was found to be blacker than a lump of coal it the some of these small rocks have comas larger than the Sun and the material that was coming off the comet instead of just sort of evaporating it was coming out in jets was unexpected and some of these Jets also were on the dark side now if it's supposed to be formed by the heat of the Sun you did not expect to see jets on the dark side

it had complex cratered surface once
again if you're just a blighting
material in the heat of the Sun you
would expect it to look more like a
melted ice cream than a cratered surface
they exhibit layering and we've also
having sampled the tail of a comet found
high temperature minerals just like
meteorites it was discovered by accident
that they emit x-rays and x-rays our
signature of an electrical discharge
pure and simple
comets explode for unknown reasons well
in the electric model that's simple if
you're discharging the body and that
body is an electorator and has an
internal electric field the process of
discharging that comet will build up
stresses within the comet rather like an
overstressed capacitor which will
eventually explode and that's what we
see this is the astronomers jet model
and it's the most fanciful thing you
could imagine here we have jets coming
out of orifices you know vertically from
the surface if you imagine a rough

surface and ice trying to escape from
underneath you don't expect it to come
out like that it can come out at any
angle
in a fan you do not get highly
collimated jets and of course we've
comet Hartley 2 we said the jets drag
water ice out of the nucleus producing a
comet snowstorm this is one of the
things that's puzzle of astronomers is
how you get such a tremendous volume of
very fine dust it's in fact when healthy
was first flying past they couldn't
believe the fineness of the dust there
was an answer to that when heat from the
Sun reaches the pocket of dry ice this
is the explanation of the traditional
one Fulford instantly transforms from
solid to vapor forming a jet wherever
local topography happens to collimate
the air rushing you guessed now the
local thermography fog rafi will not
column out the address with rushing gas
unless it's a perfect really perfectly
cylindrical event apparently these cio
carbon monoxide jets are carrying chunks

of snowy water ice along for the ride
and this is the story it's more or less
a fairy story now comet built two shows
similar surface etching to that of an
electrical discharge machine EDM surface
which you see below in fact common bill
two had a thing called the footprint on
it which you can see down to the lower
right of the comet nucleus and at the
top of the EDM he means you can see a
small footprint if you like in the
surface which has been etched by an
electric arc so the similarities are
obvious it was said in the report from
the scientists it is not clear by
sublimation process is driven by solar
illumination on a spinning body would
form globally distributed circular
structures of course it's not however
electric discharge dude for globally
distributed circular structures
unresolved bright spots seem to be
connected with the Jets from the nucleus
and this is the same kind of thing as
happened on Jupiter's moon Io there were
spots bright spots which burned out the

cameras in which were colored in by NASA

as lava because that's what they

believed it was so these unresolved

bright spots are probably the are cut

down points

Welcome to Space News

from the Electric Universe,

brought to you by The Thunderbolts

Project™ at Thunderbolts.info

For the last five years on this series,

Thunderbolts colleague Andy Hall has

presented an extraordinary reconstruction

of catastrophic events on Earth,

exploring the tell-tale clues these

events imprinted on our planet's surface.

As Andy has described, many of the

fractal patterns we see on Earth cannot

be explained through any

traditional geological process.

However, these geological features

find intriguing analogs in some of the

highest energy atmospheric phenomena

seen in our solar system today.

In part one of this two-part

presentation, Andy continues his Eye of

the Storm series with an

examination of the remarkable

filamentary and dendritic

patterns seen on planet Earth.

Patterns whose explanation

may be found in ancient events

that created the cultural
memory of a mythical creature,
the dragon. Dragons are real, folks.

This chapter may be hard to get your
head around because we've been taught
dragons are myth, but they are not
figments of imagination. They
come from the laws of physics.

They also come from
the bowels of the earth.

You see, rivers flow where
dragons once crawled.

As told in countless tales, they
are said to come from the sea
in the underworld labyrinth.

There are so many examples,
I don't think I need to quote
more than one. But I'll save that
for later. Go discover for yourself.

After this article, you will recognize
the physics of dragons
in the stories of myth.

Our ancestors were doing
their best to warn us.

And yes, dragons are still around;
they're just sleeping. This is a concept

some may struggle with even in
the EU, because so much of our
theories focus on celestial
chaos and the electrical havoc
wrought by planets in close
proximity. We imagine sparks flying,
drilling craters into the
surface of planets and moons.

And there is overwhelming
evidence of that.

But that is what happens to rocky
planets without an active magnetosphere.

Mars, Mercury and many pockmarked
moons display significant magnetism,
but it is mostly remanent. A static
artifact of the past electrical activity
that scarred them with craters.

Planets with dynamic magnetospheres,
atmospheres and weather
like Earth in the gas giants,
and even some of the moons,
have internal electric circuitry.

Stars and planets are circuits;
three-dimensional standing waves of
current and magnetism living in the
winds of their parent stars and galaxies.

They are a product of inductance and
capacitance, potentials and currents,
and the magnetic fields
current generates.

The matter trapped in
these 3D whirlwinds, gas
liquid and dust and yes that includes us,
is 100 percent organized by the circuitry.

Circuits are cyclic processes. They
produce resonant frequencies where
signals are amplified and dampened in patterns
of constructive and destructive interference.

The atmosphere and crust of the planet
are essential parts of the circuitry
because they provide capacitance,
energy storage, and regulated energy flow.

What follows comes from simply
understanding that the circuit flows
inside the planet, as well as in the atmosphere,
plasmasphere and magnetosphere.

But it is all one circuit and
that is why things are so
interconnected. There are feedback loops,
oscillations and high order harmonic responses
that bring order out of
chaos, concentrating

energy into identifiable coherent forms.

The forms appear all over the place in geology and weather, due to the role capacitance plays in the circuit.

In the situation that Earth's potential is raised or lowered in response to some significant celestial event, the crust of the earth can become saturated with charge. And

based on applied science, the most violent discharges in a circuit can be expected through the capacitor.

That is because a capacitor builds charge and a voltage across it that is the maximum of the circuit.

And when a capacitor blows, it's the biggest bang of them all. Hence we have dragons.

A dragon is a type of discharge event from inside the earth.

It's a short circuit around the continental plates, generated by ground currents beneath the plate boundaries. The discharge is reaching for the other side of the plate - the top of the continental mound that is forming around the eye of the storm,

where it's raining rock, dust and water
in a positive ionic mix relative to the
current beneath the continental shelf. Once again,
rinse and repeat, this is due to capacitance.

In nature capacitors aren't insulated
the way we make capacitors.

When we make capacitors for electric
circuits, we want their actions to be
predictable. The last thing
we want is a short circuit.

So we insulate the edges
of capacitor plates
to prevent short circuits from plate to
plate around the dielectric medium.

Nature doesn't do this; in fact nature builds
a continental plate as a big dielectric
that is thicker in the middle and
thinnest at the edge, sandwiched between
a deep ground charge and
an opposing surface charge. The edge
effect at the periphery of the capacitor plate
is called the fringing field. Think of it
as a leakage of charge around the edges.

It makes it the most
likely place to have a discharge,
and if current leakage occurs, it will

make its way directly to the opposite plate and short-circuit the capacitor. Man-made capacitors are insulated around the edges specifically to prevent short circuits in the fringing field. The continental plates aren't insulated. In fact the earth's crust at the continental boundary, the sea floor, is much thinner and it lies over the ground current paths.

Telluric currents beneath the crust are rivers of current that create the plate boundaries, and their magnetic fields create high stress.

So, the continental plates are structured, not to mitigate the fringing effect, but to encourage short circuits, like a relief valve for the energy building below.

Dragons are short-circuit discharges from the fringing field of the continental plates, discharging through magnetically stressed regions of the sea floor, fracture zones and volcanoes. There you go.

That is what a dragon is. No magic puff, but a ground-to-ground lightning discharge.

Energy building beneath the crust tries to release through volcanoes belching hot molten matter,

heat, lightning and clouds of ash. But
every lava flow adds layers of matter to
the capacitor plate. The plate
gets wider and thicker and is
dancing with surface charge from falling ash,
rock, rain and cooling lava. It's chemical soup.
Every charged cloud of ash and water
vapor forms another chemical soup,
rising to a stratosphere
already charged with plasma.

The reaction is plasma storms of higher ion
content today than today's little tabascos.

These storms build surface charge
beneath them on a surface,
already dancing with energy
released from the cooling lava.

And so it goes. Charge keeps building
across the plate until it short circuits
in the fringing field. Essentially the same
thing happens in a cloud-to-cloud discharge,
where the lightning streaks
across the surface of the clouds,
rather than jumping to ground. Just think
about it. The electric field of the storm is
between ground and clouds. It's a
potential of hundreds of megavolts.

Yet much more lightning goes sideways from cloud to cloud than from cloud to ground.

There is a local voltage difference between clouds that is stronger than the prevailing electric field of the storm between cloud and ground.

Of course, it's all one field, but the direction of its potential shifts.

The field becomes stronger between clouds due to phasing.

As clouds discharge lightning, they discharge energy and then rebuild it from the inflowing winds. This sets up cycles with hysteresis and two parts of the cloud or two storm cells get out of phase with each other, which creates a huge potential. The arc closes this voltage gap. The path the arc takes predominantly follows a surface conductive path at the cloud's edge, where the condensate boundary forms a layer of charged particles where droplets form.

The same thing happens in ground-to-ground discharge.

The subsurface and surface potential difference is oscillating.

This especially occurs if the normal path of conductance is blocked, as volcanoes evolve gas chambers of vapor that choke current flow. These oscillations can spike voltage between subsurface and surface, amplifying ground-to-ground potential and draw short-circuiting arcs from one side of the continental plate to the other, just like any capacitor would if you strip the insulation from its edges.

How can we know this is true? Because charge diffusion and discharge take fractal form and we can identify fractal forms and understand what patterns them: electricity and magnetism. There is no question rivers take fractal form, perhaps not every stream of water. But you'll notice, if you pour water downhill, it generally flows straight down whenever it can and rarely produces a lightning bolt- shaped fractal, unless you place rocks strategically in the path of the water the way hydrologists do. Examine a man-made mountain, where natural water erosion is allowed to occur, like the mine tailings pictured. The water erodes straight channels,

but natural rivers like the Amazon,
the Congo and the Colorado river
take on the same class of fractal
form called Lichtenberg figures,
after George Christophe Lichtenberg who first
studied them. It is the form that arcing electric
discharge takes during dielectric breakdown.
Dielectric breakdown is another way of
saying 'short circuit' in a capacitor. Dielectric
breakdown occurs as current paths form and
continuously branch in self-similar filaments
in a process called 'diffusion limited
aggregation'. Brownian motion in the
diffusing plasma results in a random walk,
where charged particles cluster and grow
in dendrite trees called 'Brownian trees'.
And rivers in fine and large structure,
from headwater to delta,
consistently match the variety of branching,
dendrite forms seen with electric arcs,
branching in multiple self-similar
repetition. The process is self-
similar over time scales, as well as dimensions.
A dielectric breakdown may occur over
years or nanoseconds and
produce the same dendrite form.

Lightning bolts occur in seconds,
flashing several times through a channel
created by a cascade of electrons,
reaching for positive ion tendrils
growing from the ground. But filaments
of discharge in a high voltage insulator
grow over months, in a manner of crystal
growth. The dendrites expand from a point in
ever smaller self-similarities, spread out
in ever greater area or volume over time.
They grow in pulses, lightning bolt flashes
as energy pumps into the filament again
and again, until it breaks through and
establishes continuous current flow.
Charge advances by combining with, and
drawing electrons from, its surroundings.
Which alters the surroundings thermally and
chemically, creating channels. Each new pulse
follows the channels, wave-guided to the
old paths and extending them forward in
self-similar steps until it breaks through. So, a
dragon may repeat its route over and over again,
in pulses that may be separated by moments,
or millennia. In these select images of
the Colorado River, note how
much the river follows long, straight

segments. Most people are led to believe that rivers are the result of water, simply flowing downhill to the ocean, following the path of least resistance. But it is accepted scientific consensus that rivers follow faults, and these straight-line segments are the visual evidence of it. So water doesn't just go downhill, it follows faults.

The obvious question is what causes faults.

Faults are the dragon's footprint. Faults are the path of a ground-to-ground discharge.

The solid bedrock below is the fused earth from its heat, shock, pressure, diffusing charge and magnetic field.

Its false valleys and canyons are what I call the 'arc-blasted zone'.

Arc blast is a term from applied science whereas 'dragon' sounds a bit whimsical. But they are one and the same thing.

The path of the water meanders, but the channel it travels in defines the fault line.

Water flows flood and recede, build sandbars, islands and can change course within the channel. A magnetic footprint accompanies the dragon, as countless magnetic dipole measurements surveyed on rivers around the world attest.

River channels have a magnetic signature
transverse to the direction of the channel.
Which is what one should expect from a lightning
arc. Shores blackened with magnetite is another
testament to a past event, when
electric current flowed in that channel,
wrapped in a magnetic sheath. Its path
is the jagged step-leader shape of a
lightning bolt, jumping in
straight lines and arcs from
point to point, like connecting dots.
The path often splits to form tributaries.
The angle between the channels
provides hints of their cause.

[Music]

[Music]

A new scientific paper published in the journal Science reveals yet another major surprise from NASA's Juno mission to the gas giant Jupiter.

In 2019, the Juno spacecraft twice flew past the extraordinary long-lived anti-cyclone called the Great Red Spot, the longest enduring storm in the solar system.

The data reveals that the storm reaches much deeper beneath Jupiter's cloud surface than space scientists can explain. A report on the findings from sciencealert.com states,

"NASA's Juno spacecraft zipped past the Great Red Spot - an anti-cyclone large enough to swallow Earth - twice in 2019.

Measurements from those flights are now revealing the storm structure in far more detail than telescope images can show. That data suggests that the vortex probably extends anywhere from 186 to 310 miles deep, far below Jupiter's clouds."

"Mysteriously, the jet streams surrounding the Great Red Spot extend even deeper - nearly 1,900 miles below Jupiter's cloud surface.

The researchers aren't sure why. They

do know, however, that those jets -
distinct bands of gas wrapping around the
planet - are keeping the Great Red Spot alive.

The storm is wedged between two jet
streams that move in opposite directions,
powering the spin of the vortex..."

Juno scientist Marzi Parisi of JPL states,

"It's surprising that the Great Red Spot
goes so deep... but it's also surprising
that it doesn't go as deep as the jets...

So something is happening at 500
kilometers that is basically dampening the Great
Red Spot" Unbeknownst to the scientific press, this
discovery is yet another remarkable
affirmation of a long string of
predictions by the chief proponent of the
Electric Universe, physicist Wal Thornhill.

In July of 2017, in an interview on the
Thunderbolts series, Space News from the
Electric Universe, Thornhill made the following
statement. "Plasma physicists have shown that
Birkeland currents draw the heavy elements
towards the centers of celestial bodies
and the gases form their atmospheres,
with hydrogen and helium outermost.

So the composition of Jupiter can't

be assessed from its atmosphere.

Jupiter is not mostly hydrogen and helium.

All of the issues raised mean Jupiter is a solid shell composed of heavy elements.

It will have structure both on its

external and internal surfaces. Jupiter

is not, as (Donald) Scott said of the

simplistic standard model,

'boring and uniform inside.

Anywhere you look will not look the same.'

Finally a word about Jupiter's Great Red

Spot. Its continued presence for

centuries is another argument for a

solid body beneath the clouds.

Its giant tornadic form is that of a

continuous electrical discharge vortex,

for an elevated surface feature acting

like a lightning rod. Which could be the

birth scar of one of Jupiter's moons.

The Juno spacecraft is due to observe

the Great Red Spot closely on its next

close encounter with Jupiter where I

expect even greater gravitational and

electromagnetic anomalies to be

found associated with the spot."

Unfortunately, the electrical phenomena

that Thornhill explained and predicted over four years ago, are not part of the standard theoretical toolkit, and thus were not on the table for consideration by Juno investigators. However, we have repeated ad nauseum on this series, that the only valid test of a hypothesis is its predictive record. By this standard, it becomes difficult to rationalize institutionalized science's continued disregard for the Electric Universe and plasma cosmology. It is now worthwhile to review some of the most "outrageous explicit predictions" by Thornhill, later confirmed by science discovery, and dating back over a quarter of a century. As far back as the mid-1990s, prior to the arrival of the Galileo space probe in the Jovian system, Thornhill registered several advance claims. Following the lead of earlier investigators Dr. Thomas Gold, Dr. Anthony Perratt and professor Alex Dessler, Thornhill insisted that the so-called "volcanoes" on Jupiter's moon Io are

actually electric discharge plumes.

He predicted that the so-called “volcanic vents” would be much hotter than lava, that the plumes are the jets of cathode arcs and they do not explode from a “volcanic vent”, but move around and erode the periphery of dark areas which planetary geologists call lava lakes. The so-called “lava lakes” themselves are merely the solid surface of Io, etched electrically by cathode arcs.

They would not reveal the expected heat of a recent lava flow.

Each of these predictions received stunning confirmation. Io's volcanic hot spots were not only hotter than any lava on Earth but were too hot to be measured by Galileo's instruments.

In fact, no lava flow ever recorded has produced temperatures as hot as seen in the original Galileo image. Also, as predicted by Thornhill, the discharging was found to be focused on the edges of the so-called “lava lakes”, though the rest of these dark fields are comparatively cold.

None of the expected volcanic vents could be

found. And in fact some of the volcanic plumes were discovered to move across the surface of Io. It was also discovered that the plumes emit ultraviolet light, something inconceivable under normal conditions of volcanic venting, but ultraviolet light is of course characteristic of an electric arc. Perhaps most significant of all, from the electrical viewpoint, was the discovery of filamentary structure in the plume of the so-called volcano Vashtar.

To this day, planetary scientists admit that filamentary structure simply has no place in a volcanic plume and cannot be explained. And yet, as noted previously by Gold, Peratt and Deshler, it is the distinctive feature of the penumbra of an electric discharge. More than a decade and a half ago, Thornhill offered an equally "radical prediction" on the planet Saturn.

On February 5th, 2005 Thornhill published his analysis of scientist discovery of a "warm polar vortex" at Saturn's south pole. Thornhill offered a detailed electrical interpretation of the phenomenon and

chastened investigators for referring to the vortex as the “first to ever be discovered in the solar system.” He wrote, “Keck researchers don't seem to have done their homework. Or maybe things that can't be explained get forgotten!

Saturn's ‘warm polar vortex’ is not ‘the first to ever be discovered.’ The Pioneer Venus Orbiter (PVO) discovered a warm ‘giant vortex’ of surprisingly complex structure and behavior located in the middle atmosphere at the north pole of the planet, with a similar feature presumed to exist at the south pole also.” On the question of Saturn’s strange polar hot spot, Thornhill offered an explicit prediction. He stated the Electric Universe also predicts experimentum crucis that both poles should be hot, not one hot and the other cold.

In 2008, the Reuters News Service published a science headline, Scientists Find Hot Spot On Saturn's Chilly Pole.

They wrote, “Saturn's chilly north pole boasts a hot spot of compressed air, a surprising discovery that could shed light on other planets within our own

solar system and beyond.” Planetary scientist Nick Teanby said of the discovery, “We didn't expect it to have a hot spot at the north.” Saturn's north polar hot spot was a total surprise to planetary scientists because the pole had been deprived of sunlight since its winter began more than 12 years earlier. Another clue to the incoming electric currents creating the polar hotspot, is the long-lived hexagon, also at Saturn's north pole.

While planetary scientists have long favored an explanation for the hexagon based on fluidic experiments, recent scientific discovery definitively excludes the fluid dynamics theory.

In 2014, scientists studying data from NASA's Cassini spacecraft focused on Saturn's northern stratosphere, a region hundreds of kilometers above the atmospheric hexagon. The shocking discovery came when they began observing a vortex far above the famous hexagon. One of the investigators says of their discovery, “As the polar vortex became more and more visible, we noticed it had hexagonal edges and

realized that we were seeing the pre-existing hexagon at much higher altitudes than previously thought.”

A 2018 ScienceAlert.com article states of the discovery, “...since wind conditions change dramatically with altitude, the fact that the hexagon shape persists so much higher than the cloud tops is a baffling conundrum.” In other words, the evidence overwhelmingly favors the explanation that incoming Birkeland currents are the cause of both Saturn's polar hot spots and the mysterious hexagon structure. The Saturnian system provided even greater confirmation of Electric Universe theory in 2018 with the discovery of water in Saturn's atmosphere which is remarkably similar to water in Earth's oceans.

In fact, it was well over half a century ago that Emanuel Velikovsky offered the radical prediction that the source of Earth's water was Saturn, provided in an epoch when the planets were in close congregation.

Thornhill's own investigation led him to conclude that Earth, Mars, and the Saturnian moon, Titan were all satellites

of an object he refers to as proto-Saturn.

In December of 2004, Thornhill predicted that spidery ravine networks, called Lichtenberg forms in electrical terms would be seen on Titan, not unlike the so-called "arachnoids" on Venus.

He also stated it was unlikely that large craters would be observed, although mainstream investigators were expecting them in abundance. In the standard view of Titan, the moon is billions of years old, allowing plenty of time for massive impacts to scar the surface.

In Thornhill's opinion, Titan shares a similar history to that of Venus.

Both were born very recently by electrical ejection from a "gas giant."

In both cases, planetary scientists have proposed an ad hoc theory of massive planetary resurfacing which has erased many of the craters. A recent birth also removes the need for a global hydrocarbon ocean to supply over billions of years the methane observed in Titan's atmosphere, since methane is destroyed in the atmosphere by sunlight.

That too was affirmed when the Huygens

probe landed on a solid surface in what looks conventionally to be a drainage basin.

However, the channels leading to that basin have the distinctive appearance of surface lightning scars and need not have been carved by a flowing liquid.

To date, images returned of Titan reveal that large craters are almost non-existent. What they do show are the very Lichtenberg patterns of electrical discharge Thornhill had anticipated.

Perhaps no Thornhill prediction was more dramatically affirmed than the one that shocked scientists with NASA's Deep Impact mission.

As far back as October of 2001, after the announcement of NASA's 2005 mission to the comet Temple 1, Thornhill wrote, "Given the erroneous standard model of comets it is an interesting exercise to imagine what surprises are in store for astronomers if the plan is successful.

The electrical model suggests the likelihood of an electrical discharge between the comet nucleus and the copper projectile, particularly if the comet is actively flaring at the time. The

projectile will approach too quickly for a slow electrical discharge to occur. So the energetic effects of the encounter should exceed that of a simple physical impact, in the same way that was seen with comet Shoemaker-Levy 9 at Jupiter.”

24 hours before the impact event in collaboration with the Thunderbolts.info group, Thornhill predicted that an electrical flash might precede the impact and explosion and that the explosion would be much more energetic than NASA anticipated. And this is precisely what happened on July 4, 2005.

Other successful Thornhill predictions included: a surprising lack of increase in water production in the cometary coma, indicating a lack of subsurface water anticipated by astronomers; an unexpected lack of ice on the comet nucleus, or water in the immediate ejecta from impact; a sculpted comet surface with sharply defined craters, valleys, mesas and ridges, the precise opposite of what one expects of a “dirty snowball”; a rearrangement of the comet's

jets due to charge distribution.

And of course in the 16 years since the Deep Impact mission, the evidence in favor of the electric comet model has improved tremendously. The ESA's Rosetta mission to comet 67P revealed one surprise after another, including the obvious stratified rock and extreme planetary geology seen everywhere on the comet nucleus; the discovery of sand dunes and other impossible cometary features; the stunning absence of visible water ice; the discovery of molecular oxygen in defiance of the comet's origins in a primordial nebular cloud; the continued non-detection of so-called apertures which are thought to collimate comet jets; the puzzling double-lobed shape of the comet which is also seen routinely among asteroids; and even a completely unexpected electrical aurora emitted by the comet.

In fact, in the many years since the predictions we've outlined were published, Thornhill has further developed his model of electro-gravity which explains among other things the rounding

of cometary orbits by electrical discharge.

Indeed, those who have followed these presentations understand space discovery has served as the ideal testing ground for the theoretical predictions of Thornhill's Electric Universe model as well as the discipline of plasma cosmology.

And of course these predictions become more powerful, when juxtaposed with the failed predictions and endless surprises for standard gravity-centric theory.

This juxtaposition is both a gadfly for institutionalized science beckoning for change, and an invitation to all inquirers, both present and future, who are inspired to discover our Electric Universe.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by
The Thunderbolts Project™
at Thunderbolts.info

Part 2 of our interview with Wal Thornhill
about the recently imaged "black hole".

Well, I think it's fair to say
that when it comes to conditions
at the center of any galaxy,
some of the most interesting data
has to come from our own celestial
neighborhood in the Milky Way.

I remember last year, we reported
on the "shocking discovery" that
low-mass stars were forming
just three light years away
from the hypothetical supermassive
black hole at Sagittarius A,
and in fact I have in front of me a quote
from a Phys.org report on that discovery.

It states, "At this distance,
tidal forces driven by the supermassive
black hole should be energetic enough
to rip apart clouds of dust and
gas before they can form stars."

But since the black hole's
non-existence is not
and has not been for a
very long time on the table
as a theoretical option
for astrophysicists,
this type of discovery, like countless
others, is simply forgotten
or at least no emphasis
is placed upon it.

So what are your thoughts on some of
the best evidences in the Milky Way,
which tell us that it is a plasmoid and not
a black hole at the center of the galaxy?

The stars that orbit that so-called
black hole in Sagittarius A star,
do so very rapidly which suggests,
if you're using gravity in your equation,
that the mass at the center of
the, or the focus of that orbit
is of the value they give, in millions of
Suns or, you know, maybe even billions,
and that's only because they're
using the wrong force,
we're talking about
electromagnetic forces.

The other thing is that it was pointed out, I think by Ed Dowdye, who's done valuable work on looking at gravitational, so called, gravitational lensing in pointing out that it doesn't make sense.

He said that stars orbiting that black hole, particularly ones that may have an orbit that's tilted and passes either behind the black hole or very close to behind, should suffer gravitational lensing, and I've seen no evidence that in any of the telescopic observations of the Sagittarius A.

And they've been following them now so I think other manage to observed complete orbit of at least one star, possibly more.

The other thing was that there was a report of a cloud of material that was due to be sort of 'torn to shreds' as it went close to the black hole and that didn't happen.

Well, of course we're not dealing with gravity, we're dealing with electrodynamics

which is at the heart

of real physics.

That is, the fundamental physics

of the universe is electrodynamics;

gravity is merely

a minor effect.

We happen to live in an

electrically neutral environment

where gravity does have an effect

that is noticeable, but even for us

it is so weak that the entire Earth

can't stop us from jumping away from it

even if only for a second or so.

Well, one of the most important phenomena

we've talked about for years on Space News,

is the pervasive filamentary structures,

which we see everywhere in the cosmos.

Filamentation of course, is produced by

electric currents traveling through plasmas

and of the question of what lies

at the center of the Milky Way,

over a year ago we reported on the

discovery of a 2 ½ lightyear-long filament

which appears to reach directly

to the center of the Milky Way.

So how does this discovery relate

to the plasma cosmology theory
of a plasmoid at the
centers of galaxies?

These filaments, and some
of them are twisted,
I believe also that they've
seen a twisted pair of filaments
heading into the
Sagittarius A star region.

The circuit that Hannes Alfvén
drew, all those decades ago,
the Nobel-prize-winning plasma
physicist, showed that the current,
it has to be a circuit, if you've got an electric
current, it must be part of the circuit,
and he showed that the current would
flow in along the Galactic arms
to the plasmoid in the center
and then out along the spin axis.

And then, at some distance he didn't go
into where, the circuit was completed
but it was at some
distance from the galaxy.

Now, since he put
forward that circuit,
it's been discovered of

course that galaxies tend to,
seem to align their spin axes along,
what you might call, cosmic strings
and they're beginning now to
be able to map these strings
and these connections
between galaxies.

Now, none of this makes any sense
from gravitational point of view,
because gravitational forces
are centered on a center of mass
— not along a line
which filament is,
so both Hannes
Alfven and Halton Arp
in his observational research into
galactic forms and structures and behavior,
all coincide and form the basis
for Electric Universe cosmology.

The very idea of curved space
or space-time as he called it,
he attached two words
together with a hyphen,
both of them are merely concepts,
they're not physical things
so how you curve non-physical concepts

is a question that is not answered,
and we're shown diagrams
where you have a heavy object
on what looks like a rubber
sheet being deformed,
the rubber sheet being deformed
by the weight of this object.

But that uses gravity
to explain gravity,
or to describe it and it doesn't make
much sense, if you think about it.

Deleting the force of gravity
raises a simple question, well,
what is it that stretches the spring on
the balance that measures the kilo of,
you know, potatoes?

That is a force that we
feel, a force,
you know, we're very well
aware of it when we fall over,
you cannot just make
it a trick of geometry.

So that's the first problem,
the major problem with black
hole theory and the big bang
is this idea that you can have a

concentration of mass or energy at a point.

Well, the point is non-physical,
no physical object, not even a
subatomic particle can occupy zero space
and yet we see all kinds of mathematical
concepts being put forward as being physical
and this has created
huge confusion.

In fact, the language has
become largely meaningless.

Even more so, when you consider
that there is no physical definition
of the quantities
mass and energy,
there is no physical definition.

Now, that means we don't
understand $E=mc^2$.

So come on Einstein, you know,
tell us what you mean!

Explain it, nobody can
explain it at present,
no physicists on Earth can explain it
because they haven't defined their terms.

And the problem has been the
dominance of mathematicians in physics,
rather than physicists and what

we call natural philosophers.

Those with a broader education,
the ones who got us through the 19th century
with the huge number of developments
which actually brought us to the brink of
the Electric Universe model in the 1870s
with the Germans, Wilhelm Weber in
particular and his electrodynamics law,
that you don't hear about that, I never
heard anything about that at university
and when you look in the textbooks,
you won't find anything about it.

We are not given ideas to
compare and think for ourselves
and that is the failure
of education these days,
we're just given things
to remember and facts
which are not facts but
conjectures quite often.

The result is that you are unfit for
the job once you leave University.

I've said this before, you
know, that electrical engineers
are the ones who should be doing astrophysics
because it is an electrodynamic universe,

it is not a

gravitational universe.

Well, of all the issues we've

talked about on Space News,

I think the most powerful evidence

for cosmic scale electric currents

is of course cosmic magnetism.

So but it's not technologically possible

to directly measure electric currents,

the way that scientists can infer

their presence and their strength

is indirectly through the magnetic

fields that they must produce.

So at every opportunity,

I remind the audience just how recently

mainstream gravity-centric

cosmology

downplayed or even dismissed the

idea of cosmic scale magnetic fields.

Here for maybe the third time,

I'd like to read this quote

from the 1999

online NASA feature

which asked the question,

do magnetic fields exist throughout space?

And it states,

"On the cosmological scale, there is no data to suggest that magnetic fields are present. They certainly are not important in the dynamics of the universe for any reasonable range of field strengths consistent with present observational constraints."

So why don't you discuss what has actually been discovered about cosmic magnetism and why it's so important for the Electric Universe and Plasma Cosmology?

Now, one of the beliefs that's inculcated in students and postdocs as well, at all levels in astrophysics, is that electricity plays no particular role in the universe which is quite incredible when you think of the use we have for electricity and that the universe has no use for it.

And when you map magnetic fields which the radio telescopes have done for decades and more recent telescopes that are being built, which are able to do it even better, they find that the universe is almost,

in fact they come to the point now,
where they think that magnetic fields
play a large role in star formation,
because they've been able
to map the magnetic fields
in star forming regions
inside molecular clouds.

Now this kind of modern observation
technique is showing more and more often
the fact that magnetic fields
are everywhere and not only that;
they are structured,
they're not chaotic,
which is what the gravitational
theory would have us believe
that it's a shock-induced chaos and
whatnot, but they find ordered fields,
particularly around
spiral galaxies.

And you do not have a magnetic
field without electric currents.

Electric currents are absolutely
necessary because you need
an accelerating force on a charged
particle to generate the magnetic field
and the ordered magnetic fields

indicate ordered electric currents,
all of which matches the
filamentary nature of the universe
which is also being discovered.

Welcome to Space News

from the Electric Universe,

brought to you by the Thunderbolts

Project™ at Thunderbolts. info.

In Part One of this presentation, physicist

Wal Thornhill introduced evidence for the

extraordinary recent origins of

our planetary neighbor Venus.

In myth and folklore around the entire globe,

Venus was remembered as the great comet,

as a dragon-like serpent

breathing fire about the heavens,

and as a goddess with majestic, flowing hair.

As noted previously, based on Venus's

mythic identities, Dr. Immanuel Velikovsky

was the only individual to correctly predict

that Venus would be superhot. An even

more outrageous prediction by Velikovsky

was that the planet Saturn was the

source of water in Earth's oceans.

As we reported in 2018, this prediction

received astonishing support

when scientists wrote in the journal Icarus

that water in Saturn's rings and satellites

is remarkably like water on Earth. We

asked Wal to continue to explain his

own reconstruction of our solar system's recent catastrophic history, and to reflect on the significance of recent science discoveries on this reconstruction. First, I think I need to give a warning. The Electric Universe identifies fundamental errors in science which have held back progress for more than a century. So what follows is entirely off the map of accepted science today. I mentioned earlier that we were a satellite of a brown dwarf star, Proto-Saturn. So, the answer to Velikovsky's prediction of Saturnian water on Earth requires a fundamental rethink about both nuclear physics and the century-old model of what stars are. Stars are not controlled thermonuclear explosions. Their steady light signals a simple control process. The Electric Universe model of stars was verified experimentally in 2019 by the SAFIRE project and proved stable and controllable. It proved that most of the Sun's radiant energy comes from the transmutation of light elements in the bright photosphere right in front of our eyes. Power like the Sun by thermonuclear fusion, has been a colossally expensive pipe dream.

It demonstrates the tunnel vision of experts.

As for particle physics, a number of leading researchers have declared the standard particle model is in crisis.

But the Titanic steams on, ignoring the low energy nuclear icebergs that are being produced in laboratories now.

Brown dwarfs are low-energy electric stars inside a bloated red anode glowing shell. To give some idea. If Jupiter's magnetosphere were to be lit up, it would appear at opposition the size of the full moon in our sky. Jupiter's large moons would orbit inside that glowing red sheath.

Inside that huge bubble is the most hospitable environment for life, because the radiant energy received by each satellite is evenly distributed over its entire globe. There are no seasons, no tropics, and no ice caps.

The radiant energy from the plasma sheath of a brown dwarf star is strongest at the blue and red ends of the spectrum. L-type brown dwarfs have water as a dominant molecule in their spectra, along with many other biologically important molecules

and elements. Satellites, like the Earth,
would accumulate atmospheres from such a
brown dwarf and water would mist down
continually, regardless of its spin and axial tilt. A
satellite orbiting inside the
plasma sheath of a brown dwarf
could experience an
ideal environment for life.

However, the brown dwarf Garden
of Eden comes with a caveat.

Stars off the main sequence, without a bright
photosphere, do not have the self-regulating
photospheric discharge to smooth out variations in
electrical power input. Consequently, brown dwarfs
are subject to sudden outbursts or flaring,
when they encounter a surge in the circuit that
powers them. These flares will dump minerals and
gases on the satellites orbiting inside the sheath.

It sculpts their surfaces electrically
and causes sudden extinction events,
vast fallout deposits and
instant electrical fossilization.

The last dramatic flaring event, "Let there
be Light," signaled the breakup of the
Proto-Saturnian system and
traumatized our prehistoric ancestors,

giving rise to all of our creation myths and
existential post-traumatic stress disorder.

It was that dying gasp of Proto-Saturn
that gave rise to a stream of material
orbiting Saturn, described as the
Ouroboros, or snake swallowing its tail.

The matter piled up to form the radiant planet
Venus. Saturn's icy rings are the bright
remnant of that matter. The Earth, being
a much older satellite of Proto-Saturn,
explains the origin of our amazing abundance
of water and likely its saltiness, according to
Velikovsky. Nitrogen on Earth
and Titan are predominant
in their atmospheres. This suggests very
strongly that the natal atmosphere of Venus
contained a lot of nitrogen. So
why is Venus's atmosphere today
predominantly carbon dioxide? The
answer comes from the nitrogen being
consumed at the surface and
converted to carbon monoxide.

This reaction was observed by the leading
French scientist Louis Kervran when he found
welders being poisoned with carbon monoxide,
yet there was none in the air. He found that

the red hot surface of iron that they were welding was energizing the nitrogen molecules which were then breathed in, and on the substrate of the lung the energy was converted to carbon monoxide. In other words the nitrogen molecule, the nitrogen nuclei, joined to become two different nuclei, carbon and oxygen. Two nitrogen gives carbon and oxygen. So, this was demonstrated experimentally by professor Louis Kervran. So, now we have on the surface of Venus carbon monoxide being formed from the nitrogen. On Venus, the high surface temperature and the water in the atmosphere, (remembering that we must have had a considerable amount of water also in the atmosphere), come together in a well-known industrial reaction to form carbon dioxide and hydrogen. The lighter hydrogen is being lost and has been detected in space. Now to confirm this model, the early Venus landers discovered that water vapor was present in the atmosphere, but decreased strangely on approach to the surface. This fits the suggested model.

But most importantly, the latest discovery of the decrease in nitrogen as we approach the surface of Venus, offers further support, because there we have the welder's hot surface energizing the nitrogen and converting it into carbon and oxygen, or carbon monoxide. Earlier, I mentioned the entire planet is said to have been resurfaced by some unknown process. The far simpler explanation that Venus is an infant, simply doesn't occur. As for the network of filamentary scars, they encircle the planet in the low latitudes. Venus was remembered by the ancients as a radiant star. The reconstruction of events show Venus with a variable number of distinct streamers radiating outwards, like the petals of a cosmic flower. This pattern is seen, looking down the barrel of certain plasma discharge experiments here on Earth. The filamentary pattern around the equator of Venus is to be expected under these conditions, since an electrical discharge in the very dense atmosphere of Venus will switch

from being diffuse in space to becoming very narrow lightning channels under these conditions. The extreme energy of the cosmic lightning is sufficient to sculpt the arachnoid features and bizarre pancake domes.

In the case of Titan I proposed that it was also a relatively young satellite of our brown dwarf.

I wrote in 2004, "That Titan may be young as hinted at by its eccentric orbit, which cannot have persisted for billions of years... Like Venus, surface temperatures are globally uniform on Titan within a few degrees.

It is thought that there is a greenhouse effect operating on Titan. However, the heat of Venus is due to its origin and has nothing to do with the greenhouse effect. The same will likely be true for Titan."

Like Venus, Titan seems not to have a magnetic field and yet it has a distinct magneto-tail.

Titan's electrical plasma interactions may be like those of Venus.

Titan also shines on the dayside in ultraviolet light too brightly to be explained by solar radiation."

To sum up, the best possible indication

we could have that our reconstruction of events is real and accurate, is the novelty and specificity of our successful predictions. Having a good model allows better questions and experiments in future. It allows us to halt the terrible waste today in education, manpower and massive public funds on misguided experiments on big science. The Electric Universe is inspiring participation by the public, by garage experimenters who are reproducing features on planetary surfaces using electric discharges. Science is a cultural activity and should be open to all to participate. The modern cult of the narrowly trained expert must end. The world is far more complex than any of our pet theories can deal with. Only the broadest perspective can reveal the interconnectedness of our Electric Universe and guide us to the science of the future.

[Music]

Well I think I'll start with what I call a
“head” note. You've heard of footnotes,
right? Well “prologue” sounds a little
formal and so I’m calling it a “head” note.

My first experience with the Electric
Universe conference was 15 years ago.

I believe the group was called Kronia
then and much smaller; maybe eight
speakers, maybe 40 attendees. At first,
the subject matter really mystified me, and
the context of what the different
speakers were talking about and how it
intertwined, was a mystery. But I was
really fortunate, I sat next to the late
Amy Acheson, a brilliant mind and one of
the pioneers of this group. Back then I
think it was called Kronia. It wasn't
called EU then. Amy patiently answered
every question, but I scribbled on paper
and shoved at her during the conference.

And she'd whisper back and she'd write
the answers. During breaks and during
lunch she'd answer more questions.

Eventually, Amy became a very good friend
and my mentor. It wasn't long before all
those questions got patiently answered

by Amy, that I got it and I was hooked.

Through the years, I have come to understand the Electric Universe more and more and have made many dear friends, many of whom I see out there today.

I wish Amy were here today, to see how the EU has grown, expanded not only in size, but in context for the speakers. The talk I'm about to give is my way of passing on Amy's mentoring and hopefully help those of you who are new to the EU, to see the big picture. There are many paths to discovering the nature of our universe.

Established members of the Electric Universe, Dave Talbott, Wal Thornhill, Ev Cochrane, Dwardu Cardona, have been focusing on different aspects of the nature of the world that surrounds us.

And yet they have to offer interconnections, the ways that interconnect in an intriguing way. Those interested in the EU, who specialize in the areas of planetary history, mythology electricity, plasma, geology, archaeology and prehistoric man, often have hypotheses that interconnect and support

each other, and thus suggesting a history and a present-day understanding of our universe that is revolutionary and compelling. A fascination with the universe that surrounds us, dates back to an age long before there were telescopes, space probes, or shuttle missions. When prehistoric man cast his eyes to the heavens, pictographs of a great diversity of early cultures independently depict man's fascination with, and fear of, what he observed. Myths and lore tell of strange and violent events, terrifying dramas in the heavens, and catastrophic changes in the cosmic order itself. Early man built temples to the heavenly figures he worshipped as gods. The myths and pictographs of antiquity clearly show that at one time, our eyes saw a vastly different sky from what astronomers view in their instruments today. As Wal Thornhill has stated, today's narrowly compartmentalized specialists have a form of tunnel vision, because they are not trained to see any

relevance in other fields than their own.

Or merely refer to observations no more than a few years old. Don Scott has observed that most astrophysicists' education stops with Einsteinian gravity and have little or no knowledge of electrical science, and thus come up with convoluted explanations for phenomena they don't understand, or they call mysteries: black holes, dark energy, string theory and the Big Bang. At one of our EU conferences Pierre Marie Robitaille presented impressive fundamental scientific evidence that one of the favorite, universally applied principles of astrophysics is not as generally valid as had been assumed. Kirchhoff's law of radiation, together with Max Planck's derivation of it, are often assumed to be applicable in about just any case, even when they really are not. The idea that a peak in the emissivity characteristic from any body whatsoever, will reveal the exact temperature of that object, no matter what it's composition, is

fatally flawed. Pierre Marie and Stephen Crothers, an expert mathematician, have published a groundbreaking paper, "The Theory of Heat Radiation Revisited."

Pierre Marie has given numerous presentations, (he'll be giving another one here today, or at least during this conference), pointing out that many previously accepted research results are fatally flawed. Their work, as with so many other EU researchers, have been met by the establishment with denial, derision or been ignored. Ev Cochrane, author of the book, "The Many Faces of Venus", observes that the recent history of the scientific investigation of Venus, reveals a vast theoretical graveyard of discarded hypotheses, false deductions, erroneous premises, shoddy observations, and wishful thinking. While many astronomers, Carl Sagan among them, expected the Venusian clouds to be composed of water, Mariner 9 found precious little water and plenty of concentrated sulfuric acid. Cochrane

notes that where leading astronomers observed luxuriant Venusian vegetation in full bloom, modern space probes discovered a barren desiccated wasteland.

Indeed, if truth be known, the Mariner, Magellan and Pioneer missions have forced astronomers to radically revise their previous assessment as to Venus's origin, nature and geological history.

Cochrane states that on virtually every major feature of the Venusian landscape and atmosphere, the astronomers' theoretical expectations have been proved wrong, time and time again. Given this dismal record, there would appear to be some justification for maintaining a healthy skepticism with respect to astronomers' current best guesses as to what is possible regarding

Venus's recent history, or possibly that of other planets as well.

Indeed, there are good reasons for believing that other, even more radical revisions of our understanding of Venus are in order. Many traditional astronomers and mythologists dismiss

early stories and drawings as the fantasies of primitive cultures, lacking an understanding of what they saw. However, comparative mythologists Dave Talbott, Ev Cochrane and Dwardu Cardona, have found that there is a consistent pattern in these stories. When many different, widely separated cultures, tell the same story, the probability exists that these are not mere flights of fancy, but valid observations. If astronomers today were to re-examine their assumptions about what is and is not possible in the cosmos, and take a new and unbiased look at the pictures coming back from NASA's probes, as well as the images from their own telescopes, they would find strong evidence to support a view of cosmology different from the one espoused by mainstream astronomers. One that ancient man saw all too clearly. Dave Talbott notes that in earlier times, man worshipped heavenly bodies as gods. Myths proclaimed, we once lived in the presence of gods. Gods were visible powers, often capricious and frequently

violent. The priestly astronomers of ancient Mesopotamia and elsewhere, made clear that these remarkable powers were planets. If the myths surrounding these gods were to be taken seriously, they raised many questions. Why did ancient man worship the god Saturn? The planet Saturn is very difficult for the average person to even find in the sky today. Some mythologies postulate that there is evidence in ancient lore to connect the scarred warrior hero of legend with the god Mars. Yet the planet we know as Mars is only a tiny speck in the sky and its deep 2,400 mile long scar canyon, Valles Marineris cannot be seen from Earth without a powerful telescope. Why did the ancients depict Venus as a fiery dragon, as a goddess with flowing hair, when that planet is merely a bright dot in the sky today. The myths of many ancients tell of violent thunderbolts in interaction between the gods. Of course, we see lightning in the (sky) today, but never thunderbolts that streak between planets. What could have

caused these violent interactions long ago? Because of their understanding of plasma, electrified gas, that makes up 90% of our universe, Wal Thornhill and Don Scott have formulated some reasonable hypotheses as to the cause of such violent interactions of the past.

Relating to the present electric sky, Scott has studied the behavior of plasma in the form of Birkeland currents (I think you've heard of that), and spoke at the last two EU conferences about their counter-rotating currents (I think you've seen that picture recently too), that are descending on the North Pole of Saturn. Shortly after he showed diagrams of his hypotheses of these rotating current Birkeland currents, shortly after, not long, a video produced by NASA appeared on the Internet clearly showing exactly what Scott had predicted. And yet, his proposal of just such a thing, and the reason for it, has been ignored.

Another hypothesis, and the reason for it that proved to be real, was Thornhill's

prophecy that, if a comet were to be impacted by a block of copper, as NASA announced it proposed to do, a powerful electrical discharge would occur shortly before impact. Although NASA never predicted such a possibility, this is exactly what happened. Since that event, Thornhill's explanation of the electrical discharge has either been ignored or denigrated, most likely because those in the astrophysical world have developed a collective mindset against any sort of electrical causality in the universe. An excellent resource for information about the Electric Universe is the website Picture Of the Day, managed by the industrious EU scholar. Thunderbolts picture of the day remember it and check it out. You'll get a lot of interesting information there. Prehistoric man was also fascinated by our universe, as are Scott and Thornhill today, but often what the ancients chose to depict has little bearing on what we see in the cosmos. Talbott notes that pictographs show what is commonly

considered to be the Sun as a huge disk, with a smaller one in the center, often with rays flowing out of it. With a third darker circle superimposed in the center. Our Sun looks nothing like that. In many different cultures we see the symbol of a Crescent with a star at the center. How could this be, when there is no star or planet closer to Earth than our Moon to form such a configuration. And most importantly, why do so many... and most importantly why do so many disparate and far-flung ancient cultures, people who could never have come in contact with one another, such as the Sumerians, Egyptians, Chinese, Native Americans, Mayans, Babylonians, Australian Aboriginals and many others, all tell the same story and draw similar pictures? If these ancient writings were based on valid observations, rather than fantasy, what do they tell us? Cardona, Cochran and Talbott theorize that Earth formerly moved in a linear

alignment of planets, (which I think is the picture that's been here a little early) having no resemblance to our current solar system. As seen from Earth, several planets appear together as a towering form in the northern sky. In its stable phase the planets moved in collinear equilibrium. They stayed in a line as they moved through space. For observers on Earth, the result was a unified configuration in the heavens, visually dominated by a large glowing planet, one we theorize to have been Saturn, then seen without its present ring system. This highly unusual planetary assembly was centered on our North Pole. it was regarded around the world as the cosmic center, the theater of the Gods. Talbott offers that this can only mean that the axis of the earth was directed along a line running through the collinear system. When the earliest religious texts and mythological sources are permitted to speak for themselves, this is precisely

the arrangement they describe. What the ancients were seeing when they depicted the Sun as three concentric disks, was a different alignment of planets from the one we see today. They suggest that at one time, Earth was in a different polar alignment, an alignment Talbot, Cochrane and Cardona theorize as having been Saturn, Venus and Mars. The large outer disk in the pictographs being Saturn; the next inner disk representing Venus, often with rays emanating from it; and the center dark or red disk being Mars. The view of a crescent with a star-like body at its center is impossible. However, if it would indeed be the scene viewed from Earth in its polar alignment, if the Crescent were Saturn somewhat illuminated by the Sun, and the star-like object Mars, superimposed upon Venus. Interdisciplinary physicist Wal Thornhill ventures that at one time, Earth may have been in the protective aura of a cool brown dwarf star, the proto-Saturn which provided an ideal atmosphere for life on Earth. Given

this configuration, Earth would have been bathed in Saturn's constant beneficent glow, with no difference between day and night, and a continual benign single season. This would have been the "time before time" that Dave Talbott theorizes ,was the golden age, the age of perfect virtue, or Garden of Eden, depicted in one way or another in all diverse myths and religions. our early forebears portrayed celestial events through ritual reenactment and storytelling, bringing the original celestial personalities down to earth, to become legendary ancestors of those telling the stories. By this identification with the gods, nations the world over became the special children of the mythic creator and the creator himself often metamorphosed into a legendary first king, or god, of the land. Sacred activity was enacted the world over, as humans relived cosmic events on Earth. Two primal motifs stand out: a nostalgia for the lost paradise of the Golden Age, and a fear of doomsday. A fear of Doomsday's

return, fueling collective war,
sacrifice and guilt. A group of
astronomers, physicists, electrical
engineers and experts in the field of
ancient mythology, have begun to
challenge some of the generally accepted
hypotheses of the history of our solar
system, and conventional theories of
cosmology, and agree that our solar
system had a catastrophic past. A
common theme in the myths and
religions of many disparate cultures, is
of a doomsday that brought the Golden
Age to an end. Could it be that a
disturbance and the Saturn polar
alignment was the doomsday these
cultures each independently remembered?

The exact cause of the eventual breakup
of this polar alignment, is a mystery. It
may have been the result of a close pass-
by of an asteroid, or a comet. Perhaps
an inherent instability of the alignment
resulted in its natural dissolution.

Whatever the cause of the
break-up, we know the final result is what we
see today: the placid, almost circular,

well-separated orbits of our present solar system. Dwardu Cardona hypothesized that what became known as the creation, did not proceed out of nothing but out of a pre-existing chaotic substance that was, among other things, understood as a celestial ocean, circumscribing the sub-brown dwarf star that emitted the radiating light and that went down into mytho-history as Day One. Many skeptics say there is no mechanism that could have circularized the widely divergent paths of the planets that were ejected from the polar configuration. Electrical engineer Don Scott points out that plasma physics shows us that planets can interact electrically, if they are within each other's protective plasma sheets magnetospheres' electrical repulsion that is alternately felt when the planet sheets intersect and then not felt when the sheets do not intersect, could circularize orbits relatively quickly. In addition, there is strong evidence that gravity and mass itself are

dependent on electrical charge. Traveling along another path to present-day understanding of our universe, is Scott's suggestion that the workings of the Sun's photosphere can be characterized by and better understood via a detailed study of how an electronic transistor performs its functions within an electronic circuit. Several unique phenomena observed on and above the Sun's surface are relatively easily understood through the analogous behavior of Scott's transistor model of the Sun. Another question that relates to the enigma of how Earth is different today from ancient times is the size of the giant dinosaurs. Given what we know about mass-to-muscle ratio, there is no way these huge beasts could have held up their heads, much less walked in the gravity that we have at present. Could a different planetary arrangement and/or electrical charge on Earth have provided the decreased gravity they allowed these giants to stand up and walk? Although there are questions about the Earth's

gravity at the time of the dinosaurs,
it is widely acknowledged that their
rapid demise was caused by a catastrophe.
Somehow our gravity and our environment
have changed, probably abruptly and
perhaps repeatedly. It is well-known that
there is a universal memory of doomsday-
type catastrophes, from age-old tales of
floods, fearsome thunderbolts in the sky,
and an age of darkness that descended
upon the Earth. The question is, how did
these catastrophes come about. Certainly
for the planets to change their
alignments and gravity, cataclysms of
gigantic proportions must have occurred.
Islands in the Arctic that consists more
of shattered bones than of earth, ancient
cities submerged in oceans, sea shell
fossils found on mountaintops, and behemoths
found flash-frozen in the Arctic with
palm fronds in their stomachs, are
evidence of such violent events. Arcing
and scarring are strong indications of
past cataclysmic events in the solar
system. Wal Thornhill proposes that the
Valles Marineris scar on Mars may well

have it been made by an electrical discharge and that the Grand Canyon in Arizona, right here, could have been formed in the same manner. The origin of the Grand Canyon has long been in controversy and geologists are presently rethinking their long-held theories in this area.

Those in the EU ask, if the canyon were caused by a river, where is the delta, the debris and why are the so-called tributaries perpendicular, rather than at an angle, as is typical of river tributaries? From the air, the Grand Canyon resembles a Lichtenberg pattern, a pattern that is carved on a golf green, when the pole is hit by lightning. If you look at the Grand Canyon from the air that Lichtenberg pattern looks very much like the Grand Canyon.

Thornhill points out in his work, The Electric Universe, that plasma pervades the solar system and arcing will occur when and if, charged bodies interact electrically. Makes sense to me. He proposes that it is just such arcing

that has caused craters on planets, and asteroids, and moons, and even on Earth. He postulates that pictures of craters, coming back from our space probes, do not show a shape consistent with either the impact or volcanic models. Almost every crater we observe is round, not elliptical, as many of them would be, if the meteors were coming in at an angle.

They have flat bottoms, often with conical central cones. The strata of the central peaks are undisturbed, and in many so-called 'impact craters', their walls are terraced. Secondary craters form on the rims of primary craters.

Plasma physicist Dr. C.J. Ransom has simulated such craters in his Vemasat Laboratory via an electrical arc.

Thornhill has demonstrated in the laboratory, that such characteristics are expected with electrical arcing, but not with impacts. On some small asteroids, the craters are huge, with diameters more than the asteroids' radii.

If these craters had been caused by impacts, surely the asteroids would have

been destroyed. Are these craters caused by electrical arcing? That's the phenomenon that was interpreted as the thunderbolts that raged between the gods, or planets, as described in ancient myths. A corollary to Thornhill's Electric Universe Theory, is a theory that engineer Ralph Juergens originated concerning the mechanism that powered the Sun. Following in Juergens' path, Donald Scott contends that mainstream astronomy is attempting to ignore data that contradicts their accepted nuclear fusion model. He suggests that both the polar configuration and the electric hypotheses are strongly supported by research in the field of plasma science. Scott's carefully crafted mathematical model of Birkeland currents, shows how energy in electrical form is transported across huge distance in cosmic space, without being dissipated and diverted from its path. Scott was the first person to demonstrate that the magnetic field within a Birkeland current, reaches outward and remains effective at far

greater distances than any other known type of cosmic phenomenon. He has explained the physical rationale for why the orbital distances of the planets from the Sun, correlate perfectly with certain properties of his Birkeland current model. Might the flowing hair of Venus, or the fiery dragon, as that planet is depicted in many ancient myths and drawings, actually have been the glowing ions of twisting Birkeland currents, or stringy things as mainstream calls them? Perhaps petroglyphs, showing ladder formations, and tales of a ladder to heaven, or Jacob's Ladder, might well be the sightings of Birkeland currents and plasma instabilities, such as those Tony Peratt has seen in his plasma laboratories at Los Alamos. It is interesting to note, how often a planet, a sphere, is included in pictures of a Chinese dragon. Astrophotographs taken at Mount Palomar and Mount Wilson by astronomer Halton Arp, have removed one of the main linchpins supporting

standard modern cosmology. Astronomers traditionally assume that, if an object such as a galaxy strongly exhibits a quality called positive redshift, then that object must be 1) receding rapidly away from us and 2) very distant. This assumption has led astronomers to pronounce the existence of such counterintuitive notions as Big Bang, missing matter, black holes, neutron stars, dark energy and expanding curved space.

Dozens of Arp's photographs provide strong evidence that the 'redshift equals distance' assumption is wrong. Arp theorized, based not only on his own photographs, but also on images being taken by X-ray satellites such as ROSAT, that there is an evolutionary process of galaxy birth and maturation.

Young objects are born from the active nuclei of parent galaxies. These youngsters are called quasars or BL Lac objects.

They are often ejected symmetrically from the parent galaxy along its semi-major polar axis, perpendicular to the plane of the parent. This ejection

process is strongly supported by the Electric Plasma Universe theory of Thornhill, Scott and Peratt. The thread that connects all of these innovative researchers is they're willing to base their hypotheses on the data they observe and change these hypotheses as new data is received. Too often, scientists stop asking questions and try to adjust new incoming data to their preconceived and accepted theories. The Electric Universe proponents, representing a variety of disciplines, are aware of how vastly different fields that date back to the earliest of time, can intertwine and discover rational new hypotheses about our universe. The most important element in the search for truth is the asking of questions. The advocates of the Saturn model polar configuration and the Electric Universe are asking fundamental questions, based upon what they have observed on the paths of discovery they have taken, and as a result have proposed some reasonable hypotheses.

All they ask now is that they be
listened to and that the listeners open
their eyes and their minds to the
possibility of new paths to discovery of
some very reasonable ideas. Thank you.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info on Friday March 6 the NASA Dawn spacecraft entered the orbit of the mysterious dwarf planet Ceres with a craft scheduled to begin sending images to earth in April for several weeks surprising and unexplained bright spots within a crater on the planet's surface have generated enormous buzz in popular media the very limited speculations on these mysterious bright spots have ranged from exposed ice to water vapor to salt flats or even a quote volcano like feature on the tiny planet it's interesting that Ceres which was once classified as an asteroid has no nearby gravitational influences to create tidal heating which might generate the plumes the mechanism planetary scientists have used to try to explain the so called volcanic plumes on the Jovian moon Io recently planetary geologist Emily lacta Wallow reported on the theory of at least one scientist that the bright

feature on Ceres is a form of so-called
outgassing. As Sarah Walla writes, as the
globe rotates and the 80 kilometer
crater rim rotates into view, that rim
should block our ability to see the
bright feature on the floor of the
crater.

However, the bright feature is already
visibly bright as the crater begins to
rotate into view. Therefore, it must be
vertically above the rim of the crater.
It must be some kind of plume. It's
interesting that so-called outgassing is
also the mechanism that astronomers
frequently cite when attempting to
explain the astonishing spectroscopic
readings of comets at vast distances
from the Sun, where the environment is
much too cold for solar warming to
sublimate the comets' invisible
theoretical subsurface ices. Countless
comet mysteries might finally be
resolved if scientists were willing to
entertain electrical discharge activity
on a comet, as noted in several recent
space news episodes. The discovery of

greatly enhanced

electron fluxes close to the nucleus of

Comet 67p is a confirmation of the

electric comet theory which states that

a comet will emit electrons as its

discharged activity increases the

visibility of the plume vertically above

the rim of a crater and the location of

the brightest of the two bright spots at

the center of the crater are not a

coincidence if electrical arcing is

happening on Ceres in electrical

discharge experiments we routinely see

central craters or central Peaks that

match precisely countless puzzling

craters seen on planetary surfaces

so-called bull's-eye craters which are

craters with central craters within our

long-standing puzzle for planetary

scientists we note that immediately

around the crater with the mysterious

bright spots we see what appear to be at

least two such bullseye craters consider

the side-by-side comparison of the

surface of Ceres and a picture of anode

crater formation in an electrical

discharge machining process the electric universe theory states that craters seen on asteroids comets and planetary surfaces are primarily the result of electrical discharges at a vast variety of scales the opportunity may now exist for scientists to witness the active electrical excavation of a planetary surface such a process on an electrically active comet has already been witnessed dramatically on comet Tempel 1 prior to the Deep Impact mission in 2005 scientists had suggested that the comet nucleus lost about one third of a meter of depth in each orbit when the star does next spacecraft reimagined the comet nucleus in 2010 it found that the wall of the most prominent Mesa had astonishingly retreated dozens of meters the excavation of material appeared to be precisely focused at the location of the mysterious pixel saturation which according to proponents of the electric universe was the focal point of electric arcs we note it is still too early to

form any final conclusions about the nature of the bright spots on Ceres and we eagerly await images from the dawn spacecraft in

Perle however has repeatedly demonstrated on this series space news from the electric universe theoretical models based on the notion of an electrically sterile in disconnected solar system have resulted in continuous surprises and unexplained mysteries the electric universe theory states that both comets and asteroids will experience varying degrees of electrical stresses depending on their orbits and will electrically discharge in response to a potential difference in their plasma environment given that the solar wind is primarily composed of protons representing a positively charged region of space it is only appropriate to consider the effects of this potential difference on commentary and asteroid 'el activity we suggest it is inevitable that this possibility will begin to creep into mainstream astronomical

literature consider the 2011 paper of the Russian scientist in the dog entitled space observations of comets during solar flares while the paper does not include the electric universe concept of electric circuits in space it does describe a capacitor like breakdown occurring between a comet's charged sub surface and a differently charged surface due to arriving protons from the Sun it Madhab writes an irradiation of a certain class of comet nuclei having positive brightness correlation with solar activity by intense solar cosmic rays fluxes of high-energy protons and positive ions ejected from the Sun during strong solar flares can possibly produce impulse and gamma hard x-rays due to high voltage electric discharge in the subsurface layer of the comet until recently the dwarf planet series was officially classified as an asteroid and in recent years scientists have acknowledged that the distinctions between an asteroid and a comet are increasingly unclear as noted in a 2013

space news episode astronomers were stunned when the asteroid P 2013 P 5 suddenly produced six comet-like tails the asteroid has since been officially reclassified as a main belt comet the ad-hoc theory some scientists have proposed is that an increase in the asteroid spin rate caused dust material to fly off into space where it is stretched and confined by solar radiation in a recent scientific paper astronomers have also proposed that an increase in the spin rate of the asteroid P 2012 f5 actually caused the asteroid to explode however we suggest it is not a coincidence that comets also suddenly disintegrate even at remarkably vast distances from the Sun much too far for solar warming to cause the explosions are the bright spots on Ceres electrical in nature while it is again too early to form any final conclusions we do make the following prediction with great confidence all theoretical models that fail to recognize the planet as a

charged body will only result in further
surprises and confusion for forthcoming
updates on NASA's Dawn mission to Ceres
stay tuned to space news from the
electric universe for continuous updates
on space news from the electric universe
stay tuned to Thunderbolts dot info

[Music]

Throughout the 20th century, the science of comparative mythology has been characterized by an ever-increasing specialization and narrowing of interest. Unifying theories of myth are nowhere to be found.

The so-called Saturn theory represents a notable exception in this regard.

Proponents of the theory, including David Talbott and myself, have argued that extraordinary astronomical events in the relatively recent prehistorical period, had profound and formative influence on all primary institutions of human culture, including mythology, religion, language, monumental architecture, funerary practices, marriage ritual, cosmology, athletics, dance and music.

Stated this boldly, our historical reconstruction seems so ambitious as to inspire incredulity. Once the evidence is fully laid out however, it speaks for itself.

While it would be impossible to summarize a lifetime of research within a 10-minute presentation, and we intend to use the next several videos to

illustrate some of the most salient evidence supporting the theory, interested viewers can turn to our manifold publications for additional information.

A testimony of ancient religion is especially compelling. In ancient Mesopotamia and Egypt, the principal gods are identified with celestial bodies.

In the earliest strata of Mesopotamian Uruk, conventionally dated the last third of the fourth millennium BCE, it is the worship of the planet Venus as Innana that predominates. So too at the dawn of history in Egypt, the leading god Horus, is explicitly identified with a star. In our reconstruction that star is Mars. And yet mainstream scholars rarely ask the all-important question, why planetary bodies assumed this prominent role in the oldest religious texts?

The evidence from the earliest written languages corroborates this picture.

Writing was first invented in ancient Mesopotamia in the fourth millennium BCE and the earliest script was pictographic in nature.

I.e. the vast majority of the written

signs were pictures of the object being described. For example, a foot signified a foot or, 'to walk'.

In perfect keeping with our hypothesis that the earliest gods were astronomical in nature, Sumerian scribes denoted the concept of God with an eight-pointed star. This is a so-called 'An'-sign. The earliest pictograph for Inanna Venus in turn, depicted a comet-like object.

Our theory, and our theory alone, can explain these facts. The first gods were identified with the most prominent celestial bodies and the queen of heaven, as Venus, spent a portion of her early career as a comet-like body.

The Saturn theory is most famous perhaps for the claim that a giant pillar-like structure formerly spanned the circumpolar heavens and seemingly linked together a number of nearby planets.

Hence the name polar configuration coined by Talbott, the subject of much controversy over the decades.

While it is well documented that the mythological traditions of cultures

around the globe celebrated a luminous world pillar in the sky, critics tend to be skeptical of the testimony from ancient myth.

It is here that the evidence encoded in monumental architecture is especially instructive and difficult to explain away.

Witness the towering pyramidal structures and ziggurats in Egypt and Mesopotamia that took thousands of people and multiple generations to construct. The ziggurat at Ur, for example, is estimated to have weighed several hundred thousand tons.

What could possibly have possessed the ancient sky watchers to erect these towering structures? What were they intended to represent?

According to terminology applied to the monumental structures by the builders themselves, the answer is patently obvious.

The ziggurats represented the world mountain, atop which the planetary gods lived, loved and died.

Thus it is that among the earliest Sumerian names for the 'ziggurat' are 'giant mountain' and 'stairway to heaven'.

And to whom were these first ziggurats
constructed and devoted? To the
aforementioned star gods Inanna Venus and An.

The earliest ziggurats and pyramids, like
sacred architecture everywhere, were
specifically patterned upon the unique
celestial configuration overhead in
accordance with the prevailing
philosophy of 'as above, so below'.

It stands to reason accordingly, that
early monumental structures will include
a number of telltale architectural
details that have no conceivable
function or rationale in the present
natural world, and point instead to the
unique features of the polar configuration.

As a case in point, consider the massive
set of shiny horns that formally
adorned the apex of early ziggurats.

At the tail end of the third millennium
king Gudea of Lagash could be found
boasting of a ziggurat quote "One makes
the house grow upwards like a mountain,
...makes it lift its horn like a bull."

How on earth is it possible to explain
this bizarre bovine imagery? For

anyone familiar with the writings of Talbott and myself, the answer is obvious. The gigantic crescentine horns model the heaven-spanning crescent that formerly distinguished the polar configuration during one particularly memorable phase in its history. But you don't have to take our word for it. An archaic pictograph from China dating the third millennium BCE is believed to depict the mountain of the Sun. While the image in question has no conceivable reference in the present sky, it illustrates perfectly a central claim of the Saturn theory, namely that a crescent formally adorned the world mountain and served as the perch of the primordial Sun God. Human institutions, not surprisingly, were indelibly impacted by the unique and awe-inspiring events associated with the polar configuration. The institution of kingship offers a perfect example. It will be remembered here that Sumerian tradition held that kingship had originally descended from heaven. Early kings in Mesopotamia, Egypt and

Mesoamerica referred to themselves as the son of the land and modeled their behavior in accordance with the mythical behavior ascribed to the prototypical son. If the prototypical son engaged in sexual intercourse with the planet Venus, the Sumerian king made a public show of simulating sex with Inanna Venus in order to legitimize his hold on the throne and signal his own divinity. So too, if the prototypical son was said to have formerly appeared as a diminutive orb at the breast of Venus, the Sumerian king had himself depicted in monumental artworks as a babe at the breast of Inanna or Ishtar. If the prototypical son fought apocalyptic wars against the powers of chaos, the kings of Sumer in Babylon purposely sought out barbarian hordes to vanquish. This while proclaiming that the warrior goddess Venus accompanied them at their side, protecting them from all harm and guaranteeing victory. The sacred garments of kings reveal the clear imprint of extraordinary astronomical events.

Check out the royal garb of the Assyrian king. It is as if the king wrapped himself in iconic stellar images, namely those of the primordial son and Venus. It will be noted that not one of these images has any recognizable counterpart in the current sky.

In the earliest attested rituals of royal investiture, each and every detail of the king's regalia reflected the celestial original. Crown worn by the king for example, was expressly modeled upon that worn by the prototypical son at the time of beginning and is identifiable with the planet Venus.

Thus it is that Sumerian hymns report that the ancient Sun God tied on a mush band as a crown, wherein the word 'mush' is the aforementioned comet-like pictograph denoting Inanna Venus.

The local king following a long tradition, tied on his mush crown in imitation of the celestial prototype.

Nearly two thousand years later, Assyria's great king Esarhaddon reiterated this belief, claiming of Inanna Venus that quote "She guards me like the

crown on my head." What is true in ancient Mesopotamia is also true in Egypt and Mesoamerica. There too the king tied on a headband crown carefully modeled upon the planet Venus. Thus it is that the Egyptian 'seshed' headband shows the same spiraling form and two flowing streamers as a Sumerian mush sign. The word 'seshed', as Talbott and I pointed out 30 years ago, means 'comet'. Recall here the statement from a third millennium Sumerian hymn quoted in our previous video wherein the king invoked Venus as follows "The ever-sparkling lady gives me my kingship." The word translated as ever sparkling here is mul-mul-e = "to shine, or radiate", a verb formed from the Sumerian word for star: mul="star" and hence referring to the luminous splendor of Venus itself. The clear import of this passage accordingly is that kingship is a gift of the planet Venus. Venus's profound influence on ancient conceptions of kingship is simply one of hundreds of archetypal mythological motifs that conventional scholarship has no answer for.

Our historical reconstruction on the
other hand, explains the connection with
an unrivaled elegance and logical rigor.
Truth be told, in order to achieve a
fact-based history of our solar system,
it is sometimes necessary to ignore the
strictures of modern science and pay careful
heed to the testimony of ancient myth.

[Music]

[Music]

The atomic model has remained unchanged for a long time and yet there are many mysteries that this model has not been able to unlock.

Some nuclear reactions are very well known and have been thoroughly studied.

One would therefore expect that we know all there is to know about such reactions and that we understand how the products are created.

One problem is predicting how the larger atoms split.

Why does uranium split asymmetrically, if the nucleus is simply a collection of neutrons and protons jumbled randomly in the center. If we examine the simple case of an alpha particle emission, this also throws up many problems. One of these relates to the size of the nucleus itself.

We know that protons and neutrons have size. This means that the nucleus must have a size which relates to these sizes.

If we add into this the fact that in the Standard Model, the position of the protons and

neutrons are thought to be random,
then it would imply that to emit an alpha
particle, the internal protons and neutrons must
rearrange themselves to form this prior
to being ejected. This becomes more
complex as we examine larger and larger
atoms that always seem to produce the same
products. The nucleus would need to
undergo significant rearrangement in order to
accomplish this. And this
requires space within the
nucleus to allow the particles to move
to their correct location. If we examine
the width of the nucleus and compare this to the
width of the individual particles that make up
the nucleus, we find that there is
simply no room to allow this to happen.
It would appear as if the atoms
are in a very dense packing state
at all times, which would not allow for
any rearrangement of the particles.
And this implies that the nucleus must have
structure. And this is something that Edo Kaal
has spent the last 12 years working on and
now has a team of people working on it.
Unhappy with the many problems with

the current model, he set himself the challenge of redefining the structure of the atom.

The basic premise of the Structured Atom

Model or SAM for short,

is beautifully simple. The neutron is not considered a fundamental particle. Instead it is redefined as a proton- electron pair.

The nucleus therefore only contains protons and what are called inner electrons.

These inner electrons are used to bind the protons together, acting as a kind of glue.

In order to bind two protons

together, we require one

inner electron. One proton and inner electron are therefore equivalent to what was called the neutron. Overall,

the charge of the nucleus does

not change. But the important point is that

the force which holds the protons together

inside the nucleus, is the electrostatic

force, not the strong nuclear force. This also

explains why a neutron will

decay to an electron and a proton

and an antineutrino within 15 minutes of leaving

the nucleus, and why the charge of the neutron is

zero and its mass is slightly more than that of

a proton. The force holding the proton in the nucleus will attract inwards towards the center of the structure, causing the formation of specific geometric shapes which form platonic solids that have triangular faces, like the tetrahedron and the icosahedron. These form the building blocks from which the larger nuclear structures are built.

The SAM team have produced a new periodic table that shows a plausible structural configuration for each element.

The structural pattern, combined with the principle of densest packing, drive the various observable nuclear physics phenomena, including which nuclear reactions are possible, the tendency to fission and probable isotopic variations that may exist.

It is well known that transmutation can occur under laboratory conditions.

However current models are not capable of providing an explanation for how this might occur. The SAM model contains the components for a theoretical basis for the transmutation of metals. This in turn will clear the way for finally resolving the mystery of cold

fusion or low energy nuclear reactions.

We also think transmutations play a key role in biology and again here SAM can help to understand these vital processes in more detail.

One of the main insights obtained from the SAM model is that the inner nuclear structure dictates the chemical properties of the element. Being able to visualize the nucleus can potentially provide structural clues about the outer electron configuration.

SAM has also been able to identify several cases of potentially missing elements, solely from the vacancies in the new periodic table. They identified structural shapes that can be used to make predictions about the chemical properties of these missing elements. In cosmology it is thought that the elements are created through a variety of processes in stars. The lighter elements from carbon to sulfur are created by fusion reactions, while elements in the iron group originate mostly in supernova explosions, and elements beyond iron are made in high-mass stars by slow neutron capture, and by rapid neutron capture in violent interactions of

rare supernova variants or compact stellar collisions. The narrative of the origin of the elements is being challenged by the SAM model. The realization that element transmutation does occur in relatively benign environments, suggests that this depiction of nuclear synthesis may be flawed. An alternative possibility put forward by the SAM team is that the heavy elements beyond iron are created in situ on the planets. This would occur in intense electrical discharges. Related to this, electrical discharges are the prime suspect for the occurrence of transmutation in Earth geology. One consequence of this, is that the dating of geological layers becomes questionable since the transmutation alters the decay rate of elements. SAM provides insights that no other model is capable of doing. They explain how each element is structured; why the isotopes of an element differ from each other; where the cycle of 8 comes from; and why it breaks down. It not only explains why elements become

unstable after lead, but also why alpha decay happens in some elements and yet not others, and why uranium-235 splits asymmetrically, and the origin of the neutron drip line. SAM is a radically different way of looking at the atom that brings with it a simple approach that is easily understood. Simple rules create the structure of the elements and these in turn determine, not only their properties, but also determine how they will interact or break down to form other elements on a predictable basis. The key underlying assumption is simply that the particles are held in the nucleus by one force: the electrostatic force. It removes the need for the strong force and also questions the existence of the many exotic particles that physicists have dreamt up. This is just a brief overview of the SAM model.

If you are interested in a deeper understanding of SAM, and how it can explain things like, for example why certain elements are unstable; how nuclear reactions would work; how it could explain transmutations;

then please see the SAM playlist on my channel,
or head over to the SAM website where
you can also pre-order their new book.

[Music]

[Music]

[Music]

My first foray into comparative mythology was the book Martian Metamorphoses, a compendium of traditions about the Red Planet from antiquity until modern times. There I documented that Mars was conceptualized as the archetypal warrior hero, and as a central player in the catastrophic natural events attending creation and the ordering of the cosmos. My basic strategy was to investigate the earliest literary and astronomical texts, mentioning Mars, to see if recurring patterns could be found. In time I succeeded in identifying well over 200 motifs associated with the red planet, including dragon slayer, eclipse agent and fire god. Many of these motifs are shared by Mars gods around the globe: compelling evidence that they trace to the witness behavior of the planet Mars in relatively recent prehistoric times. The picture that emerged from my research, is that Mars represented an awe-inspiring celestial form, one prone to drastic distortions in its relative size and luminosity, to say

nothing of its propensity for hurling
great thunderbolts and generating world- engulfing
storms. All of these ideas are difficult to
reconcile with Mars' present benign
appearance, needless to say.

In ancient Mesopotamia, the homeland
of the first scientific astronomy,
Mars was identified with the god Nergal,
the latter described as a raging warrior
whose incendiary behavior threatened the
world. Numerous hymns attest to Nergal's
prowess as an invincible warrior. Quote,
"Warrior! Raging storm-tide, who flattens
the lands in upheaval, Warrior!"

Nergal's belligerent nature knew no
bounds. According to one hymn, the god's wrath
threatened the domain of the gods as well.

Quote "O warrior... Perfect one without
rival among all the gods, who grasps the
pitiless deluge-weapon, who massacres
the enemy, Lion clad in splendor, at the
flaring-up of whose (fierce) brilliance, the gods
of the inhabited world took to secret places..."

Babylonian astronomical texts, interestingly,
warned that if a person is born during
the appearance of Mars, he will be quick

to anger. While such traditions can only appear bizarre and incongruous by reference to the Red Planet's innocuous behavior in today's skies, the fact remains that analogous reports should be found around the globe.

Far removed from ancient Mesopotamia the Skidi Pawnee of the North American plains are known to have had an astronomically-based religion.

Indeed, it has been said that they were obsessed with the planets and had a sky-oriented theology, perhaps without parallel in human history.

For the Skidi sky watchers, Mars was described as an irascible warrior, whose interactions with Venus at the time of Beginning sparked creation.

During a ritual in which human sacrifices were offered to the Red Planet, the celebrants sought to channel Mars's anger. Quote, "I become ferocious: I became like him." End of quote. In another ritual, the Mars impersonator chanted the following refrain when pretending to conquer Venus. Quote, "I become myself when I become angry." End of quote. Yet

another hymn quotes the god himself

"This is the way I did when I became angry."

Analogous traditions will be found in

Egypt where early astronomical texts

identified Mars with the god Horus. In

literary texts dating to the third millennium

BCE, Horus described as raging against the

gods, thereby reminding us of the

Akkadian traditions attached to Nergal.

So too, in the pyramid text Horus is

described as the "Lord of Wrath," whose

seething fury shakes the very

foundations of Heaven. Quote, "Unis will

come with the face of the great god,

Horus, who is lord of wrath...; he will

strike Shu's arms from under the sky." End of

quote. The Latin god Mars, whose name was

assigned to the Red Planet during Hellenistic

times, was remembered as a warrior whose

terrible fury knew no bounds.

Although the vast majority of Roman

mythology has been lost, a few

vestigial remnants can still be found.

The Carmen Arvale, the oldest bit of Latin

text from antiquity, invokes 'fere Mars.

Literally, "the fierce or furious Mars."

In his classic, *Archaic Roman Religion*, George Dumézil offered the following portrait of the Roman War God. Quote, “The ambiguous character of Mars, when he breaks loose on the field of battle, accounts for the epithet “caecus,” or blind, given him by the poets. At a certain stage of furor, he abandons himself to his nature, destroying friend as well as foe.” Why, it must be asked, would a distant diminutive planet, moving on a supposedly eternally stable orbit about the Sun, be described as angry or furious or as raging against the Gods? A major portion of Martian metamorphoses was devoted to investigating the mythological traditions associated with the great heroes identified with the planet Mars. Figures such as the Greek Hercules for example, to see if there was any discernible overlap with the aforementioned Mars gods. As I documented, the overlap is at once substantial and archaic in nature, tracing to the earliest literary traditions in the third millennium BCE,

while it would be impossible to do justice to this vast wealth of material in a 10-minute video, it might prove instructive to examine a few traditional tales recounting the Warrior Hero's terrible anger. The Greek Heracles, expressly identified as the planet Mars during the Hellenistic period, was renowned for his fiery anger and deemed to be a major threat to the gods.

The poet Virgil describes

Heracles as follows in the Aeneid.

Quote, "Suddenly Hercules ignited in rage. Here the word 'rage' is 'ira', literally 'anger' or 'rage'."

Seneca wrote an entire play on the subject:

Hercules Furens. Ovid in turn speaks of the fire generated by Heracles' seething wrath.

The Celtic hero 'Cu Chulainn'

offers a striking parallel to Hercules.

In traditional accounts of the great hero's fury, it is reported that he radiated intense heat, became crimson all over and assumed a gigantic form.

The epithet 'the distorted one',

commemorates the radical distortion of features that distinguished the Celtic

hero during his battle frenzy.

Indeed, The Tain describes the hero's furor as follows. Quote, "It was then that, as before, Cu Chulain's distortion came on, and he was filled with swelling and great fullness, like breath in a bladder, until he became a terrible, fearful, many-colored, wonderful giant." End of quote.

The swelling of the warrior hero, while in the midst of his furor, is a universally occurring motif, as I have documented. Ovid in his description of Heracles' Apotheosis on Mount Olympus, notes that the hero suddenly took on a gargantuan appearance.

So too, Beowulf was said to swell with anger as he prepares to meet the dragon Grendel.

Marie Sjoestedt, summarizing the Celtic traditions, was among the few scholars to call attention to this motif. Quote, "We see that all the words for 'hero' express the notions of fury, ardor, tumescence, speed. The hero is the furious one, possessed of his own tumultuous energy." End of quote.

That the hero's sudden swelling traces to a witnessed planetary event, is strongly suggested by the fact that ancient astronomers called attention

to Mars' propensity for swelling.

Thus it is that Polynesian sky watchers knew

Mars as Horo-Pukupuku, 'Quick-swelling.'

So too Babylonian scribes describe Nergal as

pes-gal, literally the "furious" or impetuous god.

Yet the word 'pes' also denotes, to 'swell' or to

'expand'. A classic example of the warrior heroes

offered by the ascetic Batraz, renowned

for his terrible furor and erratic behavior.

In a popular tale recounting the hero's

birth, Batraz is said to burst forth from

a giant's abscess on high, whereupon

he fell headlong towards Earth.

Quote, "When he came down from heaven

to earth he was burning." End of quote.

The igneous nature of the infant hero

who fell from heaven like a thunderbolt,

or meteor, is a decided point of emphasis.

In a number of tales the townsfolk are

said to have gone to great lengths to cool

him down through one means or another.

In one account, the newly delivered

infant plummets down from heaven and is

forthwith dunked into a tub of water in

an effort to quench his warrior ardor.

Quote, "Batraz ...grew so furious

that his steely body became red hot.

He peered around, then leaped down from the heavenly heights, straight onto the roof of the seven tower... He burned his way through ceilings, one after another with his red-hot body.

In the lowest story of the tower, there stood a huge water tub, and into that fell the glowing-hot Batraz. Having cooled off in the water, he climbed out of the tub.” End of quote. In a

variant account of his birth, Batraz is thrown into the sea to cool him off, at which point he assumes a gigantic form. Quote, “When the little boy came out of the abscess at the time of this birth they carried him to the sea and threw him in. All at once he became as big as a mountain.” End of quote. Such

traditions have nothing to do with human biology, needless to say. Rather these vignettes encode extraordinary i.e. cataclysmic natural events. The

curious report that Batraz became as big as a mountain upon descending from heaven, represents an invaluable clue.

As we have documented elsewhere, when the

planet Mars descended towards Earth as a meteor-like bolide along the axial column uniting the various planets, it assumed a colossal form. Like countless other warrior heroes, Batraz is a notorious shape-shifter.

Especially relevant here are the traditions that describe the hero as taking the form of lightning.

Quote, "After a turbulent and marvelous childhood, somewhat reminiscent of that of Heracles, he went to heaven, where he lived from that time on, never leaving except to fall (literally) onto the earth, in the manner of lightning, sometimes to save his fellow Narts when they were in danger, but sometimes to decimate them cruelly and blindly without any clear motive.

Each of these 'descents' is described in terms and images that express his lightning nature." End of quote.

On those occasions when Batraz descended from heaven, it is reported that he was wont to assume a brilliant red form and become furious. The red color assigned to the descending bolide, together with the hero's

identification with Aries, is tantamount to the DNA left at the scene of a crime and allows us to positively identify Batraz as the planet Mars.

Here it is significant to find that Mesopotamian sky watchers expressly compared the Red Planet to a meteor, or fire falling from heaven. Thus it is that the star god Nergal was given the epithet *miqit isatu*, denoting "the fall of fire" from heaven.

Equally telling is the fact the same phrase was employed to describe "lightning" or "meteor". Far from being confined to ancient mythological traditions, the warrior hero's capacity for destructive feats of furor left an indelible mark on countless ancient rituals and customs, not to mention warriors' initiation rights around the globe. If Skidi warriors used to prepare for battle by emulating Mars's fiery anger, the Spartans and Batavian berserkers of old Europe whipped themselves into a frenzy by singing of the deeds of Heracles

in the hopes that they too,
might be possessed by his spirit
and prove equally formidable and
invulnerable to fire or pain. Quote,
“Archaic warriors everywhere
re-enacted in masked dances the deeds
of the gods and ancestors. They did so to
gain the divine ecstasy of ‘the beginning
of time’...In battle when it mattered most
to live in mythical time, warriors bodied forth
gods and ancestors fighting in their style.
Batavi going to battle sang of ‘Hercules,’ their
ancestral, club-wielding hero.” To summarize,
traditional tales attached to the
warrior hero describe him as red-hot in
nature, swelling in anger, possessed by
seething wrath, and radiating intense heat or
lightning-like flashes. Such
attributes point unequivocally to
the Martian origins of the
warrior hero archetype.
Is it any wonder then that indigenous
warriors around the globe formerly
smeared their bodies with red ochre in
order to embody and advertise their
furor?

[Music]

[Music]

Proponents of Electric Universe theory face
one seemingly infinite wall of resistance.

The false preconceptions cemented in
people's minds by consensus science.

We simply do not see the cosmos the same way
materials do. Fundamentally, I think the cosmos is energy.

Energy is kinetic motion or potential
motion of matter over a distance, but
matter itself is potential energy.

So it's all just one thing, energy. An

Electric Universe is one of energy
transformed from kinetic to potential by
standing waves of constructive interference.

Matter particles consist of holographic,
plasmoidal interference patterns. Standing
waves, in other words, that form the ether.

Each standing wave is itself a circuit
of energy, shaped by its frequency.

The shape of matter conforms to the shape
of energy flow. And the shape of matter
forms circuitry that anchors the
shape of energy. It's a feedback loop.

From our perspective, plasmoids are
electromagnetic bubbles of potential
energy, and hence the perception

of a particle. On the inside there are
whirlwinds of trapped energy,
patterned into an infinite cyclic circuit.
This circuit creates polarity, angular
momentum, exchanges energy with its
environment by induction, and maintains structural
Integrity with the membrane of capacitance.
Its internal potential maintains
resonant balance, and therefore is in
constant feedback with its environment. It is
an RLC circuit. This circuit pattern repeats in
self-similar scalar harmonies from the
subatomic scale to the super-galactic.
Therefore, an Electric Universe is luminous bubbles
within bubbles; circuits within circuits; harmonies within
harmonies, vibrating at constant energy from
within, in resonance with everything without.
Electric Universe. I see the cosmos is circuitry
that patterns energy, frequency and vibration.
Circuitry is life. The feedback loop is
universal. Entropy is energy, dropping an
octave. Infinity means as big as it needs
to be. Gravity is an emergent consequence,
worthy of study, not worship. And we don't divide
by zero. Minds that imagine energy as chunks of stuff,
bouncing around, are unlikely to

consider repeating scalable fractal
interference patterns as evidence for
anything but the mysteries of nature.
They've been groomed all their
lives to think what matters is matter.
They will remain befuddled by 'duality'
and hunted by 'entanglement'. They will
disavow longitudinal waves and ether.
It's why consensus science cannot explain
ubiquitous patterns at every scale in the cosmos,
like the Fibonacci sequence or the Mandelbrot set.
It's just physics, but they try to sweep
such evidence of circuitry in nature
under the rug by calling it a 'mystery',
as if it's something beyond science.
It is they who have gone beyond science,
beyond falsifiability with dark stuff,
wormholes and multiverses. Breaking out of the mold
that poisons quackademia and hence the greater
population, requires more than waiting on its
internal decay. Although that is happening at an
accelerating pace, there is still a need
to reorient people's minds to reality.
They need new physical models they can visualize.
Fortunately, great minds have already blazed a path.
Their message has just been suppressed.

I'm talking about people like Faraday and

Maxwell, Heaviside and Steinmetz.

These are names that need no

introduction in the Electric Universe. But

let's add one more today: Hans G. Schantz.

Hans G. Schantz is with Q-Track

Corporation of Huntsville Alabama,

and he has written a paper titled,

"On Energy Flow in Standing Waves."

In this paper Hans re-discovers the

enlightenment of our electric pioneers.

This paper examines the underpinnings

of electromagnetism appropriately, in the

context of wavelengths, frequencies

amplitudes, harmonics and the patterns

that emerge as originally studied by The luminaries

mentioned. In particular this paper explores the

Poynting-Heaviside interpretation of

energy flow in electric circuits, which

basically says the energy isn't in the

copper wires of a circuit, but flows

through the electromagnetic lines of force

around the wires. This is quite different from the

conventional concept of electrons channeling through

wires. This paper demonstrates however, that the

Poynting-Heaviside interpretation is correct. This

conclusion should be no surprise in the EU community.

However, it's critically important to understand

the motions of a dusty plasma in free space.

It's critically important for people whose concept of

electricity is confined to the wires they plug into their

appliances. The convention in science

and engineering is to model electric

circuits from a far-field perspective;

that is to measure voltage, current, and

resistance, from point to point and

ignore how the electrons travel between.

The scientists mentioned in particular

developed methods to approximate with

simple math what otherwise was too complex to

be useful. But there was fidelity lost about the

pattern of actual energy flow in the

equations and hence the very perception

of it, even for engineers and scientists.

The paper illustrates the flow of energy

and impedance, in concert with voltage

and current as a result of standing

waves formed in the electromagnetic

field in a simulated two-phase system.

Although this is a very simple model,

the patterns of energy flow are similar

to patterns found in geology

created by electromagnetic waves.

It illustrates how energy flows like water, changing direction in zigzag patterns, and circulating in whirlpools. These intricate turbulent motions are ignored by the convention, and we can't afford to ignore them if we want to model weather and geology, or anything else for that matter, in nature.

As we've shown in previous articles, plasma storms pattern the face of the Earth by raising a global dust cloud and reapplying the constituents in patterns formed by electromagnetic forces.

In other words, Earth is an electroplated planet.

We've shown and discussed significant evidence that supersonic winds molded mountains, leaving distinctive, in fact unambiguous patterns of shock waves.

We've shown and discussed evidence of canyons formed by sputtering discharge.

And we've shown and discussed river channels formed by ground-to-ground, arc mode discharge, and the evidence of resonant frequencies, Hall effect, stray capacitance, line-to-line phase vectors, and other identifiable geometric effects in the

discharge patterns. These are all near-field effects that are not captured in conventional far-field analysis. Wind effects in particular are patterned by energy and power flow, and hence conventional far-field methods won't work.

A quick dimensional analysis says, wind is mass forced to move over distance, which is energy over time, which is power.

To model the patterns of dusty plasma winds, requires the methods of Messrs.

Poynting, Heaviside and Schantz.

Before you click to this paper and die a small death at the sight of all the equations, scroll past the illustrations.

Anyone who can see the pattern, sees the result of electromagnetic forces, regardless of whether the equations are understood.

Energy flows a more tortuous path than conventional models imply. It makes right-angle turns and eddies around pools of impedance into Z-pattern flows, like water in a rocky stream.

Just like shock waves reflect off of shock waves, EM waves reflect off of EM waves, creating interference, standing waves in odd places, harmonics and traveling waves, transient standing waves.

Geologic evidence of wind patterns left by supersonic shock waves and many other features, confirms that plasma winds, filamented into linear Z-pattern, right angle and circulating cyclones patterned by electromagnetic fields as well.

Examine the interference patterns in these illustrations and take special note of the total energy and the impedance diagrams shown.

The same type of energy flow molded the Laramie Mountains around the spectacular X-discharge pattern at the heart of the range.

Although the patterns are not identical to the examples in the paper, the angular relationships patterned in the landscape, are the same, because it was also created by an orthogonal electromagnetic field interference pattern.

The patterns are more complex in the mountains than the simple two-phase simulation, but so is the electromagnetic field of the plasma storm that created these mountains.

The storm generated an electric field between the sky and ground at this particular location on the Continental Divide, because of tension between circuit domains forming the Mississippi,

Colorado and Snake River watersheds.

It was this hot spot in the ground that drew a response in the atmosphere by building a thunderstorm, one of Zeus's finest. Wind patterns, indicated in blue, show the path of energy flow along lines of force, which we now know are interference patterns in a multi-phase electromagnetic field.

The wind energy traveled in straight line filaments at angles roughly 30 to 45 degrees offset to the orthogonal cross, just like the impedance is offset from the total energy in Figure 5 and for the same reason. The ground discharge pattern that made the orthogonal cross presents the ground phase. And the tropical layer of the storm cell above it presented the opposite end of the electric field. Or the other plate of charge density in the capacitor, and the other phase in the electromagnetic field for this circuit.

The cross itself is a discharge between the three ground domains and is anchoring the location and establishing the frequency of the circuit. As a discharge cycle from peak to trough, it presented a standing wave of maximum

impedance, minimum voltage to the plasma winds.

Plasma winds were biased positive and the ground negative. Winds were drawn by reactive energy flows of electric field inductance, which is also known as capacitance, and magnetic field inductance, both leading and lagging the pulsing arc mode discharges on the ground.

Magnetic field inductance, through filamentary jet streams toward the center of the cross and then up into the storm center, these jet streams followed magnetic waves, vectored in the direction of the wave motion, perpendicular to the lines of force.

Electric induction drew winds in curving paths, field-aligned with magnetic lines of force, and these winds deposited dust where ground charge attracted it in the act of electroplating.

The patterns formed by a dusty plasma are also influenced by the dust itself.

The difference in ionic mix, and the influence of magnetic or diamagnetic particles, might make the difference between a clockwise or counterclockwise turn; or a fast or slow wind; or whether it sticks to ground charge densities, at a shock wave; or blows right through.

So, to summarize, the orthogonal relationship of alternating electric and magnetic fields yields an X-shaped constructive interference pattern of maximum reactive energy flow, and a vertical cross-shaped minimum energy pattern of maximum impedance.

This pattern is repeatable, scalable and expressions of it are identifiable throughout nature.

The takeaway of this paper and what it illustrates about Earth, is the phased interplay of reactive power in the electromagnetic field between sky and ground.

The sky is reactive, lagging in phase to charge concentrations first established in the ground.

Lightning tornadoes and storm cells are phase-to-phase discharges in a multi-phase circuit, not DC dielectric breakdowns, nor anything to do with CO₂. That is why consensus science can't understand weather.

On Earth, like everything else in the cosmos, is a pattern of energy storage and flow.

Follow the energy to any answer. That's how it's done, with or without math. One can feel energy.

When you add the complexities of spherical geometry and how waves propagate and interfere on a spherical

capacitor that inducts energy from the poles, definable patterns appear. Take for instance these images of Iapetus.

Iapetus has no atmosphere or internal geoelectric dynamic. What happened here was a direct current event. However, it serves to illustrate ground currents. What is obvious is a meridian of raised rock, called a dike, running from one pole to the other. A quarter turn, or 90 degrees around the moon, is a similar pole-to-pole meridian of aligned craters and it's highlighted right at that limb where the light shines from the Sun. Another, smaller meridian of craters runs roughly between the larger craters and the dike. It's about 30 degrees above the dike.

Each of these lines of craters and the dike itself, is an expression of charge densities formed by filaments of current.

Immediately, when you notice the quadrangle formed by interference, here from a polar aspect, look at the dike and major crater meridians and how they parallel a quarter rotation apart from one another, around the pole from pole to pole, with a minor meridian of craters between.

It's a similar three-dimensional

quadrangle of power flow as the paper depicts in two dimensions, where the quadrangle is formed by constructive interference, and then divided into eight sections by destructive interference.

Each section forms its own pattern of charge densities, because each section acquires a different ratio and vector of electric and magnetic field inductance due to phase and frequency differences.

The craters formed on radial currents, emanating from the moon's interior and aligned along these meridians as they pass through the crust, they form destructive interference or cathode spots on the spherical field of the crust where the energy deconstructed matter.

The dike, on the other hand, is a meridian filament of constructive interference on the crustal surface that ran like a wire from pole to pole.

Constructive interference means energy aggregates matter where positive and negative ions came together and recombined.

The energy was entering one pole and leaving the other, but reflecting its internal flow into multi-phase interference which pattern standing waves of voltage, current, and impedance

from within, to create these distinct geometrically-aligned filaments, as a rise in internal energy exceeded the capacity of the body. Atmospheric planets especially show consistent patterns of energy flow in their weather, due to multi-phase reactive energy. The V-pattern winds on Venus, the magnetic shadow on the Sun, and the continental formation of North America, are all the consequence of energy flows from a body that is inducing energy, storing it in layers of spherical capacity, and expelling the excess energy through its own dynamic electromagnetic fields, forming these predictable interference patterns. Ground charge densities, called shield volcanoes to lay the continents' foundations on Earth, and weather-layered sediments on top. But they were both shaped by the same reactive energy flows and interference patterns, because the plasmoidal circuitry in Earth, Venus and the Sun are very similar. These patterns come and go. Other patterns emerge. Nothing is constant, but the patterns recur. They are interference patterns from internal circuitry that has its own cyclically-operating switching mechanism.

It's obvious, if you think about it,
assuming you accept electrical formation
in the first place, that Earth's land
masses must be patterned by forces from
within. If they were not, how would diffuse
energy from space create the complex geography
we see. By applying the same physics described
in this paper, one can determine the
fine detail about geology on Earth.

The cycles of catastrophe in Earth's
past left patterns of plasma winds,
sputtering and arc-mode discharges, shock
waves and fringe-effect-currents around
the continental plates, all patterned by Earth's own
energy flow. Each episode laid a new layer on the old.
Each layer, if properly interpreted, will
yield a clear picture of what happened.

Were there comets and asteroids colliding with
the Earth in cyclic patterns of recurrence?

Or did Earth switch its circuit patterns
periodically, perhaps due to solar influence?

These are answerable questions. In the same way one
can interpret prevailing wind patterns from the shape
of a sand dune, one can interpret
virtually any hill or dale on the planet.

A record is retained in Earth's geology like a hologram,

because it was formed by standing waves. Now, thanks
to the work of engineers and scientists like Hans G.
Schantz who are brave enough to challenge the consensus,
we have the beginnings of models to reinterpret
our world. We can go to work rewriting science.

[Music]

[Music]

A newspaper headline today, unconsciously invokes imagery of the four horsemen of the apocalypse, of doomsday. Fear and division are being whipped up globally through a compliant media and the internet as if it were wartime. The difference this time is that the war is against nature on two fronts: a pandemic and a human-triggered planetary heat death. And as usual in wartime, truth is the first casualty. This is an all-too-familiar pattern.

It requires the broadest possible historical perspective to understand.

The Electric Universe synthesis is the only science that has grown from that understanding.

It offers hope and inspiration for a better future.

Sadly, our 2020 conference had to be cancelled as the dreadful downward cycle of humanity's fearfulness and irrationality headed towards its nadir.

How often do we have to repeat this destructive pattern?

How grim does it have to get before we come to our senses?

Our planned theme for the conference last year was 2020 Vision. It is a theme that I am passionate about.

Since the Electric Universe has a vision of humanity, rather like that of the Apollo 8 astronauts who first orbited the moon.

Perhaps only the few humans who have

witnessed Earth from that distance in space have felt
the cosmic insight that such a perspective offers.

On Christmas Eve in 1968, the Apollo 8
spacecraft with astronauts Frank Borman,
Jim Lovell and Bill Anders entered lunar orbit.

At the beginning of the fourth orbit,
their spacecraft was emerging from the far side
of the moon when Earthrise, one of the most
influential images in history was taken.

The image affected Bill Anders who said later
"This is the only home we have and yet
we're busy shooting at each other
threatening nuclear war and wearing suicide vests.

It amazes me." He gave up his religious
beliefs because he could not imagine a judgmental deity up there,
wondering whether Billy was a good boy yesterday.

With a clearer view of our world in relation to the Sun,
Moon and stars, he recognized the
irrationality of our beliefs and behavior.

History shows that beliefs that acquire
the character of religious dogma
are the most inhibiting and divisive influence in
the world. Yet religion fills a basic need that
science felt bound to address. Sadly, the
result is merely a religious story rewritten -
the lifeless and unscientific Big Bang creation

myth. We must first understand human nature to understand the world. But in this technocratic world it is a specialist subject, not taught to scientists who need it most.

In my keynote speech at the 2016 Electric Universe conference, I introduced the work of Dr. Iain McGilcrist whose groundbreaking work on the different functions of the two hemispheres of the brain, has shown that our education systems damage our ability to do science. By preferentially training the left hemisphere which focuses on detail, rather than the whole picture, you get stuck in a certain way of thinking, which is fine for a worker on an industrial assembly line, but deadly for doing science. Left-hemisphere people exhibit denial and a need to be in control. It has resulted in the active suppression of alternative ways of approaching problems and accusing others of denying their beliefs about what constitutes the facts.

Instead it is they who will not contemplate ideas they deny. As a consequence, there have been no fundamental breakthroughs in science since early last century. In complete contrast, Dr. McGilcrist compares this with right- hemisphere

people who get meaning from understanding the whole, and are comfortable with not being able to grasp everything. That was encouraged in the highly productive 19th century, by a more general education and openness to the self-taught, which resulted in significant contributions to science by eminent outsiders, like Ben Franklin, Faraday, William Herschel and many others. It has been my fortunate approach, resulting in the Electric Universe synthesis.

However, modern academia is highly resistant to incursions, even from Nobel prize winners in other disciplines. The lack of major breakthroughs in fundamental science in the last century, is the result. I was lucky that my early inspiration came from the classically trained scholar, Immanuel Velikovsky who was a practicing psychoanalyst.

In the 1972 BBC Horizon documentary on his major work, *Worlds in Collision*, the narrator finally asks "Why do his views attract such sympathy? Perhaps it is because what he has to say is so much fuller than the grey conventional view of man's history and that of the solar system. And he offers his listeners a total theory, one which appears to explain everything - even the origins of religion." "Most of

all he offers them a philosophy of hope;
an idea that through his view of science,
rather than the orthodox view,
man can save himself, not kill himself. He offers
them an understanding of man's irrationality
and thereby a chance to cure it."

Velikovsky concludes by stating, "Mankind
is irrational in everything he does.... He lives under
the urge to repeat the [catastrophes of the past].

There is nothing more important than for
the human race than to know the past;
to be able to face it!" His warning is
clearly of utmost importance today.

As a practicing psychoanalyst Velikovsky identified
the origin of humanity's subconscious doomsday fear,
originating from apocalyptic planetary close
encounters. Hell, like the desolate landscapes of the
Moon, Mars and Venus was in the heavens,
while the heaven on Earth was being destroyed.

Throughout history, those who wish to control
others have played upon this existential fear.

The famous psychoanalyst Carl Jung also identified
the subconscious nightmares that haunt all
humanity, but he couldn't explain their origin.

He too warned that humanity is its own worst enemy.

Velikovsky, by explaining the archetypes, showed

that our irrational post-traumatic stress behavior is expressed cyclically in trying to somehow safely relive the experience. For example, through watching disaster movies, involving an archetypal hero to save the world. But in the extreme it involves visiting destruction upon others we would like to control in our misdirected fear. The catharsis that follows the madness has people working together to rebuild. I'm lucky to have experienced this collective behavior following World War II. But this technological age has seen the world become progressively more dangerous in the hands of leaders of a damaged species. This critical understanding for our long-term survival on this extraordinary and beautiful blue planet was buried by mainstream astronomers who had acquired the status of a priesthood, and who denied all of Velikovsky's evidence without reading it, because it didn't satisfy their subconscious necessity for a peaceful, clockwork solar system. The Electric Universe cosmology is built upon Velikovsky's insights and those of the scholars who have developed his work for many decades. The result is an unprecedented scientific

and cultural vision for the future, as the arts, humanities and sciences are combined in a phenomenal and awe-inspiring panorama of the recent history of the living Earth. It promises to heal our differences and restore peace on Earth. Nothing less should be the goal of 'we damaged survivors' from an unremembered past.

The present is not the key to the past.

Surely the idea that there is still a great deal to discover, is a more inspiring position for artists, philosophers and scientists alike.

William James shone his lantern upon this point in his 1895 address to the Harvard Young Men's Christian Association entitled "Is Life Worth Living?"

"I have heard more than one teacher say that all the fundamental conceptions of truth have been found by science, and that the future has only the details of the picture to fill in. But the slightest reflection on the real conditions will suffice to show how barbaric such notions are."

"They show such a lack of scientific imagination, that it is hard to see how one who is

actively advancing any part of

science can make a mistake so crude.”

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Today, comparative mythologist

Ev Cochran continues his series on his

lifelong research into the themes and

archetypes of world mythology. In

previous discussions, Cochran has

explored the extraordinary identities of

planets in myth, including Mars as the

warrior's hero, and Venus among other

identities, as the mother goddess, the

great comet and the fire-breathing serpent.

The reconstruction that Cochran and

colleague David Talbot have produced,

leaves none of the global archetypes

unaddressed. Archetypes which could only

exist as the result of real celestial

events, witnessed and experienced by

ancient peoples. Previously, Ev

presented his investigation into ancient

Egyptian traditions, which describe the

Sun appearing atop a lotus flower at the

time of creation. According to both

Talbot and Cochran, such traditions

describe a particular phase in the

history of the polar configuration, one

in which Mars, as Horus, was positioned in front of Venus as the lotus flower. In this episode, Ev continues his discussion on the lotus flower in myth, a symbol and probably linked to the Sun gods of various cultures. A familiar image in ancient Egyptian iconography finds the Horus child seated atop a lotus flower. According to Eric Horning, the Dean of Egyptologists, the Sun God on a lotus blossom, was an image of the first emergence of shapes at the creation. James Allen offered a very similar summary of this fascinating thematic pattern, noting it was from this flower that the Sun could blossom into the world. Why an infant sitting atop a lotus should be an archetypal symbol of creation is rarely addressed and has yet to receive a satisfactory answer. Predictably, Egyptologists identify the Horus child with the present Sun, but they essentially ignore the fundamental role of the Lotus. At no point do they ever seriously address the elephant in the room

namely, where in all of heaven is a lotus flower to be found in the immediate vicinity of the present Sun? The motif is attested in other cultures as well. In ancient India for example, we read that "The world Lotus originally blooms in response to the rising of the Sun 'in the beginning'." Here is in ancient Egypt: the blossoming of the Lotus is explicitly placed at the time of beginning. In other words, creation. Analogous traditions are evident in Mesoamerica where the sacred Mayan text known as the book of Chilam Balam describes the Sun as residing within a four-petaled flower. "Four-fold was the plate of the flower and the Sun was set in its center." So too in a hieroglyphic Mayan script, the Sun is depicted as a four-petaled flower. The Mayan Sun sign in turn, finds a remarkable analog in ancient Mesopotamia, where the Sun was represented as a four-petaled flower. To bring the argument full circle, this particular image forms a close structural parallel to the Egyptian wnb flower described as follows. "The wnb

flower is none other than the primordial lotus from which the Sun emerges at dawn in the east." We see many examples of similar imagery in ancient artworks and religious iconography from around the world.

We asked Ev how one might distinguish between depictions of four-petaled flowers, which can be explained in familiar terms, versus depictions of celestial phenomena. Naturally, it's important to pay careful attention to context. In prehistoric artwork, such as those from the famous passage tombs at Loughcrew, Ireland, four-petaled flowerlike forms appear alongside a wide variety of suns and starbursts, a sure indication that celestial forms are being depicted.

So too in Mesopotamia four-petaled flowers are routinely depicted in conjunction with a recumbent Crescent, and alongside four-rayed stars, thereby confirming their fundamental affinity.

Equally important is the fact that the so-called Ra sign also appears in conjunction with a recumbent Crescent.

All modern scholars, except for Talbot and myself, accept that the image depicted in Fig. 6 is that of the present Sun. If we grant that the four-petaled floral forms are celestial in nature, how can we rule out the conventional view that the present Sun is being depicted? A systematic analysis of the respective artworks and mythological traditions, will inevitably point to a catastrophic context of the archetypal theme of the blossoming Sun. The myths of various cultures for example, make the central heart of this or that God suddenly blossom into a Sun amidst great fireworks. It is this cataclysmic background that alone can explain the otherwise anomalous fact, whereby in numerous ancient languages words for 'to blossom' or 'to flower' also denote 'fire'. The Greek word 'anthos' for example, denotes 'flower', but also the fire stolen by Prometheus. The same linguistic connection is found in the new world, especially among the Aztecs where words for 'to flower' also mean 'fire'. Witness the

following finding offered by the anthropologist Jane Hill: "The metaphoric association of flowers and flames is very widespread in.. Aztecan languages. The metaphor of the blooming flower as 'bursting into flame' can be reconstructed as a lexical item meaning 'blossom, bloom' for Aztecan. Given the striking association between flowers and fire in ancient testimony, we asked Ev how it can be explained in terms of natural science. The Aztec myth of creation provides the all-important clue. There a scab-laden nobody named Nanahuatl hurls himself into a great funeral pyre, whereupon he's enveloped in fire and suddenly blossoms, while becoming transfigured into the Sun. While this is a singularly informative mythological tradition, analogous traditions will be found around the globe. Pericles' fiery death within the funeral pyre atop Mount Oeta offers a familiar example. Such archaic mythological traditions preserve remarkably accurate memories of extraordinary planetary events of a

catastrophic nature, the likes of which are virtually impossible to imagine today. Events which profoundly shaped the course of ancient civilization. At our last EU conference in Phoenix I presented a number of slides that are particularly compelling. Witness the image presented in Fig. 7, dating from about 3,000 BC. It depicts a four-petaled rosette with what appear to be four dots, or points of light between the petals. As I have documented, analogous images will be found around the globe, typically in celestial context. In many examples the four-petaled flower is replaced by a four-rayed star as in Fig. 8 from Mesopotamian and Fig. 9 from Mesoamerica. Students of Archaeoastronomy will recognize the latter image as the Lamat sign, widely acknowledged to have something to do with the planet Venus. Granted that such images depict celestial forms, and it is quite impossible to believe otherwise, the question is how to explain the four

dots between the rays of the central star. Readers who are familiar with Tony Perat's plasma experiments, will immediately recognize these dots as a classic signature of synchrotron radiation, as documented in the high-energy discharge experiments conducted by him. This is but one of many clues, albeit a particularly important one, pointing to the incredibly powerful electromagnetic forces associated with the polar configuration, as witnessed by ancient sky watchers around the globe.

[Music]

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What powers the Sun?

The answer seems obvious.

It must be nuclear energy to allow the
Sun to shine for billions of years.

But that assumes, as Sir Arthur Eddington
did in the early 20th century, that stars
are isolated objects in space, and
because it had been found that the
fusion of two hydrogen nuclei produced
the most energy and hydrogen dominates
the sun's outer atmosphere,
Eddington assumed that stars are a
gravitating ball of hydrogen gas.

The astronomer George Gamow wrote of
Eddington, "he was able to find out
everything about the interior of the Sun
and other stars without leaving his
comfortable study at Cambridge
University.

Eddington famously used to say, "It should
not be too difficult to understand such

a simple thing as a star."

The misguided certainty of mathematical theorists becomes conspicuous as Gamow continues, "...astronomers can tell the temperature of the central regions of the Sun and of the many stars within a few percentage points and be quite sure about the figures they quote."

So scientists have labored ever since, using Eddington's simplistic model, in an attempt to produce nuclear energy "like the Sun" although the model doesn't predict any of the complex features seen on or above the Sun.

The certainty attached to mathematical models is entirely misplaced if the physical model is incorrect.

Unbeknownst to the general public and to many scientists, an alternative electric Sun model was proposed in 1979 by an engineer.

It has the critical longevity of all electric lights, it is plugged into a Galactic circuit and galactic

circuits are the basis of plasma cosmology which is ignored by astrophysicists but was developed by experimental scientists and engineers in the 20th century and it has proven to be predictive, quite unlike mathematical Big Bang cosmology.

Only in the last few years have the circumstances arisen to enable the Electric Sun model to be tested.

Called the SAFIRE project, the cutting-edge engineering firm Aurtas international incorporated was contacted by the International Science Foundation to experimentally test the Electric Sun model.

Aurtas International Incorporated is an independent body which has no affiliation with the Electric Universe or The Thunderbolts Project.

Recently, the SAFIRE team shared an extraordinary update on their results to date.

Today, in part 1 of this two-part presentation, physicist Wal Thornhill discusses the SAFIRE experiment, its results and its promise for the future.

History was made on July 7th

at the University of Bath

Electric Universe Conference in the UK,

when the 2019 SAFIRE project update

announced the success of the SAFIRE

experiment at the end of phase 2.

On September 2nd, it was shared publicly on

The Thunderbolts website.

SAFIRE, S A F I R E, the

cryptic acronym means stellar

atmospheric function in

regulation experiment.

In plain language, it is the

Electric Sun experiment which aimed to

reproduce in a lab on earth the plasma

features of the Sun,

from the photosphere outward into

space, to do so reproducibly

and to show that it was self-regulating.

The aim was to let nature show us, if the

model was correct,

how and why stars like the

Sun shine so steadily.

It followed the example of an

early pioneer of the Electric Universe,

the Norwegian scientist Kristian

Birkeland with his terella,

or little Earth experiment which he performed at the end of the 19th century.

Birkeland demonstrated Auroras using an electric discharge to a magnetized sphere enclosed in a vacuum chamber.

Amongst other things, he predicted an electrical connection between the Earth and the Sun, composed of electrons and flying ions of all kinds.

In modern terms, he had predicted the solar wind.

The concept of electricity in space was clearly not taboo in the 19th century.

Montgomery Childs who is president and founder of Aurtas international and manager of the SAFIRE project, together with the physicist Dr. Michael Clarage, provided the experiment update.

Monty summed up with these words,

"In all our experiments and discoveries we have found no disparities with the Electric Sun model.

We believe the SAFIRE experiment validates and supports the Electric Sun model."

The mind-blowing consequences of these words may not be immediately apparent.

The SAFIRE experiment was an independent audit of the Electric Sun model by a Canadian engineering company Aurtas international with an interest in solar energy.

The project was funded by the International Science Foundation, ISF, whose mission states that it, "was established to support promising new research in the sciences, placing a spotlight on innovative ideas that have met initial scientific tests but lacked recognition or funding. The ISF places its highest value on prospects for far-reaching discovery."

These goals are sadly lacking in mainstream science where experts are far too quick to defend the status quo and declare unfamiliar proposals impossible.

At risk was the life's work of a number of scholars who are responsible for the Electric Sun model.

Such risk-taking is not something seen in today's inventive

science, where model failures are everyday occurrences but rarely seriously acted upon.

Generally, they are dismissed by qualifiers such as "the phenomenon is not fully understood" which are weasel words for "send more funding to continue searching for imaginary particles and forces we may invent so as to save appearances and per chance to score a Nobel Prize."

This shows that extraordinary disproof is required for modern institutionalized science.

The SAFIRE results now proves, cosmologists and particle physicists don't understand stars!

Eddington's complicated untestable century-old model is wrong, we don't understand the universe at any level from the subatomic to the Galactic and everything in between.

Some background to the electric model is necessary here.

Aurtas international had developed a new solar panel microfilament technology and was investigating new energy systems.

Monty first called me in Australia, in 2011, to find out if I could help him with his research, since he had looked at the Electric Sun model and for the first time in his extensive engineering experience he could, in his words, find no disparities.

That is, no inconsistencies when he compared it to the standard solar model.

So I introduced Monty to my Thunderbolts partner in the US, David Talbott who persuaded him to write a paper addressing his stated concern that, if after 14 years of our Electric Universe collaboration we don't test the Electric Sun model, we may find ourselves in the same place in another 14 years.

So in January 7th, 2012, Monty presented an experimental test of the Electric Sun at the annual Electric Universe conference in Las Vegas.

An engineer from Flagstaff, Arizona, Ralph Juergens had his well-researched Electric Sun model published in 1979 under the headline: Stellar Thermonuclear Energy, a False

Trail? Shortly after his untimely death his friend and colleague Dr. Earl Milton, associate professor of physics at the University of Lethbridge in Canada, edited Juergens' unpublished material. Both Ralph and Earl, like many others, had been inspired by Immanuel Velikovsky's 1950 challenge to astronomers in his best-selling book "Worlds in Collision".

It demanded critical attention to dramatic early global stories of an incandescent cometary Venus, and battles between nine planets hurling Thunderbolts of the Gods which raised fundamental questions about recent electrical activity and orbital instabilities in the solar system.

That was the gauntlet Velikovsky threw down at astronomers.

Electricity plays a role in celestial dynamics.

Critical support for this foundational challenge to gravitational cosmology came at a historic meeting in Portland, Oregon in 2000, where the leading expert in high-energy plasma discharge phenomena,

Anthony Peratt, matched the various worldwide petroglyph representations of the cosmic Thunderbolt with the complex forms of plasma instabilities he had documented using the high-energy z-pinch facility at Los Alamos National Laboratories.

He wrote later of the "uncanny accuracy of mythology originating in prehistory that precedes by millennia what is discovered in high-energy density plasma experiments today."

It explained why our prehistoric forebears around the world had laboriously chiseled the same strange-looking stick figures and concentric circles into hard rock.

Whatever they were depicting must have been seen in the sky and held the greatest importance for them.

The echoes of their existential doomsday fears from that time, still reverberate in us today.

Velikovsky's research should not have been dismissed on the mere authoritative pronouncement that it had disobeyed

Newton's law of gravity.

Neither Newton nor anyone after him has explained the force of gravity.

So it was that

Velikovsky alone

predicted before the Space Age; the extreme temperature of Venus, the remanent magnetism in the Moon rocks returned by the Apollo missions, and electrically generated radio noises from Jupiter.

The last prediction drew

Einstein's attention, but astronomers showed they learn nothing from history.

As the noted astronomer Sir Fred Hoyle wrote in his book "Home

Is Where the Wind Blows," Velikovsky's book caused a sensation both with the public and among astronomers, the latter becoming stirred to near violent displays of outrage. Such eminent figures as Harlow Shapley were heavily involved.

It could be said that Shapley became angry even to the point of incoherence."

They set up a metaphorical modern-day book burning by forcing the textbook

publisher Macmillan to cease publishing
their best-seller and hand it to Doubleday.

Astronomy is still ruled by
its fearful high priests.

Hoyle seemed to intuit the answer, could it be
that somewhere in the shadows there is a past
history that it is inadmissible to discuss?

So I'm pleased that, inspired by
Velikovsky's leading research into the
recent catastrophic history of the Earth
and humanity, the Electric Universe has
an unparalleled record of successful
predictions in the Space Age and is
freeing astronomy from its
misunderstood past.

In 1977, Juergens wrote, "One would
think that the sheer
weight of Space Age discoveries -- most of
them pointing to an Electric Universe in
the Velikovskian mode -- might have
rallied at least a few professionals. But
strangely enough, this has not happened.

And it is left to us who might rather be
bystanders to take up the study."

Earlier, in 1973,
Juergens wrote, "As I pursued the

phenomenology of electric discharges, it gradually dawned on me that, structurally, the atmosphere of the Sun bears a striking resemblance to the low-pressure type of electric discharge known as the glow discharge..."

Of course, this questions the Sun's internal thermonuclear energy source.

Juergens stated the obvious, the modern astrophysical concept that describes the Sun's energy to thermonuclear reactions deep in the solar interior, is contradicted by nearly every observable aspect of the Sun.

He opened up another major front in the battle for recognition and acceptance, this time with particle physicists.

Only now, it seems it's time for change, with experts declaring a crisis in physics.

But the experts don't know where to turn.

Their training gives them no historical perspective beyond the October 1927, 5th Solvay

international conference in Brussels,
where the world's most notable
physicists met to discuss the newly
formulated quantum theory, which to this
day no one understands.
That is inexcusable.

You have just entered

the theater of an alien sky.

If the words and images seem strange to

you, there's a reason for the this -

our world was once

a vastly different place.

To experience this won't hurt you

and there is nothing to fear.

Before we get too deeply into these

presentations, I'd like to leave a

few thoughts with you as

to what we hope to achieve.

We're exploring solar system

history, Earth history

and human history from a radically new

vantage point. At each step, our attention

will be on a bedrock of fact -

yes! a bedrock of fact.

I'll be using that phrase a lot,

because reliable conclusions

do emerge from human testimony

despite a thousand contradictions.

The underlying concrete agreement

will be impossible to deny.

The first segments in this series

will come largely from

talks I've given in recent years,
but will move as efficiently as possible
into a much larger library of evidence.

Our goal is to reconstruct
the celestial spectacles that
defined an early phase
of human history,
what we've called
the 'myth-making epoch'.

Well established facts will force us to
reconsider many entrenched beliefs
about the evolution of our planetary
system.

For several centuries, the space sciences
have been trapped
in the spell of an unjustified dogma.

That dogma just assumed that planets
have moved on their present courses
for a billion years and more.

But always remember, this
was just a theoretical guess.

As we'll see, that guess
can not withstand scrutiny.

The facts I'll present will
add up to a readily testable story.

That's one of the promises I'm happy

to make since we'll be drawing on
3-dimensional representations
of named planets gathered
in a unique configuration
extremely close to Earth. The electric
discharge forms between these gigantic
bodies metamorphosed in the
sky above ancient witnesses.

In the course of these segments I'll talk
about physicists, astronomers, plasma
scientists, geologists and others
in the sciences who've already
acknowledged the power of the evidence.

We will respond as best we can
to comments and challenges,
even answering questions that may have
lingered in your own mind for years.

This series is about the predictive
power of a reconstruction.

The global archetypes present
to us a verifiable
substructure of
cross-cultural memory.

Seen in 3-dimensional space, the
celestial forms will not allow us to
just make things up.

Hundreds of predictions
will follow inherently
and inescapably from the
details of the reconstruction.
If the forms and events
reconstructed really did occur,
what should we expect to find? And would
anything presently experienced account
for a single instance of the global patterns?
How about memories of a primeval sun god
ruling before the present sun.
Or memories of a mother goddess
identified globally as the planet Venus?
Or worldwide descriptions
of the planet Mars,
always as a male figure, a great warrior
whose far famed weapon
turns out to be a cosmic thunderbolt,
nothing like terrestrial lightning
however, but exactly like electric
discharge configurations
in the plasma laboratory, Suddenly, the
ancient obsession with planets and
planetary motions will make sense,
and the concrete
descriptions of planetary gods

will no longer surprise us.

But the acid tests

noted here are just the first scratches

on the surface.

Countless thousands of ancient drawings,

sacred chronicles of the gods

and ritual re-enactments must now be

addressed in terms of an underlying agreement.

That agreement is entirely coherent

and it's parts are fully interdependent.

One story told around the world.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info in April 2015 the NASA spacecraft messenger completed its more than four year journey in orbit about the planet Mercury new discoveries in the mission have emphasized just how mysterious mercury is for planetary scientists recurring features across the entire planet have recently left planetary scientists searching for answers the messenger spacecraft has imaged towering cliffs which scientists say resembled giants Stairsteps with the largest or than 600 miles long and nearly two miles high scientists had taken to referring to the cliffs as so-called fault scarps based on the theory that is mercury shrinks rock material is being squeezed and then pushed upward along fault lines however if this theory were correct the cliffs would be more uniformly distributed across the planet instead for reasons that make no sense to planetary

scientists the southern hemisphere of Mercury features about twice as many of these giant cliffs as the northern hemisphere planetary scientist Thomas waters says of this enigma it is a real mystery none of the models we have at present can account for the lopsided number of scarps between the hemispheres we still have a lot to learn about Mercury there must be other factors at play here we don't really have a grasp on yet dramatic and seemingly inexplicable hemispheric differences on rocky bodies in our solar system is a long-standing puzzle in planetary science most striking is the planet Mars where the southern hemisphere is massively cratered in stark contrast to a northern hemisphere which is barely cratered at all and has had up to 6 miles of crust and death removed by some unknown mechanism the northern and southern hemispheres of Venus also differ dramatically with the north mountainous and uncluttered in the South relatively flat and rolling with

features at planetary scientists

described as quote lava Plains the giant

asteroid Vesta also has a major global

dichotomy with a massively cratered

northern hemisphere in contrast to a

southern hemisphere with few craters and

a massive mouth

the Saturnian moon - features an

enormous crater at its leading

hemisphere nearly one-third the moon's

entire diameter which probably should

have shattered the moon if it was caused

by an impact while most of - is covered

with craters at least 40 kilometers in

diameter the south polar region of - has

almost no craters larger than 20

kilometers in diameter

it seems puzzling why so-called impact

craters over geologic time would strike

preferentially on one hemisphere of a

rocky body the answer of these

hemispheric differences may be more

simple yet dramatic than planetary

scientists have ever imagined the

electric universe proposes that

high-energy electrical discharges at a

variety of scales have sculpted the surfaces of every rocky planet and moon in our solar system this hypothesis proposes two processes in which most of the electrical scarring of rocky planets occurred the first is the birth of rocky planets and moons by ejection from a larger body such as the gas giants Jupiter Saturn Uranus and Neptune after which the planet or moon is captured electrically either by the Sun or by a parent planet the second process is a relatively recent epic of planetary instability documented in cultural records the world over in which planets were aligned along their polar axis and engaged in prolonged electrical exchanges in both instances hemispheric dichotomies are to be expected with positively and negatively charged regions being affected in dramatically different ways as recently discussed on this series experiments with electrical discharges have successfully replicated almost every familiar planetary feature including sand dunes canyons mesas and

mountains

electric arcs have also reproduced the

puzzling cratering patterns in

characteristics we see on Mercury and

many other planetary bodies including

bizarre hexagonal craters crater chains

in the seemingly inexplicable pattern of

smaller craters appearing preferentially

on the rims of larger craters indeed in

the mid-1960s when exploring the mystery

of lunar craters amateur astronomer

Brian J Ford reproduced this and other

cratering patterns in experiments with

electrical discharges in a plasma oven

many other enduring mysteries of mercury

may be predictable in the electric

universe theory planetary scientists

still cannot explain why tidy mercury

has a tenuous atmosphere why the planet

has plasma tails resembling those of a

comet why the very small and very slowly

spinning planet has a magneto sphere

with a North and South Pole or why

so-called magnetic tornadoes resembling

corkscrews have been detected in

Mercury's magnetic field scientists also

cannot explain the apparent extreme density of mercury which some have attributed to an iron core however as physicist wal Thornhill has explained Mercury's relatively powerful gravitational field does not reveal its internal quantity of matter so much as it indicates the level of the planets internal electrical stresses in a 2008 article wal thornhill wrote a rotating charge body will produce a dipolar magnetic field in Mercury's case it's strong gravitational field for its size indicates a high level of internal electrical polarization that means a high surface charge so mercury slowly rotating charge will produce a small magnetic field other effects will modify that field for example currents flow in the plasma above the surface and are induced in the surface of the planet and there is remanent magnetism associated with old cosmic Thunderbolt surface scars the eccentric orbit of mercury within the sun's electric field should ensure electric current is flowing to

the planet throughout its year Thornhill
also notes the similarities between
mercury and the moon and suggests that
their respective characteristics speak
for the reefs

Electrical capture he writes it's very
interesting to note that mercury in the
moon have practically the same
negligible tilt of their equators to the
ecliptic in addition mercury has a large
orbital tilt referred to the ecliptic of
seven degrees and the moon five degrees
mercury in the moon may be related
their appearance certainly suggests so
the Sun captured mercury while the earth
captured the moon capture of a satellite
is a quick and easy process electrically
gravitationally it is very unlikely
Mercury's marked orbital tilt and
eccentric orbit suggests a recent
arrival there it is surely telling that
as our space probes reveal a never finer
detail the secrets of our planetary
neighbors the mysteries confronting
planetary scientists continue to deepen
for science to truly progress than

enduring mysteries like those on Mercury
demonstrate it's time to begin exploring
new theoretical horizons such as those
offered by the electric universe for
continuous updates on space news from
the electric universe stay tuned to
Thunderbolts dot info

[Music]

[Music]

I like this cartoon it was from the
Rolling Stone and it shows Velikovsky as
introducing a touch of the Wild West
into celestial dynamics and that was
really my the magnet that drew me to
Velikovsky Velikovsky's astrophysics
started in his best-selling worlds in
collision where he threw down a gauntlet
to astronomers which in earlier
centuries as my friend dr. Irving Wolfe
said would have had him burned at the
stake his proposal of recent payoffs in
the planetary system exposed our worst
fear doomsday the end of the earth the
end of us astronomers who would have
happily thrown fuel on the flames
boasted that they hadn't read his book
because it disobeyed Newton's law of
gravity this was religious dogmatism not
science however many scholars did take
Velikovsky seriously I'm pleased to say
and some of those who took him most
seriously or at this conference so this
is a kind of a trip down memory lane

where I trace my path to where I am now
which may help some of you understand
some of the weird stuff that I come out
with I was born in during the Second
World War
and my father ended up an invalid I'm
afraid and so he was in and out of a
military hospital now while I was in
high school in the sort of midway
through he came home from one of his
visits to hospital with the book in his
hand and he said I think you might be
interested in this it was that red book
their worlds in collision well as a in
primary school I've been interested in
astronomy to the point where I would
memorize facts out of the encyclopedia
draw pictures and go to
cool and do a show-and-tell until the
kids in my class decided they'd had
enough of me and and told me in no
uncertain terms but the thing that
impressed me with this book was I'd
never seen the scientific method applied
so broadly he made leaps from one topic
one discipline to another that I had

never seen before

and as it says here his work crossed
over and stimulated new directions of
thought in a vast number of academic
fields which alone is no mean feat but
he also showed us as the Washington
evening star put it to not be afraid to
stake out new intellectual territory in
defiance of fashionable thought this is
from Henry Zeca

he challenged the mysteries of the
universe he sought answers to our most
perplexing questions discovered many and
inspired inquisitive minds to search for
more that alone will mark him as one of
the most profoundly influential scholars
of the century perhaps of all time now I
read this book as I said at high school
and I tried to interest friends there
and other students and I was surprised
at how disinterested they seemed to be
so and also had this difficulty how can
all of these teachers and people that
I've looked up to and all of these
encyclopedias I've read to be wrong so
wrong so I kind of let it drift for a

few years and then just before going to university I read the book again and I decided great the University is the place to ask questions and get answers well my university education disabuse me of that idea because what I found was either the answer I got back was not related to the question I asked or else I got actual hostility and that surprised me it finally meant that I got out of academia I began postgraduate research yeah upper atmosphere research but found that I was being sort of used the slave labor and decided to leave halfway through the first post-grad year and joined IBM in those years it was the Wild West of computing really and I got to learn everything because I never liked being presented with a black box I had to know how it worked that was part of my psyche I think and so with IBM I learnt the hardware the software the operating system the compilers and so on which eventually led me to being used as the systems engineer for the National

University which when I looked back was an incredible piece of luck because this was at the time of the moon landings and I had access to the professors the libraries everything in those days they didn't have combination locks and electronic locks on everything so I could walk freely and ask questions and it actually had some friends amongst the academic staff so that's a bit of that background but after that book was published of course there was a funeral and I bought every book that came out I was impatient to get Velikovsky's next book and then some of the warriors came into the fore after the triple is ambushed and wrote books which I also got CJ ransom who spoke yesterday his age at Velikovsky which was published in 1976 and also Alfred de gracia compiled a book the Velikovsky affair which is well worth reading and that was published in 1966 now one of the tests of a good hypothesis because there's another theory until it's being tested experimentally or observational

ii is the more outrageous yet correct prediction is the more weight it should carry in favor of that hypothesis and Velikovsky predicted that Venus had been incandescent only a few thousand years ago he said Venus is hot and this is a small excerpt from a 1964 interview with Eric Larrabee who was largely responsible as dr. Wolfe said for the publication of the worlds in collision in the face of a lot of opposition now you understand well that I had no personal means to send a Madrid Metro if I may be a devil's advocate just momentarily I know what many of your critics have said is that a prediction like this is a matter of chance and they imply that you were pointing things out of the air well obviously you could have said a great many other things about penis you could have said Venus has two moons or is made out of cottage cheese or something other than saying that it is hot what what led you in particular to say quite contrary to to the belief of the time the penis was a hot point

well first I will see what they said at the end of my book is the very last two sections before the section the end I put two claims so the position which I selected for them in my book by itself proves the importance I gave to them this were first venus must be very hot Nastya must be very hot is very hot I called the chapter thermal balance of Venus and I said views gives off heat not as usually supposed to be a planet gets so much heat from the Sun and reflects on much heat in the space it leaves its own heat of course if it is a body like other bodies in the solar system of six million years or longer order of course on you wouldn't expect that it would give still give off heat he now I said also that that it was observed by contemporaries of those events and after as a an incandescent body at the same time still in 1959 it was calculated and accepted that the surface temperature of Venus is 17 degrees Celsius only about three degrees above the temperature of the earth very

similar the world to earth in 1961 it
was founded by radio signals arriving
from Venus that it is very hot actually
600 Fahrenheit and your your reason for
believing this was that your theory
required that it be a new planet a young
planet in geological astronomical time
yes it was the cause of the needle heat
but also the result of the short but
we're storming history all this money
and let me also say that 600 degree of
1959 was one of the reason to send the
marina probe to find that it is not so I
heard a man scientists from Jefferson
Lab who speaking before the triple a
convention in Philadelphia meet another
expressed his hope that it will be found
the temperature much lower what was
found it was still higher not 600 800
degrees hmm now there is an outrageous
yet correct prediction that alone should
have galvanized really curious
scientists to investigate his work
further dr. Irving Wolfe talked about
what happened in 1974 the triple a s San
Francisco meeting in in that meeting

which was organized as a symposium
Velikovsky's challenge to science it was
organized by professors Donald Goldsmith
Owen Gingerich Ivan King and attended by
Immanuel Velikovsky and professors
Donald W Goldsmith Norman W stone
Cal sagen J Darrell Mulholland and Peter
Huber Fred gen'l'men who was one of the
inner circle described as an ill planned
didactic ambush that failed to discredit
Velikovsky and actually had an
unexpected backlash on his detractors
that was written in an article called a
kick in the ass

and David stove is an Australian
philosopher and also one of the people
who doesn't conform said we all grizzle
about specialization professionalization
departmental empire-building etc but
unless and until you read the details of
this case you can have no idea of the
pitiless ferocity or the organizational
muscle that organized science can
display that was in an article called
the Velikovsky story the scientific
mafia that other book that's on there

this is to the scientists confront
Velikovsky and the other one is
callously again in the manual villa
cough ski which is quite a detailed
piece of work by Charles Gyllenhaal who
is one of Velikovsky's warriors now Cal
say again did say something about
Velikovsky on the program cosmos and let
me have a look here it shows a double
standard I think and also the fact that
science is only trivially
self-correcting today or other words
during normal or settled science you can
see that the herding instinct in science
is very strong and this has only been
made worse by the global internet type
of groupthink amongst them and the
double standard in evidence in scrutiny
one side has chosen evidence is
another's anathema extraordinary claims
require only ordinary evidence
settle science requires a bomb under it
to move it experts in my opinion are the
last to know when a fundamental change
arrives the electric universe for
example but when you look back all big

changes even the idea of sending rockets
to the moon which said to be impossible
by experts heavier than air flight was
to be impossible so the last thing you
do is ask a gray-haired expert what the
future holds because they will be the
last to know
so I show this now just to get an
impression I think so again at this
point felt some guilt for what he'd done
there are many hypotheses in science
which are wrong that's perfectly right
it's the aperture to finding out what's
right science is a self-correcting
process to be accepted new ideas must
survive the most rigorous standards of
evidence and scrutiny the worst aspect
of the Velikovsky affair is not that
many of his ideas were wrong or silly or
in gross contradiction to the facts
rather the worst aspect is that some
scientists attempted to suppress
Velikovsky's ideas the suppression of
uncomfortable ideas may be common in
religion or in politics but it is not
the path to knowledge and there's no

place for it in the endeavor of science
we do not know beforehand where
fundamental insights will arise from
about our mysterious and lovely solar
system and the history of our study of
the solar system shows clearly that
accepted and conventional ideas are
often wrong and that fundamental
insights can arise from the most
unexpected sources yet as I said say
again is disingenuous and should have
taken his own advice

he was a key suppressor at the 1974
triple a s meeting here's an example of
what I mean about experts being the last
to know when a paradigm shift has begun
in the Scientific American it says we
are all impoverished by the selective
rejectionism of modern science all of
the taboos in science in this excerpt
Velikovsky is troubled by the wayponse
reports the San Francisco meeting and
this was shown at the Portland sorry the
meeting in at McMaster University in
1974 I had some information secondhand
from Milton who had some inside

information he said Villa cops he was assured by the editors of Ponce that Ralph Juergen's would oversee the final report usually Velikovsky lectures without notes at the San Francisco meeting he set to read his paper because he was fearful of omitting important points he was asked from the floor if any of his predictions had been disproved he answers he knows of none Velikovsky is angered that Ponce did not print his response to Sagan's challenge to name which organic compound has a refractive index of one point four four and has infrared absorption features at three point four micrometers and eleven point two micrometers at the meeting Velikovsky did answer both questions at length these are important scientific bits of scientific evidence now this film shot there in June 1974 at the McMaster meeting is something that I did on a brand new Coded 400-foot cartridge sound camera it was something that Coded had finally done that was to introduce sound Super 8 cameras I had

taken my own I'd built my own radio
microphone but it unfortunately suffered
a lot of interference various times
during the meeting and this is the only
one that has good sound so this has
never been seen before right would we
create a gap of ourselves
I'll see will repay them too so of
course who have no admittance to answer
publication are welcome to pass a high
hopes of fancy will come to its
beginning can be again a small is a
beginning but regime as
now the end of the world and was all the
instrument in bringing you today here
and thank you once more and I will
probably save you as for Joe's continue
what I could not see here in at the
buffer to see once more thank you

[Applause]

[Music]

[Applause]

so that was my first meeting with
Velikovsky and you saw the reference to
me by coming from the ends of the world

[Laughter]

and I have here some photographs taken
at that meeting on the left is
Velikovsky standing to answer a question
from in the audience he his daughter
wrote to me and asked for a copy of that
photo and I sent it to him and received
they a thank you from him you can see
some of the crowd there I can just pick
out my wife up the back there somewhere
and but there are a lot of the the
Warriors visible in some of these
photographs and on the riders Steve
Talbert now it's interesting that my
connection with the talbert's started
with Steve because I had written to him
once I knew that this conference was on
and stating what I had done and my
interest and so on and he invited me to
sit on one of the panels so I got to
meet people there and it was the there
of course that I also met bill Mellon
and was very impressed by his opening
address another shot of the McMaster
meeting there's one of our Scottish
scholars sitting in the middle there he
did a lot of work with the Society for

interdisciplinary studies which was the
UK of the Velikovsky and movement if you
like to put it that way
there's many people I can pick out of
that but it gives you some idea of the
crowd also speaking at that meeting and
somebody who had also had inspired me I
put him there's a lieutenant of
Velikovsky really on
scientific side Ralph Juergen's I've
tried everything I can think of to get
more photos of Ralph but that one was
taken at the Grand Canyon and I've been
in touch with a good friend of his was
dr. Earl Milton the physicist from
Lethbridge Alberta and I've been in
touch with Earl Milton's son and he's
looked through all of the material that
he has of his father's but I've not been
able to get another photograph of him
which is a great pity Bill Milton wrote
about him in 1973 and 1974 Juergens did
yeoman service in preparing Velikovsky
for San Francisco or serving as Ponce's
physical science gatekeeper Juergens
served as Velikovsky's research advisor

providing invaluable interpretation
which avoided many pitfalls within the
sea of commentaries now being made about
the state of planet Venus Ralph also
coached the manual about how to present
himself when he faces his opponents at
San Francisco this is one of the
inspirational things that I got from
Ralph Juergen's

if the Sun and the stars indeed succeed
in fusing lighter elements to form
heavier ones other relevant activities
carried out more or less in plain sight
in their atmospheres having asked this
question though Jergens nevertheless
went on to estimate the electrical
energy and voltages based on no input
from the nuclear process in other words
if there is nuclear processes going on
in the photosphere he merely calculated
the electrical energy in required to
provide the radiant energy output of
course to say this flies in the face of
particle physics because the conditions
in that 5000 degree or so photos
is not sufficient of course to even

begin to talk about nuclear fusion
according to standard thinking he says
here and this was a key to his model and
one which is now being tested by
Sappire the electric Sun hypothesis
assigns the solar body the role of an
anode that of the higher potential
electrode in a cosmic electric discharge
that's the simplicity of the model and
also the the genius of Ralph
was to identify the fact that all of the
detailed features that we actually
observe to be seen in an anode discharge
and of course the most confronting thing
he said was the modern Astrophysical
concept that describes the sun's energy
to thermonuclear reactions deep inside
in the solar interior is contradicted by
nearly every observable aspect of the
Sun that should have been a huge warning
bell in the halls of the academia but as
they say when you're woken by a loud
noise you get very annoyed it was in a
few years later in 1979 I was working
for the Australian government of briefly
in Washington DC and while there I took

the opportunity my family was with me

I rang Velikovsky at his home and

mentioned our meeting in 1974 and I

asked whether it be possible to visit

and talk to him about the work that I

was interested in he and his wife

graciously had us there on the 29th of

April 1979 and it was there that he in

answer to my question what is that we

don't understand about gravity he gave

me this small pamphlet cosmos without

gravitation

it was a synopsis of a more

comprehensive document written from 1941

to 1943

so here I'll give you some of the

chapter headings to give you the flavor

of what's inside first of all and this

is fundamental gravitation is an

electromagnetic phenomenon so now you

can see where I got it from this is

where it all started

he gave a list of phenomena not in

accord with the theory of gravitation he

looked at the attraction between two

atoms and this is something that had

occurred to chemists the molecular attraction between atoms can sometimes be down to dipole forces the fact that the atoms are distorted in a molecule gives them one side of the molecule are slightly more positively charged than the other and this of course is a feature of J. Arrhenius Pollock's work where the water molecule is distorted so that one side is more positive than the other you have a positive and a negative dipole he covers the attraction of bodies toward the earth the time of a swing and descent of a pendulum because he thought they should be different and the effective charge on the weight of the body if I get a chance I'll talk about why that idea really doesn't work but that took a long while to figure out and of course his statement that attraction repulsion you'll notice he's talking about repulsion between bodies as well because the dipole can repel as well as attract and electromagnetic induction act in the solar system that was his claim he also covered the

anomaly of mercury and other phenomena
where he tries to explain them these are
some of the phenomena not in accord with
the theory of gravitation according to
Velikovsky water is 800 times heavier
than air but millions of tons of water
droplets are held miles above the ground
in clouds and Jerry Pollock I think has
shown the way to under
stand that mountains don't exert the
pull expected by gravity that massive
rock should attract a plumb-bob slightly
towards it it doesn't so that gave rise
to the theory of isostasy where you have
to have a mountain underneath the earth
to kind of balance out the forces so the
pendulum actually points towards the
center of the earth this is the kind of
extremes you have to go to when your
theory doesn't really work gravity is
stronger over oceans than land the
spinning gaseous sun should be oblate
it's almost a perfect sphere gravity
can't restore orbital perturbations
there is nothing to restore a slight
departure from your orbit caused by

another body so that over time the whole thing becomes chaotic in fact it has been calculated I think by the orbital dynamicists that the solar system should not remain stable for more than a few million years beyond that time it should be destroyed by chaotic behavior the sweep of a comet's tail around the Sun that's not a gravitation it's not explained by our gravitational effects and Laplace he notes calculated the speed of gravity must be in excess of 50 million times the speed of light so these are all the keys that I had given to me by Velikovsky in particular this his idea this is his idea here each atom is made up of positive and negative electricity and though neutral as a whole and these are his words may form an electric dipole when subject to an external electric force attraction is not due to inherent gravitational properties of matter I wouldn't say mass but instead to the well-known electrical properties of attraction

two dipoles arrange themselves like bar magnets on a slippery surface if you just throw them on the surface they'll try and attach north-south north-south and daisy-chain and there they will always swing to try and attract one another

however if grab and this is the arguments against that simple model and Velikovsky gave me that document on the basis that it was a preliminary thinking it certainly had a lot of questions left if gravity were that simple an electric field across a polarizable dielectric that is like in a capacitor shouldn't modify gravity markedly because they are you're distorting the atoms in an electric field but it doesn't it does slightly in the by field Brown effect where you capacitor tends to move in the direction of one of the charge plates but that doesn't explain gravity and it should be shielded by a metal conductor because this is we're dealing with a bulk electrical field it isn't also the atomic dipole force is too strong it's

the force that holds molecules together
one of the forces and if we were held to
the earth like a molecule we'd be you
know maybe a few centimeters thick on
the surface so having been given in 1979
the keys I had what they call the
prepared mind I was on the lookout for a
classical physics approach the kind of
approach that got us to the beginning of
the 20th century and has given us all of
the technology we see now very little of
the 20th century beyond about the 1920s
has contributed much at all to modern
technology

it came in a tiny advertisement in the
Scientific American in December 1981 and
it advertised the Journal of classical
physics and the first issue by Ralph
Sainsbury who was the originator of this
journal was called electron structure
now Velikovsky had shown that it was the
structure of matter which may give rise
to the electric force and if the
electron has structure that's important
so this was one of the keys he what he
did was to repeat the atomic orbital

model of smaller charge particles inside
the electron and proton so imagine them
as tiny atoms it's a repeated pattern
the kind of fractal approach to looking
at science and by assuming the electrons
have this simple structure ralph
explained magnetism he was able to
derive amperes law just by based on this
simple model most importantly this model
requires for an electron to remain
stable that the electric force operates
between all of the bits that make up
that electron instantly if there's any
delay then the particles don't know
where each other are and the whole thing
flies apart
in fact he calculated that the particles
if they were free to move outside the
electron would travel from here to the
far side of the Andromeda galaxy in one
second now this gives you an idea of the
speed of the electric force and that
gives you the idea of the speed of
gravity it also simplified things here
we have the electric force explains
magnetism and gravity and classical

physics was all about simplification not
inventing more and more forces and
particles to get a Nobel Prize it was to
try and find out the real nature of
matter and the thing about
or one of the principles I've worked on
ever since getting all of these ideas is
that the simple of the model the more
likely it is to be correct and also this
model provides a real basis for quantum
behavior cause-and-effect
re-instated quantum theory got rid of
cause and effect
Einstein got rid of any means of
measuring things because he removed any
standards between them here the two of
them they got rid of physics of just R
it also discards the wave-particle
duality of life rough did some
experiments at great cost to himself
which I didn't prove his view of it but
I think it it helped me to understand
light as a wave motion only I don't
think I'll miss around with this
understands equivalence where you know
gravitational mass in an inertial mass

are said to be equivalent they're not in fact even the picture there shows that the guy standing on the earth is being attracted to all the atoms in the earth which means he's being attracted out to the horizon and the others from the other side of the earth it's nothing like being pushed in or up in a lift or in a rocket the equivalence in that diagram is not there Velikovsky said that the Equality of inertial and gravitational mass is a remarkable accidental coincidence in Newton's system and he's right it's impossible to adopt Einsteins equivalence principle of inertia and gravity because an outside observer cannot observe the earth with all the lifts traveling in different directions once again you've lost is your measurement standard of your place in the universe through Einsteins work everything is relative it suggests the equivalence is the same because subatomic electric dipoles are responsible for both the attractive force of gravity and the repulsive force

of inertia

exactly the same process so you can expect them to be equivalent once you understand it Velikovsky said it is probable that besides carrying a charge the ground turns all of its atoms as dipoles towards the ionosphere and that's what I've been showing the last few years in my presentations like this and the result is that you have the positive heavy nuclei drawn towards the center of mass and the other pole the negative poles facing outwards and this changes our view of celestial dynamics immediately but this is Velikovsky didn't take this step in fact it took me decades to take this step because it raises all sorts of other issues I'm pleased to say that I mean this infers that the insides of celestial bodies are hollow because you've got a repulsive force pushing outwards and a repulsive force from the rest of the matter in the universe pushing inwards and the most stable form in that case is a thick spherical shell which means that we know

nothing about what's inside the earth or
the Sun or any other body or the moon I
was on well to say at various times in
my journey in the electric universe I've
come to a point where I've said oh my
god
how am I ever going to tell anyone about
this because you know it's really
confronting I mean it's like going from
the Flat Earth to a spherical earth and
it takes time to get over that until I
find enough evidence that I feel I can
actually give a story which is
convincing and I knew that I had to look
for seismic evidence to show that it's a
shell and not a solid sphere or even a
solid and liquid sphere part of the
evidence came from the Apollo
moon landings the first ones where they
crashed the one of the the Lunar Module
back into the moon having placed a
seismometer on the moon so this was the
first seismic experiment on any other
body than the earth and what was the
result the moon rang like a bell for
almost an hour

well that one set the geologists back on
their heels because the most obvious
answer is that the moon is hollow
but of course they couldn't accept that
so they've made a really complicated
story to try and get around it but then
I came across that somebody sent me a
link to work by a South African he was
also in I tears I had been from all of
my career and he'd come to look at deep
earthquakes because he was interested in
this the old stories of Hollow Earth and
theories because they gave back hundreds
of years

and he found that the best answer to the
seismic evidence was that the earth is a
shell a hollow shell and when I looked
at his evidence he'd done a very good
job of analyzing and I realized here we
have sufficient evidence to really
investigate further you'll notice too
that the outside of every celestial body
will have a negative pole facing
outwards it's like having the same pole
of a magnet in a shape of a sphere and
if you have two of those bodies you try

and push them together you all know what
it's like trying to push like poles of a
magnet magnets together so all stars and
planets in the universe repel each other
with an inverse square law this answered
a question that troubled Helton up
because his research which I think is
outstanding showed that the universe is
balanced it's not collapsing it's not
expanding it seems to be just hanging
there and you can't do that if gravity
is pulling everything together so this
answered that question to gravity on the
cosmic scale is repelled
if Newton's attractive force has a very
limited sphere of influence there is an
internal gravitational field that is
repulsive and the interiors of all
celestial bodies are not what we think
the solar system Velikovsky said
attraction repulsion and electromagnetic
circumduction act in the solar system
but of course Velikovsky was unaware
that the plasma shields electric fields
so is much more complex than that there
was no mention of either of how you

establish feedback to have settled the solar system down from the chaotic state just a few thousand years ago to the present clockwork order the Sun had made planets and satellites comets are all charged bodies and are injured interdependent this is Velikovsky once again the Sun is charged negatively with respect to the earth now this statement is incorrect because J of Jergens later work the Sun is a magnet the form of the corona suggests a strong magnetic field well Villa cops key was the first one to talk about magnetism on other bodies really in it with any coherent hypothesis the bacon but he said the sun's charge and rotation must produce a stronger magnetic field because a rotating charged body must produce a dipole magnetic field that's been dismissed because when they calculate how much charge you need there so it's impossible that they're using plain electrostatics that forget plasma the charged planets move as charged bodies at right angles to the sun's magnetic

field that's what he thought in other words it was more like electric motor than and this is the point pardon me gravity exists and gravity is a special form of the electric force almost identical to magnetism it's just that those two forces are created under different circumstances one of the free subatomic level and the other one trapped in an atom but they're identical to that extent now the big journey came when the Saturn story came up because I read Dave Taylor's book published in 1980 as soon as it came out and writer Cardona had been an inspiration to me ever since the Chronos and Ponce articles began to be published and it was in the fall of 1977 in Chronos three number one I do published the sun of night which referred to Saturn which caught my attention of course and Radha's research was sufficiently well documented and thought through that I used his findings as a basis for trying to understand the history of the solar system the recent history because I

wanted to know you know where did Venus
come from where did the earth come from
where did Mars come from what had
happened and could it be explained in in
proper classical physics so he and I
corresponded quite a lot and he
published many of my articles in Chronos
so the two of us this is where myth can
become science instead of as we have now
science becoming myth and the resulting
cosmological picture that emerged had to
be simple and coherent but as it turns
out the story that unfolded would make
2001 a Space Odyssey look like child's
play I'd love to see this work
in an IMAX theater dr. L Milton was a
good friend and visited us at the time
of Halley's Comet appearance and stayed
with us in Canberra I took this photo in
1983 I had been posted by the government
to London twice which was very unusual
in the 80s and I had invited to speak to
the SAS group over there it was with the
SAS group that I began my first writing
of articles and having them published in
1980 he and Jergens independently

concluded that a comet nucleus would be scarred and the this is a direct quote like an electrode in an arc over time the cometary nucleus should become cratered and pitted when a spacecraft finally achieves a rendezvous with one of the Comets scientists are going to be surprised to find a surface pitted like that of the moon Mars or mercury and that was written at the time when scientists had never seen a comet surface the first flyby took place six years later in England I caught up with Eric crew who was a disciple of Charles Bruce and you'd be surprised this is one of the things that continues to surprise me is that there seems to be no new ideas under the Sun because you find that people in the past have had the same ideas but they've only gone so far and not put the whole picture together which I see as my job is putting the big picture together dr. Bruce is lightning research with the electrical research Association and the attendance at Sydney Chapman's 1941 Kelvin lecture on the Sun

led to the application of these ideas to
cosmic phenomena and to a new
all-electric universe Charles Bruce
wrote the surfaces of stars can be
explained as lightning discharges which
are observed in the atmosphere of the
earth in 1944 that was only a toddler
then

wrote in fact it may well be that both
Jupiter and Saturn were at one time -
stars and that their satellite systems
were formed as the result of minor or
planetary Nova outburst I couldn't have
said it better myself

Eric did a lot of work trying to get
Bruce acknowledged for his work and I
only missed him seeing him on one of my
occasions in England I realized before
he died which was unfortunate I've
managed to meet most of the people I
wanted to see because the job took me
around the world very often now 1994 and
this is 20 years after the Portland
making sorry after the McMaster meeting
Dave Talbert put on a international
conference called Villa Kowski ancient

myth and modern science and this is
where I saw Dave's presentation he
missed mine I was talking about
Velikovsky and the evidence for having
been recent recently born and I said to
him I think we should join forces
because our combined story is far more
powerful than either one of us alone
I've severed a little together with a
film that might be of interest if that's
a good time okay Mel and Amy Aitchison
were amongst the first people I met when
I went back in 1996 December and camped
on Dave's office floor for a month and
then we put on a meeting in Portland in
1997 Mel and Amy introduced me to help
nap and there was an inspiration another
inspiration and then in May 2000 help
nap spoke at our conference along with
Tony Pratt whom you've heard a lot about
and it was a historic event more
important I would say than the Solvay
conference all that those decades
earlier
Alton Hobbs views on cosmology published
in seeing red set the goal posts for

electric universe

cosmology are done a lot of work on the Sun and the solar system this painted the the bigger picture and the whole thing became a more coherent cosmology this is Tony paraffin I the quest to understand Velikovsky's electrified cosmos led to plasma cosmology a subject ignored by astrophysicists despite its engineering heritage and successful predictions here was a critical juncture when Anthony when Tony joined us at the request of Dave Talbot for a conference in May 2000 Tony's research gave us the opportunity to verify the convergence of the myth a historical record with high-energy electrical discharges in space plasma and this is some film of the historic Portland meeting one of the gas giants and then two of orbits and they circularized within so so like we're anyway we see the our objects the galaxies with ejections long line and we see all their galaxies along any line the way around the problem is that if

they come out this way without a and
component they only go up and down and
they stay along so that I think we have
perfectly good impairments for objects
being formula on the line and staying
along the data creates patterns that
have to be explained I mean this
configuration as it has been
reconstructed after this point has some
incredibly specific components and
interact between them and it is in fact
actually at that level of greater deal
that the power of the model itself just
begins to flower and it becomes
extremely compelling because it's so
specific the relationships are so
specific and it's so ludicrous how could
it possibly be confirmed but you know
exactly what needs to be firmed because
it's defined by these relationships you
go and you and there it is and it's a
puzzle for the I mean we have proved
this a thousand times

Deb and I were having and we would have
these incredible experiences just the
things we look for once we can identify

what should be found well be found I
have one more little clip to show and
this was a science meeting in London
where Tony and I were speaking I was
talking on the electric universe and the
certain configuration or how to explain
the impossible I was followed by tony
peratt

on the origins of icons from antiquity
it was very refreshing to to to listen
to wall stock on the
universe and guess I play a role some
someone over role in establishing what
is called the defies me and verse
mention about the same thing a very
refreshing to see that uh feel that I've
worked in for gosh two-and-a-half
decades or so and right now I'm working
in something very closely related but it
is but it's different it's petroglyphs
okay it's not galaxies or rotation that
getting fields in galaxy switch which
websites are any number of publications
but it's carvings on rock by man in
prehistory now why why are these
important this is a picture that I took

on the Navajo Reservation and which is absolutely typical of Federalists that one will find around the world as I'm going to show petroglyphs have a definite orientation they also change in morphology and shape depending on the latitude that they're found on earth and this is typically visited about their six degrees latitude north so it's more and

99 but but perfectly typical around the earth and the duck shake hands up here everywhere it says it's well as these other symbols and I'm going to go into about why my first introduction to was by David Talbott I got with don't media missed by accident and learned something about what they were doing and then action action Vickers and and I looked at the pictures and I said where did you get these pictures because I what am I gonna do now

no leave it there thank you

[Applause]

[Music]

[Music]

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
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A newly discovered star has
astonished a team of scientists
who say that nothing at this moment
can explain what is happening.

The star is called pulsar,
which is a star that appears to pulse
with intense radio wave emissions.

However, the star in question switches
unpredictably between radio and X-ray emissions,
leaving astronomers
openly baffled.

According to lead
author Wim Hermsen,

"The people creating models will have to
rethink what we are discovering here...

When we look now to what is
so far published in papers,
nothing at this moment can
explain what is happening."

Why is this discovery so
astonishing to astronomers?

Pulsars were discovered
back in 1967,
they discovered that there was
this string of radio pulses
with a periodicity of 1.3 seconds coming
out of the constellation of Vulpecula.
So they didn't know what that was, they called
it pulsars and there was a big puzzlement
and about a year later the
famous astronomer Tommy Gold
postulated that the reason that
these pulses were being created
is that there was a
rapidly rotating star
acting very much like a
lighthouse rotating a light beam
and as it passed in the direction
of Earth, we'd see this blink,
we could see this
emission of radio waves
and then it would
go off for a while
while this star swung the rest
of the way around those 360°
and then blink, it would come
back again 1.3 seconds later.

And Gold was the one who postulated that
that star must be a rotating neutron star
because the darn thing was
spinning around so quickly,
imagine a star spinning and
making it once around in 1.3 seconds.

Now they've discovered this one, it
has two different modes of operation.

For a while it throws off pulses
of X-rays and then changes its mind
and then throws off pulses
of high-frequency radio
at very very different frequencies
in a very very different mechanism.

And so, they don't want to hear
about two different mechanisms
because there's only one mechanism,
the rotating 'whatsis' is up there.

The lighthouse analogy for the pulsars'
flashes is attractively simple
but because the flashes
themselves are so complex
there's been no way of
explaining them currently.

Now it is, when you look at it
from an electrical point of view,

the pulsar flashes have more in
common with the complex radio signals
induced in the ionosphere of the
Earth by powerful lightning
and this may be the key
to this particular pulsar
because lightning can
also generate X-rays.

Astronomers suggest that the pulsar's varying
between radio wave and X-ray emissions
may be caused by changes in
the star's magnetosphere.

This suggestion brings them closer to
the electrical theorists' interpretation.

I just looked up a copy
of Healy and Peratt's paper,
their paper on pulsars back
in 1995, it was called
'Radiation Properties of Pulsar Magnetospheres:
Observation, Theory and Experiment'.

Healy was at the VLA, the Very Large
Array of national radio astronomy
in Socorro, New Mexico
and Peratt, of course,
was at Los Alamos Lab
and they did a very in-depth study of

all of the known properties of pulsars.

If you stop and think about

Healy and Peratt's ideas,

if this is an electrical oscillation, there are

all sorts of circuits that man uses now

and (that) have been developed in electrical

engineering laboratories, that put out

different signals at different

frequencies and switch back and forth

between one mode of operation

and another mode of operation.

So it's (a) strong strong strong

suggestion that what we are observing

is an electrical oscillation that has a

couple of different modes of operation.

We see it in the lab everyday.

The Healy and Peratt model of the

pulsing signals from a star

doesn't require a rotating

object or the lighthouse effect.

What it says in effect is that there is a

discharge that occurs close to the star

which then travels along

the magnetic field lines

outwards from the star where it meets

a disk of matter surrounding the star.

Where it meets that
more dense matter disk,
there is a kind of short circuit (that)
occurs and the signal is reflected.
It's just like a transmission line
in electrical engineering theory.
And in fact, the signal does reverse phase
which is what you'd expect in that condition.
So in other words, it's a kind of
confirmation of their model, if you like.
Now this particular pulsar
is switching between radio,
strong radio signals and strong X-ray
signals, for reasons that are unknown.
It suggests to me that where the short
circuit occurs in this signal regime,
in a less dense atmosphere
you're getting radio signals,
radio pulses. In a
more dense atmosphere
it forms more like a lightning discharge
and X-rays are being generated.
So that would be my view
of this particular pulsar.
What Healy and Peratt have
done is to provide a model

which is amenable to experiment and to
verification on Earth in the laboratory;
as distinct from a model which
invokes an unknown form of matter,
a neutron star,
and an object rotating faster than
a dentist's drill in some cases.

It seems to me that until
we get the concepts right,
we will never get
a correct answer.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

[Music]

The world of science is in the midst of
an accelerated changing of paradigms.

What I mean by paradigm is a set of
metaphysical assumptions, or a worldview,
by which all subsequent observations and reasoning
are interpreted. Physics is what we think about.
Metaphysics is how we think about it.

For example, for the past two centuries,
scientists have assumed that the present is the key
to the past. Before that, they assumed that the past
was the key to the present. The assumptions
are a free choice; the consequences are not.

We're mostly unaware of the paradigms
that shape the way we think, and when
they change we become confused. We
begin to doubt values and ideas that
we've taken for granted. We begin
to recognize falsifying evidence.

We begin to consider alternative explanatory
ideas. Familiar relationships fall apart.

We no longer know what to think.

Metaphysics overshadows physics.

With the previous worldview in doubt, we
have few benchmarks to judge new ideas.

As with beginning to assemble a jigsaw

puzzle from a pile of pieces, we must
push pieces around to find what
fits. We need to play with them.

I'll use as an example the differences
between the Electric Universe - EU model
of cosmology, and the Standard Model.

The EU model assumes that electricity
and plasma ideas are the most
important for explanatory purposes.

The Standard Model assumes that gravity
and gas ideas are the most important.

Discussions of the differences between
the models often seem confused by lack
of clarity and how we think about the ideas.

Some of it seems to arise from imprecision
in the use of such words as observations,
data, evidence, facts, and theories.

People tend to use those words
interchangeably, but they can be applied
more carefully to mark distinctions in the process
of knowing. I think of observations as groups of
nerve activations, and data as strings of electrical
on-off signals without interpretation by some
theory. They are the immediate responses
of detectors, whether biological or
electronic, to stimuli. Noting the colors of a traffic

light and holiday lights, or the number a meter needle points to, are all observations.

Evidence is a group of observations or data selected to be relevant to a preconceived, but evolving idea of the phenomenon that's of interest.

Evidence is ambiguous; it can be relevant to several different phenomena and its meaning will be different with each one.

Observations of red light are relevant both to traffic signals and to holiday lights, but you won't get a ticket for not stopping at a Christmas tree.

Still, evidence isn't arbitrary; a light is red and not green.

A meter needle points to three, and not to eight.

Facts are evidence interpreted by a theory.

The theory provides the meaning.

For the theory of traffic signals, red means stop. With a theory of circuits, a meter reading of 3 means 3 Volts.

Evidence tells you that something is, theory tells you what something is.

Facts make sense of evidence. A

theory is a set of interrelated ideas that are constrained and shaped by facts,

but that also define and determine what facts are. Theories and facts are inter-related. Facts can't exist apart from the theory that they support, and it also gives them meaning.

This is what is meant by the phrase, 'facts are theory-laden'.

Conversely, theories are fact-laden.

These are not independent processes, but different emphases on a single, evolving process of making sense that's circular, iterative and reflexive. 'Making' is a creative act that involves imaginative interpretation; it's an intrinsic aspect. 'Making sense' is not simply seeing what's naively there. A successful 'making' results in a narrative or story that is coherent, consistent, and corresponds with the theory's interpretation of the selected evidence. These definitions are soft; they add clarity to the usual vagueness, but don't entirely eliminate it. Additional confusion arises from thinking that Electric Universe ideas are simply added on to accepted ideas, of what's called the Standard Model. This has been called the inertia of prior belief. Rather, EU ideas are founded on

different selections of observations and data - different evidence - and the different interpretations of evidence - different facts.

We observe lights. We select for our evidence the ones in the sky that appear to move around the Earth. We call them stars. Before Newton, the interpretation that made sense of this evidence was that the stars moved in perfect circles, in the perfect heavens by their intrinsic nature.

After Newton, the idea of gravitational force replaced that geometric idea.

With gravity, things have an intrinsic property of mass, whose nature is to attract other mass with an inverse square of the distance relationship.

With ideas of electrically active plasma, things have an inherent property of charge, whose nature is to attract opposite charge and to repel like charge, while inducing spin.

Mixing these ideas, is like mixing water and dirt - you get mud.

The EU model has a different cognitive framework from Newtonian and relativistic mechanics. We must unlearn

several assumptions that we usually take
for granted without being aware of them.

We presume that space is dark and empty,
or practically so. It's empty because
it's dark. We don't sense anything, so
there must not be anything there.

But now that scientists have invented
sensors that detect stimuli outside
our biologically limited ranges, radio,
infrared, ultraviolet, X-ray and gamma ray
telescopes and so on, we know that space
is full and bright. It's full of radiating plasma.

The inertia of prior belief leads us to think
that the few atoms and particles
in space behave as a familiar gas.

We take it for granted that mass and
velocity are the important parameters
and movements are determined by collisions.

But a century of experimentation with
plasma has shown that the primary
characteristics are electromagnetic -
Birkeland Currents, double layers, cell
formation, pinch effects, sorting of
constituents, multiple velocities,
evolving instabilities, electrically
versus thermally generated radiation.

We never question that the weak force of gravity dominates. But again, both lab experiments and observations in space have shown that plasma forces can be many orders of magnitude greater than those of gravity and gas. For example, the arms of spiral galaxies should show that the stars move more slowly with distance from the center if they are orbiting a central gravitating mass.

Doppler evidence shows them to have about the same velocity, as if the galaxy were being stirred from the edge.

One EU model speculation is that a galaxy is a transverse pinch in a giant intergalactic Birkeland Current with multiple filaments.

The filaments twist around the axis and their location around the periphery of the galaxy drives its rotation. It's more like an electric motor than a mechanical clock.

Marklund Convection builds up quasi-neutral plasma that spirals away from the peripheral filaments.

The increased ion and current densities push the plasma into glow mode and generate stars and secondary pinches.

Think of a ring galaxy with somewhat

evenly spaced hot spots, hydrogen-2 regions near the edge. The hot spots would be where the filaments cross the intergalactic pinch plane.

Keep in mind that this is a simplistic illustration for the purpose of contrasting an idea of electrically- driven, far from equilibrium resonant motion, with the unquestioned idea of inertial gravitational rotation at energy equilibrium.

Real galaxies are surely more complex.

We also take for granted that equilibrium conditions prevail, fully specifiable and represented mathematically with continuous functions.

In contrast, plasma conditions are often far from equilibrium and discontinuous.

An excess of energy flows through active plasma, and some of it is dissipated in the evolving instabilities and radiation.

Conditions are better represented by the mathematics of complexity, with discontinuities, bifurcations, resonance states and emergent orders.

The EU model is not the Standard Model of a four-dimensional non-linear geometry, relativity, or a differential calculus of continuous variables,

Newtonian mechanics and ideal gas theory.

It's not the hypothetical and
metaphorical abstractions of
mathematical model making. It's observed behavior,
putting the empirical back in empirical method.

And it's not a finished theory. Only a
handful of experimenters have been
looking into the nature of plasma for scarcely a
century and their investigations are also permeated
with the vagueness I'm describing.

The unconscious assumptions of familiar
gravity and gas thinking prejudice
everyone's judgment and often can only
be corrected over time by trial and error
processes. The EU model is a work in progress.

[Music]

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
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A recently released video clip
provides stunning support for the
Electric Universe interpretation of
one of the most dramatic atmospheric
phenomena on Earth --
above-clouds lightning.

On October 15th, 2019, a pilot
named Chris Holmes was flying
about 35,000 feet above the Gulf of
Mexico when he noticed multiple forms of
powerful electrical
discharge called sprites
and jets erupting
from a thunderhead.

The still image seen here is
a "gigantic jet", a towering form of
electrical discharge reaching all the
way to the ionosphere, which is now known
to sometimes occur above
powerful thunderstorms.

This exceedingly rare video clip

reveals the top of the cloud

from which the jet

emerged, affording a

groundbreaking opportunity for

insights into the phenomenon.

Investigator Oscar van der Velde,

of the Lightning Research

Group, split the video footage into

individual frames and described the

observed sequence for the

website spaceweather.com

He states, "First, relatively cool

blue filaments spring up. These are

streamers akin to St. Elmo's fire. Next,

after the jet reaches its maximum height,

another feature crawls

more slowly out of the

cloud top -- a white-hot

'lightning leader'."

The Space Weather article notes

why this is a surprise for

conventional meteorology, "For years, some

researchers thought that gigantic jets

could reach such extreme

heights only if their

streamers got a boost from

the lightning leader.

Holmes's video shows just the opposite:

the gigantic jet reaches the ionosphere

before the lightning leader

even leaves the cloud."

Oscar van der Velde concludes on the

images, "This suggests that there

may be a much more powerful electric

configuration inside the thunderstorm

than was previously thought--perhaps

as much as 200 million volts."

To understand the significance of these

insights for the Electric Universe

predictions and interpretations of

extreme above-clouds electrical

discharge, let us first consider a

surprising historical background on the

question of so-called lightning

in Earth's upper atmosphere.

Although numerous eyewitness accounts of

the phenomena including the testimony of

airline pilots trace back many decades,

it was only in the late 1980s that the

first photographic evidence was obtained of

an above-clouds discharge called a sprite.

However, as early as the 1920s, the

Scottish physicist C.T.R. Wilson predicted the existence of brief flashes of light above large thunderstorms.

A fundamental question that must be asked is, do scientists today really understand lightning?

As those who follow this series are aware, what we observe in nature, as well as recent scientific discoveries demonstrate that the answer is no.

These points are illustrated when we consider the research into lightning by Professor Edgar Bering of the University of Houston.

In 2001, when Bering flew a high-altitude balloon above a thunderstorm, he made the unexpected discovery that when lightning strikes occur both above and below the clouds, the electrical charge was already present and did not take time to build up between lightning strikes.

This contradicts the standard

notion that lightning is the generator
of the clear air
electric field measured
at about 100 volts per meter between
the Earth and a clear sky.

In standard theory, lightning's
generation of power requires
water droplets to
separate charge in
clouds, a process that
remains mysterious and unverified.

The Electric Universe theory,
however, sees lightning and the
cloud activity as a "load" that is being
driven by electric currents from the Sun.

It is the electrical
circuitry between the
Sun and the Earth that
drives all lightning.

And scientific research provides
support for the role
of the electric Sun-Earth
connection in lightning.

As we reported previously,
in 2014, scientists in the UK
discovered a dramatic increase in

lightning strikes for up to 40 days
after a major
solar storm.

Simply put, the reason the
aforementioned observation of
the gigantic jet is "surprising" is
that the electrical charge that created
the jet was already sitting at the cloud
tops, which is not surprising at all from
the Electric Universe
perspective.

As physicist Wal Thornhill
has proposed, the
highest clouds
essentially act like one
plate of a capacitor which responds to
the build-up of charge in the ionosphere
above, which is where the above-
clouds lightning terminates.

Thornhill explains, the
gigantic jets and other forms of
above-clouds electrical discharge are
electrical breakdown channels in the
Earth's "leaky
atmospheric capacitor."

The discharge channel of

Birkeland filaments narrows and forms the bright jets as it reaches into the more dense lower atmosphere.

On our planet, we benefit from having clouds to distribute lightning more widely than on other planets.

For instance, Venus does not have water clouds, yet the early Russian Venera space probes discovered evidence for Venusian lightning which is both vastly more frequent and powerful than Earthly lightning.

And on the planet Mars, where the rarefied atmosphere is about 1/2 of 1% as dense as Earth's, the clearest evidence for powerful lightning-like discharges is in its towering dust tornados and global dust storms which are electrically driven phenomena, and just as Earthly lightning appears to increase in direct response to increased solar activity, we now have evidence that dramatic dust-raising events on Mars may be linked to outbursts from the Sun.

For several years, scientists have

puzzled over dramatic dust plumes which occasionally erupt up to hundreds of kilometers above the surface of Mars.

As we reported in 2016, investigators studying data from the Mars Express spacecraft found that, immediately before the observation of a dramatic plume, the planet was hit by a powerful CME from the Sun.

As one investigator noted, "It's very surprising that was affecting Mars right before the plume was first observed."

So it seems that an understanding of high-energy electrical discharge phenomena on planets, including Earth, will demand a new understanding of the electrical nature of the Sun and of all stars.

It was well over a century ago that physicist Kristian Birkeland proposed that the earthly Aurorae were produced by electric currents from the Sun. Astronomers almost universally rejected the idea for many decades, until it was finally

confirmed by discovery.

Likewise, all forms of lightning, as well as the most powerful gigantic jets in our upper atmosphere, testify to the electrical circuitry that connects all celestial bodies in our solar system and indeed pervades the entire universe.

[Music]

Gareth Samuel is a science educator and frequent contributor to the Thunderbolts Project. He also produces an outstanding video series on Electric Universe Theory that aims at the very heart of science.

He chose the perfect title for his YouTube channel and you should check it out. It's called "See the Pattern".

If a repeating pattern emerges from nature we should recognize it as significant. To truly understand it, we should be able to explain its cause and effect and reproduce it. Seeing the pattern and discovering its cause and effect is what science is all about.

The proof is in recreating the pattern.

Not by subjectively programmed and data-fixed mathematical models, but by physical demonstration of the physics involved.

This essay presents a challenge for those with a knack for playing with electricity. I'm going to show you a pattern - call it the 'keystone pattern', because it's a pattern of key significance and its effect can be found in geology, so it's written in stone. It's

a pattern that results from electrical discharge. I'll show you this pattern and explain it in the best plain language I can, and then it'll be up to you to reproduce it. It shouldn't be hard, in fact it's been done before. You may know the pattern as the "crooked smile" if you followed the Electric Universe for several years. Michael Steinbacher and Billy Yelverton produced the pattern in the image shown. I believe it was Michael who called it the crooked smile. I'm giving it a new name, the keystone name, because the smile is only part of the pattern. Michael intuitively understood this pattern was the result of a multi-phase discharge. He was trying to reproduce the shape of Valles Marineris on Mars. He assumed correctly that by creating a discharge in Billy's laboratory with the proper setup, they could reproduce Valles Marineris and they did. Unfortunately they didn't explain their experimental setup so we'll have to guess. My guess is they laid a metal plate on a table to form one electrode. They covered the metal plate with

a dielectric plate, probably glass or plastic to add resistance and enhance the reactive power. Then they hung another electrode a few inches above the plate and covered the plate and sand. I believe they then took two leads from a three-phase power source, stepped into high voltage, and connected one lead to the plate and one lead to the hanging electrode, creating a point-to-plane electric field between two out-of-phase circuits. The pattern is caused by electrical induction currents spread out in the horizontal plane from the vertically oriented, multi-phase discharge between the electrodes. These type of induction currents are called 'reactive power' currents.

You can think of it like aiming a fire hose at the floor. The stream of water from the nozzle is an analogy for the vertical discharge current.

In terms of electricity, we call that 'real power' because it's going where we want it.

The water that splashes from the floor are 'reactive currents' or 'reactive power currents' in the case of electricity. There is splashing across the electrode plate.

The stream of water hitting the floor is

like electric current hitting resistance.

Reactive power is the energy of currents
that gets redirected by the resistance.

The splash pattern that reactive power makes is
peculiar and very specific to electromagnetism.

Unlike water that splashes away vectored
by kinetic energy and gravity, an
electric current generates moving electric and
magnetic fields that vector its reactive energy.

So it generates a repeating fractal pattern.

Reproducing in the lab is as compelling
as scientific evidence can get. It's
also compelling when you can find
it in nature. over and over again.

We're going to use it to identify
several electrical craters here on Earth,
and doing so dispel the silly notion
that Earth has been bombarded by asteroids and
comets. This image shows the keystone pattern
again. Only this time I've annotated
certain features over the Billy Yelverton/
Michael Steinbacher experiment.

The pattern occurs over the duration of
the discharge while it is in contact with
the ground and making a complete circuit.

Over time the voltage vector of reactive

power, shooting out from the focal point, rotates around the pattern like the second hand of a clock, pointing to all points on the compass. Only it sweeps around counterclockwise instead of clockwise. The current that follows this voltage vector lags behind it, like the minute hand of the clock chasing the second hand, but never catching up. At the same time, magnetic fields are pulsing outward in concentric waves from the focal point and inducing current to follow it. This sets up an interference pattern of positively and negatively charged regions around the circle formed by the induced currents, where the sand grains which also carry charge, are either attracted or repelled. It's much like a cymatic pattern created by a particular frequency of vibration. Only this is caused by induced out-of-phase currents, where the charge on the plate is the same as the sand. The sand is levitated away which is technically called 'sputtering'. And it's levitated to a region of opposite charge where it sticks to form a mountain. Within the image, the red cross represents primary reactive currents

that splash at particular vectors from the discharge focused at the center of the X. C is a filament of electrical induction or capacitive reactive current, and the one marked L is a filament of magnetic conduction reactive current. The green dashed circle that surrounds the formation represents stray capacitance generated in concentric rings around the focus of the discharge made by magnetic fields. These are rings of step potentials that are expressed as hills and valleys, mountains or crater rims in geologic formations. The blue lines shown are the crooked smile that portray induction currents that follow the electric or magnetic fields, or both. On the left-hand quadrant, formed by the red X, the electric field induction dominates, and the current flows straight to the encircling ring and makes a 90-degree turn to follow parallel to the ring, because the capacitor ring is a standing potential wave in the electric field. The quadrant on the right is the magnetic induction-dominated region, so

the current streams out perpendicular to magnetic field lines induced by the magnetic field. These lines intersect the green rings at 90 degrees. In the center through the top quadrant are bars of blue. The bars are unipolar winds that drag straight across the focal point of the discharge. They probably aren't truly unipolar winds; they're plasma winds, but they're heavily ionized and so they move extremely fast across the center of the discharge. They're probably the easiest feature to identify from reactive power currents.

The crooked smile is a fractal circuit pattern of capacitive and inductive eddy currents in these particular quadrants of reactive power.

The direction of current flow can go either way depending on polarity, so I don't usually show arrows in the diagrams. In the top and bottom quadrants formed by the red X are where reactive currents form updrafts and downdrafts. The yellow star shown in the top quadrant is a downdraft current and the pale green swirl in the bottom quadrant is an updraft.

These would be tornadoes and downbursts of plasma, wind and lightning.

They generally leave circular patterns of depressions

or hills. The next image shows the same features more fully annotated. Note how the right-side magnetic induction currents marked I_l , meet the encircling capacitance at 90 degrees, while on the left capacitive induction currents marked I_c bend 90 degrees to parallel the encircling capacitance. Note also that the upper half of the right and left quadrants are more inductive with tendrils crossing perpendicular to the encirclement, and the lower halves are more capacitive with parallel flows. The upper half also has currents flowing upward towards the top of the circle, whereas in the bottom half the current is parallel and flow downward towards the bottom of the circle. The difference is leading and lagging currents that are either following or leading the electric field. The left or capacitive quadrant will sometimes also develop z-shaped currents with current alternating its vector between magnetic and electric fields. The top and bottom quadrants produce up- and down-currents that circle the crux of the discharge in a ring- or toroidal current. The yellow star and green swirl are the face and footprint of this current.

For those interested in math and fractals, phasors are calculated with complex numbers. The complex numbers have a rational number of multipliers in the equations that apply to these top and bottom quadrants.

The action of eddy currents is better understood with the following gif illustration that portrays the magnetic flux generated by the discharging current.

The left hand side of this 'compare' image shows the field lines of magnetism created along the ground plane at 90 degrees to the discharge. The right-hand side has black lines indicating the path of induced reactive eddy currents that are created by this moving magnetic flux.

I first discovered the pattern while examining the Laramie mountains in Wyoming. The pattern can be a crater or a mountain, depending on polarity. I published two articles on these mountains last year.

It wasn't until this year that I recognized the pattern I found, was the same as Michael's crooked smile. The Laramie pattern was caused by a plasma mesocyclone with its central updraft representing the real power dis-

charge, the firehose current in other words;
a positive ion current, flowing up from
the ground into the storm. The ground was
negatively charged and so positive ionic
matter from the winds collected there by
static attraction, adhering to form the mountains.
The mountains retain the shape of the winds,
like a sand dune does, except for the influence
of electromagnetism that form the keystone pattern.
The pattern can be quantified and mapped
with something called a phasor diagram.
Phasors are 3D graphs of vectors.
For electrical circuits they're used to
determine the amplitude and direction of
energy flow or power at a given time.
In an alternating-current multiphase system there
are two or more waves out of phase with each other.
Phasors are used to determine the
resultant vector for the flow of power,
voltage, and current, when there are multiple
waves. Man-made circuits work fast when the
energy sent down the wires is
aimed straight and doesn't splash.
Although some reactive power is needed,
unwanted splashing is inefficient. It
shows up as heat loss, signal noise and

can even create plasma streamers from high voltage power connections. We manage this with physical things like insulation, capacitors, transformers and generators to control frequency and amplitude and maximize what is called the real power, the fire hose power, as opposed to the reactive power or splashing. Nature lets energy splash all over the place and it results in plasma winds, storms and tornadoes. It also results in rock and mountain formation. The next image you'll recognize is the Richat structure. The 'compare' image shows the basic keystone pattern features. The wind direction is verified, where possible, by the triangular faces of tetrahedral hills formed by supersonic shockwaves and rock dikes, that are not marked on this image, caused by wind and shockwaves. The Richat was created by a plasma tornado, spinning like a buzz saw, between two opposing jet streams. Tornadoes have a down-streaming core wind inside the spinning updraft. A tornado electrically is called a Marklund current, and

it has a central core downdraft of ionic wind.

That's why tornado genesis begins with a descending column of condensate meeting a rising swirl of dust.

It's a connection being made - a down coming leader meeting our upcoming riser from the ground, to complete a circuit of opposing positive and negative current flows.

The keystone pattern in the case of the Richat was caused by induction winds that hug the ground being fed by the pour downdraft that blew out beneath the up-drafting whirlwind. The next images show the wind pattern of the whirlwind, and the shock waves that resulted from the induction winds, crossing under the whirlwinds.

The winds cross orthogonally and leave cross-hatched shock features.

The Shoemaker crater in Australia provides another example of the keystone pattern. The crater doesn't show signs of rotation on the ground, like the Richat does, but the red cross of induced ground currents formed a rock dike that is fairly pronounced, as are wind pattern mountains at the green encircling ring of capacitance forming the crater rim.

Induction features can be either anodic or cathodic. If the ground is charged negative, and a windfall of positive ionic matter blows over, a mountain of adhering matter will form. If the negative ground is exposed to a ground-to-ground discharge it will sputter, or blast earth away and leave a depression. If the ground has positive matter in it, that will suck to the discharge, and fuse to form a rock dike. Examples of rock dikes formed by ground currents are shown in the next images.

Anode and cathode features will appear alternately, as current passes through the encircling rings of capacitance, making interference patterns in the hills and crater rims. If you're wondering, do you find these patterns on the moon? No. Lunar craters are from direct current - DC charges, because the moon is not alive with the geomagnetic field like Earth is. Earth is a multi-phase circuit and these patterns result from multi-phase, alternating current interactions.

There are several craters that exhibit the fast unipolar winds crossing the crater

rims caused by induction across the blue bar.

Here are three in the next collage of images.

The striations cross in each of these

images show that winds crossed right across

the center top of each of these craters.

No one crater exhibits every feature

perfectly. Some features are covered by

sand, water, farms and cities; some have eroded,

and some simply don't develop in every condition.

The patterns develop from reactive

currents in both the air and ground.

There is, however, pattern consistency,

when several features are evident in the

correct position with respect

to the quadrants of the phasor.

Here are several craters from around the

Earth most of them falsely attributed to

meteors. They are the result of a

discharge current flowing between Earth

and sky; all exhibit aspects of the keystone

pattern. Note the 'Q' in each ring. At roughly the

five o'clock position, each crater

exhibits a hook-shaped slash or other

anomaly through the ring. Of

course I've oriented the pictures so

they are consistent. But note that

there is also similarity in the pattern of
river channels connecting to the ring to either side
of the Q mark. So there is a quick and dirty way to
identify the keystone pattern. Just look
for the Q with a lightning bolt through it.

Truth is always holistic. We've been
trained to think our consciousness is
constrained to the brain. It's not.

[Music]

[Music]

While walking and talking with a friend who was
a mechanical engineer, he asked me, what is science?

Great question, which eventually led us to
talking about what is lacking in today's science.

I proposed that when an astronomer
looks at a beautiful nebula,
the first question should be what is the
function of that? But of course, that is not
the first question most astronomers ask. This is
the crux of why astronomy is currently broken.

Our first question should be, what function is
that serving? And yet that is never even asked.

Hence, modern astronomy can never
understand anything it is looking at.

With a surprised smile he said, give me an
example [of] cosmological things having a function.

I replied, did you know that the atmosphere
above our heads has seven or eight distinct
layers before it meets the magnetosphere?

And the magnetosphere itself has seven
or eight layers and structures which
complete the connection to the solar wind?

It takes all these layers and structures
to connect the solar wind to the Earth.

That is the function of those layers. If those

layers were not present, then the solar wind would crash into the surface of the Earth creating a mix of ceramic and molten glass.

These layers are not an accident. One of their purposes is to allow organic life to exist on Earth. The presence of plants and animals is a vital importance to the Earth, and hence to the solar system as a whole. To say that all of life on Earth is an accident, typifies how out of touch modern scientists are with reality.

I feel the need to say that again: to say that all of life on Earth is an accident, typifies how out-of-touch modern scientists are with reality.

Why would a planet have a magnetic body, and a plasma body, and a monoatomic body and a gaseous body? Why would the electric currents from the Sun go into and out of the poles of the Earth?

Answer. The energy of the Sun must be digested by the Earth. Outside our Earth is a world of almost inconceivable fire, rarified beyond our understanding, so energetic, most atoms cannot exist.

One must come down into the sphere of a planet before the electron and the proton can settle down enough, to come together into even the first molecules. And yet, here on the surface of the Earth, everything lives in a cool, wet world with

rain and wood, and ice, and fish, rivers and fields.

This is an enormous stepping down. This is a condensation, more extreme than liquid into ice.

The matter itself must be carefully brought, through stage after stage of cooling and solidifying. These functional layers are what is needed to convert the solar wind energy to be usable here on Earth. My engineering friend said, that's a very poetic way to describe things.

I thought about it and responded. Yes, but it's also the solution to an engineering problem.

Where else have we seen the union of engineering solutions with beauty? Oh, that's right. We see it everywhere here on Earth. Every butterfly wing, every spider web, every musical instrument, every flower, every perfectly tuned car engine, all built to solve a very practical problem and all beautiful. The Victorian idiot warmongers who have forfeited their sex and the Darwin school flunkies, have somehow convinced many of us that life is ugly and brutish and somehow makes sense, only if profits are kept up, and new territories are conquered. Nature always makes a profit, but not at the expense of itself, and somehow does it by maintaining a very high standard of beauty.

If our current scientists are not trained in

beauty, they will forever miss the mark. Tell me your explanation of things; if it lacks beauty, then I will know you are on the wrong track.

The Electric Universe position helps with all this. I am still at a bit of a loss how this is so.

In 2010 I came across Wal Thornhill's work on how supernovae make much more sense as an electrical phenomenon and that began my journey of seeing that including electricity in the models naturally paints the correct picture of a hierarchical universe.

Maybe it's because electricity naturally travels between larger and smaller worlds.

Maybe it's the other way around, and people who feel that we live in a living Universe are drawn to using electricity as a way of describing what they see. For too long the progress of contemporary science has been made absurdly slow because we have no idea what we're looking for. Whereas if we started with the idea that we live in a living Universe which is a structured hierarchy, and that energy and influence must travel from the larger worlds into the smaller, and then again be brought up from the smaller back up to the larger, well then the progress of science would go much faster. Instead of being surprised that our atmosphere has

layers, we would begin the research expecting such an arrangement. And we'd look for the role of electricity in maintaining these layers.

A colleague of mine sent me this link about the ACES II mission. Let's spend a little time looking at the mission. Here are some images of the flow of electric current around the solid, rocky Earth.

The electric and magnetic body of the Earth is quite complex.

It is important to change your thinking about what is the body of the Earth.

Because we all have received no training in how to use our five senses, we generally believe that the body of the Earth is only the rock below our feet.

But this is only a part of the body of the Earth.

Maybe we could call the rocky part the bones of the Earth. Around this solid core is a body just as complex and multi-layered as the rest of your body that surrounds your bones.

Plasma has an amazing ability to segregate to form walls, membranes, and tubes. The flow of electricity through this larger body of the Earth is just as segregated as the flow of blood in your veins.

The plasma flows only where it is supposed to.

And just like your arteries and veins, the plasma membranes are semi-permeable. The right things get

in, the right things get out. And still, the whole system is highly pressurized and self-contained. Long before the mammalian circulatory system came to be, the Earth had solved all the problems of a self-contained circulatory system with semi-permeable membranes. Only it did so in the realm of plasma, electricity and magnetism.

Getting back to the ACES II

Mission, look at this image.

The orange lines coming into and flowing away from the Earth are electric currents. The flows have an interesting double in-and-out structure. Energy comes from far away, and then it goes back into the magnetosphere, and then it returns, and then it is sent back into the solar system.

Most of this activity is along the sunrise and sunset lines.

if you pull back from the Earth, you will see that there is only one sunrise and sunset because the shadow of the Earth remains fixed, while it is the surface of the Earth that spins underneath that shadow. Along this shadow line electric currents flow both into and out of the Earth.

We don't know what happens to this current close to the Earth's surface, and this is the focus of the ACES II Mission: fly two [sounding rockets]

through this lower region and collect data.

While the mission is very exciting, it is

half a mission. It is half a mission because

it is not starting with the question

of what is the function of the aurora?

The aurora must transfer its energy to the

body of the Earth and must also translate the

digested energy back up into the solar current.

The circuit does not just come down willy-nilly,

make a right turn, and head back out to the

magnetosphere. End of story. The current is

coming down to interact with the Earth and

all that lives on the surface of the Earth.

This is like breathing; this is like digestion.

The Earth is receiving solar energy and the

Earth gives something back. This is physics, this

is engineering. It is also permeated with beauty.

Quite literally, solar energies enter into the

Earth at sunrise. We all, animals and the

plants and the lichen, all use this energy as we

live a day on this Earth. And when we lie down to

sleep, something is taken back up into the solar

wind current. The ACES II Mission needs to be

paired with measurements of the electric currents

and magnetic fields in the surface of the Earth.

The aurora and surface of the Earth might be

connected directly, like a flashlight current flowing through a filament. The solar current could flow directly into the body of the Earth, or the aurora might make a connection through induction, like an AC Transformer where vibrations in the input current are communicated to the receiving coil, but no electric charges flow from one to the other. My bet is that both induction and transfer of matter are happening. This is the sort of question that needs to guide missions of this kind. I've been looking for updates on the mission since its successful November 21st launch, but cannot find anything yet. Millennia ago, the word 'cosmos' was used to designate a living whole. All 'cosmoses' are built on the same blueprint, the only difference being the size and how physical laws manifest at that scale. You and I are each an example: citizen cosmoses that live in the larger cosmos of the Earth. Planets are an example: citizen cosmoses that live their life in the larger world of stars. Star is an example: a citizen cosmos of the larger beings we call galaxies. Going the other direction, every plant and animal on Earth is composed of cells which are built on this same blueprint. A cosmos is born and dies, eats and eliminates. A

cosmos has power to heal after injury or sickness.

Coming back to the very start of this lecture, a nebula in our galaxy is not a cosmos. At least I don't think so. The nebula is an integral part of a larger being or of an organ within our galaxy.

Yes, galaxies have organs that perform specific functions. Like this beauty. What's the standard explanation of this? Oh, just another random explosion crashing into pointless surrounding gases. What's a better explanation? This highly structured object is doing something.

Nature always links structure and function.

So, let's try to understand what it is doing.

The Electric Universe paradigm somehow brings all of this into better focus. Electricity and light as the finest matters we know, permeate all levels of the universe. Electricity and light can organize, and manifest, at all levels large and small.

And can travel between the large and the small.

By comparison, I would say for example that gravity plays a very small role in the world of cells.

If you believe that nothing in the universe is alive, that is a belief, not science. You have done precisely zero experiments to test your belief. If you believe that stars are not conceived and born, that is based upon precisely zero experimental

evidence. If you believe that love and yearning are not powerful forces for stars and galaxies and cells, okay, that is a belief. If you call yourself a scientist, it is time to grow up and admit that these are beliefs based upon, you know not what.

Perhaps you no longer trust your feelings and trust only your instruments, made of metal and glass. An instrument made of metal and glass is not alive, and hence can only measure other things that are not alive. A living being can only be sensed by another living being.

One of us looks out and sees a dead universe, the other sees a living universe.

Those who study the dead are always surprised by the new findings, while those who study the living often have an inkling of what we would find.

[Music]

From Cosmic Currents

to the Electric Sun

No pressure!

What I want to do, and I'd like to thank

Michael Clarage for his introductory talk.

I thought

that was brilliant.

What I wanted to do here is to talk about

the problem of trying to figure out

how we connect an electric

Sun to cosmic currents.

And just to talk initially about

the Electric Universe itself,

I came across this quote from

Science on the 16th of November.

"The most important characteristic

of a paradigm is its fruitfulness."

And I think Michael has pointed out the

fruitfulness of the Electric Universe paradigm.

There's a couple of things I just

like to read from that article,

which I think are

very appropriate.

It says, in the midst of a revolution,

what counts as good evidence

and reason in a discipline, are

themselves open to dispute.

Important terms or concepts

change their meaning

or even cease to be meaningful

in the new paradigm.

Modern science isn't

fruitful, it's dogmatic.

It generates no new insights and

it produces no new outcomes,

no new ways of

generating evidence.

Science in Kuhn's image, must be

productive or its paradigm must change.

And that is the thing that's been driving

me ever since I began this journey.

So the question is what

makes the Sun shine?

And this has been thrown

into sharp relief.

Just recently with this

article published in Science,

I think it was.

And a couple of quotes there:

"Convective velocities",

that is the convection region of the

Sun, just beneath the photosphere,

"are 20 to 100 times weaker than
current theoretical estimates..."

That essentially means that the theory
of how the Sun works is incorrect
because somehow or another, the Sun is
supposed to get the intense radiation
from the center, from the core
out to the surface to give us the
heat and light that we observe.

And what we've found now is that
one of the key links in that
transfer of energy is missing.

Of course, this prompts
the question:

What actually does transport the heat
flux of the solar luminosity outwards?

But a better question is:

"does Sun shine come
from within the Sun?"

And the Electric Universe has said
from the beginning that it doesn't.

And this I think, is some
confirmatory evidence.

If we look at star birth,
as I said yesterday,
star birth is a gravitational

accident in the Big Bang cosmology.

But this is a quote from over

30 years ago, from Hannes Alfvén,

"There is a general belief that stars

are forming by gravitational collapse;

in spite of vigorous efforts

no one has yet found

any observational

indication of confirmation.

Thus the 'generally accepted'

theory of stellar formation

may be one of a hundred

unsupported dogmas

which constitute a large part of

present-day astrophysics."

Now, the reason for

introducing this is that

if we're going to look at how

a star connects to the galaxy,

one of the bits of evidence

we can look at is star birth.

What actually goes on?

And this is what the infrared

telescopes have been telling us

that stars are formed along

cosmic current filaments

Of course, the reports don't talk about electric current, they just talk about the filaments.

This is a network of 27

star-forming filaments

derived from the

Herschel observatory.

They're numbered there because in the

original report they were very interested

in the fact that the filaments are huge,

stretching for tens of light-years,

and regardless of their length or density,

the filament, the width is always the same.

And what is that

reminiscent of?

A lightning bolt!

The lightning bolt stretches

from the clouds to the ground

and its width remains roughly the

same over that entire distance.

So what we're looking at in effect is

a form of cloud to cloud lightning.

What's more, the stars within

these filaments flicker!

Now, the gravitational model

doesn't allow for that

because for it to flicker requires

material to be added to the star
repeatedly and very quickly.

So astronomers were
surprised to see
the brightness of young objects
varying by more than 20%
over just these few weeks,
since the accretion process
should take years or
even centuries...

But of course, we all know how
electric lights can flicker.

Lightning itself can flicker.

The quote of course is:

"Yet again, Herschel
observations surprise us."

This is a very recent image
which shows a bipolar nebula.

It's described as a newborn
star which is rather odd
because most of the bipolar,
in fact all of the bipolar
nebulae that I've seen so far,
have referred to them as dying
stars ejecting material.

But here we have one that's

supposed to be being born.

So there seems to be

some confusion here.

Also it says there are hundreds of

low-mass brown dwarfs in that cloud

and this provides us

with some ideas about

how stars are born,

where they're born

and also the chances of capture

a brown dwarf by bright stars

which impinges of course

on the Saturn story.

The red dust at the center is thought

to produce the hourglass shape.

This is the mantra that's used

in all of these bipolar nebulas

that it has to have a disk of matter

right at the center of that hourglass

which somehow causes the

material ejected from the star

to take these particular

shapes, the hourglass shape.

This is another visible

stellar circuit.

This of course is supposed

to be a dying star.

It's an hourglass shape and it
has an odd-looking focus there.

It's 8,000 light-years distant.

Remember that example

I gave yesterday

where if the Earth's orbit was two inches
across and the Sun was a speck of dust,
that you could measure the
distances of stars by miles.

So that'll be 8,000 miles
away, there's a speck of dust
which has this particular
interesting shape.

Here it says, the hourglass shape is produced
by the expansion of a fast stellar wind
within a slowly expanding cloud which is
denser near its equator than at its poles.

Now these are all very
special conditions.

How and why are these
conditions established?

There was no real explanation
of these objects.

And the formation of the shape of the
inner "eye" is not yet fully understood.

It's interesting
they call it an eye
because that was a very
powerful reference in mythology
to some of the things that were witnessed
in the electrical events in prehistory.

This is another visible
stellar circuit.

This one is 2,100 miles
away as a speck of dust,
if you would like to
look at it in that way
to give you some perspective.

This particular nebula represents
the spectacular 'last gasp'
of a binary star system
at the nebula center.

You notice they're 'dying stars'.
In the Electric Universe, the age
or the life and death of the star
is not measured at
all in this way.

Astronomers theorize that
the gravity of one star
pulls some of the gas from
the surface of the other

and flings it into a thin, dense
disc extending into space.

This magic that gravity
is asked to perform,
can in no way explain all of the
detailed parts of this nebula.

You'll notice that
it's coaxial too.

There's an outer cone and
then there's an inner one
and then there's these strange
bright objects here, here and here.

None of these are explained
by this particular model.

And yet we have a
quote like this,

"Such a disk and successfully account for
the jet-exhaust-like appearance of M2-9."

I don't think so.

Here's another visible stellar circuit
and this one is really stunning.

In fact, Peter Tuthill from

Sydney University said,

"The thing that really takes your breath
away is the astonishing degree of symmetry
within the intricate

linear form."

Now, I'm not sure whether you can see it all
that well with the light on the screen
but you can see these
descriptions here,
the rungs here, there's rungs
and there's thin filaments
radiating from this central point.

What I've done here is
put my little addition.

I'm calling these Birkeland
current filaments
and I'm calling these rungs here
across those filaments, double layers.
Because double layers are regions in
plasma where particles are accelerated
and you tend to get
a glow as a result.

And you can have
multiple double layers
when the plasma is changing in
density as you move towards the star.

So you see here's one that's
quite bright, that rung there.

"A series of rungs and
conical surfaces lie nested,

one within the next, down
to the heart of the system,
where the hyperbolic bicone
surfaces are crossed
by a dark lane running
across the principal axis."

And of course, this is usually referred
to as your disk of dust and so on,
which produces this shape.

But this is so intricate
and beautiful
that it cannot be formed by an explosion
of gas and dust and that kind of thing.

But, it does have all the characteristics
of an electrical pinch discharge.

"It is fascinating to
take a second look
at one of the most famous astronomical
images of them all: SN1987A."

Now, this particular supernova
is important in my life
because I had a peer-reviewed paper
published on an electrical explanation
of SN1987A in the IEEE
Plasma Sciences journal.

With the help of Tony Peratt

who also had several
other papers published,
including one on the formation
of Martian blueberries and so on
in an electrical discharge
in that same issue.

So for me, that was a milestone.

To get peer-reviewed papers
published on the Electric Universe
is extremely difficult
as you might imagine.

This object is the 'Red
Square' as it's called.

It's 34 times closer than the supernovae
so you can see far more detail.

It was described as "...the best
astrophysical laboratory yet [discovered]
for studying the physics of
generating the mysterious sharp polar-
ring systems like that around SN1987A."

"...a system as complex
and fascinating as this
is bound to keep us guessing
for years to come."

Well as soon as I saw this,
I published my explanation.

And since then I've heard
nothing from the experts
but it's sitting there,
waiting for their discovery.

This is the supernova I referred to and
here I'm only showing the central ring.

The important thing about this diagram
is that it gives you some impression
of the complexity of what goes
on in these plasma discharges.

For instance, this is the neck.

If you consider, right at the very apex of
those hyperbolic curves sits this pinch.

And this is from Tony Peratt,
this particular diagram.

And as it pinches down, it forms
these particle beam columns
right in the center of
this, sort of purplish spot,

there is a central column but then
it's surrounded by a ring of filaments
and they take on
characteristic numbers.

Now around Supernova 1987A,
this is where the actual object,
where the object

was that exploded,
you have this ring
of bright spots.

There are three coaxial
rings. There was one up here
and this is symmetrical, so down here
you've got the same kind of feature,
and there was a third
ring down here.

But they're all coaxial,
which is significant
because it, more or less, says
that this is what was going on.

It was sitting at the centre
of a plasma z-pinch discharge.

I predicted at the time
that these bright spots
would not behave as if there was a
shock-wave racing out from the star.

I also said that they
should appear to rotate
and that they will
flicker in brightness.

So far I haven't seen, I haven't
followed up to check just to see
but all of these predictions are sitting

there, waiting to be confirmed.

What happened next was that

we found around the Sun,

in the Sun's

interstellar interface,

the IBEX mission discovered that there are

energetic neutral atoms, called ENA's,

which were arriving in the Solar System

and they took on this ring shape.

What's more, they

had bright spots,

these yellow and red spots.

So we have around the

Sun, in plasma dark mode,

because they're not

visibly bright,

this same ring and it's also set

perpendicular to the local magnetic field.

So all of these things

fit the electrical model.

But it raises the question then,

how does this connect to the

Sun, how does it power it?

This is what I wrote

back in 2005:

"The solar plasma and that of interstellar

space are two different plasmas
which must therefore have a "double layer"
or Langmuir plasma sheath between them.

So to treat the heliospheric boundary
simply as a magnetohydrodynamic..."

it's a hell of a word

"...shock problem..."

it just means a magnetized fluid,
and like something plowing through water
or an aircraft plowing through the air

"...is naive."

it's not what we will find.

And of course, since that date the
evidence has been piling up in favor
of the fact that it is not
a hydrodynamic shock.

In fact it was said that there
is no shock, just recently.

Also, this is just describing
in terms of my diagram,
that I used back then,
what's going on.

This is the Sun, this is your speck
of dust, around it is the heliosphere
which, remember I said, if the Sun is a
speck of dust this is 20 feet wide.

The solar wind comes out and
it goes, it continues on,
it continues on out to these
Birkeland current filaments.

This is the looking at a
cross-section through that cylinder.

That supernova
cylinder if you like.

So here's one of these particle
beams coming down here.

It meets the solar wind, it neutralizes
some of the ions coming from the Sun
and those that are happened to be
moving in a way towards the heliosphere
will come back in and be
registered by the IBEX mission.

So this is what the IBEX mission
found, is these things here.

And even more recently,
as I said, the Sun's Z-pinch is aligned
with the local galactic magnetic field
which is what the
IBEX mission found.

The ENA's come from solar wind ions
meeting the Z-pinch current cylinder
and then returning back

into the Solar System.

And also up here we have the possibility
of double layers in this central column
and evidence for these particle-
accelerating double layers is arriving.

Remember in the 'Red Square'
image, I showed you those rungs.

It's this kind of thing
that forms the rung.

So that if there are some out here, you
would also see this rung across this pinch.

And just very recently,
December the 4th 2012,

the Voyager 1
crossed a boundary.

Now the expectation was that when
Voyager 1 crossed this boundary,
these magnetic field lines would,
all those particles and so on,
would be blown aside by
this headwind if you like,
and travel around the
heliosphere like that.

Instead of that, what they found
is that the particles suddenly,
they keep going, the magnetic

field keeps going out this way.

Which is what I said on the other diagram, they continue on.

What's more, the particles seem to be accelerated here.

There are no slow solar wind particles beyond this spot and that is also expected on that electrical model.

The quote here is of course "...the new region isn't what we expected, but we've come to expect the unexpected from Voyager."

Here is an active stellar circuit

and Michael Clarage also showed you this object, this is the Crab Nebula.

This object, which shows you the complex activity around this star.

It's supposed to be a neutron star with a period of 33 milliseconds, which means it's spinning extremely fast.

But you'll notice some of the things that are going on here,

which I'll show you in
more detail in a moment.

These are called wisps
and these are hotspots
and this is the central object.

But this thing here
is of interest.

Because just recently, it's been found
to be the source of intense gamma rays.

They are only discovered
because, by accident,
because they only
occur for a day or so
and you have to be looking at the object
just at the right time to pick it up.

Now before I show you that close up, I'm
going to talk about the plasma focus.

The plasma focus is a
very simple device
but it also is capable of producing the most
concentrated form of electromagnetic energy
and also the most concentrated source
of neutrons and high-energy particles.

In a beam, you'll notice, in a jet!

All you've got is two
different conductors,

an outer electrode,

an inner electrode.

And if you discharge this capacitor
bank which stores electrical energy,

across this switch between

these two electrodes,

what happens is that a discharge
moves down the barrel,

comes out here, balloons

around, comes back in here

and forms a particular

kind of plasma instability

which is called a plasmoid.

And that is the most concentrated
form of electromagnetic energy.

The plasmoid then breaks down and fires
a beam of particles out this way
and back that way.

Then, this direction is not shown because
the plasma gun, this is always closed off.

But in space, you'll get two
jets in different directions.

This one is negatively charged,
this one's positively charged.

So you get this beam of
X-rays and particles.

And of course, if the energy is
sufficient you will get gamma rays.

Now I'll run this
little animation.

So, you'll notice there that one of
the forms of plasma instability
is the corkscrew shape or
a whirlwind or a tornado.

Because we'll come to
that again in a moment.

So we've come back to the
heart of the Crab Nebula.

From this object in
this anvil feature,
powerful gamma rays were coming.

Now this is some distance from
this pulsar, which is here,
but this, in the Electric Universe terms, is part
of the circuit to the star, along this axis.

You'll notice, it has a shape which might
appeal to the plasma mythologists amongst us.

It has kind of upraised arms
and then this strange shape.

Now amongst the petroglyphs
you'll find that;

I'll just get the

rest of this up here...

The shape of the anvil feature is
typical of a plasma instability
or plasma focus effect,
but it can take on shapes
with, like a, duck's head.

Now there are many
petroglyphs around the world,
which have this strange-headed
creature with the arms upraised.

It's a plasma instability!

And the other thing is that that is where
that plasmoid exists, right there.

So the burst of gamma rays is completely
explained in terms of a plasma gun effect
focused on this

half of this pulsar,

(they) want us to call it a pulsar,

it's actually a normal body,

there's no such thing

as a neutron star.

But this circuit is driving

this star to such an extent

that the entire surroundings is lit

up and is in motion, rapid motion.

As I said, it's reminiscent of the

prehistoric petroglyph figures

with a 'duck's head'

atop upraised 'arms'.

Now this is another visible stellar circuit

and you see here the hyperbolic cones.

The star is in here.

And here's its counterpart, the

other half of the bipolar shape.

This one is, if you like, 450

miles away from the Sun,

in terms of that model I

talked about last night.

Now, all of these circuits have to

somehow tie up with the Sun circuit.

And this is the Sun circuit.

This was actually drawn, many

years ago, by Hannes Alfvén.

Only he considered the Sun, at

the center here, as the driver.

We're suggesting that no, the Sun is

actually being driven by this circuit here.

So the puzzle now

is to figure out

what is the connection between

this powerful circuit and the Sun,

which is sitting in this tiny little

heliosphere in the centre of it all.

And we have to couple it to this circuit.

Now, I've taken on this project

in collaboration with Don Scott

who made many...

many of you have probably read

his book The Electric Sky.

Now I think, this is one of

the most interesting and

puzzling things that I've had

to work on for many years

and we hope to be able to

present at the next conference,

our version of what

this circuit looks like.

Because if we can do this, we

can look at the questions of

what causes the solar cycle,

the 11-year solar cycle.

We can look at the possibility

of using radio telescopes

on that, which can

trace these circuits

to deduce and forecast what may

happen over the longer term.

All of these things I

think, would be of benefit

and only available from the

Electric Universe model.

It's interesting. In all

of the work I've done,

one of the most fruitful things to do is to

go back in time and look at the Pioneers.

And also look at the

arguments that went on

when certain things were accepted,

like Einstein's theories.

And if you read the articles

before Einstein was accepted,

there were some brilliant papers

describing the flaws in Einstein's work.

But there comes a point, a

tipping point I suppose,

when Einstein was accepted and

all of these arguments are lost.

Students never see them and I think

this is a great failing of education.

This chap here, amazingly, Sir

William Huggins said in 1885,

"The grandest displays of terrestrial

electrical disturbances must be altogether

insignificant in comparison

with the electrical changes
which must accompany the ceaseless and
fearful activity of the photosphere...

Surely it is not too much to say that
our terrestrial experience of lightning
and of aurorae fails to supply
us with any adequate basis
for a true conception of the electric
force in action on the Sun."

So the idea that the Sun was an electrical
body was a possibility in the 19th century
but we lost it in the
20th, unfortunately.

Recently there was a discovery, a
paper published about tornados
existing in the chromosphere,
between the corona up here,
and the photosphere, down here on the Sun.

Now remember, I talked about
the plasma instability
which creates the corkscrew
motion or the tornadic motion.

This is an example of an electrical
connection between the Sun
at the photosphere,
and the corona.

In other words, this is one
of the circuit elements.

It's estimated, there are more than 10,000 of
them continuously present in the quiet Sun.

Surface and coronal
vortices are connected.

They talk about
coronal vortices here
so I will come on to the
subject of sunspots.

And what of these
granulations on the Sun.

Once again, if we go back in time
and look at Kristian Birkeland
at the turn of the century, of
the end of the 19th century,
he said "...it might be imagined
that the interior of the Sun
formed the positive pole for
enormous electric currents."

This fellow never ceases to
amaze me when I read his works.

"...[this] assumption has the advantages
of appearing to give a natural explanation
for the movement of the
sunspots in various latitudes."

In other words, the
solar sunspot cycle.

"In this case, the origin of the sunspot
must be that the presumptive, more or less
insulating photospheric envelope was
sometimes pierced by disruptive discharges,
thus forming great
electric arcs."

Now it was discovered in the Space Age of
course, that the Sun is surrounded by
a plasma ring, a
plasma doughnut.

That's seen from the
pole looking down on it,
this is looking at
the equatorial region.

So the plasma doughnut is
an energy storage ring
which can, when it becomes
unstable, discharge to the Sun.

And that, I suggest, is
the origin of sunspots.

And this is looking
down into a sunspot.

This is penumbra, this is the
outer region of the sunspot,

look like turbulent

boiling hot jets or hot gas.

And of course, this comes back to that paper I showed you right at the beginning, which says, there is no or virtually no detectable convection occurring on the Sun.

Why is the sunspot dark if the Sun is hotter beneath?

The simplest answer is that the Sun is thousands of degrees cooler below!

Penumbral filaments are glowing plasma tornadoes.

So this is the counterpart of the tornado in the chromosphere.

This is going deeper into the Sun.

This is a bit like on Earth where you see at the top of the diffuse elves, which can be 80 km or more wide, then you come down to the jets and the blue jets and so on and sprites which are much thinner, and then you come down to lightning which is thinner still.

This is the same kind of effect.

They have bright edges, dark

cores and a rotary motion.

Inset there is a fuel fire with a
helicopter engine above to create the vortex
and you can see how it has
bright edges and a dark core.

And up here you can see
these filaments on the Sun,
bright edges and a dark core.

And bright 'lightning' flecks their tightly
packed 'granular' tops and the descending bases.
It's like a descending tornado.

The funnel of a tornado.

In the actual sunspot
itself, in the darkest part,
we see the tops of
even thinner filaments.

And the tops of those are actually
hotter than the surface of the Sun.

This is a diagram, I
won't go into it here.

It can be read both in Don Scott's book
and on my website and his website.

It shows how the Sun regulates the
current flowing through the photosphere
to give us steady
heat and light.

This is one of those amazing things
where nature seems to have worked out
the simple way of doing
things. The same as we have
with transistors to
control electric current.

The spicules, these jets between the granules
on the Sun of course, are unexplained
in the standard model but they're
necessary in the electrical model
to provide the charge carriers for
the double layers (in) above the Sun.

This is the electric Sun. This can be seen
in the online book of the Sun Electric.

And in that model the
Sun has a core here,
a very extensive atmosphere and then
all of the photosphere out here
is like a global lightning storm
or electric tornado storm.

If you like to look it that way.
And the energy flow is inwards
and not outwards.

The corona is a familiar glow discharge
phenomenon recognized by high-voltage engineers.

So, like the lights of a great city at

night, stars are lit at great distances

from where their power

is being generated.

Each star is the focus of an electromagnetic

'pinch' in the galactic current stream.

The details of which

have to be worked out.

And I suggest, the Sun sets

on 20th century science.

The data that's coming back from

all of the marvelous spacecraft

that are focused on the Sun

watching it in stereo,

watching it in all different parts

of the electromagnetic spectrum,

and it's all showing that the Sun is not

understood in terms of the Standard Model.

Thunderbolts.info

You've just entered the
theater of an alien sky.
If the words and images seem strange
to you, there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you,
and there is nothing to fear.

The Myth of the World Mountain

Any systematic investigation
of ancient myths and symbols
will lead inescapably to the
mysteries of the world mountain,
the cosmic mountain, the
mountain of the gods,
remembered by every culture on earth and
memorialized through thousands of sacred
mountains, pillars, and
symbolic poles and posts,
all appearing as symbols
of an alien sky.

Our early ancestors revered the towering
column as the visual axle of the cosmos,
reaching upward from Earth's
horizon to the center
of heaven around which this

starry dome visually turn.

No ancient culture was free from

the memory of the world mountain:

the Golden Mountain, Silver Mountain, White

Mountain, the mountain of fire and light.

called also the world's

highest mountain.

Here the gods themselves

gathered upon the summit,

giving the great column its name

as the Mount of Congregation.

Nations the world over identified this

divine habitation with the "first time,"

the "best time," the "ideal time,"

meaning of course the lost paradise,

the mythic homeland of the gods before

they departed for more distant realms.

In fact, every ancient

nation on earth

assimilated at its own history

to that of the world mountain.

The point was stated

emphatically by Mircea Eliade

"The world mountain always signified the

'point where creation had its beginning' ".

And so the early cultures

declared with one voice,

"We came from that place. the cosmic center,
the place of the divine ancestors."

And accordingly, all ancient
rites of sacred construction,
of kingship and royal marriage,
of sacrifice and holy war
always direct our attention back to the
same location, the place par excellence.

In every culture whatever
the imaginative form,
the mount connected heaven and
Earth as a pillar or ladder
or spiralling stairway from the world
below to the divine habitation above.

And it was much more than
that as we shall see.

In ancient Egyptian myths, this
was where the primeval sun god,
the wandering Atum or Ra, found
his stable resting place.

This stationary spot in the sky was the
apex of a mountain of fire and light,
wind and water, the pillar
in support of the sky.

The Egyptians called it Akhet,

the "Mountain of Fire and Light."

Of the creator Atum the

Coffin Texts say:

"The Great God lives Fixed in the
middle of the sky Upon his support"

Throughout all of ancient Egypt
priests identified every holy site
as the summit of the
cosmic mountain or pillar.

The priests of Karnak symbolically
located their temple on

"The Venerable Hill of
Primeval Beginning."

The priests of the Edfu
Temple recalled

"...the First Occasion in the High Hill at
the Beginning of Coming Into Existence."

In the language of the ancient cultures,
such phrasing meant the first appearance
of the cosmic city or temple or kingdom, the
model for sacred construction on Earth.

This remarkable idea was already in place
at the birth of Egyptian civilization.

The oldest texts in Egypt,
the Pyramid Texts,
speak of the primeval hill of the

land in the midst of the sea,
the cosmic waters whose hand
no earthlings have grasped.

Through images and texts, the Egyptians personified
the heaven-reaching pillar as the god Shu,
remembered as both a cosmic column and
the support at the divine habitation.

And it was more, the
Egyptians also described Shu
as a luminous etheric column
of wind water and fire
rising from below to vivify
the dwelling of the Gods.

In ancient Mesopotamia,
the priestly traditions
described the god Enlil
as the pillar of the sky,
naming the god as the Great Mountain,
stretching between heaven and Earth.

Exactly in the fashion of
the Egyptian Shu,
Enlil signified a visible etheric
"wind" joining the two worlds.

This is not something disputed. Though,
of course, a column of "air" or "wind"
functioning as a pillar will always

appear as a conceptual absurdity
but only until we meet the
archetype in its own terms.

The cosmic mountain and its
diverse mythic content
always suggests a progressively
evolving dwelling of the gods
resting upon the cosmic column.

With the passing of
the myth-making epoch,
the absence of this original referent
in the sky changed everything.

It guaranteed a rapid
loss of the original idea,
leaving only the local symbols to
reflect the first form, the prototype.

So when searching for
the lost paradise,
we have only a mountain that
is no longer there to guide us,
all complicated by a thousand
local hills named after
or pretending to be
the cosmic original.

It didn't take long before the world
mountain was everywhere and nowhere.

The theme needs to be
followed back to its origins.

Where was the revered Hindu Mount
Meru around which the stars revolved?

Or the Persian Haraberezaiti identified
as the tallest mountain and world axis?

Or the Japanese world
mountain Shumi or Sumeru,
called the center around which
the heavenly bodies revolved?

Or the Chinese holy mountain Kwenlun,
the axis of the celestial revolutions?

Or the Mexican Colhuacan,
whose summit the priestly astronomers
identified as the celestial pole?

What assures us of an original global
tradition is the consistent role
of the cosmic mountain as both world
axis and stable support of the sky.

The cosmic center and the apex of the world
mountain meant exactly the same thing,
to which we must add the identification
with the exemplary site of creation itself,
the birthplace of the
primeval paradise.

Traced to its origins, all

of the imagery is cosmic.

The events occurred in the sky and were always
filtered through myth-making imagination.

They did not occur down
here where we live.

The greatest mistake we could make it to ask the
local geography to explain the original idea.

No terrestrial hill gave Olympus

its name Aegus, meaning the "axle"

nor did the Hebrews name Zion as the site
of creation by some accident of geography.

Upon the summit of Zion, the creator

fashioned the city of heaven,

the temple of heaven, or

the kingdom of heaven.

The original referent was the cosmic
center and summit where creation began.

The themes are global, and they belong
to the core of world myths and symbols.

This memory held humanity in its
grip for thousands of years.

And nothing could add greater
confusion than attempts to explain
the symbolism of a sacred mountain
by attributes of local geography.

The archetype always

precedes the local symbol.

All that a regional hill could ever
provide was a symbolic pointer back
to the original cosmic
mountain of the gods.

In fact, the symbolic echoes
were far too numerous
to be blended into one story
by later chroniclers.

Long ago the best students of
comparative symbolism recognized
the linkage of the

Hebrew mount Zion
to a similar memory shared
with their Canaanite neighbors
of Mount Zaphon in the
farthest reaches of the north.

Of course, in modern times the
ideas can only appear ludicrous.

But it's the cross cultural integrity
that substantiates a global experience
beneath the chaos of
local myths and symbols.

The axial supportive and heaven
reaching role of the world mountain
was its defining character, always attached

to the land of the gods themselves.

But always keep in mind that human imagination
in the presence of this celestial column
would see much more
than just a mountain.

The archetypal form naturally inspired
multiple myths and interpretations.

By symbolic extension, thousands of local
prominences and man-made artifacts
received their mythic content from the
human memory of the cosmic mountain.
In the shadow of a grand mythic tradition,
monumental construction was always commemorative.

That's the core meaning
of the word "monument,"
a word receiving its original significance
from the collective nostalgia
for things formerly seen in
the sky but no longer present.

By their devotion to sacred
construction, humans on Earth
strove to maintain a symbolic
connection to the gods,
always painfully aware that the
original connection was broken
by heaven-altering catastrophe.

Nothing weighed more heavily and powerfully on
human minds than the nostalgia for Paradise,
always mixed with a collective anxiety, the
fear of doomsday, the great catastrophe
which brought the paradisaal
epoch to its violent conclusion.

Every collective memory of the cosmic
mountain directs us back to the time
before the sky fell, before the
gods departed for remote realms,
before, in the most reliable
astronomical traditions,
the great gods departed to
become the now distant planets.

This memory held humanity in its
grip for thousands of years.

And nothing could add greater
confusion than attempts to explain
the symbolism of sacred mountains and
pillars by attributes of local geography.

The archetype always
precedes the local symbol.

All that a regional Hill could ever
provide was a symbolic pointer back
to the original cosmic
mountain of the gods.

In fact, the symbolic echoes
were far too numerous
to be blended into one
story by later chroniclers.

Of course, the disparities in local
traditions would spawn regional competition
and a growing confusion between the archetype
and the local symbol reflecting it.

Many scholars have
already noted that
Zion and Zaphon merged as
pointers back to a single archetype,
and that fact should always take
precedence in comparative investigation.

We know that the Greeks identified
several local hills as Olympus
just as the Hindus named
more than one mountain
and innumerable man-made replicas
after their cosmic mountain Meru.

The Greek sacred mountain
Ida in present-day Turkey
had its counterpart in a Cretan
mount of the same name.

And that's just one illustration of a
vast pattern of symbolic replication.

But today, as is the case
with all archetypal forms,
both the land of the gods and the
towering column of fire and light
upon which it stood are
nowhere to be seen.

That's the heart to the dilemma we intend
to resolve by taking up the diverse
but intricately connected
features of the cosmic mountain,
all ranging far beyond the
mythic idea of the regional hill.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info scientists with the European Space Agency's Rosetta mission are writing a new chapter in the history of comet science however institutional Sciences understanding of comets is less certain today than ever before recently the Rosetta team published their first scientific papers following their successful landing on the comet 67p yet the scientific summaries have raised far more questions than answers while news media around the world have lauded the missions remarkable human achievement it must be noted that the feat was at best a partial success the primary purpose of the mission was to penetrate the comet's nucleus and gather a large sample of material however on landing the probe encountered a terrain nothing like the icy snowy surface it had been designed to withstand after bouncing into the shade of one of the Comets rocky cliffs the team ultimately

resorted to using a mechanical hammer to attempt to acquire a sample for testing according to the ESA team the hammer was unable to make more than a few millimeters of progress even at the highest power level of the hammer motor in the e essays words the hammer was bested by quote mechanically strong ice but what ice is a ESA referring to to the astonishment of mainstream scientists he complexly layered pitted boulders strewn desiccated terrain of 67p has not revealed the abundant water ice that the standard model requires indeed according to a recent nature report scientists found that 67 piece dust grains shattered on a target plate revealing they contained no water ice in the wake of this and other surprising revelations it is useful to look back at the past predictions of the standard comet theory consider the image on your screen on your left is an illustration prior to the 1986 mission to the comet Halle in the center is a ESA teams rendition

of the commentary terrain they expected
to encounter at 67p on the right is an
actual image of 67 piece nucleus yet
today the assumptions behind the drawing
on the left
remain unchanged in any meaningful way
institutional science still insists that
comets are primordial aggregates of ices
and dust the leftovers of the early
solar system with the cooperation of
science media it would appear that the
theory is unfalsifiable however
unbeknownst to most in the general
public an alternative theory of comets
does exist for decades the electric
universe theory as developed by
physicist wal Thornhill has made the
seemingly outrageous claim that comets
asteroids and meteors were electrically
machined from planets in relatively
recent epic of planetary instability
doom like ripples fields of boulders in
rubble craters pits cliffs rocky spires
a complexly layered terrain and the
absence of water ice are all consistent
with the electric universe theory of

comets and comet origins here is wal
thornhill with our first report on the
initial papers from the Rosetta team the
first papers on comet
churyumov-gerasimenko or comet 67p were
published by the rosetta team last week
once again expectations of a boring lump
of ice and dust were not met instead
there were ever more surprises a natural
result of an incorrect theory of comets
in science magazine under the headline
comet close-up reveals a world of
surprises diverse landscape of 67p
suggests an unexpectedly complicated
origin we find the usual mantra many of
the intriguing landforms the main
science camera Osiris has found testify
to the power of the Sun which heats up
67p during part of every orbit igniting
Jets of gas
dust that resculpt the surface of the
comet other discoveries could be
primordial dating from the comet's
formation more than four-and-a-half
billion years ago
however Nicholas Thomas and Osiris

co-investigator and an experimental physicist at the University of Bern confesses the Sun alone can't have created all the layers topography and chemical diversity that scientists see I find it hard to believe at the present time that 67p was originally homogeneous you've got to produce all of these diverse morphologies on the surface with that one energy source

I find this tough of course it's tough because years or decades of work that was based on generally accepted false assumptions must be abandoned the lead article in the special section of science magazine reporting on the Rosetta mission opens with comets are the best sample of primitive solar nebula material presently available to us dating back 4.5 7 billion years to the origin of our planetary system this bold statement is not fact but fiction no one was there as witness or timekeeper it hasn't been shown that nebulae around some of the stars our planet forming accretion discs it's

going too far to argue the complexity of the Comets suggest that the comet forming regions of the early solar system were more turbulent and chemically diverse than theorists have thought pushing the anomalies so far into the past that anything is possible doesn't advance science and some of the features like layering the dune like ripples and boulders with wind tails show the gaping hole in the accretion story of comets these are planetary processes now that the comet 67p and most comets show little sign of the ice is required to fuel jets of gas to sculpt their surfaces why cling to the story about comets being primordial when all the evidence is plainly against such an idea scientists need to be conscious that we are a tribal species and as such we utterly disdain things that challenge our worldview and after centuries of repetition the story of the birth of the solar system has fixated our worldview to the extent that covers of stars forming along growing

filaments in a decidedly
non-gravitational manner and thousands
of planetary systems that don't conform
to our worldview have had no effect on
that story cosmology is a belief system
sustained by confirmatory bias no
alternative to the old primordial
gravitational accretion model of the
solar system is believed possible
meanwhile comet 67p is reported to show
rocky seeming terrain which refers to
the low density of the comet far less
than rocks on earth perhaps the comet is
a polystyrene model rocky seeming is an
expression that denies the evidence of
our eyes and exposes our fundamental
ignorance of mass and gravity no more
serious accusation can be leveled at
theoretical physicists modern science
has no solid foundation for our
worldview our gravitational cosmology I
predict that will be comet 67p's
greatest lesson if we have the wisdom
and courage to discard our tribal myths
let me be clear
mass is a property of matter the mass of

the comet is not equivalent to the
amount of matter in the comet mass is a
measure of electromagnetic energy stored
in matter according to the best known
equation in physics the equals MC^2
squared so comet 67p can be composed of
rocky minerals while exhibiting low mass
and a density like cork or wood low mass
implies that the rocky comet is under
low electrical and gravitational stress
gravitational stress electrically
distorts the atoms within a body by
pulling the heavy nucleus towards the
center of mass as a small body far from
any planet and having electrons stripped
from its surface in the solar discharge
Comet 67p is under very low internal
stress which is reflected in its low
mass it doesn't demand it be a fluffy
object with the porosity of 70 to 80
percent and if there's any argument
about the Jets issuing from Comet 67p
being electrical it's only necessary to
look at the way nearby elementary jets
are alive
and draw together this is natural for

coronal discharge as issuing vertically
from a surface and the subsequent
attractive force between parallel
currents according to amperes law the
effect is seen clearly in images of the
Sun's corona it is not a natural
formation for gas under pressure
expanding through random vents into a
vacuum
for continuous updates on space news
from the electric universe stay tuned to
Thunderbolts dot info

[Music]

I arrived in Brooklyn for the Global
Breakthrough Energy Movement conference.

Opening my suitcase in my room at the
hotel, I discover I've forgotten something
absolutely crucial to the presentation I
have to give with Monty the next day.

[Music]

Amsterdam is only half an hour away by
train; so I decide on a run into the city -
see if I can replace the crucial item.

This is the handmade outfit I got in England...
and I brought this, nice shirt and jacket in
the room and found out I'd forgotten my pants.

So there was unanimous agreement that
I should just give the talk in boxer
shorts and that the cameraman would be
honest and just film me from the waist
up. But I kind of wanted an excuse to go
shopping in Amsterdam, and that's what we
are doing: shopping in Amsterdam.

[Music]

[Music]

Now that the SAFIRE project is moving
forward, to create something useful from
all we have discovered. Everybody is

asking us to explain what is happening scientifically. What's the mechanism for energy release and for the transmutation of elements. We can tell them what we are doing, the engineering and chemistry involved, but we can't tell them how nature is doing it. We don't know how - not yet - and we may never know how, let alone why. But think about this.

I fly from Boston to Amsterdam, in a jet that is controlled by electrically powered computer systems.

I ride an electric train into the city.

Four thousand times a minute, an electric spark makes an explosion to run the engine of a vehicle passing me on the street. Stop-and-go lights keep me aware, so I don't get squashed by a girl on a bike.

I take pictures with my electric cellphone, immortalizing my search for pants in Amsterdam. Ships navigate the world's oceans using computerized navigation systems. I navigate the streets of Amsterdam using the maps in my cellphone, which is a computer. Computers

wouldn't exist but for electricity.

I visit thrift stores lit by electric

lights, so I can see if my pants are

there. If I could find some pants, I would

pay for them with my credit card. Credit

cards wouldn't exist but for electricity. "Nothing

there... I don't know, what should we do?"

"You know what? We may have to wear jeans, we may

have to wear jeans... but as the nice lady said,

You're in Holland. What's wrong with

jeans? Everybody wears jeans.

OK, lead on." Breweries use electricity

to make beer. Refreshed with a pint of

Dutch beer, I take more pictures for

posterity. There is no film - it's all digital,

meaning: electric. Those

church bells ringing? You can bet

there's a timer and an electric motor

involved. I walk the streets of Amsterdam

after the Sun has set, my way

illuminated by electric lights. [Music]

I could take an electric streetcar if I

wanted to, but I don't. I like to walk

because then I can discover mysterious

places, which I would never find if I

wasn't on foot and if it wasn't for

electric signs. "They have a section here for trying to publish papers that are outside the current physics paradigm; there's a section in there."

Communications, medicine, transportation, construction, manufacturing. There is a universal current running through the very heart of the modern human condition. It is so ubiquitous and all pervasive, that we hardly notice it. We take it entirely for granted.

Electricity. And you know the most fascinating thing about electricity? No one on Earth can tell us what it is, or why it exists.

I am at the train station on time, to catch the next electric train back to my hotel. I know what time it is, because of my battery-powered digital watch. I further immortalize my search for pants with a last electrically powered cellphone photo. [Music] I could read a book on the ride back, if I wanted to: there was plenty of electric light. "Uranium, radioactive uranium in there; ultimately it will devolve into

lead 206, which is a little easier to deal with than some of the other things we're burying in the ground; or dropping into the sea". I couldn't find any pants in Amsterdam that would match my fancy suit. "Some of the half-life of ..."

There rare are certainly times I go into the lab, feeling I'm missing a crucial element that I need to do my job. "What happens is that in SAFIRE, while you remediate the nuclear waste, because it's a plasma, it's going to boil water. It's very hot, so boiling water and turning a turbine is actually no big deal. That's been done.

That's easy to do. And so now we get into the big picture and Michael, you're back home." But sometimes, despite that, "this is my favorite part", nature gives nature gives me something absolutely remarkable. A glimpse of the bigger picture.

I don't think nature cares about my limitations, or my pants. "Here's me drawing a planet. He really does draw this fast.

One of the key ways of working

that our team keeps coming back to, is what is nature doing? What's the natural way that things happen? If you've ever seen one of those photographs of the giant ITER magnetic confinement machines, nature doesn't do it that way.

There is no situation out there where that's happening, and I think that's why we have not been able as a community to do it that way either, because nature does not want to do anything that way. I don't see, how do I put this? I'm not looking for free energy. I'm not looking for energy out of nothing.

What I see when I look at the world, is that the universe has an enormous amount of energy that is constantly being transformed from one state to another, in all of the most amazing ways that you could imagine. So I'm looking for the transformation of energy. And to look then at a large scale picture of how is nature doing this already? We can look at stars and planets and the interstellar medium. This is a good, simple representation of

a planet from an electrical point of view. Planets have enormous amounts of electric current coming into them, and going out of them. It's not simple, like a light bulb. No way. The currents are going in and out of the North Pole, in and out of the South Pole, and there's ring currents going around. This is just two sets of currents; we're up to, I think like six or seven that we know about now, that are around Earth, Jupiter, Saturn. And then we're going to take this planet picture, blueprint if you will, design, idea, the way that nature is doing things. And we'll put that into the larger world that a planet is part of, namely getting its energy from its star, its central star. Stars also have pole currents, ring currents. I'm drawing in some planets there. Planets all have their magnetic bodies, electricity coming in, going out. This pattern starts to appear, if you draw it correctly, right? You start to see that there's some structure here that nature seems to be repeating. The magnetic body of planets

is something I try to help my students understand. We see dots of light when we look at a planet. Jupiter is just a dot of light, when seen with our eyes, but if we could see the magnetic body of Jupiter or Saturn, it will be larger than your hand, if you hold your hand up against the sky.

Different planets are made of different materials. There's no understanding, really, of why planets are made of different materials, but we do know that different planets are made of different materials. And then we're going to look at, well let's place all of this into the interstellar medium. The interstellar medium we now understand is highly structured, highly structured, and that was not known before ten years ago.

So let's take our star now. We're zooming out more; we see the star; imagine all the planets around it; keep that in your head.

And we're going to place this into a larger world that the Sun lives in; that the stars live in. We now know through direct data that there are filaments throughout the interstellar medium and

stars are only along those filaments.

Stars are not randomly placed - they're placed like leaves on a tree. We also see these other things in there, which I'm making as blue dots, and you might see them referred to as Proto Stellar Cores, or something like that. And whenever I hear the word "proto", I know the person has no idea what they're talking about. They just need something, to just put in place. Now, it may be that these other blue, I put in blue dots, are something else entirely. Why do they have to become stars? Maybe the stars are there to help these other things, right? We don't know yet. We don't know what all the roles these things play. There's a lot of organic molecules in the interstellar medium. It's one of those stories you just get tired of reading them.

Astronomers are surprised.

Astronomers are shocked, right? All the organic molecules out there. Hundreds and hundreds of organic molecules. Sugars are out there, amino acids are out there. What are they doing out there? If we look at just

the inorganic elements, this is the top 11, okay. This is just by abundance; this list changes, right as we get more sensitive instruments. But here's the top 11. Part of what I do is study the interstellar medium, and this list is known to me and after our set of experiments that you've just heard about, we're sitting there and we're going - wait a minute, wait a minute! I think I've seen this list before. Those are the elements that we saw appear in our chamber. I don't think that's a coincidence. I think what we're looking at here, is that the interstellar medium, in ways that we don't yet understand, is quite capable of making whatever molecules and elements it needs. It's not just some random collection, that those stars, the planets, the filaments - they all have functions up there in the galaxy. They're not doing nothing. It's an absurd idea, to think that nature would organize such an enormous something that had no function; makes no sense. So, what are

so the interstellar medium can make whatever it needs, or organize whatever it needs. The easiest elements that it makes and organizes are the ones that you're looking at there, and they are also the same elements that we see most prominently appearing in our chamber.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

It's a notion that
generations of astronomers
have agreed upon with
nearly unanimous consent,
that the clockwork predictability
we see in our solar system today
can be traced back over
countless eons of time.

The planets and the Sun formed about
a swirling disk of gas and dust
through a process of gravitational
collapse and accretion
and for billions of years their respective
orbits have remained undisturbed.

On our own planet, it's presumed that the
geological processes we see on earth today
can be traced back over
many millions of years
since a giant asteroid impact killed
the dinosaurs 65 million years ago.

This is the picture of our solar system's

four-and-a-half billion year history,
sanctioned for publication in
educational textbooks for many decades.

But this picture is
incrementally changing
in the face of an ever-growing
evidentiary crisis.

The belief that our solar system
formed from a collapsing nebular cloud,
finds no parallel in the thousands of
exoplanetary systems scientists have discovered,
including planets with
bizarre retrograde orbits
and Jupiter-sized planets
orbiting tiny parent stars
at a fraction of the distance
separating the Earth from the Sun.

In fact, with increasing regularity,
mainstream scientific literature
acknowledges that our solar system
has undergone dramatic changes,
making it a very different place
than it was after its formation.

Recently, scientists surveying
nearly 1,000 exoplanets
in over 300 multi-planet systems,

discovered an astonishing pattern.

Planets that share a star

appear like "peas in a pod"

with planetary neighbors of consistently

similar sizes and regular orbital spacing.

On the ramifications of these findings for

an understanding of our own solar system;

a recent Phys.org

reports states,

"...in our solar system, the inner planets have

surprisingly large spacing and diverse sizes.

Abundant evidence in the solar system

suggests that Jupiter and Saturn

disrupted our system's

early structure,

resulting in the four widely-spaced

terrestrial planets we have today."

As those who have followed the

Thunderbolts project are aware,

for many decades our chief

principals have proposed

such a disruption to our

solar system structure

though not to billions

of years in the past

and these catastrophes were

not typified by random impacts

but by electrical

discharges between planets.

Rocky planets and moons reveal

bizarre cratering patterns

and other features that

have been easily reproduced

in decades of laboratory experiments

with electrical discharges.

Material removed from

planetary surfaces

formed our solar system's comets,

asteroids and meteoroids.

A "radical notion" to which scientific

discovery lends increasing support.

Today, scientific research into

arguably the most perplexing meteorite

ever found on earth is "rattling"

the solar system's status quo,

challenging astronomers

fundamental ideas

about our solar system's

formation and history.

Since 2013, scientists on earth

have been studying fragments

from the so called Hypatia stone,

a tiny meteorite found in the Libyan
desert glass field in southwest Egypt.
In 2015, a number of research teams
announced that the material
cannot be identified based on any
known type of meteorite or comet.
As reported by phys.org
in January of this year,
new scientific research by a team at
the University of Johannesburg has,
"...provided unsettling
answers that spiral away
from conventional views of the material
our solar system was formed from."
The matrix of minerals composing the Hypatia
stone has been described as a "fruitcake"
resembling no known
meteorite or comet
and consisting of strange and
never-before-seen combinations of minerals.
And the dust material
found in the fragments
confounds the very core of
the solar nebula hypothesis.
As described by phys.org,
"Generally, science says that our solar

system's planets ultimately formed from a huge, ancient cloud of interstellar dust (the solar nebula) in space.

The first part of that process would be much like dust bunnies coagulating in an unswept room.

Science also holds that the solar nebula was homogeneous, that is, the same kind of dust everywhere.

But Hypatia's chemistry tugs at this view."

Lead investigator, professor Jan Kramer states,

"For starters, there are no silicate minerals in Hypatia's matrix, in contrast to chondritic meteorites (and planets like the Earth, Mars and Venus), where silicates are dominant.

Then there are the exotic mineral inclusions.

If Hypatia itself is not presolar, both features indicate that the solar nebula wasn't the same kind of dust everywhere -

which starts tugging at the generally accepted view of the formation of our solar system."

In part one of this

two-part presentation,

Thunderbolts colleague Peter Mungo Jupp

begins an examination of the Hypatia stone

as we explore the object's ramifications

for the Electric Universe theory.

The Hypatia stone, was it a

comet or a cosmic thunderbolt?

Now, the Hypatia stone is a chemically

unique carbonaceous tektite

considered alien to earth.

In 1996, Egyptian

geologist Ali Barakat

discovered a tiny one-ounce

stone in the Eastern Sahara.

And ever since, scientists have

been trying to figure out

where exactly the mysterious

pebble originated.

Recently, research at Jan Kramer's team

from the University of Johannesburg

found its chemical composition doesn't

resemble anything found on earth

or in the comets or

meteorites they have studied.

They therefore concluded it was
a deep-space extraterrestrial
from behind the
Kuiper asteroid belt.

It was discovered
amongst the supposedly
29 million years old Libyan
desert glass-strewn field.

Jan's team proposed
that the Hypatia stone
is a remnant of a
cometary nucleus fragment
that impacted after incorporating
gases from the atmosphere.

Its co-occurrence with Libyan desert
glass suggests that this fragment
could have been part of a bolide
that broke up and exploded in the
air burst that formed the glass.

Chemical analysis from the team
suggests the fragment was a deep-space
extra-terrestrial from behind
the Kuiper asteroid belt.

In normal chondritic meteorites,
we expect to see a small amount of

carbon and a good amount of silica

but Hypatia's matrix has a

massive amount of carbon

and an unusually small

amount of silicon.

Even more unusual, the matrix contains a high

amount of very specific carbon compounds

called poly(cyclic)aromatic

hydrocarbons or PAHs,

a major component of

interstellar dust,

which existed, the team claims, even

before our solar system was formed.

In another twist, most but not all,

of the PAHs in the Hypatia matrix

has been transformed into diamonds

smaller than 1 micrometer

which are thought to have been

formed in the shock of impact

with the Earth's

atmosphere or surface.

Carbon isotope data does not fit terrestrial

coal or carbonaceous chondrites

as the source of the pebbles, due

to the high carbon-13 content.

Carbon-12 is the norm for so-called

fossil fuel surface deposits
containing vegetable and
animal fossil inclusions.

But is there a
better explanation?

I believe their conclusions, although
possible, are not the only explanations.

I will build a questioning case
against this controversial theory.

Some of the team's foundational paradigms,
in my opinion, are suspect.

Now, firstly the claim that the
pebble is 29 millions of years old
relies on dating procedures such as
uranium, thorium and potassium argon
that demands a constant half-life
of an isotope over eons of time.

I suspect this is a fallacy when
applied all the catastrophic scenarios
that have revisited earth.

Synchrotron and many other forms
of radiation may well order
the internal structure of atoms
and thus their half-life.

Linear half-life is impossible
to verify over eons of time

being merely an extrapolation based
on a very narrow time sampling,
in other words the present-day.

Some indications are in strong denial
of this proven scientific fact.

Now, for instance, Rick Firestone who I
interviewed, a world expert in isotopes,
who ran the cyclotron at Berkeley
National Laboratory, revealed as an example
that the same isotope of cobalt-60 can
have dramatically different half-lives.

He couldn't explain why, other than to
suggest internal changes in the nucleus.

Could cosmic discharge events be involved
in altering stable isotopic half-lives?

Big question.

So, in other words, suspect dating
methods were used by Jan's team
to support explanations
using millions of years
to place the Hypatia
pebble's creation
as part of an assembly of
unchanged pre-solar matter.

They claim this matter
existed in space

before our Sun, the Earth and other
planets in our solar system were formed.

But slow relentless change over
millions of years is totally unproven
and more often dodges
the real explanation.

This concept of
uniformitarianism,
that is everything happens gradually and
only as witnessed in our present world,
is at odds to the observed catastrophic
events that have often driven periods
of extremely rapid change in the
Earth's and solar system's development.

The result mass extinctions
and planetary chaos
are but one example of radical
chemical transformation.

Old Might Just be Young

Now, I was fascinated to
talk to Louis Hissink,
a former diamond
geologist with De Beers.

He enlightened me on his escape from the
confines of classical geological theory.

His epiphany came when confronted

with Aboriginal mythology
that explained recent diamond formation
in the Australian Kimberley region.
This may also explain the presence
of diamonds in the Hypatia stone.
Louis was expanding exploration from
the famous Argyle diamond mines,
biggest in the world, to the alluvial plains
near Kununurra some 150 kilometers away.

Alluvial diamonds were
found in a nearby river
but the site was yet
to be isolated.

A magnetic anomaly pointed
to a concentration point.

Now once obtaining local approval
from the Gija and Miriwung tribes,
a fascinating local
legend came to light.

The verbal Australian Aboriginal legend
stated that a giant, shining Barramundi,
that's a fish,
had jumped out of the ground at
Argyle, where the diamond pipe was.

The magnetic anomaly
site at distant Kununurra

was where the aboriginals insisted

it dived back into the earth.

Both sites were rich in diamonds

around their deep diamond pipes.

Was the Barramundi

legend nonsense?

Or had these people witnessed perhaps a giant

plasmoid causing transmutation of elements

and the creation of

diamonds on a grand scale.

Now, regardless, Louis Hissink

started to question

the crusted paradigms

of modern geology

which, as its backbone, maintains

that millions of years

are required to change

the topography of Earth.

Foundational geologists Hutton and Lyell's,

classical theories of the 19th century,

maintained that slow, erosional

decay and gentle chemical change

is the steady tool of Earth's

geological dynamics.

This theory of uniformity asserts

that nothing has happened on Earth

that's not witnessed today.

Louis pondered that if these
paradigms were correct,
how could historical aborigines
witness a diamond creating event
supposedly millions of years old?

Louis Hissink concluded,
and I quote,

"Some of the cherished geological
theories we hold may be quite wrong!"

Our first objection to the University
of Johannesburg's hypothesis is blunt.

The age of the Sahara Desert is
nowhere near 28 million years old.

Insightful, as a witness, are the pictures
by David Roberts, painted around the 1850s,
which show many ancient

Egyptian destruction sites
such as the Kom Ombo temple; and
the Sphinx, half buried under sand.

This deposition of sand and earthquake
damage is obviously an historical event.

Even more direct evidence of the
Sahara desert's relatively low age
is shown by Barth's 1850 discovery
of drawings of herds of cattle

rendered by the desert's

early dwellers.

The animals depicted no longer inhabit

this area and many are generally extinct.

Neolithic implements, vessels and weapons

have also been found near the drawings.

The drawings of the cattle

contain disk on their horns

similar to Egyptian drawings of disk,

circa 4 to 6,000 years old time frame.

Pictures of chariots, drawn

by horses, are found in areas

where horses today

couldn't possibly survive.

They've been revealed in both the

eastern and western parts of the Sahara.

Men lived in these densely populated

areas where cattle pastured,

but where today are enormous expanses of

sand, stretched for thousands of miles.

Even the ancient document Papyrus Ipuwer

describes a calamitous time

when the deserts of Egypt

were created. Our quote is,

"The desert is throughout the

land, the nomes are laid waste."

So it's, that's evidence that
the creation of the sands
where the desert glass and the Hypatia
stones were found, are only recent creations.
They're thousands of years old and not
due to an episode 28 million years ago.
Stay tuned for part 2

[Music]

Every butte has a crack, but not
all cracks are beautiful. Though
some are magnificent, ruler-straight and
parallel, some can be ugly, chaotic mangles.
But there's a quixotic pattern to ugly
cracks, so we must not discriminate.
Whether they make lovely geometric
shapes or chaotic mangles, a study of
cracks is essential to Electric Universe science.
The reason is cracks are interfaces –
boundary layers – and electrically,
that's where the action is.
To understand any geology, the first
thing to look for is boundary layers.
Charge collects at boundary layers where
it displays the effects of inductance
and capacitance most prominently.
To begin with, the outside of Earth's
crust is a boundary layer. Sonic
shockwaves made the geometry, and
electricity made the chemistry. Wind,
also motivated by electric currents,
made things move – kinetics. Energy
came from within the Earth as a
release of stored capacitance. That in a

nutshell explains the face of the Earth.

The creation of virtually every mountain, hill, and dale on the planet is summarized in those sentences.

The devil is in the details, however, so that's why we're looking at cracks.

Cracks are the remnant of capacitor interfaces in Nature's circuitry. They are boundary layers between different materials.

The boundary layer separates two dielectrics with a double layer of charge – a capacitor.

The dielectric difference was due to difference in dielectric properties of the material at the time it was laid down by plasma winds. The dielectric properties differed due to the elemental and molecular makeup of the material and the state it was in at the time.

The material's temperature, density and pressure influenced the material's dielectric, and shockwaves produce sharp discontinuities in pressure, density, temperature, as well as charge density.

First, let's dismiss cracks that aren't part of the electric circuit we want to examine.

Some cracks are from thermal stresses as matter cooled and contracted, or

structural as matter shook and settled from seismic forces. These cracks are generally vertically aligned due to gravity.

Gravity makes the fracture plane vertical because it's the path of least resistance, where gravity's force vector has no influence holding the rock together.

A good example is how hydraulic fracturing is done in oil and gas production.

A fluid is pumped into the wellbore to the bottom of the hydrocarbon formation, and pressurized until the wellbore pressure exceeds the overburden pressure.

Fluid pressure separates the rock vertically, creating a fissure that extends the contact to the wellbore upward into the hydrocarbon-bearing formation.

The practice allows access to hydrocarbons otherwise locked away in dead zones far from the well.

But that's just to illustrate that vertical fracturing is predictable, applied science.

A cooling, contracting rock will fracture vertically for the same reason that is swelling the rock under pressure fractures vertically – Newton's laws.

Some cracks are due to lightning. These are certainly electrical, but lightning finds its own path. It's not wave-guided by interfaces other than the surface it contacts, which still leaves much freedom of motion.

Therefore, lightning wanders, following conductive paths on the surface it strikes.

It may be vertically oriented,

vectored by the electric field,

but it will generally not display a pure

geometry, such as straight lines and

polygonal forms. Its form is chaotic.

Lightning-blasted rock often displays

shearing where the blast fractured rock,

or melting, burning or chemical reaction

from the heat and charge. A dipolar

magnetic signature should be

detectable across the current path.

But lightning scars are not the type of

cracks we want to talk about today.

We want to discuss cracks generated by

shockwaves and electricity at the shear

zone between the land and plasma winds,

at a time when Earth was embroiled

in the epic maelstrom of creation.

In other words, we want cracks made

where the filthy underbelly, the Ouroboros
scraped the land. The Ouroboros, or the
penultimate representation of the concept anyway,
is the plasma wind that wrapped the
Earth during key stages of its evolution.
Sharp discontinuities and plasma winds
caused by supersonic shockwaves left
imprints in deposits of ionized dust,
which manifested as cracks as the dust
recombined to form rock. The
discontinuity in a shockwave
includes density, pressure,
charge density and dielectric properties, which
electrically makes it act like a capacitor.
Therefore, cracks in rocks are the
all-important proof of wind formation
and the circuitry in the plasma winds.
To define a crack, first of all means an
intrusion or separation between rock matrices,
or the boundary between stratified
layers, whether the space between is a
void or filled with material.
Therefore, we include rock, veins, dikes,
shelves, faults and similar geologic
structures, along with empty cracks.
The difference is whether material is

pulled into the crack, or expelled from the crack by electric fields. Either way the crack was made by shockwaves. That is why there are a lot of diagonal cracks. Also, polygonal cracks. There are triangles, rectangles, squares and diamonds, everywhere in the rocks, the mountain flanks, and the outline of mountain peaks. The mountains are composed of triangles at virtually every scale. These were caused by shockwaves. It's also why they form at particular angles. Mainstream theory assumes rock strata always form horizontally, and then "uplift" shifts strata into various angles. Uplift is assumed to be caused by the stretching and compression of the crust due to tectonic movements. It is then assumed erosion from wind, ice, vegetation, and rain over millions or billions of years then polishes the crustal surface into the forms we see today. The assumptions they make are actually ridiculous. Most rock is very brittle. Limestones and sandstones can break in your hands. Igneous rock like granite, break with a whack of a hammer. If the planet's crust churned the

way they say, under the forces of compression and expansion, lifting and falling, all the while scraping and jostling for billions of years, the mountains would be piles of rubble, not sharply defined tetrahedrons. Erosion would further break rocks apart, smoothing their edges, rounding their corners, and dissolving any geometry they might have had. The mainstream model of tectonics would leave piles of sand and rubble. Yet, what we see are sharply defined geometries that accurately and predictably follow the form of sonic shockwaves and the separation bubbles they form at the wind-ground interface. When a shockwave forms, it forms at an angle to the wind's direction determined by the ratio of the wind's speed to the speed of sound, called the Mach number. A Mach number of one or more means the wind is supersonic. A Mach number of two means the wind is twice the speed of sound, and so on. The incident angle the shockwave makes with the ground varies with the Mach number, so it can be used to determine if winds were consistent, forming at consistent

angle or variable in either speed or direction.

If you know the density of the

atmosphere you can determine the

velocity of the wind from the Mach angle.

Shockwaves reflect from an interface,

like the ground, just like a beam

of light reflects from a mirror.

The angle of reflection complements the incident

angle. The ground forms a plane shockwaves

reflect from. Wherever supersonic winds blew,

and evidence suggests that was nearly the

entire face of the Earth, standing waves formed

and reflected from the ground from every channel of

jetstream wind. In fact, shockwaves formed

whenever a jet stream wind changed direction or

expanded or sheared against the Earth or another

wind. Therefore, shockwaves patterned the

winds. And the wind rippled with shock-

waves as they deposited dust and sand,

and the deposits retained those patterns.

Figure 9 compares images of a diagram of

a standing shockwave reflecting from

a surface from wind tunnel tests

with an impression of a shockwave reflection

in a mountain exposed by a road cut.

Every feature of the laboratory-produced

shockwave is evident in the road cut. The angle between the incident shockwave and the reflected shockwave forms a Y. Inside the Y there is a step in the stratigraphy. The Y forms a discontinuity where the layers take a step down as if this wedge sank. They also angle, or dip differently, just as the pressure regimes inside the Y in the diagram do. The stratigraphy inside and out of the discontinuity closely matches the "stratigraphy" of pressure regimes in the boundary layer of supersonic winds – because this hill was formed in the boundary layer of a supersonic wind. Look people, this ain't no damn coincidence. How could this happen by conventional theory? How could this wedge drop a few feet and neatly fit the Y without its edges even getting ruffled? The Y isn't straight; it has a hyperbolic compound curve. How could the wedge sink and still match this curve perfectly without pinching or leaving gaps, and without disturbing the geometry of the curves or strata inside or on either side of the discontinuity? Why does the angle of the wedge strata shift with respect to surroundings on the

left and the lower right, but not at the upper right where the strata remains consistent across the discontinuity? How come, while falling into the crack, the wedge became thicker and the big white band of strata at the top, but only on one side of it? None of this makes sense, unless you consider wind deposition at the boundary layer of a standing shockwave reflection.

The discontinuities are the impressions left by the incident and reflected shock waves. They form a sharp geometric boundary with no evidence of friction between.

As dust deposited, it met this shockwave and followed the pressure and charge density profile of the shockwave.

Dust was sucked down into this hole by pressure differentials across the boundary layer, but layered in proportionate thickness to the step voltages that segregated each pressure regime, and the type of dust being delivered by the plasma wind. The wind had to pile this dust and gravel pretty fast, because the layers filled concurrently. That is, these layers didn't stack up one after the other. They fire-hosed in, each layer at the same time, segregated by the dielectric properties of the dust and the electric winds. It's

amazing when you think about it, but
this was all one flow, segregated like a
rainbow that came suddenly to a stop and
compacted itself into a mountain,
freezing in that moment this shock
reflection and the effect of its sudden pressure
anomaly in the airflow. See the damn pattern.
These images are scientific proof, a direct link
between repeatable, empirical tests and nature.

This is far more evidence than anything
geologists have presented for any of
their tectonic theories. Any. Ever.

Their theories are built on the big
ideas of arrogant, goateed bow tied phonies,
without a shred of empirical evidence.

Their evidence is conveniently shrouded in the
depths of time. Millions and billions of years of
imperceptible, sand grain-by-sand grain
movement, which they are still working to
explain how CO2 made happen.

Who are we to question them?

Actually, there's no need to question them.

Just stop listening to them and for
christ's sake stop giving them money.

The shock features exhibited in the road
cut is only a small part in the full picture

of a supersonic wind-generated shockwave.

It's best to think of a shockwaves as the membrane of a bubble. On one side of the membrane is a gas of higher pressure than on the other.

The entire bubble structure is very complex however, with regions of expansion and compression, recirculation, laminar flow and turbulence and a supersonic wind is passing through the bubble.

In a dusty plasma, it gets even more complex, with electric fields, sheets of current and step voltages across the membranes, which is no longer the physics of fluid dynamics, but of magneto-hydrodynamics.

The following image shows where I think the road cut feature came from. This part of the shockwave, circled in red, is a part of the structure that dips into the separation bubble, which is the turbulent region at the base of the bubble.

The separation bubble is where dust collects, which ultimately buried the tip of the shockwave. The shockwave is not the primary incident wave, but it's a harmonic reflection of it that does not always form, but depends on conditions.

Note the fine vertical lines to the right of the primary shockwave in the image.

These are stepwise gradations of pressure in the airflow throughout the shockwave structure. In the plasma these gradations are also steps in potential. These vertical gradations can be seen in rocks crisscrossing the diagonal shock waves produced by the Mach angle.

Sometimes dust can fill the entire lambda foot structure. In the diagram where the incident and reflected shock meet at a triple point, in which case you get mountains like this. To be clear, some mountains are formed inside the separation bubble or separated flow zone which is the wedge at the very bottom of the structure.

And some mountains fill the entire lambda shock structure, the large triangular feature.

The lambda foot manifests at the base of every shock reflection, so it is a repeating fractal element of the shock wave and appears at different scales.

The stratigraphy in the separation bubble "dips", meaning it's angled with respect to horizontal, consistent with the wind's vector inside the shock bubble, because

that is how the wind layers its dust load.

Mountains that fill the entire lambda structure may have stratigraphy that dips at a shallower angle than the dip of the Mach angle displayed by its flat triangular face, because the wind was vectored upward and dust fell, filling the lambda foot from the bottom.

Although this should not be taken as a hard and fast rule because there's always variables. Generally speaking, of wind-generated mountains, it can be said that is why shallow dipping hills, foothills and mountains have layered stratigraphy that dips with the contour of the mountain, while larger triangular peaks are more like layered bricks, not necessarily horizontal, but a relatively shallow angle at odds with its outline.

Mount Everest is a good example of a big lambda foot mountain. In fact at 29,029 feet I'm pretty confident it's the biggest, baddest lambda foot ever. Follow its stratigraphy, such as its famous "yellow band" and you can see the dip in relation to the facets of its outline.

That's how mountains are formed.

The evidence is everywhere, and looking

at cracks yields well, mountains of
information about their genesis.

The interface between stratigraphic
layers are cracks by my definition, in
case you think I'm losing the thread;
talking about the shape of mountains instead
of cracks. Cracks are the remnant signature of
shockwaves and electric currents
produced in the storm that built the
mountain, just as the outline of the
mountain is. The contour of the mountain,
the cracks in it, and the dip of its
sediments are all related to shockwaves.

The angles in their layers and contours
as pure information about their creation,
because information is always a waveform,
and the mountains store the waveform.

The shockwave and shockwave reflections
form an electric field across the walls
of the wave in the manner of a capacitor.

A double layer forms on the interface as
with a dielectric field between. The
charged layers can be the same or
opposite polarity to the charge of the dust being
deposited, leaving either a void or hardened rock.

A hardened seam will have more

conductive material, like the quartz and rock veins, than the surrounding rock matrix.

Mineral-bearing veins for instance, bear conductive minerals like gold, silver and copper because these conductive materials were attracted by the electric field of the shockwave, either as a vapor from the atmosphere, or by diffusion through the ground.

Diffusion through the ground is how consensus theory works, with the attractor being hydrothermal venting.

Why hydrothermal venting should attract metals from far and wide isn't clear.

An electric field does that though, without question. So our theory is already better if Occam's razor means anything.

The quartz veins and the images of granite were created by an emerging effect of shockwaves, called traveling waves.

Note there are four wide quartz veins in the larger image, in two pairs that parallel each other diagonally across this granite face.

Traveling waves are semi-stable reflected waves that migrate through a shockwave structure due to instabilities in the bubble.

The even vertical lines that appear in

figure 10 are examples in a steady wind,
but shockwave bubbles can wobble
just like soap bubbles, producing
instabilities as wind speed and direction varies.

They move in harmony to the shockwave
frequency in repeating patterns and
that is why there is a pair-of-a-pair,
of similarly structured, highly complex
repeating forms in these rock veins.

The next image shows clastic dykes in Washington
state. These dikes are vertical-to-diagonal
intrusions in a sedimentary hill exposed by
road cut. Each dike is layered vertically with
different fineness of sediment graded
from silt to gravel, in each separate layer.

The sediments inside the dikes are completely
different material than the hill they intrude in.

It's as if each vertical layer of the
dike sucked a different dust down into it
from somewhere other than the mountain
it's in. And that's exactly right. Each layer
in this dike was a separate funnel
of air pulling dust down from
different regions of the shockwave bubble,
where different grades and types of rock
were flowing in segregated jet stream winds.

The “funnels” were traveling waves that deposited these dikes in little, downward-pointing pressure regime spikes, while the separation bubble filled around them. It's hard to think on this scale.

The cracks, dikes, and veins just shown were produced in the very bottom of a shockwave structure like the one shown in this image.

They formed in the turbulent back-end of the separation bubble, a result of friction where the wind literally scraped the ground. Mountains like Everest, the Matterhorn, and thousands of lesser peaks were formed by dust filling the entire lambda foot structure, forged by winds and electric potentials that are nearly incomprehensible.

Supersonic winds had to wrap the entire planet.

Earth looked like Jupiter, only a lot worse.

The fastest winds rolled up and down and swept against the ground because they were driven by electric currents coupled to Earth's.

Higher winds moved slower, circulating positive charge in a halo over the concomitant destruction and creation below.

Hence the Ouroboros.

It did circle the Earth, winding and coiling like

a serpent eating its tail. It's all circuitry.

Every feature points to the actions

upstream in the current path.

That is why the true creation story is knowable.

The patterns remain that tell the story.

Frequencies, harmonies, wavelengths, and

wave guides. Shockwaves are wave guides.

Everything is electric. Everyone needs

to know this, the sooner the better.

[Music]

[Music]

We concluded the previous presentation by introducing recent James Webb Space Telescope images of the Seifert II galaxy NGC 7319 within Stephan's Quintet. Before moving to those images, we need to talk a little about dust and its relationship to telescopic observations.

In the absence of any obscuring matter, the intensity of light emitted from a light source diminishes with the square of the distance. Light in the visible portion of the spectrum can be further diminished, or even extinguished, as a result of being absorbed or scattered by matter between the source and receiver. Infrared light can penetrate through dust that is opaque to visible light. The image on your screen compares visibility and optical and infrared light in a smoke-filled room. This is a relevant example, because smoke from a fire is not purely a gas. In fact, its major constituent is particulate matter and those particles are tiny, just as dust particles in space are tiny. This image shows how even a relatively small amount of dust can effectively block a visible light, while allowing infrared light to pass.

In 1784, William Herschel was heard by

his sister Caroline to explain “There is truly a hole in the heavens.”

Herschel was referring to a dark patch in the constellation Ophiuchus, where no stars at all were visible in the field of view of his telescope. Herschel was convinced that what we now know as molecular clouds, were what he termed ‘vacancies’, or regions of space devoid of stars as far as the telescope could see. That became the prevailing view among astronomers and was only finally overturned when in the early 20th century, Edward Emerson Barnard assembled a body of photographic evidence, showing that the dark regions in the Milky Way were opaque clouds of dust that block the light of background stars. The histories recounted wonderfully by the radio astronomer, Gerrit Verschuur in his book “Interstellar Matters”.

In this set of images of the Dark Cloud Barnard 68, the first two are within the range of visible light. The remainder, moving clockwise, are at increasing wavelengths of near infrared light.

This is a comparison of Hubble images of the Pillars of Creation with a visible light image

on the left and a near- infrared image on the right.

Notice how the relatively tenuous, bluish glowing gas and dust surrounding the Pillars, effectively blocks the visible light from all but the brightest background stars.

An ESA feature explains how dust affects what a telescope can see, and how that is dependent upon the wavelengths of light being captured. Quote, "Although our eyes cannot see infrared radiation, we can sense it - as radiant heat. Infrared radiation 'is' heat and all objects, even the coldest ones, an ice cube for example, emit a certain amount of heat."

"In fact, celestial objects with surface temperatures of about 2,000 degrees Celsius - cold compared to the Sun which has a surface temperature of about 5,500 degrees Celsius - radiate most of their energy at infrared wavelengths... The cool universe is best studied in the infrared."

"Dust is the bane of the optical astronomer's life, blocking the view of many interesting objects. The universe is full of dust, microscopic particles of varied composition - carbon, silicon, water ice, minerals, frozen carbon monoxide, organic

compounds, silicates - the list is almost endless.”

”The particles can be hard or soft and come in many different shapes, but their size is usually less than one micron, or one thousandth of a millimeter. The wavelengths of visible light is much the same size as many dust particles, so it is easily blocked, i.e. scattered by the dust, whereas longer-wavelength infrared radiation passes through unhindered and dust is therefore transparent to it. And in the far-infrared, we see the glow from dust itself.” Unquote.

When dust scatters light, we may see some of that scattered light as a reflection, just as we see in the glowing dust around the Pillars of Creation, or in the most famous Reflection Nebula, the nebula surrounding the Pleiades. However, as noted in the ESA feature, in the mid-infrared dust ceases to be transparent to infrared light and instead becomes visible on account of its own thermal emission. At these wavelengths a Space Telescope can capture the glow of the dust itself. This is a spectacular example with an optical

image of the constellation of Orion on the left, and a mid-infrared image of the same field on the right, revealing extensive clouds and filaments of glowing dust.

This is Webb's MIRI and NIRCam composite image of Stephan's Quintet with the relevant portion of NGC 7319 indicated by the box. This is that portion of the Webb MIRI and NIRCam image centered on the quasar. Notice that the quasar is surrounded by a halo. With image processing to enhance contrast and saturation, the halo clearly has a hexagonal shape. A

James Webb technical document illustrates the morphology of artifacts produced in both the MIRI imaging system and in the NIRCam imaging system.

Undoubtedly, the hexagonal halo is an artifact of the telescope's optics, primarily from the longer wavelengths of MIRI. Here is a larger view of NGC 7319 from the Webb MIRI and NIRCam composite image of Stephan's Quintet, with the quasar indicated by the arrow. Note the prominent filamentary dust lanes. Here is the same region, this time from the Webb NIRCam

image only. Note the filamentary dust lanes have all but disappeared. It is plain that they are contributed almost entirely by the MIRI image.

And here is the same region, again from Webb's MIRI image only. The dust lanes dominate this image.

Note that the quasar coincides with a dust lane.

Comparing the MIRI and NIRCam images side by side, we see that the dust lanes in NGC 7319 are prominent in Webb's mid-infrared MIRI image and all but invisible in Webb's near infrared NIRCam image.

This is precisely because Webb's MIRI instrument was capturing mid-infrared light emitted by the dust itself, whereas Webb's NIRCam instrument was capturing near-infrared light with wavelengths that pass through the dust, rendering it largely transparent at those wavelengths.

Moreover, dust sufficient to produce the pronounced glow recorded in the MIRI image, indicates a column density that would, on any view, be sufficient to block visible light from a distant background visible light source. Just as the comparatively trivial amount of dust in the vicinity of the Pillars of Creation, seen in visible light as a reflection

nebula, was able to block the visible light of almost all of the background stars.

The Hubble images of Stephan's Quintet, released in 2000 and 2009, were both essentially visible-light images, albeit that both include light from filters at 814 nanometers in the very near-infrared.

Those Hubble images demonstrate one simple key fact - the quasar is bright in visible light.

This collage shows the same close-up field, centered on the quasar from Hubble's 2009 visible light image at the top left; Webb's mid-infrared MIRI image at the top right; Webb's near-infrared NIRCam image at the bottom left; and Webb's MIRI and NIRCam composite image on the bottom right.

In the NIRCam image, the relevant dust lane is not visible. Near-infrared light from the countless millions of stars in the body of the galaxy is not obscured by dust to any discernible extent, just as we would expect. However, the Webb MIRI image and Webb MIRI and NIRCam composite, demonstrate that a substantial dust lane, seen by its own glow, extends all around the quasar. As

stated, this demonstrates the presence of dust, sufficient on any view, to block the visible light of the quasar captured in the Hubble image, if that visible light was coming from behind the galaxy - let alone, for more than 9 billion light years behind the galaxy. In the Hubble image, the dust lane appeared to coincide with the quasar, but there was still some room to debate the matter.

The proposition that the quasar is a deep-background object, shining through the whole disc of the dusty Seyfert II galaxy NGC 7319, including the substantial dust lane captured in visible light by Hubble - seen in both the WFC2 image released in 2000 and the WFC3 image released in 2009 - is quite simply preposterous. In summary, the Hubble and Webb images of the quasar associated with NGC 7319 are observations that simply and unambiguously prove that the high redshift quasar is a foreground object.

These observations falsify the redshift-distance relationship, the foundational axiom upon which the whole edifice of Big Bang cosmology is erected.

The wisdom of Edwin Hubble's caution

is demonstrated, and Halton Arp is vindicated yet again, just as I predicted. However, Standard Model astrophysicists and cosmologists will continue to insist that the quasar is not in front of the galaxy and must be a background object shining through the galaxy. If they don't, they will be forced to admit that these observations destroy the foundation of Big Bang cosmology. It's a textbook case of paradigm paralysis. But as Chico Marx might have put it, who are you going to believe, them or your lying eyes?

Of course the quasar in NGC 7319 only adds to the numerous examples that Arp and others have produced, demonstrating unequivocally the existence of physical connections between objects with wildly different redshifts. Like the connection between the low-redshift galaxy NGC 7603 and a high-redshift quasar - a connection established even more convincingly by Martin Lopez Corridora and C. M. Gutierrez who obtained the images you see on the screen. Or like the connections between NGC 4319 and Markarian 205. A physical connection between these two objects of very different redshift, was first imaged

by an amateur astronomer in 1970.

Halton Arp demonstrated the reality of that physical connection in a paper

published in 1971. In 2002, the Hubble

Heritage team at the Space Telescope

Science Institute released the image on

the left, showing no connection, and

accompanied by a commentary stating

"Appearances can be deceiving. In this

NASA Hubble Space Telescope image, an odd

celestial duo, the spiral galaxy NGC 4319 -

in the center - and a quasar called

Markarian 205 - in the upper right - appear

to be neighbors. In reality, the two

objects don't even live in the same city.

They are separated by time and space.

NGC 4319 is 80 million light years from

Earth. Markarian 205 is more than 14

times farther away, residing one billion

light years from Earth. The apparent

close alignment of MRK 205 and NGC 4319

is simply a matter of chance." However, image processing

of the STSI's own image file by Bernard Lempel, shown

on the right, brings out the bridge of

matter physically connecting these objects.

In each of these cases, and many others,

a physical connection is demonstrated between objects with redshifts, so different that such a connection is utterly Impossible on the Big Bang's foundational axiom. These examples, as powerful as they are, are but one component of a vast body of evidence accumulated by Arp and others that falsify the Hubble relationship and establish that cosmological redshift is intrinsic; that quasars are ejected from active Galactic nuclei; and evolve into galaxies in quantized redshift steps.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

On this series we are shining a light on an
unresolvable problem for astrophysicists,
the challenge of explaining unimaginably
powerful electromagnetic emissions and energies
in a universe in which
electricity causes nothing.

In our first three episodes, we explored
this question through our discussion
of the stupendous magnetic
and filamentary structures
seen all throughout
the visible universe.

The features are neither predicted nor
explained in gravity-centric cosmology
but they are the expected
features of an electric universe.

Fantastic electromagnetic phenomena are
increasingly recognized with each passing year.

From the powerful
electric fields
and supersonic plasma jets

detected on our own Earth
to the mysterious electron
acceleration in Jupiter's aurora
and even tremendous electric
currents measured in galactic jets.

Yet standard astronomy still holds to theories
in which mechanical and kinetic processes,
collisions, explosions, gravitational
collapse, heating and shock waves,
produce the measured
electrical effects.

But it cannot be a coincidence
that ever finer technological data
only increases astrophysicists'
expressions of amazement and perplexity.

In this episode, we will explain why the
discovery of "giant light bulbs in space"
is the 4th of 10 reasons why
the universe is electric.

The Fermi Bubbles

It is one of a growing list
of astounding mysteries
that demand entirely new
theoretical pathways.

For over seven years
astronomers have struggled to explain the

presence of the so called Fermi Bubbles,
giant structures emitting
powerful gamma-rays that stretch
for tens of thousands of light-years above
and below the Milky Way's spiral disk.

Both the structures' mind-boggling
size and energetic emissions
appear to pose intractable
problems for astrophysicists.

Astronomers using the Fermi
Gamma-Ray Space Telescope
discovered the so-called
bubbles in 2010.

The energetic lobes emanating
from the Milky Way's center
have been a source of extreme
puzzlement ever since.

The 2014 phys.org article 'Despite extensive
analysis, Fermi bubbles defy explanation'
outlines the mystery as follows,

"The outlines of the
bubbles are quite sharp,
and the bubbles themselves glow in nearly uniform
gamma-rays over their colossal surfaces,
like two 30,000 light years tall incandescent
bulbs screwed into the center of the galaxy...

Their size is another puzzle.

The farthest reaches of the Fermi bubbles
boast some of the highest energy gamma rays,
but there's no discernible cause for
them that far from the galaxy."

As we outlined in a
recent Space News episode,
Does Gravity Cause
Lightning in Space,
it seems almost beyond belief
that astrophysicists can only visualize
mechanical and kinetic processes
even when observing the unmistakable
signatures of electrical discharge phenomena.

The aforementioned phys.org
report poses the question,
what blew the bubbles?

As if air is being expelled
from the galactic center
and filling a balloon-like
fabric in the vacuum of space.

One theoretical possibility
investigators have proposed
is that a tremendous
population of giant stars
all exploded at roughly the

same time for some reason,
somehow forming the
gamma-ray bubbles.

As noted in the phys.org report,
another ad hoc theory for
the "bubbles" is that they
"...could have been created by huge jets
of accelerated matter blasting out
from the supermassive black hole
at the center of our galaxy."

More recently, in 2017, astronomers
claimed that a so-called giant snack,
several million years ago, by the hypothetical
black hole believed to be at Sagittarius A,
produced the energy that
created the bubbles.

These scientists may
have forgotten
that the supposed black hole had the
opportunity for another "snack"
when the gas cloud G2 made its
long-anticipated closest approach in 2014.

Apparently, the imagined gravitational
monster was not hungry
leaving the gas cloud intact to the
amazement of astronomers around the world.

We again note the irony of scientists
looking to colossal gravity
to explain stupendous
electromagnetic phenomena,
in this case, no less than "incandescent
bulbs" screwed into the center of our galaxy.

As we've reported
several times recently,
the stupendous electric
current in a galactic jet,
estimated at 10^{18} amps or the
equivalent to a trillion bolts of lightning,
has been measured by
radio astronomers
and the seemingly unfathomable discovery
of radio jets in numerous galaxies
in a distant region of space, all
spinning in the same direction,
will never be explained
by black hole proponents.

As we've also discussed
several times recently,
in the Electric Universe, an ultra-high
density energy storage phenomenon
called a plasmoid is at
the core of the Milky Way,

a kind of load in the
Galactic electrical circuit,
rather like a
rechargeable battery.

In a galactic circuit, electrical power
flows inward along the spiral arms
lighting the stars as it goes and is
concentrated and stored in the central plasmoid.

When the plasmoid reaches a
threshold density, it discharges
usually along the
galaxy's spin axis.

This process has been replicated in the
laboratory with the Plasma Focus device.

The most seemingly puzzling
feature of the bubbles,
the presence of the most intense gamma-
rays at the outer edges of the bubbles
at the farthest distance
from the galactic center,
is explicable and indeed predictable
in the electrical interpretation.

The father of plasma
cosmology, Hannes Alfven,
proposed that a plasma formation
called the double layer

should be classified as a
discrete celestial object
and that explosions of double layers
could be the source of gamma-ray bursts
and mysterious X-ray emissions.

A double layer, or what is known
as a Langmuir sheath,
forms between plasma regions
of different properties.

It's a complete mystery
to astrophysicists
why the most intense gamma-rays should
be at the outer edges of the bubbles.

Yet in the electrical
interpretation
the edges of the bubbles delineate the
boundary of the Galactic plasma environment
and that of deep space.

A double layer only exists
where there is an electric current
flowing through space plasma.

In this case, the double
layer at the bubbles' edge
would be like a giant
spherical plate capacitor
with positive charge on one plate

and negative charge on the other.

Charged particles are accelerated
across the double layer
generating electromagnetic radiation
which can include X-rays and gamma-rays.

The double layer acts
as a boundary effect,
dissipating electrical
energy in a thin layer.

Plasma scientist Dr. Anthony Peratt wrote
in his book, *Physics of the Plasma Universe*,
"...x-ray and gamma-ray
sources are likely
to have their radiative energies
supplied by electrical currents."

While astronomers continue
to ascribe the bubbles
to a mysterious blast or eruption
event, millions of years ago,
another important feature of the
bubbles completely defies this notion
while affirming the
electrical interpretation.

In 2013, in the journal *Nature*,
scientists reported the observation of
"...two giant, linearly polarized radio lobes,

containing three ridge-like substructures,
emanating from the
Galactic Center.

The lobes each extend about 60
degrees in the Galactic bulge,
closely corresponding
to the Fermi bubbles,
and are permeated by strong magnetic
fields of up to 15 microgauss."

These extremely powerful
magnetic fields follow closely
the directions of the ridges which
wind around the flow of energy
as we must find if the ridges in
fact represent electrical currents.

Critically, the width of the ridges is
remarkably constant at about 300 parsecs.

Like the consistent width
of star-forming filaments,
the constant width of the bubbles' ridges
is the unmistakable hallmark of lightning.

Collisions, explosions, eruptions,
geysers, shockwaves, heating;
like countless others stupendous
electromagnetic phenomena in the cosmos,
these kinetic and

mechanical mechanisms

will never explain the

spectacular Fermi bubbles.

But why should it be surprising

that electricity is actually the source

of so-called giant light bulbs in space.

The celestial surprises

will surely continue

until the light bulb

of new understanding

begins to flicker in the

minds of astronomers,

illuminating for them

our electric universe.

For continuous updates on Space

News from the Electric Universe,

stay tuned to

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the Electric Universe,
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On August 6, 2012, the NASA rover Curiosity
touched down on the planet Mars
to begin the latest investigation
into the Martian environment.

It seems that NASA's
scientists are most curious
about whether Mars could have
ever supported microbial life.

Beyond this, much discussion in the science
media has centered on internet hoaxes
and misunderstandings that have
duped many in the general public.

Based on the NASA press
releases one is left to wonder,
do any real mysteries remain
for Curiosity to explore.

Well, it is true that there's a great
deal of rumor mongering on the Internet
and this gives NASA officials
an opportunity to correct
misinformation and to be

more informed on the subject
than those who are
spreading the rumors.

But there is an irony
in all of this.

Here on the surface of Mars today,
we have a rover named Curiosity
and this Rover is a witness to
stupendous technological achievement
but the irony is that within the theoretical
sciences today curiosity is absent.

Here we have a laboratory
in space, the planet Mars
which offers such a unique opportunity
for discovery in the sciences.

But the questions
are not being asked.

Just consider for example the mystery
of the Martian profile as a whole
where you have such a split
personality, completely unexplained.

Two hemispheres so
radically different.

In the North, virtually
no craters.

In the south dense cratering.

How could that be?

We make assumptions about

planetary evolution

and hold on to those assumptions for

decades after they've stopped working.

The mysteries surrounding

Martian geology

may run far deeper than the general

public have been led to believe.

The key piece of evidence

is the shape of the planet.

The northern hemisphere is actually

lower than the southern hemisphere

and it's not just that that planet was

somehow squeezed into an odd shape.

The definitive consideration

is the crustal depth

for reasons that no planetary

scientist has explained.

The crust of the northern

hemisphere has been excavated.

It's been eaten

away, up to 6 miles deep.

And there is one force only that could

achieve hemispheric excavation of a planet.

That force is electric discharge in an age

of planetary instability and violence.

A reconsideration of Martian

geology could challenge

many of the underlying assumptions

of planetary science.

Planetary scientists have long maintained

that you can date the surfaces

of rocky planets and moons

by counting craters.

This would make the southern hemisphere

of Mars a billion years older

than the northern hemisphere.

But if Mars was engulfed in the

electric discharge in the past,

one of the first questions to ask

is whether that pervasive cratering

in the southern hemisphere could

be explained by electric arcs.

And electrical experiments by plasma scientist

C.J. Ransom of Vemasat laboratories,

showed that production of

craters by electric arcs

can also generate the telltale markers

that you see on the planet Mars,

including the central darkened

bumps of so many craters

and the general darkening of
the heavily cratered terrain.

These are not patterns that would
be expected from random bombardment
by rocky bodies from space
over a billion years.

The cratering patterns created by high-energy
plasma discharge to a solid surface,
may help explain the many
anomalous crater forms on Mars.

It really is a fact that textbook theory does
not account for Martian cratering patterns.

Bizarre hexagonal
craters for example.

A hexagon is a common trademark
of electric discharge.

So-called bull's-eye craters
where one crater centers on
another beyond all probability.

Craters with towering central peaks
that terminate in another crater.

Finally, terraced crater
floors. Then crater walls.

Huge mesas sitting squarely
within a surrounding crater.

Sharply scalloped walls as seen in the

case of the famous Victoria crater.

Also the endless strings of
craters or crater chains.

And what about craters with central
spherical domes, incredibly enigmatic.

Is it a coincidence that Dr.

Ransom got exactly the same form
in electric discharge
to a Martian type soil.

The cratering mysteries on
Mars are just the beginning
and if NASA will open the door
to an electrical interpretation,
a different picture of Solar System
history is certain to follow.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

a comet can be a wonder to behold for thousands of years these visitors have mystified enchanted and terrified humanity and even today despite much attention from astronomers the popular science of comets is filled with enigmas and unresolved mysteries to theoretical views of comets today stand in stark contrast but aided by recent discoveries we can compare the two vantage points and test them against presently known facts it was only in the mid twentieth century that a scientific consensus emerged on the nature of comets in 1950 astronomer Fred Whipple proposed a model that came to be known as the dirty snowball hypothesis crippled envision comets as conglomerates of frozen gases mainly water carbon monoxide and carbon dioxide together with the primordial dust of the early solar system but a dilemma had to be solved comets lose considerable material at each pass around the Sun this means that the Comets we see cannot have been around all that long so the Dutch

astronomer Yann Oort envisioned a vast
hoard of icy objects circling the Sun
about a thousand times more distant than
remote Pluto he imagined that after
billions of years one of these dirty
snowballs could be deflected from the
icy cloud by a passing star it might
then fall into the inner solar system to
produce an active comet
as astronomers came to accept the idea
they called this theoretical source of
comets the Oort cloud but in the early
1990s with improved observations it
became clear that numerous objects
circled the Sun at much closer distances
than the conjectured Oort cloud and
eventually all short-term comets were
theorized to have arrived from a disk of
debris called the Kuiper belt it's
extending out from Neptune's orbit and
containing objects that drifted inward
from the Oort cloud across the eons my
astronomers own admissions these
theoretical guesses leave numerous comet
mysteries unresolved but always it is
assumed that comets are composed of dust

and ice warmed by the Sun to create a coma and tail leaving a ring of dust the theory suggests that beneath the blackened shallow crust pockets of gas form at critical moments the pressure breaks through the surface creating jets blasting vapor and dust away from the nucleus but how well does this popular theory explain what we've more recently learned about comets

in an alternative view comets have a much different history this view sees comets as debris left by intense electrical activity in an earlier phase of solar system evolution not billions of years ago but a much more recent epoch of planetary instability and violence one that reached even into early human times this new perspective combines historical facts with surprising recent discoveries about comets in the electrical interpretation not just comets but asteroids and meteors as well were born in planetary upheaval as electric arcs blasted material from the surfaces of planets

and moons to produce fused formations identical in appearance to fused material and laboratory experiments with electric discharge here an arriving comet moves on an elliptical path through the sun's electric field an exceedingly weak field but immensely powerful across the great distances of interplanetary space as the comet draws closer to the Sun the charge imbalance triggers electric discharge creating a coma and long cometary tail the mysterious Jets of comets can then be understood in terms of arc discharges to the nucleus very similar to industrial electric discharge machining the excavated material is accelerated into space along the Jets filamentary pathways intermittent and wandering arcs he rode the surface and Burnet black leaving the distinctive scarring patterns of comet nuclei the Jets explode from the nucleus at supersonic speed and retained their coherent structure for hundreds of thousands of miles

scene in terms of an electrically
neutral vacuum in space nothing of this
sort should occur
the tails of comets reveal well-defined
twisting filaments extending up to tens
of millions of miles without dissipating
in the vacuum of space for proponents of
the electric model this contradiction of
neutral gas behavior is no surprise it
is the testament to the Comets
electrified environment the proponents
of this interpretation also say it's the
electric force that holds the spherical
coma in place against the solar wind as
the comet races around the Sun the
diameter of the visible coma will often
reach millions of miles and it's
surrounded by an even larger and more
improbable spherical envelope of
fluorescing hydrogen visible in
ultraviolet light for decades we've been
assured that comets were made in the
deepest of deep freezes in interstellar
space
comets coalesced from interstellar
Stardust the primal material of the

universe before the emergence of the Sun
as we know it or its planets and their
moons

a foundational principle of Comet theory
and of modern cosmology as a whole is
compositional zoning at the outermost
reaches of the sun's domain formative
processes were limited to the most
rudimentary material raw dust

constituted in an environment close to
absolute zero with no complex chemistry
in contrast bodies later formed close to
the emerging Sun would exhibit minerals
formed at relatively high temperatures
for decades this theoretical claim stood
fast and the claim was even carried into
space it's what prompted the Stardust
mission to comet ville 2 as indicated by
the very name of the scientific mission
the theory required that a comet be
constituted of Stardust

but the core assumptions of Comet theory
could not withstand the shock from the
data returned by the Stardust mission
launched on February 7th 1999 Stardust
carried with it a tray of aerogel

to capture samples of Comet dust from
built to and it returned these samples
to earth scientists could then view
microscopically the raw material of a
comet the first surprise was the size of
the dust grains much larger stronger
with far more complex structure and
chemistry than Theory allowed and the
gel did capture trivial amounts of the
expected microscopic dust invisible to
the naked eye and leaving shallow bowl
shaped pits in the aerogel but more
common by far were much deeper tracks
more in the shape of carrots than
shallow pits the particles themselves
were clearly visible to the naked eye to
their amazement the mission scientists
found elaborately developed crystalline
structures in the comet dust it was
an exciting discovery but one that
challenged all prior theory of a comet's
origins crystalline structures cannot
form in the absence of minimum
temperatures temperatures unavailable in
interstellar space the spectra of
silicates and cometary comas were

evident as far back as the probes of
Comet Halle though largely ignored but
the mystery couldn't be ignored after a
rival of the comet hale-bopp in 1997
this comet spectra placed an exclamation
point on crystalline silicon structures
in cometary comas to get past the
problem astronomers hedged their bets
they surmised that billions of years ago
the raw material of the comet was ever
so slightly warmed by an emerging Sun
then all of the discrete particles in a
vast circle around the Sun were
transported outward by means only
guessed at to the faraway and frigid
Oort cloud but this rationalization
failed outright once the scientists had
real Comet dust in their laboratories
the grains were simply too large and the
mineralogical and chemical compositions
far too complex
one puzzle was followed by another comet
theory assumed that water ice was a
primary constituent of active comets but
no water ice was detected on the nucleus
of ville two and not a trace of water

was found in the well-preserved comet
dust and yet paradoxically the raw comet
material of vilt

two contained iron and sulfur minerals
that can only be formed in the presence
of liquid water liquid water not in the
near-perfect vacuum of deep space and
not in a deep freeze

instead of trivial warming the built to
minerals revealed a diversity of
formative processes various sulfide
minerals requiring liquid water can only
exist below 210 degrees Celsius or 410
degrees Fahrenheit these minerals have
never seen higher temperatures but also
occurring in the comet dust was the

mineral olivine whose molecular
structure rapidly breaks down in the
very presence of water it's a common
igneous form an abundant byproduct of
volcanism perhaps the biggest surprise
was that some of the comet minerals such
as forsterite in the instant of their
formation were heated to thousands of
degrees forsterite is formed in the most
intense volcanic heating of silicates

but occurs also in lightning strikes to
silicate rocks the message could not
have been more emphatic

it was not just the hypothesized Oort
cloud that failed to work is advertised
the entire concept of compositional
zoning is applied to comets failed its
first acid test

comet material requiring moderate
temperatures in liquid water comet
material formed at exceedingly high
temperatures only the most trivial
levels of the presumed raw material of
comets interstellar dust a complete
absence of water

despite cometary material originally
formed in liquid water though the
olivine abundances could not have been
formed or even survived in the presence
of liquid water and of course liquid
water requires atmospheric or other
pressure it cannot exist in the extreme
vacuum of interstellar space

- this seemingly contradictory picture
we must add extreme selective heating
selective heating because much of the

compositional material could not survive
the super heating that created olivine
forsterite
and other crystalline minerals the Ville
- discoveries have forced upon comet
science one inescapable fact in our own
cosmic neighborhood the diverse mineral
content of ilk - is typical only of
planets in the habitable zone of a fully
developed Sun
when the fundamentals of a theory are
falsified by unexpected findings a new
vantage point is required one that
explains and predicts the surprises
without introducing new contradictions
the conjectured Oort cloud freezer
forming and preserving comets for
billions of years is falsified by the
vill to findings only the diverse
surface environments of rocky planets
can provide the required raw material
and only the recent formation of comets
can explain why these rapidly degraded
objects are still with us the bold
question must now be asked where comets
created and in recent periods of

planetary instability and intense electrical events would minerals formed in liquid water then come as a surprise would comets now exhibiting no water be a surprise or crystalline structure suggesting igneous processes or minerals pointing to the exceedingly high temperatures of lightning a more unified picture of comet formation is available to us and if comets were born electrically what might the causative connection be to asteroids and meteorites the apparent cousins of the comet

built to mineral cuba night a copper iron sulphide is abundant on earth and so₂ on mars

in fact it's found in Martian meteorites now known to have been blasted up to escape velocity from the surface of Mars later to arrive at Earth a few years ago things now stated by astronomers would have been considered preposterous astronomers now acknowledge that the margin moon Phobos long called a captured asteroid was formed out of

material blasted from the Martian
surface for the source of a comet's
constituent materials planets close to
the sun's habitable zone are the most
reasonable places to look the foremost
candidate is the planet Mars in this
intellectual adventure we must revisit
all earlier ideas about solar system
history evidence for high-energy
electrical events can no longer be
ignored the popular bill in your
scenarios describing a comet's origins
will be displaced by things now
established as fact
and the changing picture of solar system
history will surely not stop at the new
story of the comet
you

welcome to space news from the electric
universe brought to you by the
thunderbolts project at Thunderbolts dot
info the comet 67p has provided an
avalanche of astonishing discoveries
that may puzzle scientists for years to
come
and one problem that will simply not go
away is the seemingly impossible dooms
or doom like ripples at the Comets neck
at its first observation the feature
drew gasps of disbelief from scientists
and science media alike as planetary
geologist Emily locked a wallow wrote on
October 28th 2014 other features are odd
because they look familiar and yet have
no right being on a comet I've called
them rhythmic ridges but to pretty much
everyone who looks at them they look
like sand dunes which are just plain
impossible on a body that has neither
atmosphere nor much of any gravity more
recent close-up images of the impossible
dunes have only deepened the mystery
emily lacta Walla is of course correct
within the standard model of comets and

comet origins so-called sand dunes or dune like ripples are clearly impossible however vision scientists have had no choice but to grasp for an explanation they have suggested that the Comets Jets act as a kind of wind to create a Dueling process despite the absence of the required atmosphere dr. Nicholas Thomas said to the New York Times you have to ask yourself is that possible you can convince yourself you could make the move it's plausible at least at the moment this remarkable conjecture has even been given a scientific sounding name localized gas driven transport a hint of another possibility has been suggested on at least one science news service on January 24th the Universe Today website suggested of the doom like ripples formation electrostatic levitation of dust charged by sunlight may also play a role indeed electrostatic dust levitation on the moon has been a subject of scientific interest for several decades since Apollo astronauts observed

fountain

of dust hundreds of kilometres above the lunar surface the implications of this discovery have long been clear for other airless bodies in the solar system we can now see on the horizon of the illuminated portion of 67 piece nucleus a cloud of dust lit by the Sun both the behavior of the Jets and the Comets dust layers defy the notion of an icy body moving through an electrically inert vacuum the increasingly energetic Philipmentary Jets are aligned and draw together and it appears that the dust is being gathered in two unique configurations on the surface and globally levitated above the surface this increases the confidence of electric universe proponents that surface electrical activity could profoundly reconfigure the dust layers in the course of the next few months we note that the most abundant and energetic Jets originated at the Comets neck which is frequently in shadow and is the coldest region on the nucleus

which means it should be the least active region if solar warming is the cause of the Jets nor have we seen evidence that the Jets are connected to the supposed pressurized chambers which are said to provide the quote nozzles from which the Jets explode as noted in a recent space news episode for more than 15 years members of the electric universe community have been exploring the effects of electrical discharges and electric fields on surface dust these experiments have successfully replicated many familiar planetary features including dunes and dune like ripples confirming the ability of the electrical force to organize dust material much more efficiently than mechanical wind or gravity alone consider also the significance of this experimental research for our understanding of planetary science the planet Mars has an atmosphere less than 1% as dense as Earth's and it's scientists have puzzled for decades over the planets towering dust devils and

global dust storms today the electrified nature of the giant dust devils has been acknowledged by NASA investigators mechanical wind alone does not explain the Martian sand dunes a more than it can explain the dunes on 67p in the past few decades scientific papers have suggested minor electrostatic and photoelectric effects on comets and asteroids but comet theorists as a whole have yet to give serious attention to the electric universe theory of a comet the electrical interpretation sees comets as negatively charged bodies moving through a weak electric field of the Sun comets simply pick up the negative charge during their time at greater distances from the Sun a new scientific paper appears to have confirmed yet another prediction of this theory in the fall of 2014 the Rosetta orbiters ion and electron sensor measured a high level of excess electrons surprisingly close to 60 7-piece nucleus the paper reads IES has revealed the presence of greatly

enhanced electron fluxes and densities
which appear to be associated with
cometary ions created near the nucleus
electron fluxes within a couple of
hundred of kilometers of the nucleus
greatly exceed solar wind electron
fluxes the presence of surprising
densities of electrons near the common
nucleus is precisely what we do expect
if cometary displays are electric
discharge phenomena the successful
predictive record of the electric comet
theory stands in stark contrast to the
record of the 65 year old dirty snowball
model indeed in recent weeks we've seen
some remarkable statements from the
Rosetta team in January dr. Nicholas
Thomas was quoted as saying by the
science News org website Rosetta has
blown the dirty snowball idea out of the
water
however the ad hoc theories constructed
by the Rosetta team still hold to the
original story of comets as primordial
icy bodies from the early solar system
how institutional science responds to

the now acknowledged falsification of
the dirty snowball model will be a
crucial test of its health and integrity
whatever the outcome the current
challenges for comet scientists will
simply not go away
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Welcome to Space News from
the Electric Universe,
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In part one of
this presentation,

Thunderbolts colleague Peter Mungo
Jupp began a provocative reassessment
of the standard geological and
anthropological timetables on planet Earth.

We have proposed a radically
alternative history for planet Earth
and indeed our
entire solar system.

In relatively recent times, there was a
chaotic period in the inner solar system,
when planets approached one another close
enough to exchange electromagnetic energy
taking the form of
interplanetary lightning.

One of these planets was Earth.

Whose close encounter with
Venus, the great comet,
was recorded in ancient
texts around the world.

In this scenario, in
an era of prehistory,
the Earth was bombarded with
tremendous electromagnetic radiation.

What effects did this have on our
planet and its living organisms?

Most geologists and biologists work
from a uniformitarian viewpoint,
i.e. that's only small incremental
changes in the last thousands of years.

One though has only to read
Claude Schaeffer's works,
the archaeologist in the Middle
East, to realize that many violent
perturbations have occurred within
the last few thousand years.

We're talking roughly no more than 8,000
years and if one is to believe historical
and many of the myths as
argued by Rens van der Sluijs,
then continent-encompassing floods, earthquakes,
volcanoes, and massive electrical phenomena
must have played a huge part in
altering the carbon-14 isotope's
concentration in living species.

Also, dead carbon-13 from underground

sources in huge volcanic eruptions

must also falsify

carbon-14 ratios.

The concept of dead

carbon contamination.

Now, before we go on to the atomic

clock mitochondrial DNA Theory,

let's just touch on one of the last archaeological

modern science dating technologies.

Electric spin resonance, uranium-

thorium, thermoluminescence

and optically

stimulated resonance.

How accurate are these other methodologies

used in establishing chronology?

Electric spin resonance and uranium-

thorium series dating methods

are secondary in the sense that they

rely on measurements of isotopes

and others not originally

present in the living body

and the modeling of process

taking place after burial.

For instance, thermo-luminescence and optically

stimulated luminescence dating methods

are applied to quartz grains in

sediments containing skeletal remains

but not directly on the bones.

Again, these must be subject to interpretation of the environment at the time of inception.

Brian notes that he found thermo-luminescence dating highly inaccurate with echoes of the Jinmium affair which we'll go into.

When dating marine deposits, the laboratory result was 20,000 years BP (Before Present).

He maintains this cannot be accurate for the time the shoreline was well out to sea.

He also remarks that this technique cannot be considered accurate if the event that initially triggered the zeroing of the quartz particles occurred at night.

It's light dependent

In this case, it will not start the clock ticking.

He also notes serious age reversal effects with carbon dating.

We have not always lived in an uniformitarian universe and what happens today may have been and most probably was drastically different to our own relatively

geologically calm world.

These methods too, could be

subject to gross error

without knowing the physical, historical,

geological history of the site.

Cataclysmic events have often shaped the

Earth in only the last few thousand years.

Our reliance on scientific

dating demands caution.

I touched on the Jinmium affair

with first declared the site is

possibly 170,000 years before

present, using luminescence dating.

But it was eventually found

to be only 3,000 years old.

Optical luminescence methods are highly

subject to contamination with Bowler,

from Melbourne University, noting

in his last studies of Lake Mungo

that one lower level came up at a

later date than the higher one.

Impossible?

He declared this

was contamination

but there are serious

flaws for this method

especially when water has, at some stage, washed through an area.

In addition, it assumes zero crystal attachment when initially exposed to sunlight at its foundation.

It depends on how it was formed and this is how to assume when the geologies was not there at its inception.

Similarly, electric spin, electron spin and uranium-thorium series methodologies, make many assumptions gleaned from our uniformitarian present-day world and make no speculation on conditions evident in the ice age where unknown factors were probably at work.

For instance, note the discrepancy between Bowler and Thorne's work at Lake Mungo.

One came to 40,000 years before present, the other 60,000.

A 20,000 year discrepancy.

Carbon dating if it's not standardized with dendrography, which only goes to 8,000

years, cannot be accurate.

Remember, we're not doubting the accuracy of mass spectrometry used, only its universal application without time calibration controls.

And finally we move on to the atomic clock-mitochondrial-DNA-phylogenetic theory.

Aha!

Is in fact mitochondrial DNA the atomic clock genetic scientists claim it to be?

Eukaryote cells, that's mammal and other living cells, contain mitochondria within the plasma of the cell but outside its nucleus.

Amongst other functions, they are an energy factory driving the cells.

Curiously, they most closely resembled the bacteria Rickettsia and have many similar properties.

What has become of great interest is the mitochondria's ability to transport, that's with the exceptions the female line to the next generation.

The quality that excites interest is that

a certain portion of the genetic chain of the mitochondrial DNA, is subject to mutation in what is believed to be a constant rate within any species.

Thus analysis of past generations should reveal the number of generations, noted at humans for 20 years per generation, and thus act as an atomic clock to peg the age of the specimen.

Recently, an attempt was made to estimate the age of the human race using mitochondrial DNA.

This material is inherited always from mother to children only and there are exceptions but that's a distraction.

By measuring the difference in mitochondrial DNA among many individuals, the age of the common maternal ancestor of humanity was estimated at about 200,000 years.

Is this true?

A problem is that rates of mutation

are not known by direct measurement
and are often computed based on
assumed evolutionary timescales.

Note that 'assumed
evolutionary timescales.'

As we have seen in the
previous work above,
all these age estimates
could be greatly in error.

In fact, many different rates of mutation
are quoted by different biologists.

It shouldn't be very
hard explicitly
to measure the rate of mutation of mitochondrial
DNA to get a better estimate on this age.

From royal lineages, for example,
one could find two individuals
whose most recent common maternal
ancestor was, say, 1,000 years ago.

One could then measure
the difference
of the mitochondrial DNA of these
individuals to find its mutation rate.

This scheme is attractive because it
does not depend on radiometric dating
or other assumptions about

evolution or mutation rates.

It is possible that in 1,000 years there would be too little difference to measure.

At least, this would give us some useful information.

Now along this line, Parsons, one of these researchers, has recently done some work to measure explicitly the rate of substitution in the mitochondrial DNA control region.

That's a narrow region where a lot of mutation occurs and I'll read his summary, "The rate and pattern of sequence substitutions in the mitochondrial DNA control region is of central importance to studies of human evolution and to forensic identity.

Here, we report a direct measurement of the intergenerational substitution rate in the human CR."

Now, this is a way we can actually find the age.

He compared these to what they call 'phylogenetic analysis'

that claim the use of mitochondrial DNA to ascertain the age of, let's say, a particular Neanderthal for instance.

He found the observed substitution rate reported were very high compared to rates inferred from evolutionary studies.

So, using so-called mitochondria DNA in fact, 20 times higher.

"Using our empirical rate to calibrate the mitochondrial DNA molecular clock would result in an age of this mitochondrial DNA of only 6,500 years, clearly incompatible with the age of modern humans (as estimated by evolutionary studies)

...it remains

implausible to explain

the known geographic distribution of mitochondrial DNA sequence variation by human migration that occurred only in the last 6,500 years."

In fact, the evolutionary molecular clock,

as measured by mitochondrial DNA, has a long and troubled history.

Hampered by a lack of empirically
measured mutation rates,
the evolutionary molecular clock
researchers have historically assumed
mutation rates by dividing two
species' genetic differences
by their evolutionary
time of divergence,
e.g. human-chimpanzee
divergence.

Since the latter was inferred from the
evolutionary age of silence in the fossil record
which is basically not
very well understood,
the evolutionary molecular clock amounted
to a circle of evolutionary assumptions
and never, never an independent
test of a species' time of origin.

The advent of modern
molecular genetics
has resulted in an increasing
number of publications
in which mutation rates in various species
and in various genetic compartments
have been empirically determined
independent of the evolutionary age of

silence in the so-called fossil record.

Using the mitochondrial

mutation rates,

predictions can now be made on how

much mitochondrial DNA diversity

should result after a specific

number of years have elapsed.

These studies represent an important

and significant step forward

in our understanding of the origin of

human mitochondrial DNA differences.

Though the mutation rate was measured

only in European individuals,

predictions with this mutation

rate on the 6,000 year time scale

captured the mitochondrial

DNA diversity.

All non-African people groups

including the major Eurasian groups

and representatives of the

native peoples of the Americas.

Welcome to Space News from
the Electric Universe,
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The interview you are about to hear
with physicist Wal Thornhill was
recorded on Monday April 8th, 2019.

In anticipation of the scheduled release of
the so called 'first ever direct image of
a black hole' which occurred
on Wednesday, April 10th.

Now, whenever we talk about a
space science story which has crossed
over and become a major international
news headline, we seem to attract an
inordinate number of viewers who have
little or no prior familiarity with
plasma cosmology and the
Electric Universe theory.

The problem is that the
overwhelming majority of the general
public have no idea that any theoretical
alternatives to the black hole exist and
should actually be taken seriously.

So here's a brief segment from a possible

elevator speech for newcomers to plasma cosmology and the Electric Universe.

Plasma cosmology is a model of the universe which recognizes the now undeniable significance of plasma and the electromagnetic force in the cosmos.

For several decades, plasma cosmologists have successfully reproduced, in laboratory experiments, many Astrophysical phenomena.

An electric plasma universe predicts, and in fact, requires the pervasive and shockingly well ordered cosmic magnetic fields which are now recognized but are not explained and were not predicted by gravity-centric cosmology.

And for decades, it's been proposed that at the center of galaxies is not a black hole but rather a physically real object which is produced and observed in laboratories, called a plasmoid.

Now, you've probably never heard Neil deGrasse Tyson or Brian Cox talking about plasmoids, but that

doesn't make them any less real.

So what is a plasmoid?

Well, the term plasmoid was coined by the physicist Winston H. Bostick in the 1950s.

Bostick described a plasmoid as follows,

"The plasma is emitted not as an amorphous blob, but in the form of a torus.

We shall take the liberty of calling this toroidal structure a plasmoid, a word which means plasma-magnetic entity.

Now, Bostick is probably most famous for having performed many experiments in the plasma lab which reproduced the formation and evolution of spiral galaxies.

Now, Wal Thornhill explains in this interview in some detail the nature and properties of plasmoids and for viewers who wish to gain an understanding of what plasma cosmology and the Electric Universe actually propose for the phenomena that astrophysicists attribute to "black holes."

In the comments section, we have penned a

comment which will feature a dozen or so relevant links to previous Space News episodes and a number of other resources.

So finally, as I begin to play my discussion from Monday with Wal Thornhill, bear in mind again the description of the plasmoid as a "toroidal or doughnut-shaped structure."

Now consider the side-by-side comparison of the plasma cosmology prediction of what's actually at a galaxy's core which is the aforementioned extremely dense magnetically confined hot spot called a plasmoid, and to the right we see the image that has been touted as the first picture of a black hole, of course, with no alternative being considered.

So here now is part 1 of my two-part interview with Wal Thornhill, recorded April 8, 2019.

On April 6, the Phys.org report says, scientists are set to unveil the first picture of a black hole.

The thing is that the picture itself is actually a virtual reality image, like most of these deep space images turn out to be and that's

because the imaging algorithms that were developed to fill the gaps of data and they say the gaps of data we are missing in order to reconstruct a picture of black hole.

So in other words, it's the algorithms that they've developed based on their understanding and their assumptions about what it is they're looking at that will generate this image.

They just granted that they are looking for something at the center of the galaxy which would appear about the size of a, try to photograph a golf ball on the moon, according to this article.

There is plenty of opportunity for making the image look like what you expect to see.

And this has happened of course before.

It's just like the gravitational wave detectors that were built to detect gravitational waves and all of the assumptions were built-in into that so that they had to find something.

So they had hundreds of thousands of templates against which to match these signals and then of course the signals have to be

sort of pulled out of the noise, they're looking at signals that are incredibly tiny, which gives rise of course to the possibility that what they're seeing is like making faces out of clouds.

The notion that black holes exist is based on gravitational theory.

Now gravitational theory, according to modern scientists, is that of general relativity, Einstein's general relativity, but the problem with that is and it was best described, I think, in a television program put on by the BBC which showed Brian Cox explaining the genius of Einstein in looking at a falling cannonball and a feather in a huge vacuum chamber.

And of course, the two fall together.

And what Brian Cox said was that Einstein's genius was that he said, they're not actually falling.

In other words, it's all an appearance but the only way you can get away with that is to disregard everything else that exists in the universe, which was a tendency of the mathematics of general

relativity and also special relativity.

Special relativity makes all observers,
no matter how they're moving, equivalent
which is sheer nonsense.

The only way you can do that is to disregard the
rest of the universe because the most their
motion will be different for different
observers with respect to this
background of all the stars and matter
in the rest of the universe.

So it's a weird kind of perception
that's induced by Einstein's theory.

The Electric Universe has followed the guide
of the plasma cosmologists, the plasma
physicists who've done real experiments
and developed a simple theory which
explains what is at the center of our galaxy
and other galaxies and that is a plasmoid.

Now, plasmoid is a concentration
of electromagnetic energy caused by
electric currents flowing in along the
spiral arms into the center of the
galaxy and this is seen in the
laboratory, the plasma laboratory, in
terms of what's known as a plasma focus
where you have a central conductor and a

surrounding cylinder with that large voltage difference between them; and you produce that voltage difference by having a huge roomful of capacitors, stored electric charge, which you release suddenly.

What you do then is, you create a discharge which runs down the cylinder, between the cylinder and the central electrode and when it comes to the end that it moves out beyond the end and curls back in on itself and forms as tiny plasmoid.

Now, a description of all of this and the physics behind it was given by Eric Lerner in his book 'The Big Bang Never Happened' which was published in 1991.

It's easily understood, it makes sense, it conforms to electromagnetic theory, and it is all about electrodynamics that is the movement of charged particles.

And when you think about it, the universe is formed by moving charged particles.

So, the governing force in the universe is what's known as electrodynamics, not gravity.

And in particular, spiral galaxies, their form and the way they move is easily explained in terms of electrodynamics, not gravity!

Now when you concentrate a huge amount of electrical and electromagnetic energy in a tiny plasmoid, the energy storage means that it appears to have a lot more mass than you would expect in such a small space.

Also, the plasmoid has a doughnut shape.

So it's quite likely that what we will be told is that they've seen a glowing accretion disk.

The gravitational accretion has nothing whatever to do with it, it is all electro-dynamic.

So yes, there can be or they should actually see a glowing doughnut-shaped object quite bright because there's an awful lot of radiation and so on from this object and in the center there will be nothing.

No black hole, just the plasmoid, and it's only when the plasmoid begins to break down that the, where the electric and electromagnetic

forces are greatest that is in this
center of the doughnut.

That is where the breakdown occurs
and you get these jets formed.

Now jets from a black hole are an
incredible nonsense when you think about
it, because black holes are supposed to
suck everything in and here they are,
forcing jets out along the rotation axis.

Maybe I should expand a bit on what
these jets are and how they're formed.

If you can imagine that the plasmoid has a
combination of both positive and
negative charges in that plasma and this
is quite normal for a plasma; where they
become forced closest together is in the
center of the doughnut, if you like.

And when the density of these particles
reaches a critical point, the protons and
electrons may actually join together to
form a neutron and the neutrons then are
not subject to the electromagnetic
forces that have held them in
place and this is why they escape in the
form of neutrons and the neutrons of
course decay in a matter of minutes but

that's enough time for them traveling at relativistic velocities to get away to then become positive and negative particles once more.

The electrons tend to be trapped longer by the powerful magnetic fields involved, they tend to spiral around much more tightly than the heavier protons, and so you get an electric current flowing along these jets.

And this is actually being measured by the magnetic fields they create and these currents are huge.

So the whole galactic environment and behavior and appearance can be explained electromagnetically and has been done so by plasma cosmologists decades ago.

But of course, astrophysicists and this over-specialization of science these days creates walls between people, even within the same discipline.

It's difficult often to get ideas broadcast and discussed rationally and rational decisions made based upon rational argument even within individual departments, let alone across

departments in a university.

So in some ways, our institutionalized education and research system fails us, dismally, and this is why we get away with this huge expense on things like the gravitational wave detectors when no one actually knows what the gravitational force is, and event horizon telescopes when even the very concept of the event horizon for a black hole is nonsense.

The answers all lie in getting a grip on the real history of science because we actually lost the plot at the end of the 19th and beginning of the 20th century.

It's as if the human race went rather berserk, both politically and scientifically at the same time.

And of course, the history that's taught to students is sanitized, you only hear about the people that they want you to hear about and those who had other ideas are not even compared against the ideas that are so-called, you know, 'accepted science' or 'consensus science.'

The whole idea of consensus science is nonsense anyway because the truth is not found by a vote.

Well, an unspoken agreement that lurks behind this kind of media sensation is the assumption that no basis exists for anyone to doubt the black holes' existence.

So here's a very simple question for you, what is your response to the astrophysicist who says that the existence of black holes is an established fact?

The questions to ask an astrophysicist in return for any dogmatic statements is to define mass and energy because here we hear these black holes have masses of millions or even billions of Suns and they're compressed into a space where the mass resides in a singularity.

Well, a singularity involves infinity and you're no longer talking physics when you introduce infinity because infinity is merely a concept, that's not a thing, it's not a number, you can't use it in mathematics as school boys were taught when I went to school.

But it's a word that's often used in reference to black holes and also the Big Bang.

This gets back to Eric Lerner's book

and why it's important to read it.

From the physics point of view is, that he deals with these things, the plasma cosmologists don't deal with infinities, they have no need because the electric force is so much more powerful than gravity that you can ignore gravity and they've actually tested that in their supercomputer simulations of their experiments and they can include gravity quite easily and in the simulation or they can leave it out and it makes no difference.

Stay tuned for part 2

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts.info

The following presentation is an adaptation of the Mel Acheson Picture-Of-the-Day article, "What Science Says." The link to the article may be found in the description box of this video. It's common to hear people refer to "what science says." The usual assumption is that what science says is said indefeasibly.

But the term "science" has two conflicting senses: science as Currently Accepted Theory and science as method. To conclude that method inevitably leads to Currently Accepted Theory and furthermore, that Currently Accepted theory is the end of science, is to wallow in hubris. Both the history of science and the nature of cognition contradict such arrogance. The universe is large, and data both accumulate and can be arranged and valued in different ways. The discernment of orderly patterns in these mutable fields of data, can result not only in refinements of a theory, but in the wholesale replacement

of a theory. In pursuing the questions raised by Currently Accepted Theory, method is likely to overturn Currently Accepted Theory. In the competition between a Currently Accepted Theory and its potential replacement, the two senses of science apply opposite standards of evaluation. From the viewpoint of science as Currently Accepted Theory, the standard is conformity with the fundamental principles of the discipline. Any fundamentally different theory will be seen as a “crackpot” idea. Half a century ago, fitting continents together like a jigsaw puzzle, was ridiculous. From the viewpoint of science as method, the standard is systematic exercise of cognitive skill: the discernment of orderly patterns in domains of experience.

The distinction between fundamental and superficial differences is irrelevant.

That continents can be fit together like a jigsaw puzzle, was a clue to a new theory and recognition of a new phenomenon. In the sense of method,

particular theories are just tools,
something with which to build a
technology, to be replaced when
experience and curiosity move on. All
theories are “working hypotheses”,
not Ultimate Truths. I'll use the Electric
Universe Theory for an example. In the
standards of Currently Accepted Theory,
it's ridiculous: four or five planets
stacked one above the other on a common
axis, is if not impossible, so far from
the familiar and the expected, that it's
laughable. Gravitational theory has come
up with the orbit of SOHO, revolving
around an empty spot in space. And Comet
Shoemaker-Levy 9 stretched out in a line
that might have mimicked the Saturnian
polar configuration from one of its
components. But if gravitational theory
alone can't quite say it's impossible,
the many interlocking connections with
other disciplines, makes it extremely
unlikely. In the standards of method
however, this is all merely argument from
authority. Method is concerned more with
process than with the product. In the

following, I'll compare the Electric Universe theory with a list of standards developed by B. J. F. Lonergan in his book, Insight. The Canon of Selection requires a theory to involve sensible, observable consequences. In accord with this, the data of the Electric Universe theory are the words, written and spoken, of the myths of all cultures, their ritual and cultural contexts, linguistic associations and etymologies, and the associated artistic expressions such as pictographs, ceramics and architecture. The Canon of Operations involves an accumulation of insights from observations, applications and experiments. The Electric Universe Theory verifies the existence of expected themes from one myth and culture to the next. It modifies the generalization of those themes by the comparative removal of local embellishments and addition of common elements. The Canon of Relevance is concerned with the intelligibility imminent in the data. The Electric

Universe Theory derives its model from the structure of the common themes. The Canon of Parsimony - called Occam's Razor in its simplistic form - requires that nothing be added to the data, except the laws verified in the data. The Electric Universe Theory is limited to only the structure of common themes in the data. Note here that modifying the theory to make it compatible with theories of other disciplines, would be a violation of this Canon. Contrary to one's first impulse that Occam's Razor requires cutting off those parts of the theory that are "added assumptions" to Currently Accepted Theory and instead requires strict independence from Currently Accepted Theory. The Canon of Completeness requires a theory to account for all the data. It's precisely the Electric Universe Theory's method of comparing all the myths of all cultures, that reveals the common themes and their interdependent structure. The conclusion is that science says two things: as Currently Accepted Theory it

says the Electric Universe Theory is
next to impossible. But as method, it says
the Electric Universe Theory is a viable
and valuable insight that presents the
opportunity of enlarging the
insights of other disciplines.

[Music]

Welcome to the Electricity of Life, brought to you
by the Thunderbolts Project™ at Thunderbolts.info

In the 21st century, scientific discovery
routinely forces a new perspective on
the nature of reality, including physical
phenomena at every scale in the cosmos.

One of the strangest beliefs in
cosmology is that celestial bodies exist
in isolation, with no connection or
influence on one another. However, today
our most powerful telescopes reveal
astonishing networks of plasma filaments
which connect stars and galaxies across
unfathomable distances. It's been said
that no man is an island and likewise,
in our Electric Universe, no islands exist
in space. For generations,
a similar strange belief about the human
body has prevailed in the world of
Western medicine. Specialization means
treating each organ and part of the body
as a separate isolated instrument and
just as finer technological data reveals
the connectedness of the most distant
celestial objects, today, mainstream
medicine increasingly recognizes the

basis for a more integrative approach to human health. Just as an electrical circuitry connects distant celestial objects, the electrical circuitry of the body is a stupendous, complex network central to life. One of the leading pioneers in integrative health is Dr. Jerry Tennant, a world-renowned ophthalmologist whose book series "Healing is Voltage" describes his groundbreaking research into the body's circuitry. Recently, Dr. Tennant offered a series of presentations as part of a continuing medical education class for Naturopathic Doctors in Arizona.

Dr. Tennant and his group have kindly granted us permission to share these presentations in a series of videos.

In this introductory episode, Dr. Tennant begins with a remarkable summary of his personal and professional journey. To further explore Dr. Tennant's resources and materials, you may visit the links in the description box of this video.

This is Dr. Jerry Tennant. I'd like to discuss with you some concepts about

"Healing is Voltage". First of all, a Notice:

Tennant Institute is a Private Expressive Association, as defined by law, and is under the direction of Jerry Tennant, MD, MD(H), PScD. This lecture is given under the auspices of my Arizona MD(H) license and Not my Texas MD license, partially with the support of a contribution by Synergy Medical Group. Participation in the seminar implies that the participant has given an acknowledgement of the rights noted above and others recognized by law, and asserts first, ninth and 14th Amendment rights. Participation means, "I voluntarily license Jerry Tennant, MD, MD(H), PScD to counsel me with his Arizona MD(H) license.

Disclosure of Interest, I likely have a financial interest in patented and/or trademark devices and books that carry my name. The concepts presented here were contributed to by many people, including the staff of the Tennant institute, Dr.

Steven Evans, Dr. Max Collins,

Dr. Nathan Bryan, CareyLyn Carter, Leo

Szymborski, Dr. Robert Gilbert, Dr.

Richard Hull, Eileen McKusick, Dr. Dan

Winter and Dr. Karim from Cairo, Egypt in bio geometry. So, I was trained as an ophthalmologist and had a great deal of enjoyment and fun, and in doing so I was able to do a lot of different things in ophthalmology but one of the things that I did was to do the majority of the research for the laser from the company called Visx used in Lasik surgery.

So, as an ophthalmologist, I was able to accomplish many of the things that people strive to do. I was successful in my efforts as an ophthalmologist. I changed the way ophthalmology is practiced by introducing and helping to develop the techniques for outpatient eye surgery. I developed intraocular lenses that were widely used in eyes after cataract surgery, and one of the things that I was able to do was the majority, as I mentioned, of research for the laser used in Lasik surgery. So, one of the problems was that we didn't recognize that the laser wouldn't kill viruses, and so I treated a gentleman from Europe who had leukemia and also

had scarring in his cornea, and I used the laser to carve the scar off his cornea. What we didn't understand at the time was that the laser would not kill viruses and as the viruses escaped his cornea, they went up through my mask, through my nose and into my brain, and I developed encephalitis. That resulted in me having overwhelming fatigue. I got to the place where I could see a patient, I knew what was wrong with him, but I couldn't remember how to write a prescription.

Also, I developed spastic movements, which doesn't work really well if you're operating inside somebody's eyeball. And I came to the place that I could only have two or three hours a day in which I could think clearly enough to understand the newspaper. Otherwise, I spent about 16 hours a day sleeping. I also had a bleeding disorder and had some bleeding under my skin. If you'll notice the picture with the dogs, you'll see that I had viruses in my brain and viruses in my spleen, and these two dogs

seem to understand where my problems were. So, the brown dog, Teager, would always come and lay on my head, and the Hawaii dog, Poo, would come and curl up next to my spleen. So, I always considered these two dogs the original bio modulators. So, as you can see in the image of me, I was robust and had a great life, but then slowly over time, as you can see, I began to fade away and where I was basically totally dysfunctional.

I eventually figured out that the difference between peak performance and death was voltage. So, in the two or three hours a day I could think, I began to read cellular biology books with the concept that, if I could figure out how to one make one cell work, I could figure out how to make them all work. Because after all cells look different but they really have the same hardware, just different software. And in all of the cellular biology books I began to realize that cells had to have voltage to work. So, for a moment let's look at the concept of regeneration

versus healing. If I cut myself with a knife, then the skin will heal, leaving behind perhaps a small scar. On the other hand, if I cut off a finger, but that finger actually regrows, then that's called regeneration. And regeneration is controlled by voltage. So, the purpose of this lecture, among others is to focus on the role of voltage in stem cell function, along with exosomes and recovery from chronic disease. This subject cannot be adequately covered in the few minutes we have allotted, but it is hoped that this lecture will focus your attention on its role so you will want to learn more. Now the foundation work of this subject was done by Robert Becker and by Dr. Bjorn Nordstrom. Becker wrote the book "The Body Electric", Nordstrom wrote the book "Biologically Closed Electric Circuits". So each of us, working in this field, are standing on the shoulders of these pioneers. So, in Becker's work, he was interested in the subject of, if a human loses a piece of bone, they grow more bone, but if they

lose another body part, it's replaced with scar. And he wondered why that was. Why is it that the human can make bone, but has difficulty replacing other organs. So, to study this, he used the salamander. The salamander has essentially the same anatomy as the human, that is the same number of bones, muscles and nerves and in the same arrangement. But unlike the human, the salamander is capable of growing an exact replacement of an arm, leg, eye, ear, up to a third of its brain, almost all of its digestive tract and up to half of its heart. A salamander is so efficient at regeneration, that it does not get cancer. The regeneration of the salamander cannot be explained by chemical-mechanistic views of traditional medicine. So, Becker studied the salamander by studying its voltage patterns. So, he found that, if you cut off the salamander's arm, then over the next days, it would actually grow a new arm. So, a salamander's base voltage is minus 10 millivolts, compared to a human which is

minus 25 millivolts, as we'll discuss later. As the arm is amputated, the voltage drops to approximately plus 25 millivolts of "electron stealer". So again, it goes from minus 10 millivolts of electron donor, to plus 25 millivolts of electron stealer. Then, as the voltage begins to recover, and as it does so, it eventually gets up to minus 30 millivolts of electron donor. And as this occurs, then stem cells are formed and the salamander grows a new arm in somewhere around 25 to 30 days. Now, Becker found that, after you amputate the arm, the skin grows over the stump and then at somewhere around a week or so, stem cells begin to accumulate in the stump and by two weeks or so, there is a large number of stem cells. And then by three weeks, the arm is beginning to regrow and somewhere in the neighborhood of day 25 or so, the hand begins to form. Now, he found some other very interesting things. So, if he amputated the arm and waited until the stem cells formed and he extracted those

and made an incision
somewhere else in the body,
the salamander would grow whatever the
local area was. So, for example, if he
amputated an arm, early on extracted
the stem cells, made a slit by the
salamander's hind leg and put the stem
cells in there, it would grow another
hind leg from those stem cells. On the
other hand, if he waited until the stem
cells were more mature, before he
extracted them, it was totally different.
So, he amputated the arm, he waits till
the stem cells are somewhat matured,
extracts them, makes an incision on the
top of the salamander's head and puts
them in there,
the salamander will grow an arm at the
top of his head. So, what became obvious
is that early on, the stem cells had not
been programmed into what they were to
become, and wherever you put them, they
would become or regenerate one of those
body parts. On the other hand, if you left
them a bit longer, they would be
programmed to become what they were

locally, and then when you extracted them and put them elsewhere, they would continue to grow that organ. Now, in the lower right picture, you see an image of a dog that was on the news recently, who had a tail growing out from between his eyebrows. And of course, they didn't seem to understand how this could happen, but looking at Becker's work, it's quite obvious. The stem cells from this dog's tail had been programmed to grow another tail, but somehow got moved and inserted between his eyes, and thus grew a tail there. In this image, we see an amputation of a salamander's arm at 48 hours, and you can see the bone sticking out the end. You can see the skin and the muscles have retracted somewhat. Here at 18 days, you can see the stem cells that are quite prominent. This is a collection of stem cells that are called a blastema, and you can see, begin to see, the differentiation of the muscle cells. Here at 42 days, the limb pattern is completely restored and as the salamander continues to grow the new

arm. Now, this is an image of a young boy who was a passenger on a four-wheeler; the driver of the four-wheeler turned it too sharply and actually caused the four-wheeler to roll, resulting in this injury. This boy was taken to the hospital, then taken to surgery and the wound was cleaned up.

The surgeons felt that this was going to require attention by the plastic surgeons, and that perhaps that recovery would be difficult. I received a call from his father, and he sent me a picture that you saw. So, I quickly sent him a bio transducer and a bio modulator which, of course, that bio transducer puts out scalar energy and the bio modulator puts out electromagnetic energy. The boy had been crying constantly since his injury, in spite of the narcotics that they were giving him. Within minutes, after they placed the devices in this position as you can see, the boy quit crying. The following day, he was taken back to surgery and the plastic surgeon showed up. But the general

surgeons were able to close this primarily without a skin graft. And the plastic surgeons were saying, "so, why are we here?" as they left the operating room.

Well the picture on the right is a recent photograph of this boy's foot. You can see that it healed quite well.

And this boy now can play soccer and football, and has no apparent symptoms that he ever had this injury. So, to some degree you will have to acknowledge that this was, in some regards, regeneration as well as improved healing, by restoring the voltage to the area.

So, you must realize that the human body is an electronic device. Now, any cellular biology book will tell you that cells are designed to run at a pH of 7.35 to 7.45. pH is

actually the measurement of voltage in a solution. So, if you have a copper wire, if the switch is on, electrons flow through it and if you turn the switch off, they do not. And that's called conductive electricity.

But a liquid is completely different, and

that is, a liquid has the ability to be either an electron donor, or an electron stealer. And so, if you take a pH meter, which is a type of sophisticated voltmeter, it has a switch in which you can measure in millivolts or you can measure in pH. So, by convention, if the liquid is an electron stealer, you put a plus sign in front of the voltage and if it's an electron donor, you put a minus sign in front of it and then you convert it to a logarithmic scale that goes from zero to 14. So, plus 400 millivolts of electron stealer is the same as a pH of 0, and minus 400 millivolts of electron donor is the same as a pH of 14.

if it's neither electron donor nor an electron stealer, it's a pH of 7. Now, I mentioned that all cellular biology books will tell you that cells are designed to run at a pH of 7.35 to 7.45.

So, 7.35 is synonym of -20 millivolts of electron donor, and 7.45 is synonym of -25 millivolts of

electron donor. So, what you see is that cells are designed to run between minus 20 and minus 25 millivolts. Now, some people get confused because, if you take a cell and put it into a petri dish, and put an electrode inside the cell, and another outside the cell, and measure the voltage across the cell membrane, you'll get about minus 90 millivolts.

However the environment in which cells are designed to run, is between minus 20 and minus 25 millivolts. So, cells need minus 25 millivolts to run correctly, and minus 50 millivolts to make new cells. So, this leads us to understand that all chronic disease is characterized by having inadequate voltage. Let me say that one more time, all chronic disease is characterized by having inadequate voltage. Now, the other thing that's important to realize in understanding chronic disease, is that we're constantly wearing ourselves out and having to make new cells. So, different sources have slightly

different times, because studies are based on tissue turnover time from natural stable isotope labeling, which varies according to bomb testing and other environmental factors. However, in general you will find that you get new cells in the macula of your eye every 48 hours; the lining of your guts is replaced every 3 days; your skin is 6 weeks old; your liver is 8 weeks old; your nervous system is between 8 and 12 months old, etc. So, what's critical to understand is that chronic disease only occurs when we lose the ability to make new cells that work. So, let me say that one more time: chronic disease only occurs when we lose the ability to make new cells that work. So what's it take to make new cells that work. Well, as I mentioned, cells run at minus 25 millivolts, but it requires minus 50 millivolts to make new cells. And as we also pointed out, if you measure across a cell membrane and a petri dish, you'll get about minus 90 millivolts. So, we need to make new cells, we need minus

50 millivolts, but we also need all of the materials that are necessary to make new cells. This is called "nutrition" and requires a functional digestive system, including stomach acid. And finally, we must deal with any toxins that destroy cells as fast as we make them. The most common toxins are heavy metals like mercury, dental toxins, GMO foods with pesticide, called Roundup or glyphosate. So, what's the body's voltage and wiring system? Well the body has five battery packs. The most important that are perhaps, or at least the largest, is our muscles. Our muscles are rechargeable batteries and the fascia around the muscles serves as the body's wiring system. Our cell membranes are small batteries called "capacitors". Water inside the cell membrane is called EZ water, which is H_3O_2^- - and it's an electron donor form of water. Inside the mitochondria we have a rechargeable battery system called "ADP/ATP" and then finally our DNA has its own battery, using scalar energy. So, this diagram was

sent to me by Dr. Al-Tubaikh, who is also a medical artist and I'm grateful for his sending this to me. What one sees here, is that we have the muscle battery packs. So, one must understand that the muscles are piezoelectric. So, what does that funny word mean? If you take a piece of quartz and you squeeze it with a pair of pliers, it emits electrons. So, the process of distorting something and causing it to emit electrons, is called piezoelectricity. So, one of the reasons that we exercise, is that doing so causes the muscles to emit electrons. Our muscles are rechargeable batteries as well, and so every time we exercise, we are actually recharging our muscle battery packs. Now in addition, our muscles are stacked one on top of each other in a very specific order to create a battery pack. And it's that pack of our stack of muscle batteries is surrounded by a stocking of fascia and thus this stack of muscle batteries and fascia creates the muscle battery pack for every organ, that is to say, every organ

in the body has its own battery pack,
and such a pack of muscles is called an
acupuncture meridian. Now, each
acupuncture meridian extends from a leg
to the brain, or an arm to the brain, and
then makes a loop and comes back to near
its origin. So, these large muscles then
are acupuncture circuits, [they] are the
major battery for all of our organs. Now,
each of these circuits runs through very
specific teeth and thus our teeth are an
integrated part of every circuit. As the
voltage from the muscle battery packs
gets to the cell membranes, we have
another battery pack here, or a
battery that is called a capacitor, and
that's the cell membrane. Now, if you
take an electron conductor and a second
electron conductor, and separate them by
an insulator, you have what's called a
capacitor. A capacitor is actually a type
of small battery; the difference is that
a regular battery can discharge
electrons slowly, whereas if a capacitor
is asked to deliver electrons,
it empties itself and

so it then has to recharge. Well, our cell membranes are made by opposing pairs of specific types of phospholipids, that have a ball on one end and two legs on the other. The balls are electron conductors and the legs are electron insulators and thus they form a capacitor. So, we have our muscle battery packs, then we have the cell membrane, which is a capacitor or a small battery, and just inside the cell membrane we have what's called EZ water, which I will explain more about in just a moment, and then we have our mitochondria. Now, inside the mitochondria we have a rechargeable battery system; when the battery's discharged, it's called ADP and when it's charged is called ATP. And then finally we have the DNA, which has its own power system in that scalar energy inflows into the center of the DNA to give it its voltage. So, here we see a diagram of the EZ water; EZ stands for "Exclusion Zone" and so, you can see in the upper image on the right, the EZ zone is thinner and if you expose it to

specifically, infrared light, it expands into a larger battery pack, if you please. Next, we have the DNA battery. So, the characteristics of DNA was first elucidated by Rosalind Franklin in 1952. Her work was stolen by Watson and Crick and they received a Nobel Prize for the technology that they took from Dr. Franklin. Nevertheless, you can see on the left her original picture, photographing the DNA from within. Now most pictures of DNA that you see are from the side, but when you look at it from the end, you can see its torsional pattern and also the hole down through the center. So, scalar energy implodes down through this hole or canal in the center of DNA to energize it, because scalar energy will implode into anything that's golden mean, and certainly DNA is golden mean. Now, the scalar energy as it implodes into the DNA, is capable of reading the code there. It's capable of transmitting that code to a new cell, if a cell division occurs. It's also capable of

communicating with nearby cells, through the use of the scalar energy. This work has been recently published by Konstantin Miele, a physician/physicists in Germany. Now, let's look a bit at the voltage oxygen control mechanisms. So, if we look at the fetus, everyone understands that there is the umbilical cord that comes from mother, providing blood and nutrition to the growing fetus. But it's important to know that this umbilical cord also brings voltage into the fetus. Now, as you can see, the fetus has very little room for exercising inside the uterus, and thus the normal mechanism of charging our muscle battery packs is impractical in a fetus, that is in the process of growing its muscle battery packs and acupuncture wiring system, and there's just not room for that. Well, at the time of birth, a string is tied around the umbilical cord and it is cut, so that it leaves the new baby free from the umbilical cord. This then scars over on the end and

becomes our umbilicus. Now, it's at this point when the umbilical cord is cut, that the baby switches from this fetal or original wiring system, to the muscle battery pack acupuncture system. Now, here you can see that surrounding the blood vessels, we have a fibrous sheath and this fibrous sheath, like the fascia, is capable of acting as a wiring system and moving electrons from place to place. So, one of the things you should remember is that around our blood vessels and also surrounding our muscle battery packs, we have this fibrous connective tissue. Around the muscle battery packs, it's called fascia and it has a different name around the the arteries and veins called tunica adventitia. An important thing to know is that these structures are semiconductors. So, what's a semiconductor? A semiconductor is a collection of molecules, arranged in such a way that electrons flow through them at the speed of light, but only in one direction. So, understanding that, helps us

understand how the body can quickly move electrons from one place to the other.

For example, if you put an essential oil on the foot, the frequencies of those are in the brain at the speed of light, because those frequencies travel through the fasciae which is a semiconductor. Now, in the fetus, as you can see, then we have this wiring system going to all of the organs and in this slide you can see how that works. So, it goes from the placenta through the umbilical cord, to basically every organ in the body, using the semiconductor of the tissue around the vessels. Now, because the umbilicus scars, where it was cut from the umbilical cord, it is blocked; electrons cannot flow through there.

However if you simply put the bio transducer with its scalar energy over the umbilicus, what you will find is that it reorganizes the scar as we'll discuss later and once it does so, electrons can now flow through it, and so now we are capable of again using the original fetal wiring system. So, when you open

this system, now you have access to that original wiring system that goes to every cell in the body. One of the reasons that this is important and useful, is that this system is rarely blocked, whereas muscle battery packs can be blocked by scars, dental infections, emotions, etc.

[Music]

Welcome to the Thunderbolts.info

podcast for July 15, 2016.

In the last two episodes, David Talbott,
the director of the Thunderbolts project,
has outlined the foundations
of his working relationship
with one of the world's leading
plasma physicists, Dr. Anthony Peratt
and the impact that this relationship
had on Peratt's life work and career.

As David described, Peratt's research proves
undeniably that high energy plasma events
occurred in the earthly sky within human
memory and were recorded in rock art
and cave drawings in various locations
including the American Southwest.

In this episode, David
explores, in greater depth,
one of the most remarkable
rock art motifs
which has an explicit counterpart in
laboratory experiments with plasma
and that is the Stickman figure,
carved on stone around the world.

Evidence gathered from around the
world has made abundantly clear

that in ancient times intense electrical
activity above observers on earth
was the subject of massive collective
endeavors to record the forms on stone.

Especially compelling is the rock
art theme called the Stickman.

The illustrations shown here
compare a well documented
electric discharge form
in the laboratory
to the remarkably similar rock art carvings
from different parts of the world.

These rock art Stick-men are taken
from Tony Peratt's 2003 paper
in "Transactions on
Plasma Science",
published by the Institute of
Electrical and Electronics Engineers.

Peratt states his
conclusion forthrightly.

The recurring petroglyph patterns are
reproductions of plasma phenomena in space.

Of course the majority
of rock art authorities,
particularly those with primary
interest in Native American sources,

argue that only images of the Sun, Moon and stars reflect actual celestial phenomena.

Apart from such associations most authorities claim that global patterns do not exist.

Rather, they tell us, the ancient artists projected onto stone the subjective content of shamanistic trances.

Peratt's investigation

say the opposite,

that the most fundamental patterns of rock art occur globally through massive labors, some apparently taking whole lifetimes, according to Peratt.

The artists carved onto stone, observed electric discharge phenomena in the heavens.

The stickman configuration occurs

when a disc or donut like torus,

around a linear

discharge column,

is bent by magnetic fields

induced by intense current flow.

From the viewpoint of the observer, the edges

of the upper disk may appear to point up

forming arms and those of the lower torus

may appear to point down forming legs.

The underlying hourglass pattern
with many subtle variations
not only occurs around the world, it
is among the most fundamental forms
appearing in highest energy electric
discharge in the laboratory.

To appreciate the evolution of
the discharge configuration,
these graphics must be
visualized three-dimensionally.

Illustrations show the structure
of a translucent plasma discharge
whose 3d configuration would not be self
evident in a rendition carved on rock.

Here is a key consideration, rotating
the configuration on its axis
would not change the basic form
or appearance to the observer.

Our idealization here of the dynamic
geometry show slight variations
between the upward pointing
and downward pointing components,
consistent with common variations
in the laboratory and in rock art.

The upper champagne glass form
results from a distortion of a disk

as the edges curve upward.

In the warping of the disk below, the downward curvature is interrupted at the extremity which bends outward to create a squashed Bell appearance.

The rock art images we've noted in this series are all characteristic of intense electric discharge in the laboratory.

In the case at hand, the idealization of the hourglass discharge form, accents the visual relationship of the two symmetrical dots or circles to a transparent donut like torus - viewed edge on.

But many other nuances of such discharge configurations must be taken into account since the warping of the upward and downward extremities of the hourglass form can occur in almost limitless variations.

If Peratt's conclusions are correct, then several thousand years ago the terrestrial sky was ablaze with the electrical activity.

The ramifications of this

possibility will directly affect

our understanding of cultural

roots the world over.

What was the impact of the recorded

events on the early civilizations,

what was the relationship to the

origins of world mythology,

to the birth of the

early religions

or to the massive ancient investments

in monumental construction?

Both the rock artists and the mythmakers

had true perils on their minds.

The rock artists recorded and the mythmakers

interpreted electrical events in the sky

as plasma discharge sequences

moved through discreet phases,

some of celestial beauty, others

intensely violent and terrifying.

The most essential issues

concern the connectedness

between seemingly different

rock art themes.

For example was there relationship between

the Kayenta pictograph previously noted

and the global Stickman image?

Why is the Kayenta form more sparsely recorded than the worldwide Stickman archetype?

There is good reason for this, according to Peratt.

The Kayenta pictograph signifies a critical moment, just prior to a collapse of that more complex form into the simpler Stickman form.

The synchrotron radiation proceeding that transition would have been deadly, making it close to impossible for humans to record the form while standing in the open.

This means that the relationship between the two, never mentioned in Prior rock art studies, is crucial to an understanding of both global themes.

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

Science news headlines around the world tell
of a baffling mystery on the planet Mars.

In March of 2012,
amateur astronomers spotted enormous
plumes jetting from the Martian surface.

The plumes were more than 250 km high and
several hundreds of kilometers in length.

Similar bright, enormous plumes have
occasionally been spotted on Mars since 1997.

The lead author of a new paper
in the journal Nature states,

"At about 250 km, the division between the
atmosphere and outer space is very thin,
so the reported plumes
are extremely unexpected."

The ad hoc explanations scientists
are grasping for are extremely limited.

One suggestion is that frozen shards
of carbon dioxide or water vapor
somehow form the plumes.

But as noted in a recent

Scientific American article,
their existence would require
the atmosphere to be much colder
than models predict
for that altitude.

Scientists have also suggested that
the plumes may be a kind of Aurora
similar to the Northern
Lights on Earth.

The Nature report states,
"Mars does not have a global magnetic
field, only pockets of magnetization.

The mystery clouds were spotted over one
of these so-called magnetic anomalies,
and auroral lights have been
observed there previously.

However, to explain
the 2012 observations,
an aurora would have had to be 1,000
times brighter than the Northern Lights.

This would require an increased flow
of charged particles from the Sun,
but its activity was not
unusually high during the time."

But there is another possibility that
planetary scientists have yet to consider.

For an important clue,
let us go back to 2001,
when Mars became engulfed in the greatest
global dust storm ever observed on the planet.

The giant Martian dust storms had already
puzzled planetary scientists for decades.

How can an atmosphere less
than 1% as dense as Earth's
remove dust from the soil and accelerate it
into massive clouds circling the planet
up to 40 miles or
more above the surface?

In late June, 2001, the Hubble telescope
revealed the first stirrings of a dust storm.

Within a few weeks, it had
covered the entire planet.

And the storm did not begin
to subside until October.

Scientists were left
to ponder in vain.

How is the dust excavated
from the surface?

What held the dust aloft?

What accelerated the winds and dusts across
the near vacuum of Mars's upper atmosphere
to speeds greater than

250 miles per hour?

Like the baffling Martian plumes,
conventional planetary science offers
no answers that withstand scrutiny.

However, in 2005, The Thunderbolts
Project offered a critical prediction
about dramatic dust
raising events on Mars.

The article 'When Dust
Storms Engulf Mars' states,
"Since Mars has no thunderstorms
to 'charge up its ionosphere,'
it should present a good case
study of the Electric Universe.

The electrical model predicts that the
Martian ionosphere is indeed charged,
and it posits no isolated
dynamo to 'separate charge.'

On Mars, electrical effects will reach
directly from the ionosphere to the surface
without the ameliorating leakage via
storm clouds that we see on Earth.

Unlike radiant
energy from the Sun,
electrical energy can accumulate in the
'planetary capacitor' for some time,

with a potential for planet-altering events
when the atmosphere finally 'breaks down'
and massive discharge
activity is initiated."

The Thunderbolts

Project noted in 2005

that, when the greatest storm on Mars began
in June of 2001, Mars had reached opposition
and was the closest it had been
to Earth in about 12 years.

We then suggest it is not a
coincidence that in March of 2012,
just days before scientists spotted
the enormous baffling Martian plumes,
Mars was again at opposition and was at its
closest proximity to Earth in over two years.

The Martian plumes resembled the fountains
of electrostatically levitated dust
hundreds of kilometers tall, first
observed on the moon in the 1960s.

Indeed, according to

a 2008 NASA report,

Earth's magnetic tail creates a powerful
electric field near the lunar surface
occasionally causing
dust storms on the Moon.

NASA scientist Tim Stubbs states,
"Earth's magnetotail extends well beyond
the orbit of the Moon and, once a month,
the Moon orbits through it.

This can have consequences ranging from lunar
'dust storms' to electrostatic discharges."

We also note that NASA
scientists have acknowledged
the electrified nature of
the giant Martian dust devils.

A NASA news report in
July of 2005 begins,
When humans visit Mars, we'll have to watch
out for towering electrified dust devils.

The article describes a typical dust
devil on Mars as a 'monster column'
towering kilometers high
and hundreds of meters wide,
ten times larger than
any tornado on Earth.

For decades, physicist Wal Thornhill and
others have proposed that dust devils,
tornadoes and water spouts are
all electric discharge phenomena.

We must also note that we cannot
say definitively at this point

that the Martian plumes are
composed of excavated dust.

However, planetary scientists must not
ignore the proven ability of electric fields
to levitate dust in a near vacuum
like the Martian atmosphere.

We cannot emphasize enough that
scientists are just beginning to recognize
the extraordinary electrical
environment of Earth
and of all planets and moons.

In 2012, scientists around
the world were astonished
by the discovery of giant electric
fields in Earth's radiation belts,
some more than 1
million volts strong.

Structures familiar to plasma physicists
called double layers in the outer belts
are said to be powerful enough to accelerate
electrons to near the speed of light.

With each new discovery, planetary
scientists move closer to recognizing
the electrical circuitry between
planets, moons and the Sun.

The electric currents that connect Jupiter

and Saturn to their respective moons
are now acknowledged
by NASA scientists.

It is therefore no coincidence that the so-
called 'volcanic plumes' of the Jovian moon Io,
and the so called 'geysers' of
the Saturnian moon Enceladus,
closely resemble the
baffling Martian plumes.

The Electric Universe does not call for
rewriting the known laws of physics.
Rather, we need only acknowledge the
undeniable significance of electricity
in our lives and
in all of nature.

We again remind scientists
that all matter is electrical,
and it is electrical connectedness
that drives the universe.

For continuous updates on Space
News from the Electric Universe
stay tuned to
Thunderbolts.info

Welcome to Space News
from the Electric Universe,
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In part two of this presentation, physicist
Wal Thornhill continues his discussion
of the recent discovery of the so-called
shocking electric wind at the planet Venus.

As described in the previous episode, the
electric wind is said to be sufficiently strong
that it can strip an entire planet
of all its water components.

The co-author of a study on the
Discovery said of these findings,
"It's amazing and shocking. We never
dreamt an electric wind can be so powerful
that it can suck oxygen right out
of an atmosphere into space.

This is something that has
to be on the checklist
when we go looking for habitable
planets around other stars."

But as Wal Thornhill explains, neither this
nor countless other surprising discoveries
has freed planetary scientists from their

ideas about the history of the solar system,
including the notions of how life arose on
Earth and could arise on other planets.

I answered in detail in

June 2004 the question,

why doesn't Venus have much water,

in my article - Cassini's homecoming.

It was written to coincide with that amazing
spacecrafts' arrival at the rings-giant Saturn.

The simple answer is that Venus hasn't been
around long enough to lose an ocean of water
so its puzzling heavy carbon dioxide atmosphere
requires a very different explanation.

Likewise, it is nowhere admitted that,
according to the standard model,
the Earth should not have oceans of water
either, because hydrogen would have been
blown out of the inner Solar System
early in the Sun's assumed career.

However, all observations in the
Space Age saw the Solar System
to be a blended family of odd
bodies, each with their own story.

Nothing is to be gained by
trying to force fit them
to a centuries-old

evolution-in-place theory,
with all of the hypothetical collisional
drama occurring billions of years ago.
That might make us feel safe, but
it has nothing to do with science!
Meanwhile, gravitational systems as presently
understood, are inherently unstable.
Something is seriously wrong!
So, back to these electric winds, stripping
planets of oceans and atmospheres.
Velikovsky's identification of Venus as an
electrically discharging comet was spot on.
The problem of how comet that
size can end up in the most
circular orbit of any of the
planets, has had to wait
for the electric universe explanation of
the electrical nature of mass and gravity.
It provides the essential feedback mechanism
to establish and maintain clockwork stability.
As a comet, Venus was
discharging massively
as a cathode in the solar discharge
and swiftly circularizing its orbit.
As a planet, Venus still discharges five
times more strongly than the Earth.

The electrons leaving Venus drag along positive oxygen ions to a degree that was unexpected.

But the euphemism "electric wind" means an electric discharge, like an air ionizer.

It's an electric current.

This is confirmed by the twisted magnetic flux ropes, known more correctly as Birkeland currents by plasma physicists, identified in the cometary tail of Venus.

That tail still stretches to tickle the Earth at inferior conjunction.

That's a mechanism that determines the spacing of orbits.

It's true that this gradual loss of atmosphere and water over eons poses a problem for life on earth-like planets.

It shows the folly of assuming, in typical geocentric fashion, that life in the Universe is to be found in a narrow Goldilocks zone about a bright star.

It's not a good situation to be in, either for the establishment of

life or its long-term survival.

The electric universe shows

instead that all stars

are a form of low pressure electrical gas

discharge phenomenon in a galactic circuit.

Red stars of all sizes are those that have

expanded their glowing plasma sheaths,

in order to collect enough electrons

from the interstellar plasma

to satisfy their

discharge requirements.

That's why red giants are

observed to expand and contract

in response to changes in

their electrical environment.

But it's inside the glowing red

spheres of brown dwarf stars

that orbiting satellites find

conditions best suited for life!

Every square meter of each satellite's

surface receives the same radiant energy,

there are no seasons.

Most significantly recent observations

show, water and other molecules

necessary for life are found in

the spectra of brown dwarfs,

and those molecules will mist down on the
satellites, establishing oceans and atmospheres.

Significantly, ferns are
adapted to misting rain,
and red light is the most
conducive to photosynthesis.

And water which is
essential to life,
is activated electrically by
infrared light or warmth.

So, it makes sense that brown dwarfs should
be considered as the most likely candidates
for cosmic wombs, not
bright stars like the Sun.

This raises many issues in the search
for life elsewhere in the Universe.

Perhaps most important is that the
search for extraterrestrial intelligence
or SETI is doomed to failure
because radio waves
cannot penetrate the glowing
plasma shell of a red star.

And the chances of intelligent
life, happening to survive,
being torn from its brown dwarf
womb in a capture event,

like that suffered by the

Earth and Mars, seems remote.

In fact, Mars stands as mute testimony to

the devastation that we narrowly avoided.

It is our closest relative in the Solar

System and shared the same cosmic womb.

This much is made remarkably clear by applying

a forensic approach to all of the evidence

available from human observations

of the skies over millennia.

Of course, none of this information is

deducible from the narrow deductive

perspective of a modern cosmology,

which has no interest in history

and denies any electrical involvement

in the celestial mechanism.

Thankfully, in this age of

instant global communication,

we may not have to wait

centuries for a paradigm shift.

For continuous updates on Space

News from the Electric Universe,

stay tuned to

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Cosmic Power Lines Part 1

Now the gentlemen that set this
up have done a marvelous job.

I told them they have built us
a 747 here with these screens
and a lot of controls
in front of me.

You should all come up and
look at this before you leave.

And I said I would be happy if I could
get this damn 747 off the runway.

Anyway, thank you very
much and good evening.

It's a pleasure to be
here and thank you for
paying me the honor of wanting
to hear what I have to say.

The topic of course, is
the cosmic power grid
and what it consists of is some
updates about Birkeland currents,
where they go what they do?

Those of you who have been
to this conference before
perhaps heard me speak
on this very topic.

And one of the nice things
about the area that I'm in;
which is this idea of
electricity in the sky
and that sort of, the
electric universe and so on,
okay, thank you;
is that new stuff keeps
coming along all the time.

And I'm very happy.

Between the last workshop that we had
here in this in this hotel I think
and then the previous
conference in Albuquerque,
some very new and I think very,
from our point of view, encouraging
data has come back about this very
topic, the Birkeland current.

What is a Birkeland current
then, who was Birkeland?

Well, let me very
quickly get by that
because I know that some of
you have heard this story,
have been to these conferences perhaps
longer than I've been coming to them,

oh I doubt that but...

beard beard, you know, anyway.

The newcomers might like to know just a little bit about the background of this so...

For you all folks,

I don't mean that by age, you veteran attenders take it as a refresher course, ok?

Birkeland current you can think of as a pipeline in the sky.

It's not an oil pipeline,

it's not a water pipeline,

it's an electrical current pipeline, it carries charge and carries charged particles and it can carry them in both directions and it consists...

Well, we'll talk a little bit in detail about what it it consists of and what its structure is.

And I was very happy to, in the last April this, couple of months ago, to get a paper published about this topic.

And this, I'm saying this not just to brag about getting the paper published but to make a comment about the

status of science these days.

You perhaps have heard
us complain and moan,
people like me, others that you
will hear at this conference,
about how difficult it is to get
anything published from here,
from the Electric Universe.

Oh it's those guys, there
are the fringe scientists.

And so if you say anything that
anybody in mainstream science
doesn't completely agree with,
you're out of there, it's
not going to be published.

So I submitted this paper to
a very well-known journal
but, if you want to know
I'll slip it to you later,
but they turned it down!

Cold!

For the wrong reasons.

The guy who did the review,
who sent me the negative review
didn't understand
what I was saying

and he was absolutely wrong!

So I finally found through the good
offices of a couple of friends of mine
this other journal and
they did publish it.

And there is, if you want
to see the article itself,
on the bottom there is,
it's a pretty big long URL
but I think you can get to it just by putting
in your browser - progress in physics
and that'll give you the magazine, the
journal page and look for the April issue
and you can see all the great
gory details in there.

But anyway, well, I'll talk some
more about what that paper says and
what it means as
the talk goes on.

But I always have to, and every time I'd
give a talk here I have to say this
because it stabbed me in the heart so much
that I need to have a catharsis I guess,
at your folks expense.

That is, some things never changed
in this world, it seems like.

The people who talk about
black holes, dark energy,
missing neutrinos, missing
that, neutron stars,
all of which are blatantly impossible,
call us the fringe scientists.

When they don't believe that a fellow
by name James Clark Maxwell ever lived
or that a fellow by the name of
Langmuir ever won the Nobel Prize
or Hannes Alfvén who
won the Nobel Prize
and it's his, those people's
principles that we use.

We use all of the
tools in the toolbox,
they ignore the electrical half!
They're fine with thermodynamics
and fluid dynamics
but they don't, they don't
take advantage of what we do.

And so therefore we
can get some answers
and I hope to show you some
of those answers tonight.

But our detractors seem

to keep getting promoted,

I have a sort of a joke here.

I'm not getting through, hello!

Okay, sorry for

the interruption.

The joke on here is that a fellow,

who's a very well-known astronomer;

he is now the head of a very prestigious

astronomical organization in this country

and perhaps in the world;

said this:

"Yes, yes. We know there are electrical

currents in space, but they don't DO ANYTHING."

Well okay, I had his picture and I was

going to put his actual picture on here

but I thought I didn't want to get

sued so I would put that on and said.

Anyway down to business.

The paper that I'm going to

talk to you a little bit about

derives the mathematical equations that

constitute a model of a Birkeland current.

And when I say a model,

that's a meaningful thing.

Engineers like me very often build

models of things, mathematical models,

will come up with an equation
and we try to make those
equations mimic what we see.
I mean, science is really
making observations
and fitting some theory
to those observations
and then later testing those theories
and see if they pass the tests of time
and whatever you want
to do to test them out.

Some people think that
they are not making models
but they are actually discovering the
equations by which the world works.
By which the universe works.

They want to discover the equations
God used when he made thing.

Engineers are less ...
aggressive than that.

We want to just model, we want to
come up with something that works,
kind of like the way
the real thing does
and the closer we can make
it work the happier we are.

So that's what's the difference
between being, I guess, a cosmologist
who wants to know
how does it work
and us who say, we just
want to make a model.

So for example,
the model can be,
this model that I
developed and can be
or, I should say, be very careful
to say that the original model,
the original equations were
discovered back in 1950
but the guy just wrote down a
couple of lines and took off.

He did write, he did show this diagram,
that curlicue diagram on the left
of which, sort of, shows what the
Birkeland current looks like.

It's a curlicue, a helix of current and
magnetic field, parallel if you will.

I know there's some EE's in the audience
and you usually don't think about
currents and magnetic
fields being in parallel,

you usually think of them as being
at right angles to each other.

But if you can get
them to relax,
they will actually line up
and those of you who know what I'm talking
about, the Lorentz forces between them,
their tendency to push each other
back and forth, goes away.

If you can get them to line up
and so there's a thing called a
"Force Free Field Aligned Current.

And that's a picture of it, that barber's
pole there on the left or on the right.

The difference between the two is of
course size, that's all there is.

And so in this model there is a scale factor,
in all models there are scale factors.

If you build a model of a ship or model
of an airplane or think about a map,
a map is a model of reality.

If you draw a topographical
map of a mountain,
that's a model of the mountain, as
you see, the topographical contours.

You can see exactly where the mountain is

higher, steepest, less steep or whatever.

But I think sometimes scientists,
especially cosmologists,
mistake the mountain for the map
with a map for the mountain
and forget about the fact that
they are two different things.

So what we have here is a model of
the way the Birkeland current works.

I contend!

And the scale factor maybe
seems to be, you know,
not important but it is.

For one, it's what got my paper
rejected the first time.

Because you're gonna ...
scale factor.

It's a property of the plasma and
you don't have any idea what it is.

My answer of course is
yes, it's a scale factor
and I, the model builder can
tell you what it's going to be.

You want it to be
seven, make it seven.

And it's not like the

permittivity or permeability,
something that comes to you
through what is nature
but it's just a scale factor so you can make
the size of this thing bigger or smaller.

Anyway there's the journal.

That's the April issue.

And the reason I

show it to you is,

I don't know if you can read the
small writing there at the bottom.

Let me see if I can read it.

It says; "All scientists shall have the right
to present their scientific research results,
in whole or in part, at relevant
scientific conferences,
and to publish the same in
printed scientific journals,
electronic archives,
and any other media."

And this is from the Declaration
of Academic Freedom.

To which, I think, the editor
of this journal actually wrote.

And so, I think that's a step
forward in and of itself

regardless of whether they
publish my paper or not.

That's a breakthrough.

No longer do people like me and people
who are called fringe scientists,
we're going to resent that
totally but of course.

We don't have to be under the heel,
under the boot, the jackboot of,
"do you please the
powers that be or not?"

These, I know for sure that
a couple of my friends, and you
will hear from them later,
or they're in here, Pierre Marie
Robitaille and Stephen Crothers
also have a paper
in that same issue.

And I know for certain that
there is disagreement,
I won't say between
whom and whom,
but as to what they
think is right.

But they got their paper published,
I got my paper published

and the editor honors that there
may be differences of opinion.

But he's still going

to publish it

and I think that's a

real breakthrough.

It may be a subtle thing,

a subtle thing for people to

understand but I think it really is.

Anyway, my contention is that some

scientists refuse to see analogies.

I'm a big analogy, you know

if you know how it works in this

state, in this area, in this milieu,

maybe it works the same way

in this thing over here.

If you know how that...

How that building is constructed

and how it stands against 100 hundred mile

an hour winds maybe you can build your

whatever,

in the same, using the same principles

and have it be stronger too.

To see analogies across fields, I

think is a very important thing.

The analogy that I'm

really talking about

is the, well, that's obviously

the aurora borealis.

The aurora australis

looks the same.

And what you're looking at there is the

business end of a Birkeland current.

And if I can describe it to you

which i think is very apparent,

I think you would say the same thing

if I asked you to describe it to me.

It's a concentric, a collection

of concentric hollow cylinders

that contain filaments

that transport stuff.

In this case the stuff

is electric charge.

It looks as though they possibly might

be some spiraling going on there

and it looks also that the center

of the thing is fairly solid.

... that's the way a

Birkeland current works

and that's the way

the model that I...

Well, I should say finished the derivation

of, predicts that the thing should work.

Well okay, if a long time ago we found

out that this fellow Birkeland,

after whom these

things are named,

was right!

He contended that the energy for, to power

the aurora was coming from outer space.

He said from the Sun.

I would modify that slightly and say,

from the neighborhood of the Sun

and that we receive energy,

electrical energy into our North Pole

and that's how the

auroras are present.

Well we know other planets

have auroras as well.

But you never hear these people,

astrophysicists, saying that,

"Oh yes, we know there are Birkeland currents

going into the North Pole of Saturn."

or into the North Pole of Jupiter

or North Pole of whatever.

We know there are aurorae there but we're

not going to use the word Birkeland.

I don't know why.

I think that's, I don't know...

Maybe it's because they, they're
ashamed of how they treated Birkeland.

They essentially told
him he was a lunatic.

The poor man died in 1917 and it wasn't
until after the end of World War II
when we sent Rockets up into this
area that we found out he was right!

Not just a little bit
right, he was a 100% right!

So Birkeland Currents are named
Birkeland Currents for a good reason.

The topic, I guess,
but the property
that is most important at least for
our purposes here this evening,
is this idea of
counter rotation.

That the Birkeland Current, if
you want to think about it,
is like a bunch of
concentric pipes.

Start off with a rod in the
middle, put a pipe around it
and then put a bigger pipe around that

and then a bigger pipe around that
and keep doing that until
you could run out of pipes.

And the answer is, of course,
until you run out of charge
that wants to be transported
by this mechanism.

And each of those pipes
counter rotates.

You pick out one, the one above it and the one
below it is going in the opposite direction.

That's what I mean
by counter rotation.

That's what the model says!

Now the question is, do Birkeland
currents really work that way?

Well those of you who were here, I
guess at the last one or two meetings,
I forget which one it was,

I showed the picture,
know that that's true, we can we've
seen that in one specific case.

But there is what the
model comes up with.

And it might be.

Let's see if I can make the

747 get off the runway here.

Yes, look at that!

Oh well, like I have a pointer.

Do you can see these dark, the
black lines, the outer one here?

You can see that

the circles there,

the black circles with arrow heads
showing the counter rotation.

Those black circles that

are counter-rotating

are the current and the magnetic
field of the Birkeland current.

The salmon-colored

rings are not really,

they don't really occur in a

Birkeland current in free space

but they do when you jam that Birkeland current

down into the North Pole of the earth,

you've all seen what the magnetosphere

looks like, it's like a funnel.

Because the magnetosphere is

like this big fat doughnut

with the earth in

the middle of it

and the current comes down and as it

comes down closer and closer to Earth
gets squeezed into narrow
or narrower diameters.

The same amount of
current with less area
means the current
density increases.

And so when the current density
increases you get this,
those salmon colored rings are
concentrations of matter.

And matter concentrates into also,
not the same concentric rings
because you can see that salmon coloured
rings are, there are fewer of them,
then there are white more widely
spaced than the black ones
which are, the black ones are the
magnetic field and the current density.

But anyway, that is the main property
that I would like to get across.

This counter rotation of the of the
Birkeland current is very important.

I'd like to change the next
slide but I can't do it.

Very good, okay thank you.

There is a picture, taken by Dr. Tony
Peratt in Los Alamos Nuclear Laboratory,
of one of these Birkeland currents that he
shot into what's called a witness plate
and so you can see exactly
or pretty exactly what
I'm talking about.

There is the slight
spiraling look,
there are certainly that
center is sort of a solid core
and then there are these
rings going outward.

One of the properties of plasma is
that it breaks up into filaments.

And so what we've
got on the outside,
and if I could have my pointer
I would show you what I can't.

See those dots around the outside,
those are filaments of plasma.

And Peratt has drawn a circle
of little dots to delineate
where the, at least the
theoretical filaments should be.

Keep this picture in

the back of your mind

because we're gonna see something

that looks exactly like that.

Okay, next slide please.

That's a picture of

Saturn's North Pole

and it was the famous, not hurricane

but the hexagon is actually there.

And okay, thank

you, all right so.

This is certainly true,

everyone was so surprised

about the hexagon shape,

the question about if these things counter

rotate or not was never really asked.

There's, wow, a

hexagon up there!

Why is there a hexagon?

That was all over the press

for a couple of years.

But of course I'm asking

the question, are

those rings going in the opposite

directions from one to another?

And okay, well let's go,

let's go with this.

This is a NASA video

[Video] Cassini has been in

orbit around Saturn for 9 years

and we've been following this hexagon

which surrounds the North Pole.

It's bigger than two Earths and

it's a wandering jetstream.

But it's been

winter in the north

so we have not been able to see

what's at the center of the hexagon.

But now it's spring!

And what we've found at the center of

the hexagon is a Saturn hurricane.

This is a view from directly over the

North Pole which is made possible ...

[Donald] You see the counterrotation.

Again if I could point,

you can see the whitest

ring from the outside,

you can see those set of elypsies, those

are called diocotron instabilities

and they happen in plasma

and in any hydraulic fluids

when their shear.

And so, perfectly in the upper left-hand

corner, you see those curlicue things?

Those are diocotron

instabilities.

And it shows that what's to the inside of
that and and what's to the outside of that
are at least traveling at very different
velocities and probably counter-rotating.

Go ahead, turn up the volume.

I don't know if you can

hear what he said.

He said that the hurricane is

anchored to the North Pole

and it's been there as long as

we've been able to observe it

and he's worried about the fact that a
hurricane is never anchored to anything,
it moves.

And the other thing about a hurricane, on
Earth at least, is it has a warm ocean.

You know, when a hurricane gets

all over land it breaks up

because it loses its heat

energy from the warm water

and all look for any

warm water on Saturn.

So they are very

mystified by this

and I'm not at all

mystified by this.

You folks can see that diagram.

This is from a paper that was
published just earlier this year.

The question was, are there
actually counter rotational winds?

And if you look very carefully, at A is
the North Pole and B is the South Pole

so there's no hexagon

on the South Pole

but there is certainly

on the North Pole.

And the, you can look

at the velocity,

it's way on the left-hand

side, you can see zero

is sort of at the junction between

the blue and the turquoise

and one is positive one ...

is negative.

It means it's going in

opposite directions.

So between blue and

turquoise there's a shear.

And they quote that this,
in this paper that yes, there is
indeed counter-rotation on Saturn.

How about Jupiter?

Well, from the looks of this it looks as
if there's a hexagon on Jupiter too maybe.

I don't think so.

But I think the guy who drew the
hexagon has a little wishful thinking
but we don't know.

And does Jupiter have a
hexagon, I'm not sure, right?

My vote would be no because
from what I'm going to show you
it doesn't look like
there's a hexagon there.

But does it have a counter rotational
kind of a thing happening?

Do these cloud belts counter
rotate as the ones on Saturn do?

Well, nobody knew for years.

And this came out after
my last lecture.

About two days after

I got home, bingo!

This comes out from NASA.

And why so late? Why so late?

You know, anyway.

There's a picture of

Jupiter's North Pole.

And actually, well, I won't

hold you in a suspense.

Do you see any counter rotation?

I sat there for about 20 minutes

and tried to count the rings

and I counted 15 different

counter rotating cylinders.

And the, you can see

going around about

oh, I don't know, maybe, what,

three quarters of the way out

you can see there's a real steady

progression of those little black dots.

I think those are probably

Tony Peratt's filaments,

that he has in those circles that

he drew around his witness plate.

But this is on an endless loop

now, you can sit here and watch it

all night if you want to but...

I just, and again look at, look

on the upper right-hand corner,

right there you see?

Those, all those

diocotron instabilities.

So you can definitely see that

there's a shear going on there.

So is there counter

rotation on Jupiter?

Yeah, you bet there is.

How about Uranus, well,

Uranus is a crazy animal.

You folks probably

know about the Uranus

is actually lying over on its

side, more than 90 degrees over.

So if you point that, to see

going out to the left there,

there's a vector to the Sun.

So when this was drawn, it was

Summer at the north pole of Uranus.

And the spin axis is

pointing downward.

The magnetic field axis,

the axis of its magnetosphere is

59 degrees farther down than that.

This thing is really screwed up.

But the question is,

does it have an aurora?

Yes, yes, it does.

Where is the aurora?

Is it on the geographic

pole, the spin axis?

Does it depend on what parts pointed at the

Sun or does it depend on the magnetic axis?

The magnetic axis.

So the aurora on any planet

is due to the magnetic field,

is due to the Birkeland current coming

in to the magnetosphere of that current,

of that planet.

Some of you've seen

that diagram before,

we're not sure about Mercury

because Mercury doesn't even have,

it's got like a 1% of the

magnetic field of Earth.

And does it have enough

of a magnetic field

to actually cause a Birkeland current

to go down there into the North Pole?

I don't know.

There's some doubt about it.

But boy, it sure looks like there's been

some action at Mercury's North Pole.

And maybe in an earlier geologic
period there was a magnetic field.

Who knows, we don't know now.

There's some new,

new to me at least,

apparently if you look at

the second line there,

these stable auroral red auroras

have been known for about 50 years

but they, there's,

they're will o' the wisp

because they're always, sort of, in

daylight and they're always so far south

that you don't see them very much

and there's city lights down here

and along the northern axis, northern

border of the United States.

But wouldn't it be nice if

what I'm saying is right

and the Birkeland currents are indeed

symmetrically placed concentric hollow cylinders.

Maybe these SAR auroras

are due to the second,

the second column out

there, the second cylinder,

the real Aurora's are
due to the inner one,
up on the North Pole which is
not shown in this diagram.

We're up nearer to the north,
nearer to the North Magnetic Pole.

Don't know. Neptune, some of you
have seen that one already.

There's a hotspot at
Neptune's South Pole.

You think about it,
the South Pole!

South Pole is the hot
spot of the planet?!

Well, there's a possibility that it's getting
a real powerful electric current in there
and that's what's heating up
that particular spot on Neptune
to be the hottest
spot on the planet.

Okay, we're down
to the punchline.

The latest piece of evidence that
I've managed to accumulate is...

Well, I'll show it
to you in a minute.

But let me make a sort of a slight
aside and say a couple of things.
I made an assertion in my paper,
back a couple of months ago,
that the Bessel function model
of a Birkeland current specifies
that these currents
are composed mainly
of hollow, concentric, counter-rotating,
cylindrical, sheets of current.
And I think I've showed that to you.
I hope I have.
I think this is the first time
anyone has made that statement.
But I'm gun-shy because when I did
the, my derivation of this model
I didn't know that Stig
Lundquist had come up
with the form of the
solution about 50 years ago.
Nobody else had talked about it, Tony
Peratt never talked about it in his book.
And so I completely
was blindsided
and I don't want to
be blindsided again.

So if anybody knows of anybody else,
any other investigator other than me
that has said that
Birkeland currents consist
of counter-rotating concentric cylinders of
current density and parallel magnetic fields,
I want to hear about it.

Until that time I claim the...

You know, it's like the
explorer who crawls across
and plants the flag
on the island.

I may be wrong, I may be very
disappointed to find out that
yes yes Rick Dicksmutnitz back
in 1420 came up with this idea.

But I hope, maybe it's my contribution.

I hope it is anyway.

Anyway, what I have
to show you now
is a picture, very mundane
picture taken here on earth
by a spectacularly good
photographer of the Northern Lights
and he did a video of
the aurora borealis

and he did it from a fixed super
high-resolution camera on a fixed tripod
and just let it rip.

And I want to see if you think he
captured any counter-rotation, okay?

This is Caithness on the
northern end of Scotland,
right below Scapa Flow with
the English naval bases.

His name is Maciej Winiarczyk.

See the inner one
moving right to left?

Is there counterrotation,
uh, that's hard to say.

The red is oxygen,
the green is nitrogen.

That's the whole "business
end" of a Birkeland Current.

That's, of course,
the edge of it.

... over on the left

This is sort of a picture of a train
wreck if you start to think about it.

This is the end of the
Birkeland current

... that smashes into,

into the earth.

So yes, there's shattering
and it takes a while for that
form to come back again.

There you can see, I think,
some counter-rotation.

The inner green one is
moving well, who knows.

Some people see these black stripes on a
zebra, other people see white stripes
It looks like MacDuff's Castle.

Yeah, there's a more, I think that
you can see counter-rotation there.

The very last scene I defy anybody
not to see counter-rotation
and I'll tell you when it...
not quite here.

You can see stuff, some stuff
going one way, some another.

This one!

See the one in the,
in the distance,
it seems to me is
going left to right,
the one up on top here, the fuzzy
ones are moving right to left.

Those are just clouds, don't

worry about the clouds.

Did you, did you see the counter rotation?

I don't know,

it's hard to see whether

it's there or not.

It's, how, I've lost my clock, I

don't know what time it is...

How, do we have two

minutes to run that?

Okay, why don't you run that video

one more time and we can see,

sit back, get a glass

of wine and see.

He has released this, by the way, to

the public for educational purposes.

Up on the left,

it's coming at you.

I think that's some obvious

counter-rotation in there, left to right.

Way over on the left not to take

care of those here's the Pleiades

and the constellation of Taurus.

Taurus the Bull, there's

Aldebaran see the ... ?

There's the one that seems to be

in the far distance, it's
moving left to right
and up here near us at the top
it's moving right to left.

I think that's pretty
obvious there.

But that's me. Maybe other people
can say, I don't see that, oh.

I don't know.

Anyway, that's, that is the
latest piece of evidence
and there are all sorts of folks
now taking time-lapse photography
those were, ... time-lapse
to get it to speed up.

There are some videos available that
are just in real time, not time-lapsed
and you can still
see the movement.

And it's, as one and particularly
taken from Yellowknife up in Canada
that I think is almost as
good as this but not quite.

This is the best one
I've been able to find.

Anyway, just one last kind

of piece of evidence,
if you guys heard of the what do they
call it, the Blue Eye of the Desert
and the Richat Structure
It's in the Sahara Desert, it's
about 30 miles in diameter,
the rings are spaced
equidistantly from each other.
That's a Bes... anybody who knows
anything about Bessel functions
realize that the zeroes
are all equally spaced.
And I'll talk more about
that in my next talk but...
Well, how Bessel functions are
important but forget the math.
The surface altitude is
higher toward the center.
And there's what it looks like.
If that doesn't look like
a Birkeland current...
And they're all, it's about
30 miles across there.
Anyway that's, it's
another example so
I'm concluding by saying, I think we've

seen several planets have auroras
that are likely created
by Birkeland currents.

The Earth, Jupiter, Saturn, Uranus and
possibly Mercury and Neptune, who knows.

(It will) be interesting to see
what they find in Pluto next month.

If they take any
measurements of that at all.

And we now have evidence of
concentric counter rotation
as predicted by the Bessel function that
is the Lundquist model on three of them
that is Saturn,
Jupiter and Earth.

So how about the Sun?

Is there a Birkeland current
coming down into the Sun?

Well, tune in tomorrow,

I'll be back again.

Thunderbolts.info

All right good afternoon
and thank you too
for Dave Talbott and the rest of the
team for making this conference happen,
and for inviting me
to speak here today.

It's certainly an honor
to be here has a
long-standing supporter of the
Thunderbolts project,
and plasma universe
generally, and I'm hoping that what I
will say today will be able to make a
contribution to the ongoing development
of the electric universe
model which Wal

Thornhill and Monte Childs referred to
this morning. So here
we go as we've seen,
the electrical nature of the Sun is not
in doubt. But I would suggest that some
of the recent evidence doesn't seem to
fit our current model.

I want to look at
this anomalous evidence,
and speculate on

possible changes to the
model to account for it.

The basis of the EU model is the
work of Hannes Alfvén and Ralf Juergens
who both argued that electric currents
are important in the solar system, but
they both had differing views on where
those currents flow.

Alfvén suggested that the
Heliospheric current sheet
is part of a circuit
in the heliosphere.

Near the Sun the current splits into
north and south components, which then
flow along the meridians towards the
poles of the Sun.

Birkeland currents then
flow from each pole, and the Alfvén
circuit closes at some unspecified
distance from the Sun. The important
thing is that Alfvén's current does not
enter or leave the photosphere and the
direction of the current changes in
alternate solar cycles.

In contrast, Juergens
argued that the photosphere

is a region of anode
tufting and therefore
current must always be flowing through
the photosphere into
the body of the Sun,
which he identified as the anode. By
equating the sun's radiant output to
the electrical power,
and assuming a driving
potential of ten billion volts.

Juergens calculated that the inflowing
current is around four times ten to the
16 amps and according
to this model, the
anode sun receives charge which will
tend to neutralize it. A potential of
10 billion volts, if it was on the
surface of the Sun,
equates to a minimum
charge of about three-quarters of a
billion coulombs on
the Sun itself, which
is a very large charge to have
accumulated, but it's tiny compared to
the inflowing current.

And that means the

Sun would be discharged

in a very short time.

Now Juergens recognize this, and originally postulated that the galaxy's potential kept changing to maintain the voltage differential between the anode Sun and the galaxy.

But by 1979 Juergens and Earle Milton between them had developed a different model in which electrons are simultaneously flowing in through the tufts in the photosphere and out again between them. But they still recognized that you had to deal with this question of how the Sun doesn't get discharged.

The current EU model modifies that again, and we now assume that the inflowing electron current is balanced by positive discharges from the coronal torus to the photosphere. And as Wal Thornhill said this morning, these discharges appear as sunspots in the photosphere.

In the heliosphere,
the inflowing electron
current powering the
Sun is assumed to drift slowly towards
the Sun under the influence of a very
low electric field,
like the current in a
Crookes tube. (And a Crookes tube is a
device for studying electricity and
plasma in the lab.) In
the revised Juergens
model the heliopause is assumed to be a
virtual cathode where most of the
voltage drop occurs.

Now there seemed to me to be two
questions relating to this model.

The first question is how we
reconcile Juergens'
and Alfvén's circuits.

One involves a current flowing
in through the photosphere,
and the other does not.

So, Don Scott's diagram, which we saw
earlier, combines the
two ideas, and shows
the Alfvén current entering the

photosphere at the poles, and leaving at the equator. Therefore, given that the photosphere is presumed to be a region of anode tufting, one region should show anode tufting, where the electron current enters, but the other region should not. But what I find puzzling is that the photosphere completely encircles the Sun. There doesn't appear to be any difference between the polar regions and the equatorial regions, suggesting that the current doesn't enter the photosphere and leave the photosphere in quite the way the diagram suggests. So that's one puzzle.

The second question is, whether the evidence supports the model and as I said, some of it seems to contradict Juergens' anode sun.

And I want to focus on that first.

We've seen that the balancing positive

charge is apparently delivered from the coronal torus, and creates sunspots as it punches through the photosphere. But there's a puzzle here too.

The torus forms at solar minimum, when there are no sunspots, and disappears at solar maximum as we see on the right, where sunspots are the most numerous.

Now these two diagrams I'm showing you, here are both looking in the equatorial plane, so they're not the same views as we saw this morning, where the the encircling photosphere /coronal torus diagram was a view from the poles. These are both photographs taken from the earth, so they're in the equatorial plane.

The one on the left is at sunspot minimum and the one on the right is at sunspot maximum. So the torus comes and goes with the cycle. And the model that suggests

that the sunspots are caused by
discharges from the torus is out of
step with when the torus
is actually there.

Now another problem is that the
source of the balancing positive charge
isn't explained.

Presumably protons must
come in from intergalactic space along
with the electrons, otherwise the
heliosphere would become negatively
charged.

But protons entering the heliosphere
seem to contradict the anode model.

If we now turn to the evidence for the
Juergens drift currents,

to get a current at all,

there needs to be an

electron drift relative

to the positive ions,

and we can estimate the relative

velocity of the electrons from their

known density and the

current we need to

generate. Now if all of the electrons

present at 1 AU radius

- that's the radius

of the Earth's orbit - if all of the

electrons are drifting

slowly towards the Sun,

they've got to have an average

drift velocity of 350 kilometers a

second to generate the current.

And that's almost the speed of the slow

solar wind away from the Sun.

Now I would have thought

that velocity should be

obvious in the spacecraft data but it's

very difficult to find it in the

published papers. The measured data

seem to indicate that

both the protons and

the electrons in the solar wind receive

additional energy as they get further

from the Sun. They're always getting

faster. So the protons are behaving as

expected, but not the electrons.

And we'll

look at one or two examples from the

literature to show this.

Here's the data

for electron temperatures

from Philips at all(1995).

The bottom black line shows the expected adiabatic expansion temperature in the mainstream model. The other colored lines show the electron temperatures as actually measured by various different missions relative to a nominal value of 1 at 1 AU (just to show you the shape of the curve).

And all the other lines show that the electron temperature is decreasing more slowly with distance than expected.

So something appears to be heating the electrons as they get further from the Sun.

And that's the wrong way around for an anode Sun model. This plot from Cranmer (2009) shows proton and electron temperatures in the fast solar wind plotted against radial distance in the data taken from the Helios and Ulysses missions. The red dots show the protons

and the blue dots show the electrons.

Strangely, the electron temperature branches beyond about two AU radius. The lower values clustered near the black curve occurred at solar minimum but the uptick of blue points you can see there occurs at solar maximum. And that shouldn't occur if the electrons are being accelerated by an anode Sun, and nor should the effect be dependent on the solar cycle.

So let's look at the electrons in more detail.

Štverák et al. (2009) tells us that the electron velocity distribution functions observed in the solar wind typically exhibit three different components: a core, a halo, and a strahl population. The strahl appears as a beam-like population moving away from the Sun along the magnetic field.

Now in the figure the strahl population is the white zone under the starred curve to the right here.

And the thermal core is a normal Maxwell distribution. The non-thermal halo populations are symmetrically distributed non maxwellian distributions.

The important point is that there is no corresponding strahl population on the left of the diagram, which is the part moving towards the Sun, as you can see from the velocity at the bottom is zero in the middle. So these are moving away.

There are no strahl electrons moving towards the Sun over there. And that seems to be clear evidence that there are more electrons moving away from the Sun faster than the protons, because the baseline for these measurements is the protons. So taken together these various strands of evidence seem to argue against an anode Sun.

So when I got this far looking for this evidence which I was expecting to find and couldn't find, I then thought, well, what evidence the Juergens have. So I went back to his 1972 paper - the original one in which he postulated the anode sun model - and he started off by saying, "The dipole component of the solar magnetic field can only be attributed to the rotation of the charged Sun as a whole, as Dr. Velikovsky pointed out more than two decades ago".

The problem here is that the dipole field of the Sun reverses every cycle, but the rotation doesn't.

So that was a puzzle.

Juergens then refers to a paper by Ogilvie et al.(1974) apparently suggesting that electrons in the solar wind are traveling away from the Sun too slowly. And I've looked at the original Ogilvie paper and this is

what it says. Ogilvie did find that the electron heat flux values are sufficiently low to require modifications to the Spitzer-Harm conductivity formula used in the Parker disk model. But he also concluded a detector measures a net electron flux away from the solar direction.

Juergens then quoted a paper by Lemaire et al. (1971) who Juergens says have a solar wind model that claims better than average success in squaring predictions with observations.

So what did they say?

Their conclusion was that a voltage drop of only 400 volts at around 6 solar radii was all that was needed to explain the observations. And that doesn't sound like a 10 billion volt anode.

Juergens then quoted a paper by Gosling et al. (1971) which he claimed showed the constancy of the

solar wind during the solar cycle,
arguing that this demonstrated that the
energy could not come from inside the sun,
otherwise sunspot activity would
alter the output. Now Gosling's
paper did say that the
average speed was
remarkably constant. But he also stated
high speeds in excess of 550 km/s
were more commonly observed
near solar minimum than solar maximum.

And Gosling also demonstrated a very
good correlation between sunspot
activity, the electron corona radiance
and the ratio flux. So the sun's output
does vary with the
solar cycle after all,

Which means I find it hard to
understand how Juergens interpreted the
evidence that he quoted as support for
a 10 billion volt anode Sun.

Now I must re-emphasize
that the EU model
now says that the
voltage drop occurs at the heliopause,
not at the Sun itself. Now it is an

important change, but it doesn't get around the fact that the 350 km/s electron drift towards an anode Sun is needed to power the radiant output in the Juergens model.

Neither does

it solve the problem of fast strahl electrons coming away from the Sun or the electron heating further out. And nor does it solved the problem of where the supposed balancing charges supposed to come from. So

altogether, I wonder, are

we trying to modify a theory, that was flawed from the start?

So let's look at what the

evidence does actually tell us.

The solar wind seems to be evidence of electrical activity. That's clear. But we need to clear exactly what it is, and where it's occurring.

The solar wind

itself consists mainly of protons and electrons streaming away from the Sun.

The slow solar wind comes from the equatorial regions, where the magnetic

field lines of the Sun are often looped back into the Sun - so we see that coronal mass ejections and similar formations which loop back in. The fast solar wind comes from the higher solar latitudes, and especially at solar minima where coronal holes appear as dark regions in the x-ray spectrum you can see on the right here.

After leaving the Sun, the fast solar wind curves along the magnetic field lines towards the equator from both poles, eventually linking up to form the heliosphere current sheet. And this diagram from Coles (1998) paper shows the effect close in to the Sun.

A little bit further out you'd have also seen the lines from the poles dropping down to the equator.

Now this geometry is similar to the geometry of the Alfvén current except that it's not clear there's a concentration of current along the polar axis. The situation seems to me to me more like the proton emission in the cigar galaxy shown in the picture on the right, where the protons are the red explosion along - vaguely along - the axes, but not concentrated along the axes. So the question is, "What accelerates the solar wind?" Is it a small electric field through the heliosphere, or is it more local to the Sun? There's evidence that the acceleration takes place very close to the Sun in astronomical terms, and I'll just give you two examples from many in the literature. Shapiro in 2012 states that the solar wind acceleration region is a

a dozen solar radii. And Frazin et al.

in 2003 states we know

that the O 5 plus

ions need to accelerate

somewhere before

3 AU. These and many similar

references appear to suggest that the

acceleration zone is close to the Sun,

and not spread throughout the

heliosphere. So let's look at the field

that the EU model predicts.

Now Wal Thornhill has made

the point that simple

electrostatics can't be applied to the

Crookes tube discharge model of the

heliosphere. The pith ball model on the

lower picture is the wrong model.

I agree.

The Crookes tube analogy suggests that

there's no space charge in the

heliosphere, but there is a shell of

positive charge at the

inner boundary of

the heliopause which

maintains the sun's

potential up to the heliopause and

outside this positive layer there's a negative layer which is the virtual cathode where most of the potential drop occurs. And in the model the electric field from the anode Sun itself will fall off with the inverse square of the distance from the Sun giving a low electric field within the heliopause as required, but a high electric field immediately adjacent to the Sun. If you've got a charge on the Sun there must be an electric field coming from the body of the Sun itself, and then outside that you have the heliopause double-layer where the main drop occurs, but we can't get away from the fact that you need a potential drop near the Sun. And this makes the anode sun behave like a double-layer, exactly as we've seen in the acceleration data. So so far that's so good, but

it's more complicated than
that, because in the EU model there are
actually four separate
charged regions. The body of the sun is
an anode and in this
diagram the body of
the Sun is off to the
left here, and its
anode voltage is this intersection with
that axis on the left. The inner and
outer photo spheres are two layers a
positive charge, which you can see as
blue regions here,
causing the height of
this potential hill here, and then the
lower corona is a negative layer here,
which causes this steep potential drop
down here. As we've just seen from the
data, the data appears to indicate that
the acceleration is coming from this
steep potential drop here, as the model
suggests. But the
acceleration data which
is what we measure way out here
somewhere, can be
explained by this part

here. How do we know from the data that you've got this extra layer here, and you've got an anode Sun here? I find it hard to see how we can interpret from measurements out here what's going on behind this double-layer here. So we've got no direct evidence of the anode Sun inside that steep double-layer.

Apart from causing the charged layers out of the heliopause, there appear to be two main reasons why the anode Sun body is necessary. The first is to drive the in flowing current from galactic space, and power the Sun. In a Crookes tube, the current is driven by the external circuit. And that also removes any charge arriving at the anode, so you don't have a charge balancing problem. The second reason for having an anode Sun relates to the control of the solar wind by Don Scott's PNP transistor analogy. And that model assumes that the

ions in the anode Sun are trying to escape, and so they need to be restrained by this potential hill here in the photosphere. An alteration of the height of this hill here regulates the amount of ions that are allowed to pass across and reach this steep part here - the double-layer - and that controls the output of the double-layer, which we measure out here as the solar wind.

Now without an anode Sun, an outwardly directing double-layer, consisting of the outer photosphere and lower corona, would accelerate the positive ions in exactly the way we measure. But then how could the control work if you don't have this hill part between the anode and the inner photosphere?

Well in the first place, without an anode, there is no excess of positive ions trying to escape.

Any positive ions that are drifting around here will be accelerated if they get to the edge of this hill, and they will be accelerated down the potential hill, if they approach the double-layer, but they won't be being forced outwards from an anode Sun if it isn't an anode.

And secondly, control of the acceleration is basically the control of the height of this part of the hill here. And that could be achieved equally well either by the adjustment of the voltage of the photosphere here, that is, the amount of charge in these layers, or slightly more subtly, you could keep the charge in the two layers the same, and simply separate them - physically separate them - slightly further. And both mechanisms would increase the voltage, or

therefore the height of the hill, and

therefore the acceleration.

So just this

part - the double-layer

part here alone -

can provide the control mechanism.

Now I

wonder, is an anode Sun

necessary after all?

So, if there's a double-layer, without

an anode Sun inside it, what happens at

sunspots? The transistor

analogy suggests

that sunspots are holes

in the double-layer,

through which the positive ions can

leak out. But a problem with this model

is that the observed

motions of sunspots

appears to show that

matter is falling in.

For example, Newton in 1958 refers to

an always present slight downdraft of

hydrogen and calcium gas from the

chromosphere above the sunspot, falling

in. Also, sunspots are known to emit

electrons. We've already
seen Birkeland's
work presented a couple of times this
morning. Here's the
diagram you'll recognize.

Now in relation to this
diagram Birkeland
refers to the emission
of cathode rays from sunspots and
compares them to what he found
when his terrella was
the cathode, not the
anode. With slight magnetization on his
cathode glob, the rays came from the
equatorial regions,
which is the sunspot
belt, and they formed
groups, exactly like
sunspots do, as we see here in the
picture. And these rays - these cathode
rays in Birkeland terrella - seem to be
analogous to the strahl electron beams
we've already seen.

In his recent interview
with Michael Goodspeed, Don
Scott pointed out the correlation

between sun spots in
the photosphere and
the bright x-ray
emission regions in the
chromosphere and corona above.

The x-ray emission stops
at higher latitudes,
where there are no sunspots. Now x-rays
are due to high-speed electrons
impacting neutral atoms.

So it seems that
the high temperature electrons causing
the X rays are coming
from the sunspots.

These factors all seem to point to a
source of high-energy electrons inside
the Sun, which need to be contained by
the double-layer, in contrast to the
containment of positive
ions in an anode
Sun. The double-layer would be the same
way around we've seen already, but it's
just containing electrons, not protons.

So why should there
be a double-layer at
all, if there's no anode body there to

cause it? It's well-known

the plasma also

forms a double-layer to separate areas

of plasma with different

properties, such

as temperature, or

degree of ionization.

And these types of double-layer are

current-free double-layers in contrast

to the current-carrying double-layers

formed in a Crookes tube.

And in essence,

that's the difference

I'm suggesting. The

anode Sun model requires a CCDL around

it, but plasma could generate a CFDL

cell boundary, without a charged anode.

And the particle acceleration in the

double-layer is similar in both cases.

But one type of double-layer is caused

by an externally driven current and the

other is not. So perhaps we should look

at what sort of plasma the Sun might

contain, which would

prompt the formation

of a current free double-layer.

The recent interest in fusion has led to the study of plasmoids. This is an example here.

I'll show you after I have a small drink.

Most fusion devices aim to create a high temperature plasma which is contained by external magnetic fields, such as seen here in the tokamak machine near Oxford. However there's a perfectly good example of naturally occurring self-contained plasmoids in nature and that is ball lightning. And the recent fusion research has looked at ball lightning in an attempt to explain what's going on in these lab machines.

I found two very good papers by Tsui published in 2001 and 3 respectively who demonstrated that there's a stable force-free arrangement of currents in a plasmoid when there is the right balance of toroidal and poloidal fields.

So that

means that a stable plasmoid is like a Birkeland current wrapped around into a closed loop. Now this force free form occurs at all scales.

It's been suggested elsewhere that the electron itself is a toroid and as we heard this morning Wal Thornhill has argued that there's a plasmoid at the heart of the Milky Way and other galaxies. So if we accept that, it seems possible that a plasmoid may be contained inside the Sun and other stars as well. Now, this idea isn't new.

Alfvén argued that the Sun was a pair of toroidal rings. And this double ring model explains the loops of prominences on the Sun as escapes from the toroids. Now, perhaps that's why the Paris Observatory recently published the similar image seen on the right, something of an artist's

impression, but

at least they're adopting the model.

Now, Bostick's experiments in 1956

demonstrated that the Rings are formed

when a plasma gun discharges into a

magnetic field across

the field lines as

you see on the left.

Initially the plasmoids of tubular and

aligned along the field lines and then

develop into knots and eventually

into rings,

In contrast shown on the right.

Charles Bruce was convinced that ball

lightning is a result of ejection of

plasma from bends in

lightning discharge

channels, where the stretched magnetic

field allows highly energetic plasma to

escape from the main

lightning discharge

channel. Observations of naturally

occurring ball lightnings

seem to support

this view that is associated

with conventional lightning discharges.

Birkeland currents can also develop
bends due to what is known as the
kink instability. So
a plasmoid could be
formed at a kink instability in a
galactic Birkeland current without the
need for an artificial plasma gun.
Now if a star forms as
a plasmoid, it will
inevitably contain high temperature
electrons similar to
the tokamak devices,
and so we should expect
to see a CFDL form
around it to separate the two
plasma States. So I'd like to suggest
that there may be a plasmoid in the
center of the Sun and a CFDL around it.
Ionization would then occur in the
interaction region with the surrounding
plasma. The tufting in the
photosphere would be due to ions being
accelerated away because they got too
close to the double-layer.
And the electrons
would be drawn in against the electron

temperature gradient. Sunspots in that case would be leaks of high temperature electrons like in the Birkeland experiments, and the leak of high-temperature electrons would maintain the overall neutrality of the plasmoid. The energy would come from the energy contained in the plasmoid which is slowly leaking out, by interaction with its environment, which is similar to what we see in ball lightning behavior. And the CFDL would accelerate the solar wind away from the Sun just like the CCDL in the anode Sun model.

But the plasmoid CFDL model avoids the problems of the electrons not behaving further out and it also avoids the need for a balancing proton inflow into an anode Sun. So it solves a couple of problems.

But if we replace the anode

Sun with a plasmoid Sun,
where does this leave
the Alfven current?

Well, I suggest that we leave
it exactly where it was,
with the one exception
that we touched on
earlier. The concentration
of the current
along the polar axis is not obvious in
the ulysses mission data.

It seems to be
more distributed and
therefore more like
the arrangement shown
here from Alfven's
1941 paper. In that
paper he argued that
the field aligned currents from the Sun
caused orbital rotation of the
heliospheric current sheet by the
Faraday motor mechanism. It seems as
though the Alfven current around a
plasmoid which is not energetically
producing axial Jets is primarily
concerned with rotation and transfer of

angular momentum not with

the processes going on

in the photosphere itself.

But if that's so, which

way is the momentum being

transferred? Recent evidence suggests #####

that the corona is not

rotating the same

way as the photosphere, or in the same

way. It rotates in same

direction, but not

in the same manner. This graph from

Giordano 2008 shows the measurements of

the rotation period plotted against

latitude. And the parabolic curve shows

the differential rotation of the

photosphere for comparison. And the

puzzling aspect is that the corona does

not show differential rotation.

Also the

corona has a faster rotation. That is a

smaller period, than the photosphere at

higher latitudes. So

that says to me that

photosphere can't be

driving the corona.

It seems that it's the corona that's
linked to the Alfvén Faraday motor.
But Alfvén's mechanism
can work both ways.
And therefore it's possible that the
corona can
be driven by the heliospheric current
sheet. But, if so where could the
heliospheric current sheet motion come
from? The recent evidence from the IBEX
mission suggests that the heliosphere
sits in the center of a galactic
Birkeland current. And
it seems reasonable
to assume that the presence of the
heliosphere effects the
Birkeland current,
which either bulges around it as NASA
says shown on the left, or perhaps
pinches down onto it
as we might prefer.
Now we know that a
Birkeland current has
a radially varying
helicity which allows
each particle to follow the magnetic

field line at its own location. The balance is maintained automatically because if it is not parallel to B at any location, the cross-product will generate a radial force, which moves the plasma back into alignment.

So suppose that the heliosphere causes the Birkeland current to become misaligned at the bulge or the pinch, then some plasma will be shifted radially into or out of the heliosphere. If it's incoming it will still be carrying the spiraling current which is carried mainly by the electrons.

So the incoming electrons will have a strong orbital velocity component and an inward radial drift in which the electrons are moving faster than the protons. Once inside the heliosphere we

would see this as the current in the heliospheric current sheet, which according to Alfvén spirals in towards the Sun in alternate cycles. The motion of the heliosphere current sheet could then drive the corona by the Alfvén mechanism in reverse.

During the other cycle, when the sun's magnetic field is reversed, but the rotation remains the same, the radial component of the current must reverse and flow back out. And it may be during that phase the corona is driving the heliospheric current sheet.

So it seems possible that the solar cycle is due to the galactic current bleeding into the solar system in one cycle and leaking back out again in the next.

And Don Scott has recently referred to a paper by Decker published in Nature in September 2012. Decker reported that contrary to NASA's models Voyager 1 had measured zero north-south plasma flow near the heliopause. And instead they found an

unexpected totally

unexpected east-west ion flow plus a
continued radial drift.

So already there seems to be some
evidence for the suggested interaction
between the heliosphere
and the Birkeland
current. So to summarize I suggest that
the evidence does not seem to support
Juergen anode Sun but

it's more in favor

of a CFDL near the Sun and this may be

a result of normal

plasma cell formation

around a force-free

plasmoid which could

have been formed by discharge from a

kink instability in the original

galactic Birkeland current. The energy

would come from the plasmoid similar to

ball lightning and caused ionization of

the plasma next to it.

The DL accelerates

the islands and draws

in electrons until

there's an imbalance when

high-temperature electrons escape fire
holes in the DL which
we see as sunspots.

The role of the Alfvén circuit seems to
be largely rotational transferring
momentum between the corona and the HTS
and exchanging electromagnetic and
kinetic energy during the solar cycles.

The coronal torus does store part of
that energy during the cycle.

The primary
driver for coronal rotation in may then
be the galactic Birkeland
current leading
into the heliopause
due to misalignment at a pinch or bulge
around the heliosphere.

And oscillations
of the misalignment might cause the
saivors cycle but is it right? I don't
know we need more evidence.

I do suggest that the
forthcoming SAFIRE
experiment should keep an open mind as
to whether the Sun is an anode or not.

And I think the Thunderbolts project

either has to find convincing evidence
for a drift current towards the Sun and
a better means of maintaining the anode
voltage or perhaps we have to consider
abandoning the anode. Electricity is
undoubtedly the key,
but how and where it
flows is uncertain. But the good news
is there's still plenty
of physics to be
sorted out and I think it's exciting to
be involved in the
search for answers. I
hope you agree because there's a role
here for anyone who's interested.
Thank you for listening.

I want to start by asking your question how can liquids behave like an ionized gas plasma okay the answer I think is the plasma behavior depends on the motion of charged particles which are free to move in response to electromagnetic forces so if the liquid is partially ionized than the charged particles in the liquid ought to experience similar forces and the liquid will behaviors sort of similarly to the ionized particles in the gas so what we're going to do is to look at three examples of partially ionized liquids and compare their behavior to plasma behavior in space so the structure of the talk first of all we'll examine the floating water bridge excuse me and the various attempts to explain it without using plasma behavior then we'll compare it to the way plasma behaves in space we'll find that some of the puzzling features of the floating water bridge can be explained by using plasma behavior and the second half of the talk will then use the same plasma behavior

and professor Pollux easy layers in water to offer an explanation of unusual fluid flows in plant roots and blood vessels so we're starting off with a floating water bridge now you've already seen this a couple of times already courtesy of Professor and Elmer Fuchs who made the film so the floating water bridge forms between two beakers of pure water when a large potential difference of about 15 thousand volts or above is applied between them and here you can see two features of the bridge there's a nearly cylindrical tube of water 1 to 2 millimeters in diameter between the beakers and the tube can be stretched up to about 25 millimeters long and the bridge is like a tightrope it doesn't sag as you would expect it to under its own weight even when it's stretched out to 25 millimeters now this film also by Elmer Fuchs shows that the water is rotating the films in slow motion because the rotation is actually too fast to see with a naked eye so folks have shown

that water in the bridge is separated into an annulus and an inner core and the circular annulus is the part that's rotating in laser light shown in from the end of the bridge you can see that the light is curving around the rotating annulus part and avoiding the core in the middle so it gives you some indication of that shape I'm talking about now folks also found that the annulus and core each carry water along the bridge but in opposite directions so that's quite extraordinary really water is flowing in both directions at the same time now not only water earth but charge flows across the bridge as well now charge flowing in opposite directions is an electric current by using pH dyes fuchs has shown that the bridge transports charge or current from one beaker to the other and here we can see charge regions adjacent to the terminals boiling off as it were charged during an experiment and at the end of the experiment you can see the difference in pH and the Meekers now

Armstrong back in 1893 who is the guy who first discovered the floating water bridge the experiment was in for Kaufman for about a hundred years Armstrong found that the annulus is positively charged and the core is negative so there we can see how we can get a current flowing across the bridge positive charge in one direction and negative charge in the other is equivalent to a current in one direction so to summarize a floating water bridge is a stiff cylindrical tube with an annulus and call structure there's simultaneous bi-directional flow of water and charge across the bridge and the annulus is rotating very fast around the core what's more the annulus is positive and the core is negative so researchers approached the analysis of the floating water bridge from both the classical and the quantum directions the principle of the classic EHD approach is that electric stress causes the axial tension in the bridge

according to Taylor electrodynamic currents are assumed to be so small that magnetic induction effect can be ignored Bertram and Sowell expanded on Taylor's analysis but without achieving complete success they stated although the quantitative agreement between theory and experiment is not as close as one might like using surface transport as an adjustable parameter it brings them into agreement

sounds great isn't it but the problem with that is that the adjustable parameter is completely arbitrary its values chosen to make the equations work it's not a measured value from the experiment well of course you can make it work if you can choose any value you like so there's something missing

why'd Amana lies the water bridge in terms of the Maxwell pressure pencil in a dielectric fluid he assumed deionized water throughout because the need for deionized water is evidently necessary to prevent conductivity effects from masking the insulating dielectric

effects in other words his analysis only worked with a dielectric but the presence of charge and the beakers after an experiment shows that the water does become partially ionized this obviously casts doubt on widens analysis

you

so what's missing what's missing from the LRC's is that they don't account for the annulus and course structure all the bi-directional flow or the fast rotation of the annulus now I suggest that these may introduce additional electromagnetic effects which haven't been taken into account because as we know the water is charged will therefore compare the floating water bridge with another filamentary structure in which an electromagnetic effects dominate the behavior here's a picture of plasma behavior in space now Rogoff and others have described plasma as the fourth state of matter the other three of course are solids liquids and gases plasmas are estimated to constitute over 99% of the visible universe and plasma

as you all know is often described as an ionized gas but as Alphen said whilst this is technically true it doesn't reflect the complexity of the behavior of plasma under the influence of electromagnetic forces normal gases simply can't do what a plasma does plasma can transmit an electric current in a defined filament without affecting the surrounding plasma as we see here in the Cygnus loop the plasma rearranges itself to form what is effectively an insulated cable around the current path and so the bulk plasma the rest of the plasma in space isn't affected and the way it does this is by forming a rotating cylinder of adjacent layers of positive and negative charge on the outside of the current this filamentary arrangement is known as a berkland current now the behavior of the berkland current is governed by Maxwell's equations of the Lorentz force law applied to the individual charged particles in the filament essentially each and every particle has to follow

the magnetic field lines where it is but
it also by moving it modifies the same
magnetic field lines so according to
both alpha and peratt's the net result
of this
interaction is a result is a spiraling
filamentary pattern in which the
circularity of the paths of the
particles is dependent on their radial
distance from the central axis of the
filament so here you can see a diagram
with three examples chosen at random the
further you are from the centre of the
current the more rate more circular the
path you have to follow so strongly
helical and the outside layers so the
charged particles always follow the
magnetic field line direction at their
location and this explains the
alternative name for a birth length
current as a field aligned current the
field aligned direction is the most
efficient direction for current to
traveling through a magnetic field and
that's because the Lorentz force law
effectively imposes an electrical

resistance on motion transverse to the magnetic field that means the resistance is lowest in the direction parallel to the magnetic field therefore the current is in a fourth free configuration when it's field line one other effects important here the outer paths are strongly helical and that means that the outer layers are rotating around the axis of the filament and that in turn generates more electromagnetic forces and they are an essential part of the stability of the berkland current so the summarized berkland current plasma behavior means that a berkland current has a form of annulus and called structure it has bi-directional flows because of current of opposite charge particles and it also has rotation of the outer layer that sounds a bit like the missing bits of the floating water region now

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you, there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you
and there is nothing to fear.

Invitation to Jordan Peterson

Tonight's talk, this is the most popular
talk we've ever done in 15 years.

Please welcome one of the world's great
public intellectuals, Jordan Peterson!

Well, that was nice.

It's not surprising that we've been asked
to comment on the YouTube presence
of Canadian psychologist

Jordan Peterson.

It seems his star rose spectacularly
after a record-setting interview
with Britain's Channel
4 host Kathy Newman.

Posted on YouTube in January, the interview
attracted over 11 million views
in about six months
with an overwhelmingly

positive rating,
not to mention the multitude of repostings
of the same or similar material
garnering up to a
million views each.

Prior to this remarkable turn, there
was little to distinguish Peterson
from other qualified
presenters on YouTube.

But now when Peterson gives public
presentations auditoriums sell out.

Just one cautionary
note is required here.

Though Peterson is most definitely not
an evangelist for any religious view,
he does single out the dominant religion
of the Western world, Christianity,
as an indispensable
force in our culture.

And he frequently states his personal
view that civilization would collapse
were a culture to fully abandon
its broad religious heritage.

Due to the diversity of people
contributing to the Thunderbolts Project,
we've avoided contemporary

politics and religion

when discussing the

Electric Universe movement.

After many years of observing this rule, we

can now say that without this constraint

the Thunderbolts Project

could never have emerged

as the most popular internet voice

of the Electric Universe idea.

So we've asked ourselves how to

respond to our own supporters

urging us to take up

Peterson and his work.

The answer has come from looking more closely

at how he acquired his current perspective.

His academic training placed an

emphasis on the mythic archetypes,

the deepest structures of human

thought in ancient times

echoing across all

of human history

and continuing to

influence our world today.

By their cultural impact,

Peterson observes,

the archetypes have provided

guidelines to humanity

inspiring people to live productively

and responsibly in the world.

Though we don't have an answer to offer on

contemporary religious and political questions,

we've noted that Peterson's

historic subject matter

is pretty close to that

of psychologist Carl Jung

who saw in the world's great myths a

repeated presence of certain first forms

evident in the early expressions

of human consciousness.

By archetypes Jung meant deeply

embedded recurrent patterns

of sacred beliefs and

practices the world over.

Bringing the ancient mythic and

symbolic structures to light

became the first priority in Jung's

approach to human psychology.

So we see in Peterson's presentations

a clearly stated respect for Jung

and for such comparative

mythologists as Joseph Campbell.

And it's worth emphasizing that

most comparative mythology

does not require a student

of ancient history

to know how an archetype arose.

What really counts, they would say,

is the archetype's cultural function.

One discerns its role as the culture

strives to affirm its own identity

in a changing world.

But for us, there is also a deeper

level of analysis available,

one almost never expressed in popular

treatments of the archetypes.

Our claim is that the real

obstacle to deeper insight

is the one that prevents an investigator from

seeing what will ultimately become obvious.

The archetypes did not originate

in today's natural world

nor did they emerge

from a vacuum.

They arose as the

effect of a prior cause.

A prior cause within a natural order

that disappeared thousands of years ago.

If we're correct in this

fundamental conclusion,
just imagine the scale of the disconnect when
trying to comprehend the ancient archetypes
in terms of familiar
natural experience today.

All we'll have available to us are the
later projections of mythic themes
onto fragments of
the natural world
while the original provocation
remains forever elusive.

Well the remarkable truth is that by following
rational ground rules for comparative analysis,
hundreds of archetypes can
be reliably identified
and not just by their
own essential qualities
but by seeing them in terms of
origin and timeless significance.

All archetypes have a direct connection
to an extraordinary natural experience
and all are inseparably
connected to each other
with no more than two or three degrees
of separation between any of them.

With this specificity in

front of us, we can assure
anyone coming into this
discussion for the first time
that the answers given will not
allow us to simply perpetuate
modern-day interpretations
of ancient myths and symbols.

And so we've stated our conclusion
emphatically and repeatedly
that the archetypes point
back to a former time.

And the most persuasive answer requires the
clearest connection between cause and effect
as the cause itself becomes
logically inescapable.

That's it, we will then say.

But next comes the greatest challenge
arising from a vast field of evidence,
confirming that each and every
archetype arose explosively
in response to earth-shaking
and mind-altering events.

To many newcomers that proposed
cause will seem preposterous.

Yet after decades of
systematic research,

we have never found any other
plausible cause of a single archetype.
And that means no justification
for ignoring the cause
that fits the evidence precisely.
For those close to The
Thunderbolts Project,
the greatest surprise has come from the
predictive ability of the reconstruction offered.
What one would expect to find within
the framework proposed, one does find.
In this regard, it seems that Jordan
Peterson himself has delivered to us
several examples
well worth exploring.
In number 7 of his Maps of Meaning
series he takes up what some have called
The Consilience Test for assessing
the overall integrity of an idea.
That test becomes
particularly useful
when a novel idea reaches across multiple
layers or patterns of fact, he states.
Of course, we've drawn
on this very principle
when we proposed what we've called the acid

test of the historic polar configuration --

the centerpiece of

our reconstruction.

Do the mythic archetypes

become predictable

when seen from the perspective

of this evolving configuration?

Our claim has been that hundreds of

archetypes meet the acid tests unequivocally.

A level of specificity that could

not be possible by cherry-picking.

When comparing our claims to

Peterson's tests of consilience,

one difference should be noted

and this difference shows up in virtually all

comparative studies of the mythic archetypes.

The more familiar studies, such as the

highly popular work of Joseph Campbell,

invariably stop short of anything

that could be called an explanation.

While describing

undeniable patterns,

they do not penetrate to a

proposed origin or first cause.

The archetypes are simply there as a

profound influence on human conduct

and cultural evolution over time.

But this is where our challenge to today's
most pervasive scientific illusion
enters the picture.

The illusion that we've called
the uniformity principle.

Others have called
it uniformitarianism.

The uniformity principle suggests to
astronomers and planetary scientists
that they can retro-calculate the
position of any planet in the ancient sky
at any historical juncture based
on today's planetary motions.

They will not realize that in
the 19th and 20th centuries,
this disregard for
ancient testimony
was the greatest mistake
of modern science.

A mistake that continues to echo through
all of the scientific disciplines today.

Of course when living in
the shadow of this mistake,
the very idea of Earth-
altering events in the past

will appear preposterous.

But allow the ancient

witnesses to speak

and a vastly different

sky will reveal itself.

We've proposed that all

of world mythology,

all of the enchanting stories and symbols and

commemorative practices that have come down to us

are explained by an ancient

gathering of planets close to Earth.

We make that claim based

on global evidence.

Yes, in innumerable instances

evidence is remarkably explicit,

but explicit will not mean obvious

to a person looking somewhere else.

No one could explain or has

ever explained the archetypes

in the absence of an

extraordinary human experience.

And that's the historical truth we'll

continue to highlight in these Discourses.

It's also why we

invite Jordan Peterson

who's contributed so much to public

discussion of the archetypes,

to join us in a common exploration of

first causes and their implications.

Few sciences or social sciences

could possibly escape the effects

that followed from the most fundamental

theoretical error in our time.

So this is about Ptolemy, Belief

Systems and other Dark Matters.

Now, we're all here

or watching online

because we have an interest in the

exploration and an explanation of the cosmos.

Now when we think about the

investigation of the cosmos

we often focus on the capabilities

and limitations of the instruments

and the observational

tools that we use.

We lose track of the limitations

that are imposed on us by

possibly the greatest instrument, the most critical

instrument involved in this exploratory process

and that is of course

the human mind itself.

Now, unlike the instruments of

our invention, the human mind

really hasn't changed very much, if at all, since

we took our first steps on this great journey.

I often talk about how we have not

really changed very much from

our previous selves

so many thousands of years

ago when we huddled together,
trying to figure out what populated
the darkness beyond the campfire.

And so we lose track of how the
greatest challenge ahead of us
is not really the precision of our
mechanical or electronic instruments,
It's the cumulative psychological
and sociological and biological and
evolutionary hindrances
in our own mind.

Now, I plan to talk about this
for the next little while,
but first I thought it would be
instructive to open with a story.

And this is the story of the
clever king and the sage.

Now once upon a time
there was a clever king.

In fact he was so clever
that it was widely held
that he was the most clever
person in all the land.

More clever than anyone
had ever been before
and probably more clever

than anybody would ever be.

And one day the clever King decided that
he would devote all of his cleverness
and all his kingly resources to
enriching the lives of his subjects by
discovering the secrets of the cosmos, the Sun,
the stars, the Earth and even life itself.

And so he collected all of the
clever people in his land
to help them in this great work.

And for many years the King toiled
with his hundreds of clever people
in constructing the most amazing,
sophisticated, complicated
mechanism ever built.

They poured all of their
collective knowledge into it,
all of their cleverness. Nothing
was missed, no mistakes were made.

And it was wrong.

The magnificent
machine, so complex,
did not explain the cosmos, the Sun
the Earth, the stars and life itself.
It always gave something different
than what the king could see.

Something was wrong.

So, he was so confident,

he knew, he was certain

in fact, that something

little was missing.

They had poured so much

of their knowledge,

so much of their cleverness into this machine.

It had to be something incremental.

So in frustration he looked

for other clever people

who could come and help him

find his missing pieces.

And finally he heard of

a sage, and old wise man

who had wandered through

all of the kingdoms

and was said to be as

wise as time itself.

So he summoned the sage to come before

him and look upon his great work.

And so the King explained,

piece-by-piece,

this incredibly complicated,

beautiful machine.

He's showing him how all of the cleverness

all of the knowledge had gone into it.

And the old wise man nodded and
smiled and he blinked in wonder.

Then said, my king I can tell that indeed
you are the most clever person in the land,
more clever than
anyone who's come before,
probably more clever than
anybody will ever be..

But, he said, I can
immediately see
what it is, where the missing pieces are
that will complete your great work.

The king was
overjoyed, he was amazed.

This is fantastic, he knew it done the
right thing bringing in that sage, right?

So he said; this is great, can you please
tell me what the missing pieces are
so that I complete
this great work?

And then wise man said;
the pieces that are missing are all the things
that you don't know that you don't know.

Well, the king was dumbfounded,
he sputtered in frustration,

so how am I going to complete this great
mechanism if I don't even know what I don't know?
And the old sage nodded and smiled because now he
knew the king was asking the right questions.

And he said; my king when I first met you I knew
you were the most clever person in all the land
but now you're just a
little bit wiser.

Well I can't say the
king took that very well
but the moral of the story
is that the clever man
has complete confidence in the
cleverness of his inventions
and that complete knowledge
is just a few pieces away,
with just a little few more
pieces to complete the picture.

The wise man accepts
and acknowledges that
we can never really know
what we don't know
which means we can never be certain
about anything we think we know
and that, the pursuit of absolute
certainty is probably a foolish goal anyway.

Now there are a couple things

i like about the story.

One of them is this metaphor of this

machine for conceptual frameworks.

After all the system of differential equations

is really just a mathematical machine.

You crank away at it, sort of algorithmically, and

answers and simulations come out the other side.

And if it agrees, relatively well,

with some subset of what we observe

we get quite a bit of certainty

[that] in its general use.

And this ingrains some belief that

it can be used in all conditions.

Well, modeling

mimics understanding.

Now over the course

of our history

we've constructed various complicated

conceptual frameworks

to try to understand the

workings of the cosmos.

Now, one of these very complicated

conceptual frameworks

can actually trace its lineage back

to ancient Greece and Aristotle

but it was actually perfected
by Claudius Ptolemy.

This is of course the geocentric
model of the universe.

This notion that the Sun and the
planets revolved around the Earth.

Now, Claudius Ptolemy was an observational
astronomer and mathematician
we actually don't know
very much about his life
except that he lived and worked
in Alexandria about 150 AD.

Now however, most of his
work actually survives
and foremost amongst
this is the Almagest
which is a treatise in 13 volumes that
describe the motion of the Sun and the planets.

And indeed the universe was
conceived as a great mechanism.

Nested planetary spheres comprised
of a perfect crystalline substance
called quintessence or ether.

And the planets riding on
the crystalline spheres.

Now quintessence has a natural

perfect circular motion
and also it can never be
experienced here on earth
where we could only experience the normal
elements of earth, air, fire and water.
And now we have this
notion arising
of some disconnection between the
physical nature of the heavens
and what can be experienced here. We actually
see this recurring in modern cosmology.
We'll talk more about that later.
Now one of the things that I like about this
model, one of the things I find interesting
is this creation of new physical
entities and mechanisms
to fill in our gaps
in understanding.
What we don't know, we populate
with new physical entities
and as our imaginings are modified and
adapted to fit with what we observe
then these imaginings are transmuted
into an illusion of understanding.
Now, probably Ptolemy's great
innovation was the use of the equant

and the use of the
epicycle and deferent.

Now through multiple
spheres per planet
and sophisticated use of
epicycles and deferents,
he was able to construct a
very complicated system
to predict the motion of
the Sun and the planets.

And here we see in this animation that
through this use of epicycles and deferents
he could model that back-and-forth
wandering of the planets.

And actually the Ptolemaic model
was relatively satisfactory
and from a mathematical
perspective
was probably one of the most outstanding
achievements of the human mind.

In fact it's very difficult to identify
another scientific system of thought
that was so successful in
predicting for so long.

For over 1400 years it dominated
as our view of the cosmos.

At least until the
advent of Copernicus.

Now, Nicholas Copernicus was originally
educated in art and mathematics
but when he became canon of
the Frombork cathedral
he traveled to Italy, ostensibly
to study religious law.

But what he really did was he
dived headfirst into astronomy
and he made full use of the books
that were available at the time
due to the advent, the recent
advent of the printing press.

Now we all know that Copernicus
made that great leap
and placing the Sun at
the center of the cosmos
and he was largely motivated by a
sense of simplicity and elegance,
the theme of this conference.

But he was also, he also believed very strongly
in Plato's notion of perfect circular motion.

He abhorred Ptolemy's equant
but because he was limited
to circular motion

he needed to use the
epicycle and the deferent
to make his model match
what was observed.

Now to a certain extent it was more simple
and elegant than the Ptolemaic model
but it's arguable whether it
was really that much simpler
and in fact in real practice it didn't
really provide that much better prediction,
if at all, than the
Ptolemaic model.

There's also something on
the heretical side as well
and Copernicus took great
pains during his life
not to actually
broadcast these notions
and is only, was only really published
very shortly before his death in 1543.

And he was right because
in the oncoming years
the church condemned the work and the book was
added to the list of banned books in 1616.

And so the geocentric
model persisted,

even in the face of fairly
convincing contradictory evidence
that was coming
forth from Galileo.

Now Galileo was working
with the telescope
which was just invented in 1609 making
some really critical observations.

Observations like moons around Jupiter
and craters on the moon and sunspots,
but his most critical observation of all
was probably that of the phases of Venus.

The phases of Venus, these observations
were completely inconsistent
with the geocentric
notion of the universe.

If the geocentric model was
a scientific hypothesis
it would have been
disproven out of hand.

And it's a wonderful example
of how humans can ignore
evidence that contradicts a
strongly held belief system.

Well, it is fair to say that life
became uncomfortable for Galileo;

inquisitions tend to do that,
so he eventually recanted, was exiled
and the geocentric model persisted.
In the meantime Kepler was working away and
did away with this notion of circular motion
and developed a new empirical set of planetary
laws of motion based on the ellipse.

He sort of set the stage for
true revolution in human thought.

But it was the groundbreaking
work, actually, of Isaac Newton
that really did away with geocentrism
as our dominant view of the cosmos.

Now, Newton began his groundbreaking
and amazingly broad range of work
when the Scientific Revolution of
the 17th century was in full swing.

His new notions of gravity
provided an exciting new
explanatory framework for
the motion of the planets.

He established a unified earthly
and heavenly system of mechanics.

He was able to independently derive,
mathematically derive, from first principles,
Kepler's empirical laws

of planetary motion.

Now the power of Newton's system
lay in its universality.

It tied together the physical phenomena
both earthly and heavenly into one system.

There was no longer this separation between
the physical nature of the heavens
and what was on earth.

And it's interesting that
this separation, this,
this connection between what happens in
the heavens and what happens on earth
has only been recently
severed again.

But more on that later.

Now the way to Newton's power to this
universality was through mathematics
and the title of his book The Mathematical
Principles Of Natural Philosophy
sort of speaks for itself.

It's embodied and inspired this notion
that the universe could be reduced
and accurately modeled through
mathematical formulation.

But Newton himself admitted
that and if I can paraphrase,

"he had found the laws
but not the cause".
He even though had
not really describe
the underlying physical principles
as the cause behind gravity,
he had established that this
new system of the world
was uniquely grounded
in gravitational laws,
and it's been immensely successful.
It's Newtonian mechanics
that launched rockets and satellites
into orbit and put men on the Moon
and our lack of understanding of what
underlies the gravitational laws
has in no way kept us from taking full
advantage of its mathematical description.
So again we've been lulled
into a sense of understanding.
Now with the advent
of field theory
inspired by the work of,
Far.., I mean Michael Faraday,
we did away with this mechanical
notion of the universe

and replaced it with more abstract
notions of field of influence.

Ultimately Clerk Maxwell
mathematically codified
Faraday's empirically derived
laws of electromagnetism.

Einstein applied field theory to a fairly
major refurbishment of the gravitational laws
in the general
theory of relativity.

And it's with the general
theory of relativity
that we turned our faces
to the natural world
we embraced a mythical, mathematical
universe of space-time fabric
and the smooth dance of
gravitational fields.

And where was electricity and
magnetism in all of this?

Well it was sort of banished
from the cosmological stage
with a vague promise that it
might be unified later on.

And so the earthly sphere became one of
sparks and magnetism and vacuum tubes

and Edison and Tesla and the electric
and the electronic ages, swept over us.

But in cosmology the mathematical
perfection of gravity held sway.

The heavenly sphere was one of pristine
space-time fabric and singularities
and infinitely perfect physical entities
that could not be experienced here on earth.

Sounds familiar.

Now it's ironic that it said that Einstein
kept a portrait of Michael Faraday in his study.

It's ironic because Einstein's great
achievement effectively removed
electricity and magnetism from
our exploration of the cosmos.

And while we waited for the
square peg of electromagnetism
to be fit into the round
hole of Einstein's theories

over the next

hundred or so years,

there was a new complex, sophisticated
mechanism developed and constructed
to explain the

workings of the cosmos

and this is of course the

lambda cold dark matter model.

It's presently known as the
standard model of cosmology.

So, let's have a look at the
lambda cold dark matter model
to orient ourselves a little bit.

Well, if you look it up in Wikipedia, it's
a parameterization of Big Bang cosmology
and cosmological constant lambda
that's associated with dark energy.

Dark energy and dark
matter between the two
comprise something like 96% of the matter
and energy content of the universe.

That other 4% that thin slice of the
cosmological pie chart, as I like to say,
is what we can observe and
actually directly experience.

So here we are again in
a cosmological model
where most of its material content
is outside of our experience.

It cannot be experienced
here on earth.

And I feel like we've taken, certain,
to a certain extent a step backwards

in fact dark energy is even sometimes
referred to as quintessence.

You might remember quintessence of the
crystalline spheres in the Ptolemaic model.

And I'm amazed not so much
by how humans repeat history,
but the level of
detail that they do so.

It's not just a repeat of the same sort of
philosophical concept of the separation
between the physical
nature of Heaven and Earth.

Actually reusing specific words again
to fill in gaps in our understanding.

Now it took over 1,500 years and the
full force of the age of enlightenment
to shatter those
crystalline spheres.

But here we are again.

From the age of enlightenment to what
I can only term the age of "endarkenment".

Dark energy, dark
matter, black holes..

OK, well, let's focus
in on one of them.

Let's look at dark.

matter. Why dark matter?

Dark matter, the need

for dark matter

arose in the late sixties and the early

seventies from the work of Vera Rubin,

who plotted gravitational, I mean,

rotational curves like this.

Curve A is the curve that we expected to see

and curve B is what was actually observed.

It implied that most of the mass,

there was more mass density in the

galaxy than we can actually observe.

And Vera Rubin reckoned that there

is something like about 6 times

the dark mass in the galaxy

than we can actually see.

And very shortly after, it

became quite common knowledge

and became commonly accepted that Dark

Matter constituted most of the galaxies' mass.

Now, it's interesting because this whole

thing is based on a fundamental assumption

that gravity is the

only force at work.

The equation, the orbital velocity

equation only uses gravitation

as one of its parameters.

So what if though, what if we

don't know what we don't know

what if there's something missing

in that mathematical modeling?

What if electricity and magnetism

actually could play a role?

What if this sort of line of reasoning was

applied in a different field of science?

Now I come from a biological

background, as you heard

and I remember in ecology class learning

about the Lotka-Volterra equation.

The Lotka-Volterra equation is a

system of differential equations

used to model the population dynamics

of predator-prey pairs in ecosystems.

It was famously used to model

the population dynamics

of lynx in arctic air

in northern Canada.

Now what if Lotka found, when

he went out and measured,

[think] actual population

dynamics of lynx and hare that

it didn't really agree

with what his model showed.

What if he had absolute certainty that
his mathematical model was complete.

Then what if he then

{somemore what-if] questions,

what if we then proposed that there

was a hypothetical creature

in the ecosystem that we can't see and

left no impact on the environment,

in fact its presence

could only be detected

through its influence on the population

dynamics of the lynx and the hare.

And what if he did a lot

of super computer modeling

to show that other predator-prey

pairings in the world

could actually be modeled and predicted

if he just adjusted the placement

and the relative density of this

hypothetical creature that we can't see.

Well it didn't actually play out that way

because biologists have a very healthy

respect for the incompleteness

of their mathematical models.

But you see the

logical flaw here.

Well, what if a similar

sort of logical flaw

has taken us to incorrect

conclusions about dark matter?

Well then we would expect

to see discrepancies

between what the cold dark matter

model predicts and what we observe.

That happens to be the case.

There are actually

a list of issues.

There's the Dwarf

Galaxy Problem.

There is the Cuspy Halo

or (Core/Cusp) problem.

There's this issue with the Ratio of regular

Matter to Dark Matter in some cases.

There's a Dwarf Galaxy Pancake Problem

which is actually fairly serious

and we have a problem with, we

don't have any Local Dark Matter.

So we'll go through

each of these in turn.

Now, the dwarf galaxy problem is also

referred to as the missing satellite problem.

Now this stems from computer simulations
in the cold dark matter model
which predicts orders of magnitude
more satellite dwarf galaxies
than are actually observed.

So, for example, there are about 11 satellite
dwarf galaxies around the Milky Way
but computer simulations, in one case
for example, predicts more than 500
so we're orders of magnitude away
from what we actually observe.

And then we have the
cuspy halo problem
and this refers to, again, computer
simulations that predict
the density distribution
of dark matter in a galaxy.

The mathematical computer
simulations indicate that it's cuspy.

By cuspy I mean, the
dark matter distribution
increases sharply to a peak
at the center of the galaxy.

Well when the usual mathematical derivations
are done based on gravitational dynamics,
the inferred dark matter distribution in

galaxies is seen to be quite smooth. Smooth,
maybe there's a bit of a core and
the core and the core/cusp problem
but it's actually a smooth
profile, there are no cusps,
there's no cuspy dark halos.

This is also known as the
small-scale cosmology crisis.

Then there's the problem with the ratio
of regular matter to dark matter.

Recent studies of a
galaxy sized cloud of gas,
it's actually plasma,

Virgo HI21, this is actually
the bullet cluster,
but in Virgo HI21, that the
derived amount of dark matter
is about a hundred times the amount
of matter that we can observe
and that's 10 times higher
than it really should be.

So this is a real disconnect between what
the model predicts and what we observe.

And now we have this
pancake problem.

This is observations

in January of 2013,
observers from Canada and
France at the Keck Observatory
were amazed to find
that satellite galaxies
were moving in unison
around the Andromeda galaxy
and they were in sort of
a disk-like structure.

A similar disk-like structure
was found around the Milky Way.
It's indicated that it's not unique
to the Andromeda galaxy
and we'll probably find
more of them if we go looking.

Now it's important to note that in the
decades of cold dark matter modeling,
satellite galaxies are always predicted to be
oriented randomly around the larger galaxy.

So this is clearly inconsistent with the
predictions of the cold dark matter model
and actually it puts me
in mind a little bit
of the observations of the
phases of Venus by Galileo.

These observations were

clearly inconsistent
with the predictions of
the geocentric model,
and in a very similar way the
observation of this disk like-structure
of satellite galaxies is completely
inconsistent with the cold dark matter model,
and yet the model persists.

And finally we have the problem
with no local dark matter.

Now this story, actually the
story is a bit of a tale,
starts in 2012 with the report
from a group of observers
at the ESO's La Silla observatory
headed by Christian Moni-Bidin.

They mapped over 400 stars up to
13,000 light-years away from the Sun
and used this data to calculate the
mass of matter in that volume of space.

It was four times the volume of space
than had ever been considered before.

The intent was to compare the
amount of observable matter
versus the amount of matter that is derived
gravitationally, through mathematical means,

and compare the two and the discrepancy
like we saw with Vera Rubin,
discrepancy would indicate the
amount of dark matter that's present.

And what they found when
they compared the two
was that there is no need to
invoke a dark-matter component.

So there was no dark matter.

Well this prompted an article
in The New Scientist
where they declared a
dark-matter conundrum.

Well about a month or so later
there's a paper from another group
headed by Bovy and Tremaine
who took exception to one of the
assumptions in this previous paper
and it was an assumption that the rotational
velocity of the stars in that region of space
were constant as you moved away
from the center of the galaxy.

So they corrected for that
and they also introduced
their own assumptions
about the mass distribution

in that volume of space
and what they found
was actually, now,
there was the amount of
dark matter [the] model predicted,
in fact just a little bit more
just to be on the safe side.

So, that elicited another
article in The New Scientist
where they claim that
the crisis was averted.

And there's a really interesting
quote in this New Scientist paper
that I like where they say,
"the true believers of dark
matter were never really worried".

So I find it interesting the
use of the term "true believers"
and so the story ended
for the New Scientist.

But, if you follow that kind of
literature and you track these issues,
in 2014 Modi Boudin et al.
published another paper
finding that the mass distribution
assumptions of Bovian Tremain

actually were completely
inconsistent with observational data;
and that, when they corrected
for a mass distribution
that was consistent
with observational data,
and corrected for their own assumption
about the rotational velocity of the stars,
that in fact, again they found there was
a negligible amount of dark matter.

There really was no
need for dark matter
but.. So, crisis averted?

No, not really!

But there were no headlines,
there's no follow-on story
in The New Scientist,
and the point of view of the New Scientist "Crisis
averted" -- the world was safe for dark matter.

But why "crisis"?

I'm interested in the use
of this word 'crisis'.

I happen to live in the UK and
next week we're going to vote
to see if we stay
in the EU or not.

Now proponents of both sides

present various crises

that will ensue if we go one way

or the other. If we leave the EU

the national health system will suffer,

the real estate in London will go down

and foreign exchange and

the UK pound will suffer.

Or, if we stick with the UK we'll lose sovereignty, we'll lose control of our destiny.

So crisis on both sides.

But why crisis with dark

matter? I don't understand that.

If we find that there's no

such thing as dark matter

it's not going to change the

real estate prices in London,

so I don't understand

what the crisis is.

Well it's a crisis in belief

and when you have belief systems

in science you've got trouble

and belief systems come

wrapped in certainty.

When you have certainty, our

rational mind ceases to play

a primary function in

our cognitive processes.

But really, I can't say it

better than Mark Twain;

"it's not what you don't

know that gets into trouble

it's what you know for

sure that just ain't so".

And so we have a

problem with certainty.

And when it comes to certainty I

really can't recommend a better book

than this book by

Robert A. Burton,

On Being Certain or Believing

You're Right Even When You're Not.

And in it he covers a range of material

about certainty and our sense of knowing.

For instance a very interesting

example, called the Challenger study.

This pertains to how we remember things

around dramatic events in our lives

and when the Space

Shuttle exploded

dr. Ove Kneisser, psychologist and

the father of cognitive psychology

had 106 of his students

record in their journals

what they were doing at the time,

what was happening, how they felt.

All of the details they can remember

when the event actually happened.

And then he interviewed them

two and a half years later.

Now as you might expect, 25% of them got

a lot of the details completely wrong.

And at least half had a

few details incorrect

but what was really interesting

was the reaction of some of the

students to their handwritten notes.

In the words of one of the

students, "that's my handwriting

but that's not what happened!"

So the students had complete certainty

over their sense of knowing

even in the face of very

convincing evidence,

their own handwritten notes.

Now Burton uses another

example along these lines

and it has to do with Cotard

syndrome, this is dr. Cotard

who described a syndrome in patients
who develop a delusion of negation.
Negation of their own existence, negation
of limbs, that their limbs are putrefying
and what's really interesting
about the syndrome
is the unshakable belief in these
patients that they're dead.

Now Burton describes
one case, Miss B
who came into the hospital with a very
severe case of viral encephalitis.

While she was there she
began to complain about
things not feeling real
and that she was dead.

The hospital staff had her
hold her hand to her heart
so that she can feel her beating heart and she
admitted she could feel her beating heart.

But she argued that the
beating of her heart
was in no way evidence that she was
alive when she was clearly dead.

She was absolutely certain she was
dead, all evidence to the contrary.

So Burton uses Cotard's syndrome, the Challenger study, placebo effects to show that when there's a conflict between rational evidence and what we see with our own eyes, vs our feeling of knowing, our sense of rightness and correctness, that feeling wins out almost every time and he argues that there's some physiological basis to this feeling of knowing that is so powerful that it makes a rational thought seem, feel, wrong or irrelevant.

And he felt that, he argued, that it had to do with the limbic system.

Now the limbic system is associated with our primitive brain, it's the seat of strong emotions, fear and hatred and anger.

In fact the amygdala controls all the strong emotions.

The hippocampus plays a role in converting short-term memories into long-term memories.

Burton describes a study, a cortical mapping study, where they stimulated regions of the temporal lobe

associated with parts
of our limbic system.
And he described patient
responses where,
if that particular part of the temporal lobe
associated with limbic system was stimulated,
they had a feeling of certainty.

They had a feeling of certainty,
a sense of knowing, a déjà
vu, a sense of familiar..
a sense of familiarity
in a strange environment.

So, he argued that if it is
possible to stimulate the brain
and produce these primary
feelings and knowing
it's very much other, like other
primary things like anger.

And he argued that our feeling of
certainty is actually closely associated
with these primary
feelings in our limbic system.

And it's not surprising that certainty
is connected with the limbic system.

Recent neurological research has shown
that social threats and rewards

evoke the same neuro-chemical responses
as actual physical threats and rewards.

A threat to our certainty
evokes the same neurotransmitter
response as an actual physical threat.

So it would seem to be
connected to the limbic system.

So we have a number of issues,
things that we are up against.

Well, we don't know
what we don't know
but we always seem
to forget that.

We have certainty in
what we think we know
and it limits the
acquisition of new knowledge.

There's this myth of the
rational objective mind
where we're really under the control
of our limbic system
and what we really need to do is
encourage the pursuit of uncertainty,
but that's completely counter to
our physiology in our evolution.

So here we are,

all of our beliefs and our
biases and our blind spots
trying to make shapes
of the darkness
and we construct stories that match
the shapes that we think we see.
So should we stop trying to discover what's
out there, looking back in the darkness?
I don't think we could even if we tried
We're compelled to ask these basic questions
like the clever king about the cosmos, the
Sun, the Earth, the stars and life itself.
But we're also compelled
to construct stories,
to help fill the gaps
in our understanding,
to give us satisfying answers
however wrong they are,
to answer those basic questions.
So like any device that we use
to investigate the cosmos,
we need to understand the
limitations of our own mind.
When the device, when the instrument
is giving us noisy or valid data,
are we believing what we see

or seeing what we believe?

I would argue that dark matter is
more of a manifestation of gray matter,
so we end up seeing
it everywhere we look.

It's been shown that
our rational mind
cannot work independently
of our threat-reward responses.

We're under the sway of the
limbic system like some
great psychological
schoolyard bully in our mind.

Our ability to objectively observe is
severely limited by our biases and beliefs,
we know that!

And yet we have this myth of
the rational objective mind.

We think we got it all figured out, just
a few more pieces, we're almost there.

But how can we, when we don't
know what we don't know.

Have we learned nothing
from the clever King.

Which reminds me, I haven't actually finished
the story of the clever king and the sage.

The sage learned that it was unwise to
provoke a frustrated and angry king
and he spent a few years learning even more
wisdom in the King's dungeons, unfortunately.

The King learned
wisdom, over many years,
because he discovered that he could
never complete his great machine,
and that it was probably based
on faulty principles anyway.

And so he learned that the
sage was actually right.

So he released the sage who
was very ancient by that time
and they together, in the remaining years,
taught the clever people in the kingdom
about the foolishness of certainty
and the rich rewards of uncertainty.

Now having said all that I have a
few qualified certainties of my own.

I'm only human after all
and I'm encumbered with
my own belief systems.

So I believe that there is no
matter and energy in the universe
that cannot be experienced

and experimented with here.

We do not live in an island of normal
matter in otherwise exotic universe.

The darkness beyond the campfire
is not inherently different,
is just as yet unlit.

That the universe is a manifestation of
gravity and electricity and magnetism
in a glorious interplay that we're only
just now on the verge of glimpsing.

And that in this quest we
need to embrace uncertainty
and allow ourselves only a
qualified provisional understanding
of what we think we see in the
darkness beyond the campfire.

Thank you!

[Music]

In Part 1 of the cosmology of the Electric Universe, we looked at how the electrical systems of the Earth and the planets exist in the larger electrical body of the Sun.

Do we stop at the body of our Sun? No of course, we do not. The Sun lives within a larger world.

The Sun lives inside the galaxy.

This, of course, is not a picture of our galaxy because we cannot take a picture of our galaxy any more than a cell in your liver could take a picture from the outside of your body. We do have decent evidence to believe that our galaxy looks something like this.

When we shift up in scale, we can ask what's the relation of each star to the larger galactic body of which it is a part?

Every star is transforming galactic currents and fields. In our schematic, we picture current coming from the galaxy and being transformed by the stars, and we must allow that stellar transformation of galactic energies is just as complex as what we are learning about the electrical transformations taking place on planets. In other words, my little drawing is very inadequate but it does convey the main

point: stars transform galactic energy.

So, are we done with our picture? No!

Our most excellent engineers and

astrophysicists have given us

a larger view to contemplate.

In this picture, which is a computer

generated picture, each dot, each tiny dot

represents galaxies and clusters of galaxies.

This is the large-scale structure of our Universe.

And you might not be surprised to

learn that this filament-like structure

was a complete surprise to standard

cosmologists. But it was predicted by Electric

Universe theorists. Gravity cannot

explain this structure, but electricity,

and the flow of electricity does predict

this. Keeping our theme of each world

eating and transforming energies from the larger

world it lives in, we can see that galaxies are

transforming energies from, well it's hard to say

from what, we're kind of at the limits of what

we can talk about. But we can say

something like, 'galaxies transform

the great currents and fluxes that course

through our universe as a whole'. Coming back

to our own human scale. All plants, all

animals, all humans, transform energy that comes from the Sun. This is rather obvious. Plants turn sunlight and minerals into leaves and fruits, animals digest the fruits and the leaves, and we humans eat all of it. We only move and think and feel because of the flow of electricity in our bodies. If it were possible to stop the flow of charged particles and electric fields within us, then our thoughts, feeling and sensations would instantly stop. I am studying the electrical connections that exist between one living creature and another, or exist between every plant and animals and the Earth. Or between living creatures and other planets. Or even the connections between an individual man or woman and the Sun. All of this is my field of study. As a closing note, since I said that cosmology must also include our aspirations, what does this new cosmology say about our yearnings and our hopes? In a better cosmology, we would recognize that caterpillars do sometimes turn into butterflies, and buds do sometimes turn into flowers, and the sperm and the egg do sometimes become babies. These transformations are part of our

life and part of every aspect of the living Universe. The Electric Universe model says that the brightness of a star is a function of how much galactic current it is transforming. Bright stars are transforming a lot of galactic energy, dim stars transform little. Maybe the stars we see burning more brightly, are actually doing more work for the galaxy and the brightness is really more of a side effect, a consequence. The bright stars in the sky are literally responding to some galactic need that requires more energy. And we can go one step further because we know that some stars completely transform into a supernova, putting out for a short time more energy than the entire galaxy. In the old view, this is an accident, and unconnected to anything else going on in the galaxy. But in a better cosmology, we can see that the supernova is a star that has taken a huge leap in its ability to transform galactic energy. A supernova is burning so incredibly brightly because it has found a way to be much more useful. The Crab Nebula was once an ordinary star, doing ordinary work for the galaxy. And then something

changed. And it has since been churning out prodigious amounts of super-high frequencies.

What is the purpose of these enormous energies, at these very high frequencies? We don't know, but I do know that these supernovae play an important galactic function and I know that a similar transformation is possible for you and me at our own scale.

We could actually take a leap and be much more useful to the world around us.

We could start emitting much more energy at much higher and finer frequencies.

This promise is one of the reasons I pursue the Electric Universe paradigm.

In closing let me say that I do not think electricity explains everything, but including electricity in our explanations, provides a much more coherent view than using gravity to explain everything. I personally think as we try explaining how galaxies and Suns behave, we will have to be open to including other forms of energy that are beyond light and electricity.

I also want to remind us all that hubris

is one of the lowest places we can go to
intellectually. Hubris, a form of
arrogance. This knowing that I'm right,
believing I have explained everything,
and then being offended when my
brilliance is questioned; believing
that human understanding can
penetrate the ultimate degrees of truth,
all this is hubris. And let none of us
fall to that level. And besides, hubris
makes us all quite boring and oh so tiresome.
In this truly exciting adventure, a lot of
what we are proposing might be totally wrong,
but I know that a lot of what has
been proposed is totally right,
more right than things have
been for many years in science.

[Music]

[Music]

As you can imagine
there's a lot to be said
about how do you form a
shish kebob of planets
and how do you capture
a star, a passing star.

So this is going to be
a race against time.

...the clicker

we have

now here it is, yep yep...

we have the new

less modest lectern

THE STAR 'PROTO-SATURN'

This is Saturn before it became a gas
giant planet in the solar system.

And this is a quote

from Roger Wescott,

the late Roger Wescott who

was a good friend and

used to come to the Kronia conferences

and actually spoke at one or two,

"Pre-history was a

dream turned nightmare.

Mankind forgot the dream

because it was too remote

and the nightmare because

it was too shocking.

The prehistory that we have confabulated,

however, is too bland to be believed."

He was a professor of anthropology

and linguistics at Drew University,

Madison, New Jersey.

What does the star

Proto-Saturn mean?

It means a star became the gas

giant we now call Saturn.

This claim is outrageous according

to present-day cosmology

and our understanding of stars

but it is supported by

lifetimes of forensic research

into the earliest recorded

memories of mankind

and it is confirmed by the recognition

of global prehistoric petroglyphs

as representations of the many

distinctive forms of plasma instability

seen in the highest energy

electrical discharges.

It has become crystal clear

that the legendary Thunderbolts

of the planetary gods were real
and they accompanied a major recent
disturbance of the solar system
but perhaps the greatest
puzzle for scholars
has been the references to
Saturn as the first Sun
and in my home in Australia
the original inhabitants
have legends of a time
when there were two suns,
a greater and a lesser Sun.
Details in their Dreamtime
Stories have no reference points
other than in high-energy
plasma experiments.
They were not dreaming!
My concern since I became
aware of this evidence
has been to make classical physics
sense of Saturn as a star
and to understand the
sequence of events
that led to the seemingly peaceful
solar system we see today.
So we have these big questions;

Do we really have a 4.6 billion
year old clockwork solar system?

How do planets form?

...I beg your pardon...

How do planets form?

How did the atmosphere
and ocean form?

Was the past like the present?

And I think from the
evidence that you've seen
that Dave Talbot and Ev
Cochran have provided,
it certainly wasn't
anything like the present.

So if Saturn was a star
within the memory of mankind,
it throws some big questions
into sharp relief
and in doing so it
throws a harsh light on
to our self-satisfying fictional story
of the earth and the solar system.

The Origin of the Solar System

Professor William McRae wrote;

It is impossible to discover
the origin of the solar system

by observing it now and working
steadily backwards in time
in order to infer the
whole of its past history.

The solar nebula model has no
successful predictions to its name!

That's a bit of a
sobering thought.

The... Here we go, yeah.

My meeting with Dr. Velikovsky

I visited him in 1979 at his
home in Princeton, New Jersey,
he very gracefully accepted
my family as well,

I've got photos of my daughters
with him but none with me,
I was rather shy of
asking him for a photo.

But the main question then was this
problem that he faced with astronomers.

What don't we know about gravity, there's
something really missing in our physics.

Velikovsky argued that planets
change orbits, exchange Thunderbolts
and quickly settle
into peaceful orbits.

Rapid settling following chaos defies our understanding of gravitational systems which for more than a two-body system are chaotic as I said.

If one planet departs from its normal orbit by a small amount, it will affect the others and there's no way of restoring the original situation, the system flies apart.

Our understanding of gravity and solar system mechanics is inadequate.

So we have a new cosmology.

A new forensic approach to old evidence produced the recent history of the solar system that requires a critical examination of modern science instead of dogmatic rejection of evidence.

The result is an entirely new cosmology, the Electric Universe.

The history of this new cosmological paradigm goes back to 'Worlds in Collision' in 1950.

In the last chapter Velikovsky referred

to Jupiter and Saturn as stars.

And I quote,

"There I wrote with respect to
the future that some dark star
like Jupiter or Saturn may
be in the path of the Sun
and may be attracted to the
system and cause havoc in it."

That was in chapter 9, The end.

Worlds in Collision comprises only
the last two acts of a cosmic drama,
wrote Velikovsky in Kronos
volume 5 number 1 in 1979.

That's the Kronos issue there.

And then we have David Talbott's
remarkable reconstruction
of the earlier acts in
our prehistoric skies
that was published in 1980.

Then in Aeon vol 5
number 5 in January 2000,

I first published my physical model of
Earth's relationship to the Dark Star
dubbed Proto-Saturn
in Stars in an Electric Universe.

It had appeared earlier

on my website as

Other Stars Other Worlds

Other Life in December 1999.

And then we have all the

books by Dwardu Cardona

and they're all there,

God Star published 2006,

Metamorphic Star 2008,

Primordial Star 2009,

Flare Star 2011.

So the evidential history is;

Earth and Mars were satellites

orbiting a brown dwarf star;

It was a very hospitable

environment for life;

Atmosphere, water and minerals

were deposited on the satellites;

The system changed spectacularly

on encountering the Sun;

The brown dwarf flared and

ejected a new satellite;

An axial column of

satellites was formed;

And intense plasma discharge

phenomena were observed.

The terms giant and dwarf

applied to stars are misleading.

That is calculated on the

standard model of the Sun

And the notion of a star's age based

on its appearance or spectrum

has no validity for

the same reason.

Stars on the main sequence

may be characterized

as self-regulating cosmic

power transformers,

as I spoke about this morning,

that focus diffuse galactic

electrical energy to catalyze fusion

in their photospheres to

provide radiant energy.

Like the Sun, such stars

derive their luminosity

from very bright anode tufts

in their plasma sheaths.

Moving diagonally upward to the

right, the current density increases.

Anode tufting becomes more crowded

and their mutual repulsion

forces the photosphere to

grow to accommodate them.

At the top right of the main
sequence the light from those Tufts
is electric blue of a true arc
and the stars appear
as blue giants,
intensely hot objects appearing
considerably larger than our Sun.

As you might expect, blue giants tend
to be concentrated on the central axes
of our galaxy's
spiral arm discharges.

Red stars must collect
more electrons
than the plasma can deliver
continuously to its surface.

So bright anode tufts
are unnecessary.

The anode expands instead by forming
a negative space charge sheath
and as that sheath expands its
electric field grows stronger.

Electrons caught up in the field are
accelerated to ever greater energies
and before long they become energetic
enough to excite neutral particles
they collide with in the outer sheath

to take on a uniform red glow.

A white dwarf is a star

whose discharge current

is satisfied by all the

approaching electrons,

drift electrons plus those those

randomly move towards the anode.

It has no anode tufting.

It is rather like moving a low-energy

corona of a main-sequence star

down into the atmosphere

of the white dwarf star.

That's why the star, that the dim star Sirius

B is brighter in X-rays than Sirius A

because the corona emits X-rays.

So what is a brown dwarf?

To summarize, a red or brown

dwarf can be characterized

as an independent gas

giant type object

under low electrical stress

from its galactic environment.

A main-sequence star is

electrically stressed

so it resorts to

becoming a tufted anode

which, as I said, regulates
the output of the star,
this is why most, all bright
stars appear to twinkle.

They don't change
from day to day.

Red Giants are normal stars under
low electrical stress.

White Dwarfs are stars with a low
luminosity coronal discharge only.

...was that at the same point...

Red Giant are normal stars and
allow additional stress... and White Dwarfs...

So, size matters.

Brown Dwarfs come with a major
drawback for astronomers,
their stellar radii are hard
to determine accurately.

In the Electric Universe, Brown
Dwarfs are not dwarf stars,
instead all red stars have a bloated glowing
anode sheath which expands and contracts
in order to collect the amount of
electrons required for that discharge.

As the anode sheath grows,
its electric field grows

which results in the prodigious and unexplained
stellar winds from cool red giants.

If the winds were due to the heat of the
corona, then this puts paid to that idea.

In a December 2008 NASA report, the brightness
of a brown dwarf at 17 light years distance
was twice that expected for a brown
dwarf with its particular temperature.

The solution?

The object must have twice
the surface area, they said.

It must be twins.

Such ad hocery is unnecessary
in the Electric Universe model.

A brown dwarf's photosphere
is much larger
than the standard model
of such stars predict.

The Cradle of Life

And this goes back to the idea of the
Garden of Eden period in man's memory.

If you are a satellite orbiting
within that anode glow,
and this is not an
outrageous idea

because astronomers have suggested

the same thing for red giants
that planets could actually
orbit within that star
because the atmosphere
is such low density.

In fact, we orbit in the sun's
atmosphere if you like
and it doesn't cause
us any trouble.

But within that glowing shell,
the radiant energy received from that
envelope is constant over the entire globe.

The light from the plasmasphere
is not reflected light,
it's a radiant energy.

Brown Dwarfs radiate blue
and ultraviolet light,
even though they are cool at
a temperature around 950 K.

This is further evidence that we are looking
at a mix of an electrical red anode glow
and coronal ultraviolet
blue end of the spectrum.

There are no seasons, no
tropics, and no ice caps.

A planet does not

have to rotate.

Its axis can point in any direction,
and its orbit can be eccentric,
and you'll still get this beautiful,
even temperature over the whole body.

The radiant energy
received by the planet
will be strongest at the blue
and red ends of the spectrum
so photosynthesis, which relies on
red light, would be very active.

The sky light would
be a pale purple,
which maybe is referred to by the
classical purple dawn of creation.

And I know that in Canberra we have
this new Arboretum, which is fantastic,
and all of the new trees that are being
planted are put in red plastic to start with.

And I asked the head of the
Arboretum why they did that,
and he said, the plants grow
much better in red light.

Water molecules dominate the
spectra of brown dwarfs.

So you want to know where the

Earth's water came from?

The light on Earth was dim and purplish
amid a continuous mist of water.

No other bodies in the
system were visible.

This is what Dave
mentioned yesterday.

This explains the abundant water on Earth and
many satellites of the gas giant planets
and the rings of Saturn.

And the red light, warmth and water
was ideally suited for giant ferns,
it explains the gigantic lush vegetation
found at the poles fossilized as coal.

Now the problem faced by life
on planets orbiting a red star,

I think you saw last
thing, last night,
which was this flaring red dwarf.

So this tendency to
flare up is a problem.

The reason for this
is that, as I said,
the red stars don't have the current
regulation afforded by the bright photosphere.

So the response of a red star to a sudden

electrical disturbance in their environment
is to shed charged
matter in a flare up.

They may also change
in apparent size
as the anode glow accommodates
to the electrical environment.

I think this would account for the
great dyings in the geological record,
and the episodic deposit of vast sediment
and mineral layers on the earth
and on other bodies too. Every body
that's been looked at is layered.

What's more, it explains for the first
time the oceans of salty water on Earth.

Comets cannot be responsible
because they have little or no water
and little or no sodium chloride.

To see how much of this I want to show
you because we saw this yesterday.

This is that, referring to that
superflare you saw yesterday
and you remember the
astrophysicists said,
anyone who was on a
planet orbiting that star

at the time would be

having a very bad day.

I think the Earth has had its bad days, and

they're reflected in the geological record.

Mass Extinctions

As I said, those flare-ups

can be so drastic

that it would practically

wipe out the life

on, any existing life on those

satellites of that dwarf star.

This raises an

interesting side issue,

and that is, ironically, intelligent

life can't communicate through

such a plasma shell

using radio waves.

So the lack of intelligible radio signals

in the SETI project is understandable.

In fact, denizens of such worlds would most

likely be unaware of the universe at large.

Now astronomers also submit

that orbiting a red dwarf

is possibly one of the best

places to look for life.

What they've never considered

is orbiting inside a red dwarf.

I don't think I'll

talk about this one,

this is a recent report

of a spotty brown dwarf

which suggests there are things

orbiting within that red anode sheath

causing a dimming of the red glow behind

where that satellite happens to be.

They're calling it weather

but of course if it's anode glow

it has nothing to do with weather.

So this is a picture of the

Brown Dwarf Proto-Saturn

as I see it. Now there would have been

many more bodies than you see there

but I've included Mars and

Earth and Proto-Saturn

because they're the main

players at this stage.

50% of red dwarfs have Earth-sized planets

in their conventional habitable zone.

This suggests there are a large number

hidden inside the red star's glow

and you can say that too

because our gas giants

all have large numbers of
satellites orbiting quite closely.

But you'll note there is
no Venus at this stage.

Gigantism

It wasn't just pterodactyls that
struggled to get up off the ground.

Scaling of muscle and
bone strengths shows that
dinosaurs could not have raised their
bodies off the ground in today's gravity.

For them to move about, Earth's gravity
needed to be about 1/3rd of today's.

Global extinction and
fossilization requires far more
(pardon me)

than a simple impact

Clearly, we have no understanding
of the cause of gravity.

Is Gravity Electrical?

Gigantism in the animal kingdom

...Sorry, beg your pardon.

The question is of fundamental
importance for cosmology
and our understanding
of the solar system.

And the answer should provide insights
into the demise of the dinosaurs;
the sky our ancestors saw and
why they feared 'doomsday'.

This is the crucial thing, this
is the thing I asked Velikovsky;
What don't we understand
about gravity?

And of course, we're getting confirmation
you'd ever sought from this comet visit
because all the measurements say it
has very low mass, it can't be rock
and I'm saying no, you
don't understand gravity,
it may appear to be of low
density but it's made of rock.

This is the kind of thing that
the Earth would have been,
a situation for the Earth when it was
orbiting Proto-Saturn presumably.

So we get to

Proto-Saturn's Capture.

Capture by the Sun is almost
impossible gravitationally
because there is no energy loss,
there's no way of losing energy,

a body coming in and swinging
around the Sun will depart again
because there's nothing to put the
brakes on and make it go around the Sun.

Electrical capture has a huge
cross-section by comparison.

Two stars will see each
other electrically
once their heliospheres or astrospheres,
as they call generically, touch.

Now the sun's heliosphere is 100
Astronomical Units (AU) in radius,
another star would be
something comparable,
so you're talking about
a huge cross-section.

So the chances of capture of an
object is far greater than gravity
would suggest.

I actually, I'll explain more about this
when I give my presentation on cosmology,
this change in
gravity and so on.

So Proto-Saturn changed
from being a star,
that is an anode in

interstellar space,
to becoming a cathode or cometary
body in the Sun's heliosphere
and, like all cathodes, surface
material is electrically ejected
and the body may fragment under
internal electrical stress.

And this is the kind of thing
which the ancients reported.

As you may expect in the electrical
model, a brown dwarf desert
has been identified close to
bright main sequence stars
because the brown dwarf switches
off, becomes a gas giant
and this is what is
seen by astronomers,
you won't find brown dwarfs
orbiting closely to bright stars.

So gravitational theory only
accommodates accretion disks.

Expulsion disks are
believed impossible
despite the copious evidence of
stars ejecting matter in jets,
even the Sun does it in a modest

coronal mass ejection kind of way.

It's also interesting to

note the large number

of close-orbiting gas

giants about nearby stars.

This fits the electrical fissioning argument

and not the nebular accretion model.

Gas giants have also been discovered

at distances from their stars

where they couldn't have formed

within the age of the star.

All of the impossible planets

and stars being discovered

are not impossible in the

Electric Universe model.

Instead, they are expected

based on that model.

I'll deal with this issue in

my presentation on cosmology.

So it explains why there

are so many hot Jupiters,

have been found closely

orbiting a star and

it explains the expulsion

rings and many satellites

of the gas giant planets

in our solar system.

And the fact that Saturn's

is the most spectacular

indicates that it was

the last or most recent

gas giant to flare

up and eject matter.

Right.

Axial Tilt Families

A simple method of identifying

related objects in the solar system

is to look at their axial tilts

because in the close relationship

between a gas giant or a brown dwarf

and its close orbiting satellites,

there will generally be phase-lock.

The satellites all have the same

face pointing towards the parent.

And as these close orbiting

satellites therefore

will have their rotation

axis aligned with the parent.

Having the same

degree of axial tilt

modified by precession

after disturbance

like the tearing apart
of the Saturnian system,
that tilt to the plane of
their orbits, of the ecliptic,
should be roughly
the same and we can,
this is one way of trying to
identify members of the same family
because the Sun has
an adopted family.

So when you look at the planets here,
you've got Mars and you've got Venus
and you've got Earth and you've
got Saturn, the main players
but Venus is the odd one out.

Because research shows with great certainty
that it was born from Proto-Saturn
in a massive flare up resulting
from the initial adjustment
to the present Sun's quite
different electrical environment
and this is why there were all
those radiating streamers
because it was born as a comet
from an already cometary body,
so the cometary body fissioned and

the resulting ejected body
went into, it was still
captured by its parent
but it too was busily
discharging frantically
trying to adjust to its
electrical environment.

So all the radiating streamers and
the colossal Venus Comet appearances
can be explained by this model.

Now, when Venus was ejecting
material it occurred equatorial,
we were sitting underneath
this chain of objects
and the streamers were coming
out radiating from Venus
and this is actually what
we see on Venus today,
the scars are wrapped
around the equator.

But also when these
bodies are ejected
the main body may be
spinning this way
and the material is
ejected in a stream,

it's given a backward
kick by its parent
and the result is that
the satellite initially,
at least, has a backward rotation
and this is what Venus has,
very slow backward rotation.

It had no time before the
system was totally disrupted
to achieve phase lock
with Proto-Saturn.

So we look at Saturn.

In June 2004, the Electric
Universe was the only model
to predict the surface features
of smog shrouded Titan.

Titan, being a huge moon which
would be classed as a planet
if it was separate from Saturn.

These surface features were predicted
before they were revealed in detail
by the Huygens probe from
the Cassini spacecraft.

In "Cassini's Homecoming" I wrote,
"A scenario follows that is so alien to any
conventional theory of Saturn's history

but should be easily tested against
information gained from the Cassini mission.
It shows striking connections between many
seemingly unrelated facts about certain planets."

That is something that conventional cosmogony
or cosmology has not been able to do.

Until recently, Saturn was an
independent brown dwarf star
with his own entourage of
close orbiting small planets
and Dave Talbott alluded
to those last night
with the circling
objects around the god,
the god Saturn.

The tilt of Saturn at 27 degrees to the
ecliptic plane is itself an enigma
unless it formed
independently from the Sun
and the axial tilts of Saturn,
Earth and Mars are very similar.

Are we on the same page?

No, let me catch up.

The Titan is very
important to study
because it may be a sibling

of the Earth, Mars and Venus.

It's an enigma, having a massive
atmosphere mainly of nitrogen
with the pressure of the surface 1.6
times that of Earth's air at sea level,
this is for a smaller body,
and anomalously high nitrogen 15 levels
in a 95% nitrogen 14 atmosphere.

It is not a body more
than 4 billion years old.

The Electric Universe was the only
model to predict the surface features
before Huygens descended
and photographed it
and that was based on the kind of electrical
sculpting seen on Venus, Mars and Earth.

The earliest reports from scientists
are usually the most revealing
before they have time to recover
from shock and make up stories.

So what was discovered in the
first close flyby of Titan?

In New Scientist of November
6, 2004, just after the event,
Titan images add to moon's
mystery wrote Stephen Battersby.

The world got its first peek at the
surface of Saturn's moon Titan last week.

The images were taken as Cassini's,
Cassini-Huygens spacecraft swept past the moon.

The images show a landscape that
is clearly still being shaped.

Where'd we heard that before?

We heard that about Venus.

Although Titan must have suffered
numerous meteor impacts in the past,
its surface today is
largely crater free.

Once again, just like Venus.

Somehow these scars must have
been eroded or filled in.

There's that operative
word "somehow".

We are seeing a place that is
alive geologically speaking
says Charles Elachi. This is
what they said about Venus,
it must have overturned the
entire surface recently.

That's precisely what was said about
Venus when the Magellan orbiter revealed
that planet's surface.

It is only supposition
that Titans surface
is still being shaped.

It is based on the belief that Titan must have
suffered numerous meteor impacts in the past
and therefore something must have occurred
from within the moon to fill the craters.

However, like Venus, there may have
been no impact craters to fill.

Some initial comments
by Cassini team members,
accompanying this picture
in that little insert there
of Titan from the
descending Huygens probe,
reflected on the Venus-like
appearance of features on Titan.

Now I'd predicted these
before the event.

"These remind me of what we have
observed in the past on Venus."

This is a quote. Another quote,

"We now have the key to understanding
what shapes Titan's landscape."

- said Dr. Martin Tomasco, principal
investigator for the descent imager.

He added, "Geological evidence for precipitation, erosion, mechanical abrasion and other fluvial activity says that the physical processes shaping Titan are much the same as those shaping Earth."

Oh yeah

But nonpolar liquid methane is not like liquid water as Jerry Pollack would tell anyone.

In the atmosphere such molecules form smog, not heavy rain drops.

This demonstrates the problem of interpreting evidence when your thinking is limited to flowing liquids to carve channels.

The channels on Titan bear the hallmarks of lightning imprinted on the surface.

As I've done there, I've inverted the black and white and turned it up the other way to make it look more like lightning.

The channels on Titan bear the hallmarks of lightning imprinted on the surface.

And the lack of a methane

ocean was predicted
because Titan's atmosphere is not yet
in equilibrium, after recent events.
So a vast reservoir of methane is not
needed to make good the losses expected
over the 4.7 billion years
required by the solar nebula model.
Because the expectation was
that the Huygens Lander,
the Huygens probe,
would go through the clouds that it'd
photograph it on the way down
and then it would plop into a
methane or ethane ocean.

They never found it.

Titan's Enigmatic Atmosphere

Titan's atmosphere is
believed by many scientists
to be similar to Earth's early
atmosphere, billions of years ago.

This is the usual story, we're out there
to try and show how the earth was born.

Toby Owen, principal
scientist at JPL said,

"What we've got is a very
primitive atmosphere that

has been preserved for

4.6 billion years.

Titan gives us a chance

for cosmic time travel,

going back to the very earliest days of

Earth when it had a similar atmosphere.

All conjecture.

But in a sense Toby

Owens may be right.

Titan can give us insights about

the Proto-Saturnian environment

but just take off about five

zeros from that age figure.

The striking disparity in nitrogen

isotopes is telling us something

about the way planetary atmospheres are

formed rather than how they evolved.

Hannes Alfvén wrote in *Evolution*

of the Solar System, and I quote:

"The Laplacian concept of

a homogeneous gas disc

provides the general background

for most current speculations.

The advent of magnetohydrodynamics

about 25 years ago,

and experimental and theoretical progress in

solar and magnetic and magnetospheric physics
have made this concept obsolete
but this seems not yet
to be fully understood.

While acknowledging Alfvén's point,
it is possible to go a step further
and invoke several processes available
in the plasma discharge model
that would affect
Titan's atmosphere.

Was Titan captured or born
earlier by Proto-Saturn
in a major electrical event
in its recent history?

This is hinted at by
Titan's eccentric orbit
which cannot have persisted
for billions of years
and isotopes will separate in the
combined electric and magnetic fields
of a cosmic plasma discharge.

So this is where we get into the problem
of nitrogen in planetary atmospheres,
you've got Venus with its heavy
carbon dioxide atmosphere.

How did these happen?

Why are these differences?

And it comes down to the electrical
effects on atmospheric molecules

which I don't think

I'll discuss here,

just, I've done so many,

I have so many slide preparations, I'm not
quite sure which things I've addressed.

Ah, here we go, yes.

We come to Venus.

Saturn's last-born

and a birth witnessed

by humanity.

The planet shows a

surprisingly young surface

that gave rise to ad hoc

theories of resurfacing events.

They're unnecessary.

Venus is a baby.

The Electric Universe account

explains its hellish temperature

having been born recently from the

interior of a brown dwarf star

and its thick 96% carbon dioxide

and 4% nitrogen atmosphere

was inherited from its

brown dwarf parent,
was subsequently modified
by cosmic discharges.

The amount of nitrogen in the Venusian
atmosphere is relatively small,
compared to the amount
of carbon dioxide,
but because the atmosphere is so
much thicker than that on Earth
its total nitrogen content is roughly
four times higher than the Earth's,
even though on Earth nitrogen makes
up about 78% of the atmosphere.

But Venus may have begun with
more nitrogen, more like the Earth.

Now nitrogen, and this isn't
understood by astrophysicists,
is catalyzed by hot iron
atoms to carbon monoxide,
the two molecules have very
little energy difference.

So if you get a catalytic
effect on a hot iron surface,
it will convert nitrogen
to carbon monoxide.

And the carbon monoxide and

water on a hot surface

gives you carbon

dioxide and hydrogen.

The hydrogen, being a very light

gas of course, escapes to space

and it's still escaping --

it's been shown.

The heavier deuterium

tends to be left behind

which might explain Venus's 10 times higher

ratio of deuterium to hydrogen than the Earth('s)

and solar UV light is

totally inadequate

as an explanation if we accept

the short history of Venus.

Now notably, if water is being consumed

at the surface and being converted

into carbon dioxide with the surface carbon

monoxide and the hydrogen is escaping,

it's very interesting that water

was found to mysteriously decrease

as the surface was approached

by the Venus landing craft.

In other words, that reaction

is still taking place today.

So here we see the

Venus's equatorial scars
were caused by spectacular
radial discharging
which was faithfully recorded
by the petroglyph artists.

The thicker the atmosphere the more
filamentary the surface lightning becomes
as you see.

Venus carried away significant
charge from its parent
so that it still has a
cometary magneto tail
which was detected
back in the 80's
and its mountains glow with plasma
discharges that reflect radar
and this puzzled the
scientists greatly:

Why are the mountains of Venus shiny
when we look at them in radar?

And I wrote at the time,
it's because they're all, got St.

Elmo's fire type discharges
at above a certain elevation
and that's why just the peaks
were glowing in the radar signal.

Battle-Scarred Mars

The devastated face of Mars shows the colossal gash of Valles Marineris stretching a third of the way around the planet.

Carl Sagan in the Scientific

American of September 1975 wrote,

"The ultimate objective of comparative planetology it might be said, is something like a vast computer program into which we insert a few input parameters, perhaps the initial mass, composition and angular momentum of a proto planet and the population of neighboring objects that strike it and then derive the complete evolution of the planet."

End of quote.

Sagan's statement, it epitomizes everything that's wrong with modern science based on computer generated models of virtual-reality.

The first law of computing is, and since I was in the computer industry all my working life, garbage in equals garbage out.

Planetologists have adopted
their story of the earth,
sorry, adapted their story of the Earth
to accommodate their findings on Mars.
So we now have eras called the Noachian,
the Hesperian and the Amazonian
based on crater counting.
But crater counting assumes the conventional
story of formation of the solar system
which, as I've shown, has no
real evidential support.
In fact, the evidence
is strongly against it.
In my next presentation,
which is later today,
I will talk about
the damage on Mars
but Mars was stripped of
atmosphere, water and rocks.
And the modern evidence,
we are still receiving
Mars rocks on Earth today!!
And the evidence of Mars' battles
with cosmic Thunderbolts
is written hugely
on its "scar-face".

That was the name given to Mars

by the North American Indians.

What can conventional planetologists

do with evidence like that?

And of course we have the MAVEN

mission that is going to tell us

how Mars atmosphere was stripped

off over 4 billion years.

So whatever that mission

was designed to do,

the question, initial question,

is irrelevant and wrong.

And this is the really

interesting thing.

Is Earth a former Saturnian?

And the first question is...

Why continents and

oceans of water?

There's no other body

in the solar system

with continents and oceanic

type basins like the Earth.

Each planet has its own

story of electrical birth

and the scars of interplanetary thunderbolts

in order to achieve orbitals' harmony.

This is where the battles these cosmic
battles with the Thunderbolts of the Gods
can scar the face of
a planet terribly
but also the birth process
itself can do the same.

Electrical sculpting of planetary
features is the most powerful concept
missing from planetary
scientists' toolkit.

The Earth's unique oceanic basins
with their mid-oceanic raised ridges
and orthogonal coronal pattern,
if you have a powerful discharge, high voltage
discharge you get coronal discharges
at right angles to the
main discharge channel.

And I would suggest that the Earth
probably suffered the massive
ocean basin carving as
a feature of its birth.

It was a pole to pole discharge.

Mountain ranges with their
electrically sculpted ridges and gullies
and backbones of intrusive
melted rock called granite

signify surface and subterranean telluric currents unimagined by geologists.

Global tectonics is a failed paradigm because it assumes undisturbed evolution of the Earth in place over millions of years.

Brown dwarfs flare and deposit minerals and gases on their satellites.

The flare ejects stellar matter from the brown dwarf equatorially or axially, most usually equatorially.

The composition will vary depending on the depth from which matter is dredged up and the chance encounter between that ejected matter and each satellite.

This I think explains the water and mineral deposits on Earth largely.

So the rings of Saturn are a water ice remnant of flaring activity.

Saturn was the source of the copious amounts of surface water on the Earth and probably the sodium and the chlorine in particular because it's hard to get chlorine out of rocks.

Each planet has its own birth

drama and complex history,
this is why this solar system is a
complete fruit salad of objects
with all sorts of different
surfaces and characteristics,
axial tilts, rotation
rates and so on.

They are all
individuals, you know.

This explains why the Earth, Mars
and Venus appear so different
even though they may be
members of the same family.

There is no nebula gradation of
physical properties of the planets
and the ad-hoc suggestion of migration of
planets only serves to confuse the issue.

All the Electric Universe does is
work with the forensic evidence
about the most recent chapter
in solar system history.

So The Future?

Professor Wescott is right,
mankind's survival is astonishing.

Of course, there are reports
globally of dreadful heat and cold

while the Earth established this
new home in the solar system.
This is to be expected
on a cometary orbit.
It seems to me that part of
the answer for our survival
lay in the great heat
reservoirs of the oceans
but there was also the exchange of
electrical energy via the cometary discharge
which may have provided
some additional heat
while circularizing the
orbit of the Earth,
as I'll discuss later.

But as Roger Wescott makes clear,
we may have no future if we do not
understand our irrational behavior
trying to imitate the
power of the old gods
in our ability to destroy each
other and the environment.

Velikovsky as a psychoanalyst,
felt his most important legacy,
as he makes clear in
Mankind in Amnesia,

was to help us understand
our catastrophic past
and by so doing begin to heal
from those psychic wounds.

Fear is a great cattle prod.

But we are not cattle.

Thank you!

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

The following presentation is an
adaptation of the Mel Acheson Picture
Of the Day article: Matter,
Charge and Conjecture.

The link to the article may be found
in the description box of this video.

Electricians know the electric
force is thirty nine orders of magnitude
stronger than gravity, and the
graviticians know the gravitational force
is 40 orders of magnitude
stronger than electricity.

This misses the point.

On the purely mathematical
level, you can plug
numbers into the equations to get any
magnitude of force you want.

The gravitational force between
two 10 kilogram lead spheres
placed one meter apart is
the figure on your screen.

To equal that force with
electricity, the spheres
would have to be charged
to this figure:

This could be achieved
with a current of one
micro ampere in less
than a millisecond.

The technology of nylon rods
rubbed over cat fur can transfer
enough static charge to overcome the
gravitational attraction of lead spheres.

But can you get electricity
to move planets?

That would require
a lot of cats.

The question is not relative strengths
of forces but rather whether it's
possible to accumulate
enough charge and
move it with enough power to toss
planets around like electrons.

Irving Langmuir could provide
some enlightenment here.

He's dead, but his
discoveries linger on.

One discovery was that just
a few ions in a substance
can cause it to behave
in unexpected ways.

It forms cells and filaments.

Charges separate into double layers that
insulate cells from each other.

The filaments twist
around each other.

They writhe
and radiate.

They seem almost alive--which is why
Irving called the substance a plasma.

An accumulation of charge inside
one cell doesn't interact
with that in another cell until the
double layers break down.

Then they interact
with tremendous power.

Another discovery
(maybe this wasn't Langmuir's)
was that plasmas exhibit the same
behavior over large ranges of scale.

From millimeter-sized sparks in a lab that
last a millionth of a second to
kilometer-long lightning

bolts that last several
seconds, the same
properties can be observed.

A long list of investigators
has tried to draw attention to the
similarities between
certain astronomical
phenomena and these lab
and terrestrial plasmas.

Just on a theoretical level,
it seems rather simple
to scale up a lightning
bolt that can
toss around our lead
spheres to the size
of an interplanetary bolt that
can toss around planets.

But does it actually happen?

We can't clip the leads from
a planet-sized voltmeter
across the solar system and
measure the voltage drop.

So we're left arguing
about similarities.

And we all know argument
from analogy is fallacious.

That doesn't mean it's necessarily
wrong, only that it's uncertain.

The idea of gravity
tossing planets around is
familiar, the idea of
plasma doing it isn't.

Much of our preference for one idea over
another is simply the business of familiarity.

Much of the work required to
reach a new understanding of
something is just this effort to
make the unfamiliar familiar.

By analogy with argument from analogy,
argument from familiarity is also fallacious.

After allowing for the
preference for familiarity,
gravity is in no better
shape than plasma.

We see large accumulations of
matter-which we could just as easily
see as large accumulations of
charge if that idea were familiar.

We assume an identity
between the ideas of a large
accumulation of matter and a large
accumulation of mass, but mass is a

property--that's not necessarily
identical with quantity of matter.

The Machian idea of inertial mass being
the relationship of a particle of matter
to all other particles within its
sphere of communication implies
that a newly created particle
increases its mass as it ages.

The Meta Model idea of gravitational
mass being the shielding effect of other
matter within the mean collisional
distance of gravitons implies an upper
limit of matter accumulations beyond
which mass remains constant.

We can't hatch a Machian chicken and
see if it grows without feeding it corn,
nor can we stick a large
toothpick into cakes of Meta
matter to see if there's
uncooked mass in the middle.

What we're stuck with is
a conflict of paradigms.

Each explains overlapping sets
of data in different ways.

We won't know for sure
if the universe is electric until we

travel to a Seyfert galaxy and stick
our finger in the socket.

Nor will we know for sure

if it's gravitic until

we drop a Newton's apple off

the Leaning Tower of M87.

The question of what's

the truth is premature.

The truth is this: no paradigm is believable,

that is to say, none are certain.

Being stuck with a conflict of

paradigms is really an opportunity.

We can choose whichever

conjecture strikes our fancy and follow

its implications to see if

we can invent something

new to make our lives more

comfortable and exciting.

It's not necessary to choose;

it's an opportunity to choose.

We're better off having more conjectures

to choose from than having less.

It's time to scrap the outworn philosophy

of physics based on an illusory certainty.

Instead, a more biological

philosophy based on

conjectures and refutations (Karl Popper's
phrase) or blind variations with
selective retention (Donald Campbell's
phrase) would be more appropriate for
small soft creatures
living on a speck of
terrestrial dirt and
prancing around the cosmos.

[Music]

We have explored the current crisis in cosmology and what it means to have a revolutionary shift, or change in cosmology.

Now let's step back and explore why cosmology matters in the first place.

Why does cosmology matter beyond science and to non-scientists? And, how does cosmology impact everyday life?

We know that the study of the universe is important to science, but cosmology has impacts far beyond science and has a significant cultural component.

Cosmology has impacted everything from anthropology and art to philosophy, morality, religion, and even politics.

Cosmology also impacts our worldview and how we view ourselves in the world.

Historically, changes in cosmology have precipitated tectonic cultural and ideological shifts that have shaped, and defined, the course of history. But the relationship between cosmology and culture is not unidirectional. It is far more nuanced than that. Cosmological shifts are also a product of their time

and often grow out of, and/or reinforce philosophical and socio-political settings that benefit from, or exploit the ideas promoted and reflected in a new cosmology.

Let's look at these points in greater detail.

Changes in cosmology can have tectonic ripple effects that influence the course of history. A classic example is Galileo and the Copernican Revolution and the shift from the geocentric to the heliocentric model of cosmology.

This shift was so profound that it sparked a Scientific Revolution. But it also had profound consequences beyond science, as the educational director of the Italian consulate in the United States explains. Quote, "Galileo's ideas not only sparked a scientific revolution, they initiated a large-scale revolution in human thinking. He changed the way we see the world and, more importantly, how we perceive ourselves within it." End quote.

The shift from an Earth-centric to a Sun-centric view of the cosmos, created an historic opportunity to unseat the

power of the church and eventually led to what has been described as, quote, "...the most important idea in modern history...

The idea that any person, regardless of his or her individual characteristics, can seek and find the truth." This meant that the catholic church and clergy were no longer the sole investigators and arbiters of the truth.

Putting knowledge within reach of the individual and human deduction was a revolution in human thinking, one that landed Galileo in deep trouble with the church.

However, the human mind as important and worthy of contemplation is an idea that predates Galileo, going back to Greek philosophy.

When Socrates spoke of the need to know thyself, he shifted the emphasis of the contemporary philosophy from nature to humans.

Promoting this type of thinking, eventually got him executed for atheism.

Thus, Galileo fared far better than his philosophical predecessors.

This may be due to the environment in which Galileo's ideas emerged.

Galileo's discoveries were bolstered by,

and reinforced, renaissance humanism,
a philosophy that prioritizes
and glorifies the potential of the
individual and the human mind, especially
in the areas of creativity and the arts.

Power structures tend to prop up, or
support, the cosmological trends and
tenets that serve larger pre-
existing notions and agendas.

While Galileo was condemned by the
church, he was also backed by certain
segments of the aristocracy.

Specifically, he had the patronage of
Lord del Monte, a nobleman and author
of several important works on mechanics.

The Scientific Revolution helped bring
the fruits of humanism into the realm of
politics. It shifted ultimate political
power from the church to the monarchy,
which was good news for monarchs and the
nobility who could now rule without the
blessing or approval of the church.

But the monarchy supremacy was
short-lived, as notions of human
importance and self-actualization led
individuals to question the absolute

dominance of monarchs and rise up throughout history, most notably during the Enlightenment in a manner that eventually gave rise to republics, the nation-state and modern-day concepts of democracy.

Overall, Galileo's ideas reinforced and furthered, the tide of humanism and were beneficial to opponents of the absolute power of the church and later on, the absolute power of monarchs.

Beyond politics, the technological advancements of the Scientific Revolution also shaped economics and labor, moving the west from a feudal system to economies that are or were industrial and factory-based.

It has been noted that quote "...the Scientific Revolution lit a path that, centuries later, with the help of a lot of steam and coal power, money, and labor, led to the Industrial Revolution." End quote.

This triggered the necessary socio-cultural shift from a predominantly rural population to an increasingly urbanized one. Galileo's impact also affected and reinforced trends in

the arts. His influence reaffirmed and expanded upon, the work and focus of renaissance artists of his time, who were obsessed with representing man, and nature, as geometrically accurate and realistic as possible.

Despite the vast cultural and technological impacts, for many, the most profound impact of the scientific revolution, was how it helped shape our understanding of what it means to be human.

Implied in the Scientific Revolution is the recognition that individuals matter and can think for themselves. This is arguably the underlying tenet of the Enlightenment or Age of Reason, that humankind is a rational thinking being capable of arriving at truth and therefore, enlightenment. Central to enlightenment thought were, quote,"... the use and celebration of reason-- the power by which humans understand the universe and improve their own condition."

Implied in this belief is a view of the universe as reasonable and understandable. For, how can humans apply reason to understand a universe that is not

reasonable or comprehensible?

Enlightenment thinkers in England, France and throughout Europe, shared the common enlightenment themes of rational questioning and a belief in progress through dialogue.

One can imagine how these notions would benefit and be bolstered by powerful or influential individuals that favored republics and parliamentary forms of governance, since these are characterized by dialogue and cooperation between and among the people and/or their representatives.

This is an example of the nuanced relationship between cosmology and culture, which can be described as a feedback loop, wherein sociocultural powers tend to adopt, and then promote, those parts of cosmology that can shape and influence present and/or future outcomes and behavior. Relativism is another modern-day example.

While much has been noted about Einstein's Theory of Relativity and its influence on relativism, relativism as an idea, goes back to the ancient world.

Though it did not gain favor in ancient

times and was refuted by philosophers such as Plato, arguments for relativism have existed throughout history.

Moreover, there is presently no philosophical consensus on what Relativism actually means. Relativism as I use it here, refers to the doctrine that knowledge, truth and morality are not absolute. Known respectively as epistemological, or cognitive relativism and moral relativism.

I believe that it was not until contemporary powers and interests in politics, academia and/or economics had a need for, and could benefit from, moral and cognitive relativism, that relativism was fully promoted and normalized in the popular culture.

Einstein and his Special Theory of Relativity provided a good opportunity and catalyst for this.

Reinforced by the Theory of Relativity, relativism eventually impacted art, philosophy and modern culture, influencing an/or engendering everything from abstract cubist art to postmodern theory and identity politics.

As noted in an article in the Stanford

Encyclopedia of Philosophy quote,

"...the popularity of the very idea of relativism in the 20th century owes something to Einstein's Special Theory of Relativity, which was to be used both as model and as well as a vindication for various relativistic claims." End quote.

that article points to Gilbert Harman as one of the contemporary philosophers to use Einsteinian relativity as a model for philosophical versions of relativism.

Harman has stated that quote,

"According to Einstein's Theory of Relativity even an object's mass is relative to a choice of spatio-temporal framework.... I'm going to argue for a similar claim about moral right and wrong....

I'm going to argue that moral right and wrong.... are always relative to a choice of moral framework."

End quote. It is interesting to note that Harman wrote this in 1996, which is several decades after Einstein and curiously only a few years before identity politics began to gain serious and ubiquitous momentum as well as the support of the establishment in the West.

The 2000's witnessed the rise of identity politics which is grounded in post-modern notions of relativism and the replacement of traditional forms of left-wing opposition with identity-based movements which are often sympathetic to the establishment.

Under identity politics, relativism is exploited to fragment, dilute and/or diffuse, political opposition and ultimately, to serve power.

Let's take a closer look at relativism.

Epistemological relativism espouses the idea that there is no absolute truth to be had, since all truth is relative. Similarly, moral relativism holds that morality, right and wrong, good and bad, is also relative and varies from person to person.

Such notions fly in the face of the Scientific Revolution and Enlightenment era's emphasis on the ability of the rational individual to seek and find Truth, with a capital T. Prior to relativism, philosophers argued that there was an absolute truth and an absolute way of approaching various aspects of life, especially with respect

to morality and moral obligations.

Moral relativism creates a philosophical slippery slope that can arguably be exploited, or abused, especially by those with power. If there is no such thing as an absolute right and wrong, then we are powerless to point out and confront the wrongs of those with power, since everything is relative. In other words, arguing that there is no such thing as absolute right and wrong, alleviates wrongdoers, big or small, from responsibility and accountability for wrongdoing.

How convenient for the wrongdoer.

Einstein was not a moral relativist and even recoiled at the misappropriation and misapplication of his theory in the non-sciences.

As Einstein's most prominent biographer has observed, quote, "In both his science and his moral philosophy, Einstein was driven by a quest for certainty and deterministic laws.

If his theory of relativity produced ripples that unsettled the realms of morality and culture, this was not caused by what Einstein believed but by how he was popularly interpreted." End quote.

Similarly, the Stanford Encyclopedia of Philosophy states, quote,
"It is...worth noting that Einstein did not think that the Theory of Relativity supported relativism in ethics or epistemology because, although in his model simultaneity and sameness of place are relative to reference frames, the physical laws expressing such relativity are constant and universal and hence in no sense relative." End quote.

It seems that Einstein's Theory of Relativity and by extension, contemporary cosmology, was misappropriated and misapplied in a manner that supports moral and cognitive relativism and the host of non-scientific or non-empirical interests they could potentially serve. A common criticism against epistemological relativism is that semantically, it contradicts or refutes itself.

The statement, "all is relative," holds itself to be absolute, therefore contradicting its original premise that all is relative.

Put another way, if the statement "all

is relative" is an absolute, then this contradicts relativism. And if the statement is relative, then it does not have to be, or cannot be, accepted as true. For this, many view relativism as a paradox. I believe paradox may be a contemporary motivation for the misapplication of Einstein.

In Western culture, paradox is increasingly presented as a good thing and is even celebrated and promoted in all areas of life, using science and cosmology as a justification for such arguments. For instance in a 2020 article entitled, "Think Like Einstein: The Paradox Mindset", the author notes that Einstein was used to conceiving and embracing opposite or contradictory ideas and that many Nobel prize-winning scientists are known to actively conceive multiple opposites simultaneously.

Describing this as a paradox mindset, the author encourages readers to do the same, arguing that quote, "Embracing contradictory ideas is one of the main assets for raising creativity and is a better way forward." End quote.

The author concludes that strangeness is a good

thing which ought to be embraced in the workplace.

Similarly, in a 2020 BBC article on work culture, the author argues that the paradox mindset is the key to success in the workforce stating that quote, "Although paradoxes often trip us up, embracing contradictory ideas may actually be the secret to creativity and leadership." End quote.

And in a talk at the Proceedings of the National Academy of Sciences of the United States of America, scholars argued that the key to promoting peacemaking and peaceful intervention overseas is paradoxical thinking which they define as quote, "...information that is inconsistent with held beliefs, and raises the sense of absurdity."

End quote. It is strange and perhaps disheartening to see paradox promoted as a good thing in the world of politics and peacekeeping. It is also odd to see politics discussed at the National Academy of Science. This brings us back to earlier discussions about science and cosmology

being used to justify larger and or pre-existing interests and agendas. It also harkens back to what Thomas Kuhn implied about institutionalized science; that it is hegemonic and functions much like other institutions of power, such as religion or politics or, in the service of power.

Promoting paradox and absurdity in politics and political intervention may be a way to disguise or preserve empire and political hegemony. Not least by framing inconsistency in absurdity as positive political strategy.

Rhetoric about the benefits of paradox in politics and the workplace is somewhat evocative of that found in media articles on contemporary cosmology, which embrace and celebrate cosmological weirdness and paradox rather than problematizing it. As I note in a previous show, the increasing focus in mainstream media on the strange and wacky universe presents cosmic weirdness and contradiction as something that is matter-of-fact and non-problematic.

Basically, the universe is a weird and

unknowable place and that's okay because the universe does not have to make sense. If that's the case, then contemporary cosmology has failed us. For what good are science and empirical observation and analysis if they cannot give us answers? Rather than admit the failure or inability of contemporary cosmology to provide answers and explanations, mainstream science and mainstream media increasingly blame the failure on, or hide the failure behind, the strangeness of the universe. This suggests that mainstream cosmology is not actually interested in giving us answers. It also confirms what Thomas Kuhn believed about dominant or normal science. That it is hegemonic, dogmatic, and unyielding to falsification and change. At the sociocultural level, the promotion of a paradox mindset could be interpreted as giving people permission to act inconsistently, unpredictably, contradictory and/or without integrity. Rather than admit that systems or policies may be failing or contradictory, failure and contradiction can simply be

repackaged as normal and acceptable, just as it is in cosmology. In terms of dominant discourse, this potentially opens the door to and/or justifies inconsistent, contradictory and deceptive discourse and narratives.

As an aside, it is important to note that the paradox rationale is a tool that can only fully be exploited by those in a position of power. For if the average person on the street tried to argue in court that the law is relative or could be interpreted in a contradictory manner, it probably would not go very well for them.

In closing, everything we discussed drives home just how influential cosmology is beyond the sciences, and how much it shapes and impacts the broader culture and human thinking.

Cosmology and changes in cosmology have shaped and or fostered everything from the Scientific Revolution, to present-day forms of governance, industry, philosophy, and morality.

With respect to the most recent sea change in cosmology, that of Relativity and the Big Bang, theories and innovations in cosmology were

misappropriated and misapplied by thinkers in the non-sciences in a manner that gave rise to various notions of relativism and eventually fostered a culture and worldview that embraces, celebrates, and promotes paradox, contradiction, and absurdity.

This is a stark contrast to the Enlightenment's obsession with reason and rational thinking.

We have been educated with clear evidence that cosmology is presently in a state of crisis and is inevitably heading towards revolution.

Given that reality, our next logical step will be to explore what a future cosmology might look like, and how it will impact the broader culture and human thinking.

[Music]

Gerald Pollack

Weather and EZ Water — An

Intimate Role of Separated Charge

So I am going to

talk about water but

I'm going to talk about

water in a special context

and that is in the context of something

that's really important around here

and really important where I

come from and that is weather.

And so, I want to talk

about water and weather

and I hope to demonstrate to you that

something is really important about weather

that we haven't realized before

and that is electrical charge

which fits nicely into the

theme of this conference.

And, I guess, a shorter title would be,

should I bring an umbrella to work?

Okay, so let me start

with a few questions.

So, here's a question.

Sometimes above the water

you see a single cloud.

But that's weird because you know, the
water is evaporating from everywhere
so how come only one cloud
when the vapor rises all over?

Is there some attraction
of moisture that comes
and pulls the moisture into
this cloud or something else?

How do we understand this?

How come there's not one broad
cloud that exists over the water?

Another one.

Maybe you haven't
thought about this
but what keeps the cloud afloat?

Cloud consists of
water, water is heavy,
cloud like this consists of, I
could give you in kilograms,
the weight and such but
it's convenient to talk about the
weight in terms of elephants.

So, this is the equivalent of
perhaps a thousand or so elephants.

And how come the elephants
don't fall on your head?

Maybe it's a question that you haven't
thought about but some people have.

And then, you know, in

Seattle where I live,

we get a lot of rain and

we see dark clouds.

Sometimes they release the rain

and other times they don't.

And so, what gives, how

come, what makes it rain

and why sometimes

does it not rain?

So we're talking about water

and water is something

about which we know so.

So I want to start from a few principles

that have been developed over the past years

and then go on from there to

talk about how these principles

can be applied to get a better

understanding of weather.

And it starts with this book

that Don Scott mentioned

and we uncovered a different phase of

water beyond solid, liquid and vapor.

And it's the basis, it comes from

a lot of experiments that we did
and I think rather
straightforward interpretations.

And I just want to give you a summary without
presenting the evidence for what we found.

So, we found that
if there's water
and the water sits next to a hydrophilic
material in particular not hydrophobic
but hydrophilic, water-loving,
what happens is that the water transitions
into a completely different structure.

A layered structure, honeycomb kind
of structure that builds in layers
from here one after another
and just keeps going on
and in fact typically we find up
to millions of molecular layers
that undergo these
transformations.

We call them EZ or
Exclusion Zone of water
because we find experimentally
that as these grow
they push out all
particles and solutes

so it's rather pure substance that

we get here that's solute free.

And the structure looks

something like this.

It's a hexagonal or

honeycomb kind of structure

consisting of course

of oxygen and hydrogen

and unlike the structure of

liquid water which sits out here.

And it turns out it's

not H_2O anymore.

It's actually H_3O_2^- - if you count the

oxygens and hydrogens in the unit cell.

This is what you get

and it's not surprising because

experimentally we found that this region

has a net negative charge and

this is negatively charged.

To be neutral, it would have to be H_4O_2

that is double H_2O that's neutral.

It's negatively charged.

If you wanted this to be neutral, you'd

have to put one more proton in here

to make it H_4O_2 .

So, negatively charged and

the positive charges,
complementary positive
charges lie here in water
and the reason is that,
in order to build these
what happens is the water molecule is
breaking into its component parts into OH-
which sits here and lines up to give
you this structure and H+ protons.

So this is negative
and this is positive
and what that does is to
form a kind of battery.

This is the hydrophilic
surface, this is the water
and this negatively charged, EZ, or we call
it 'fourth phase of water' is sitting here
and the complementary
protons are sitting here.

It's got potential energy
just like a battery
and in fact the energy to charge this
comes from light, we found that.

So, question is, how does this
potential energy play into weather?

Everybody's interested in the weather,

nobody really understands it.

And I think the answer

is - profoundly.

And I want to present to you some,

well rather than really evidence,

some of this is evidence and

some of it is conjecture

to give you perhaps some idea that

differs from the conventional idea of

what is responsible for weather.

It's not with the watercycle and

many of you have seen this before.

Here's the atmosphere and the

clouds and we have precipitation

which could be water or

it could be ice and snow

and the groundwater flows down

into the oceans and it evaporates

and the evaporated water

condenses and so on.

And so, some of the water that exists,

could be millions of years old.

Same molecules that get

recycled over and over.

And so, we deal with ice and

snow, we deal with snow-melt,

evaporation, condensation

and then precipitation.

And that's what I

want to talk about

and I'd like to present you and argue

that these are qualitatively different

from what you think you have,

what you might have learned.

So, we're going to talk about

this water cycle and weather

and I want to talk first about water and

ice which you saw on the upper left.

Then evaporation, condensation,

precipitation and then wind,

something that many of us never really

think about but it's certainly around.

And, weather exotica.

I'm not sure how much I'll

get through but let's see.

So, we start with water and ice.

So you know about ice, you just basically

take water and freeze it and you get ice.

But it's not quite

so clear as that.

It turns out that this fourth

phase that I mentioned to you

is a necessary condition

for the freezing of water.

So we all think that when you freeze

water you go from water to ice

but what we found and is described in the

book and I'll show you a few slides,

is that water doesn't really

transition directly to ice.

It transitions to EZ whose structure

is not so different from ice.

It's not ice but not so

different and then to ice.

And if you melt the ice, you go

from ice to EZ and then to water.

So, the process of

freezing differs.

And the way it works is something like

this, you start with the EZ structure,

remember there are the these hexagonal

sheets that pile on one another,

and you may not

have noticed it but

each sheet is slightly displaced

from the sheet behind it.

It's displaced in such a way

that the negative oxygen here

lines up with the
positive hydrogen here
and so these are
electrostatically attracted.

The same here, so it's a stable
structure, it sticks together.

And what we found is that the
ice forms as this EZ structure.

Remember, you start, you go from
water to EZ and then to ice.

What happens is that you add protons,
and I'll explain how in a moment,
and these protons,
positively charged,
insinuate themselves between
the two negative oxygens here
and then there's a
shift of planes

so that the planes are no longer
displaced from one another
but they're actually in register and
that's when the planes come apart
so that the ice is less
dense and the ice floats.

And, you know, we're
happy that ice floats

because if it didn't float,
if the ice were more dense
and the ice began from the
bottom and worked its way up
then you'd have a real problem because
creatures like this could be,
maybe in cold climes, could be
basically pushed out of the water
and would obviously perish.

So, we're lucky that the structure of ice
is less dense than the structure of water.

So, let me show
you the evidence.

Is it really necessary, is the EZ
really necessary for ice formation?

So, here's a simple experiment.

What we do is, we take
a droplet of water
and we put it next to a
hydrophilic material.

This is one that
we commonly use.

It's called Nafion.

And so, what we find is
that next to the Nafion
we have EZ water that forms and

beneath this we have a cooling plate
so basically this water is being
cooled and eventually it turns to ice.

But I want to demonstrate
to you that it's the EZ
where the ice formation
is initiated.

And that's shown here.

And so, we're depicting this
particular region over time
and so here's a water drop and here's
the piece of Nafion and remember the EZ
is sitting right here and
you see this bright spot.

This bright spot shows the initial
location of ice formation
and later as ice formation occurs
of course it moves into the water
but it moves and penetrates down where
the EZ is and you can see later
it basically follows the EZ.

So, the EZ is basically the
first place to freeze.

The freeze initiates in the
EZ and that's the main point.

And the way we think it does, and

I'll show you evidence in a moment,
is that you have the EZ here and
remember negatively charged here
and the protons here and
gradually as the EZ builds up,
more negative charge, you get
more positive charge here.
And when the positive
charge gets dense enough,
what happens is it
moves into the lattice
all the way to the most negative
part and it forms here.
And remember, EZ plus
protons gives you ice
and so we have the ice that forms
right here and the process continues
and gradually you get a whole bunch
of ice starting with the EZ.
Now to show you that this really happens,
we have a setup that looks like this.
So, here's a chamber.
This is a thermoelectric cooler so this
water then gets progressively cooler
and we find that the cooler it
gets the bigger the EZ gets

and beyond that we just have water

and we put pH sensitive dye.

These are the dyes, you know, that

change color just like litmus paper.

Acid is one color, base is another color and

here's what happens when freeze occurs.

So here's the cooling

plate, right.

Here's this cooling plate.

Here's the ice and here's the water

that has yet to convert to ice.

So, the green color

is actually neutral

and here in the ice the

red color is very low pH.

It means it's full of protons.

So it shows that indeed, as the ice forms,

a lot of protons enter into that region.

So, ice formation

involves protons.

It's EZ, negatively charged,

plus protons, give you ice.

So we understand now that what happens is,

you reduce the temperature, you get EZ,

EZ builds up and all the protons that

are sitting here rush into the EZ

whose structure is a little bit different
from ice and that converts to ice.

So, what happens
when the ice melts?

Well, you might expect the
opposite or the reverse process.

So, the ice turns into EZ which
then turns into - water.

So do we really see EZ
water when this melts?

We did the experiment, put ice into
a cuvette and allowed it to melt.

And put the cuvette
into a spectrometer
which can measure the absorption
of light at different wavelengths.

And so we asked the question, does
melting produce EZ water and protons?

So, this is the absorption spectra of just
melted ice, just melted water samples.

And there are four
different panels
and the only difference between them
is we used a different kind of water
so this is de-ionized water,
we use that to make the ice.

Boiled de-ionized water,
de-gassed de-ionized water.

It doesn't really matter what
kind of water you put in there,
when you melt the ice you get
a similar spectral pattern.

In all cases, there's a big
absorption peak at 270 nanometers
and we know from our
previous experience that
the 270 nanometer absorption
is the signature of EZ water.

It's the defining feature.

That water absorbs light in the UV region
at 270 nanometers, ordinary water doesn't.

So, we can conclude that as you
take the ice and you melt the ice,
the melted ice is EZ water.

So, the melting is ice
to EZ and then finally,
after some time, the EZ
converts to ordinary water.

So, what about snow?

Um well, it's pretty
and I think all of you know that
snow has hexagonal crystals

and it's always been a kind of mystery
as to why they should be hexagonal.
But remember, the EZ is hexagonal
and if snow grows from
hexagonal kind of ordered water it makes
total sense that the snowflake would
But remember, the EZ is hexagonal
and if snow grows from
hexagonal kind of ordered water it makes
total sense that the snowflake would
actually be EZ, some
construct of EZ water.

And the fact that EZ
water is negative
means every snowflake
should have negative charge
and these snowflakes should stay apart
from one another which basically they do,
built from hexagonal EZ.

So, we dealt with ice and snow
and the fourth phase of water
and I presented to you some features
that are perhaps a lot different
from what the conventional view
is of freezing and melting.

And now I would like

to show you a video
and this video is something that
is on the Discovery Channel
and it was based on my book
'The Fourth Phase Of Water'
and we made it, you might say, to Hollywood
and I want to show you a five minute clip.
The movie is called
'The Fourth Phase'.
It's done by a famous
snowboarder Travis Rice.
From when I was a kid I've
always been intrigued with water
and how we interact with it.
Since then, traveling the world of snowboarding,
the concept for this trip evolved
to follow the hydrological
cycle around the North Pacific
really attempting to immerse oneself in the
elements and see how this whole thing works.
It's been incredible.
As children, we're all
motivated to find the truth.
A child looks around and is
learning truths all the time.
We have this natural

tendency to explore.

I'm Gerald Pollack

and I'm a professor of bioengineering at

the University of Washington in Seattle.

It can be really challenging to

keep an open mind in these days.

Scientists have become more hesitant

to challenge perceived truth.

"How are you doing?

So, it's working?"

There are some books

that suggest that

essentially we've kind of reached

the limit of what there is to know.

I'm shocked by this

this perception.

There are many aspects of

water that we see every day

and we don't really

understand them.

These are questions

that need answers.

We all learned that

water has three phases;

solid state,

liquid state

and also vapor state.

However, you can't explain all the known properties of water with 3 phases alone.

You need a fourth phase.

What's the fourth phase?

With an energetic input, water molecules undergo massive change.

They become ordered,
they acquire charge.

All of this energy to create
that order comes from light.

We began with experiments
to try to learn more.

We noticed something that
seemed almost magical.

Every one of the tests
that we did showed that
this water was different
from ordinary water.

The individual molecules were actually
linked together to form a hexagon,
and then many hexagons.

We can understand why
snowflakes are hexagonal.

They actually form from the
fourth phase of water.

After some time there seemed to be
enough evidence to indicate that
this was a distinctly
different phase of water.

You might ask, what
implications it has for us?

We're approximately
two-thirds water.

Most of the water inside of our cells,
they're filled with fourth-phase water.

This could be central to all of what
goes on in the biology of the cell.

This is going to lead the way to a better
understanding of how cells function.

I think part of the beauty
of the fourth phase,
especially as it relates,

I guess, to this film,
is the concept that not everything
is as it appears to be.

Leaving some space
and open-mindedness
for allowance of a shift in perspective
on how you view the world is
one of the most important
things in my life.

Being a scientist is

a search for truth.

We somehow need to change

the system so that

we're looking for ideas whose outcome has

the capacity to really shake the earth

and yield breakthroughs

if not revolutions.

You need to dig deeper and deeper

in order to find the truth.

Thank you.

This was cool and I'm really shocked

that these guys actually survive

what they, what they

do in the backcountry.

OK, so I talked about water and ice

and I've tried to demonstrate that

the formation of ice and the melting of

ice is different from what we think.

And I want to talk about evaporation

and the message is the same,

it's not what we think.

So, what do you think

about evaporation?

You probably think that you've

got a glass of water, you know,

and it's evaporating one

molecule at a time.

A molecule gets a kick of energy,
of kinetic energy, and it comes up
at least that's what I learned.

And the reality is

a lot different.

So, let me start with this.

This is taken at Starbucks

and, you know, Seattle, Starbucks was born
in Seattle so we drink a lot of coffee.

And if you have a dark background you
notice this is a hot latte, I think,
and taken by my son.

You notice something interesting,
you can see the vapor.

Now, if you can see the
vapor, what does that mean?

Well, you can see the vapor because
the light is being scattered
and you don't see a hell of a lot
unless the scattering entity
is at least on the order of
the wavelength of light.

Wavelength of light
is half a micrometer.

Well, it turns out that these are little tiny droplets in here that are tens of microns.

Now, even one micrometer

little droplet contains,

you know, how many

water molecules?

You can do the arithmetic, it's something

like a billion, on that order.

So, there's something wrong with,

appears to be wrong with the idea

that the evaporative

entity is one molecule,

unless they come together above here and

we know they don't because we've checked

that where we've checked these

when water is evaporating

and we can check right just above

the surface as this is emerging,

it's no different from

what you see here.

So, that idea seems to be

incompatible with basic physics.

Well, another interesting feature

is that it's not continuous.

Look, it seems to be discrete.

Now that's a surprise

because most of us,
we presume that the evaporative process is
a continuous one, not only is it discrete
but also it appears to come
from one region of the water
not necessarily from the
entire surface simultaneously.

Well, I have a lot of undergraduate
students working in the lab
and many of them don't do
what I tell them to do.

They have minds of their
own and there was one guy,
a Chinese student, we have
a lot of them in Seattle,
and he was curious and so he
took a laser beam and he,
what he did is to condense
the beam into a plane
and he wanted to get a cross-section
of how one of these would look like.

So, what do you think
they look like?

You might think,
cross-section might,
would look like kind of cotton

or something like that,

but doesn't.

It looks like this.

These are four different

experiments and you can see,

looking at let's say this one, that

the bright area is scattering light.

It means that's

where the water is.

In between that, the dark

area is doing nothing.

So it seems to be

essentially empty.

And I got to tell you that

when I saw this for the first

time I almost fell out of my seat

because I couldn't believe that the evaporative

entity had structure, just like this.

It seemed inconceivable but, you know,

after enough repeats of the experiment

it was pretty clear

that this was correct.

So the first thing...

Well, sorry it wasn't

the first thing

but we thought this is not

created from nothing.

This kind of

pretzel-like structure.

There must be something

in the water

that may be giving rise to this

kind of pretzel-like structure.

So, we raised the question, is there a

corresponding structure in the water itself?

I'm not sure if you can see it

but I can see it on my screen.

If you look into the warm

water that you see here,

and this picture was

taken by my son,

he was the artist of my book and I was

really pleasantly surprised to see this.

This one was at home, I think,

not in Starbucks but...

I can see it here,

I hope you can.

There's a mosaic structure.

If you can't see it then

take a look at this one.

This is an experiment

you could do yourself.

So, this is a pan of warm water and
it's illuminated not from above
but at a glancing
angle from the side.

You might call that
dark field illumination
and you can see the same sort of
structure, low angle illumination.

And so, it looks like the
warm water that's evaporating
does contain some kind of structure
as the previous slide showed as well.

And we can also see it by
using an infrared camera
to look down at the warm water and
you can see same sort of structures.

There's no doubt that
the structure is there.

Well the usual interpretation
when you use an infrared camera
is that this region looks
warmer than this region.

In fact, conveniently they
actually provide a scale for you
so you can correlate the darkness
with the equivalent temperature

but it's not necessary that

that's the only explanation.

Another possible explanation is that these lines

actually denote the presence of EZ water.

Now why do I think so?

Well it's because of older

experiments that we did.

Here's a piece of

Nafion next to water

and remember an EZ forms

next to the water.

And so the infrared camera is picking

up the amount of infrared energy

that's being radiated from that.

The EZ is dark.

That means it doesn't

radiate a whole lot

and the water beyond the EZ radiates, as you

can see it's brighter, it radiates much more.

So dark here, the EZ is dark and if we

go back to the infrared image of this

you have to ask the question,

is it possible that the dark region

here is actually EZ material?

And we think it is because we've looked at

the origin of these structures that form.

And you can see little dots

here just as they form.

And these dots, we don't know whether

they're little droplets or little bubbles

but essentially it doesn't matter for us

because what we found in our experiments

is that if you have a droplet,

this is the structure.

If you have a bubble,

this is a structure.

And in both cases these are

lined by layers of EZ material,

just like onion skin and that's what

holds it together for both of these.

But inside you have a lot of protons and

the protons are repelling each other,

they're pushing out against the skin and

that's what keeps it into a sphere.

The difference is that in this case

it's liquid, in this case it's a vapor.

So we've learned in our experiments

about these water droplets

and since we don't really know if they are

droplets or bubbles, we call them vesicles.

And we do know that the vesicle

structure looks like this

and we do know that as they form
before they enclose themselves,
these positive charges tend to
repel each other, they leak out.

And so, the amount of
negative charge here
is always more than the
amount of positive charge.

So, these little vesicles, whether they're
bubbles or droplets, have net negative charge.

That's important.

So, if you think about the possible
explanation for these dark lines,
remember I suggested, maybe
they contain EZ material.

Well, a possible way that
they can contain EZ material
is shown here that you have a lot of
these vesicles that are stuck together
and so, for example,
this entire cluster here
would represent what we see here consisting
of a whole bunch of these stuck together.

How are they stuck together?

Well, we presume that they're
actually glued by protons

and so these are negatively charged

and this is negatively charged.

If you have protons between them, the protons

will act as glue holding them together.

Now this is not a

wild speculation.

It actually comes from

Feynman, many years ago,

who talked about negative, like

charges that come together

and he called it

like-likes-like.

Well, these negative

charges like each other

so they come together and he said

the reason they come together

doesn't violate any basic

principles of physics.

It's because opposite

charges gather in between

and so you might have positive charge

which pulls this one and pulls this one.

He said like-likes-like because

of an intermediate of unlikes.

And I think that's what happens

and that's how you can imagine

that these are actually glued
together, negative charge here
negative charge here, protons
in-between holding it all together.

There are many examples of this.

I don't have time to present it.

So, this is what, this is an oblique view
that shows the same mosaic structure on top;
but what this slide shows is that
it's not just a surface layer,
it actually extends downward.

You can see the dark lines
coming and extending downward
and what that means is that these
mosaic cells are actually mosaic tubes,
they extend down into the water.

And so, when we talk about evaporation we
have a situation that looks like this.

This is a kind of conclusion slide that we
have these basically tubes that run down.

They're not just on the surface.

They run into the water and
when sufficient charge gathers,
they actually rise up like this
and then they become vapor.

And if you were to take a cross-section of

this, it might look something like this.

So, basically the vapor patterns that you see, especially in cross-section, come from liquid patterns that are down here.

They simply rise up to give you this incredibly beautifully shaped vapor that we see.

And you get clusters so you get one of these groups of tubes that rise, so this will be the first

one then the next one

and the next one and they're actually discrete events.

But by the time you get up here, the droplets that make up these clusters eventually dissipate because you don't see any vapor up here.

So they're basically dissipated into the air.

And so, when you think about humid air,

you can think about these

negatively charged little droplets

surrounded by positive charges which are known to occupy the atmosphere.

However, if there's enough positive

charge to glue these together

and form clouds like this.

In the atmosphere, the humidity disappears

and it becomes clear instead of humid

and then you can see a

difference in your environment.

So, if you have humid air,

you can imagine looking through this humid air

to some building that sits at some distance.

And the building is not clear, it's

fuzzy and the reason it's fuzzy

is that the light that gets scattered from

the building before it gets to your eye,

it's scattered by numerous of these

rather large little droplets

that sit in the air as humidity.

On the other hand,

if the air is clear,

if these little droplets have

actually condensed into clouds,

then you can see these

buildings much more clearly.

So, those of you who live on the East Coast,

you know, Washington DC in summertime,

buildings look like this but in the

wintertime they may look like this.

OK, so that's evaporation and the mechanism I've presented evidence to you that the mechanism is grossly different from what we think.

OK, now what about condensation?

So, you've got these droplets in the air, how do they condense into clouds?

Why do we get a cloud to begin with?

So, what we have in the atmosphere among other things are two principal constituents.

One is these water vesicles that have a net negative charge and we have positive

charges known, the atmosphere is known among atmospheric scientists to be net positive charge and somehow the positive charges are linked, nobody knows exactly how, to molecules in the air.

So, we have negative charge and we have positive charge and so we come back to the Feynman like-likes-like mechanism, we have these vesicles of water that are suspended in the air

and we have positive charge.

If you add these together in the right quantity, you get a cloud because the positive charge brings these negatively charged vesicles together.

So, a cloud may look something like this.

Principally these negatively-charged vesicles and with enough positive charge these charges, these vesicles are actually linked together and they form these clusters that we call clouds.

So question arises, what keeps clouds suspended in the sky?

And I don't know, a lot of people have never thought about this question.

Remember it's water, the water is pretty heavy.

Well we know that clouds have charge.

This is one example, probably not unknown to the Electric Universe people.

We also know that the earth has an electric field.

I mean, beyond the

magnetic field.

And the electric field runs perpendicular
to the surface of the earth
and it exists because there are positive
charges up here in the ionosphere and beneath
and because the earth has
a net negative charge.

By the way, the net negative
charge may come from the EZ water
that fills the surface of
the earth and all greenery.

So, this is the electric field
at the surface of the earth.

It is roughly a hundred
volts per meter
which means that my nose is 200
volts relative to my toes.

OK, good to remember.

You know, it's easy.

OK, so we have, what
about floating clouds.

So, the earth is negative
and the cloud is negative
and so doesn't take a rocket
scientist to figure out that
there's a repulsive

force between them.

But your reaction might

be or may might not be,

is that repulsive force really strong

enough to keep the clouds suspended

simply by repulsion?

I want to give you two

examples that demonstrate it.

The first is this.

You take an old-fashioned

120-watt bulb

and, you know, current is flowing

through the tungsten filament.

And suppose you could collect one second

worth of charge flowing through it,

just one second.

And suppose, thought experiment,

you could compress that to a point

and you put that point down

here of negative charge

and you do the same thing up here

and they're separated by one meter.

So, the question I ask you is, you know

that these are going to repel each other.

This one can't go down

but this one can go up.

So, question is, how much weight do you need to put on this one in order to prevent it from going up, OK?

So, I've asked this question.

I got all kinds of answers from a gram to a ton or whatever and the right answer is about 50,000 garbage trucks.

Now, knowing that there are Boeing engineers here, the original thought was actually, it's something like 5,000 Boeing 747s.

But my son, the artist, couldn't draw a Boeing 747 stacked up so we wind up with garbage trucks and this is roughly the amount of weight.

And even... So it, we're talking a huge force.

Now, another example is this.

So, you have a couple and the guy is lying here and the woman is suspended somehow.

It doesn't really matter

how she's suspended,

you might think of a net or

something that's keeping her away.

Of course, they would like to join
each other but she's suspended here.
And suppose, this comes also
from Feynman by the way,
from his lectures except
he has them vertical.

I mean, standing instead
of in this position.

But suppose you're able to remove
1% of the electrons from this guy
and 1% of the electrons from this woman
so she's positive, he's positive.

They repel each other.

He can't go down
but she can go up.

He doesn't want her to go up,
he'd rather have her go...

Well, so, so a question is,
how much weight would you have to put on her
back in order to prevent her from rising up?

Anybody have a guess?

How many garbage trucks.

OK, so actually the number of garbage
trucks is so large, the correct answer,
remember according to Feynman
is the weight of the earth.

It's astonishing.

So, main point.

The force that is generated

by charges is much larger

even than people in the Electric Universe

are, most of you are, I think, thinking.

Huge forces.

And so we come back to what

keeps the clouds suspended?

And I think what keeps them

suspended is the fact that

the clouds have a net negative charge and

the earth has a net negative charge.

So one suggestion is a repulsive

force between these and these.

That's why the clouds

are sitting up there.

And if the cloud has more negative

charge then it's going to be higher

and if it has less negative charge

then it's going to be lower.

It's a simple paradigm

and that explains what atmospheric scientists

have a really hard time explaining

and that is clouds

in different layers.

So, simple explanation is that this cloud
has a lot of negative charge so it's high.
And this one has a moderate amount and
this one has low negative charge.

And so that's how
they're suspended.

Side issue is this,
think about it.

The earth is negative, the
atmosphere is positive.

We all know that positive attracts
negative and so you'd expect that
simply by virtue of the fact that this
is positive and this is negative,
they're going to stick together.

Now imagine if they
didn't stick together.

Just think about the
scenario for a moment.

The earth is spinning, right, and
typical velocity on the surface is,
we're talking about something like
two times the speed of a jet plane.

So, it means if you went outside and the
atmosphere was not stuck to the earth,
there'd be a hurricane outside

every time you walked out.

So, I mean the atmosphere must

somehow stick to the earth

and this is perhaps a

simple explanation that

plus and minus cling and so the

atmospheric clings to the earth.

And in fact, if you think about it,

a question that might be raised is,

does clinging force explain what

we know as atmospheric pressure?

We think of the pressure arising from

molecules pressing on each other

but, you know, the atmosphere

is not a pile of bricks.

The molecules are a gas which means

they hardly touch each other

and you can go through various

arguments to come up with an idea

of how the atmosphere could

actually press on the earth

but a simple argument

might be that

the pressure comes from the

plus sticking to the minus.

And that prevents the

blow-away scenario because
there are big winds up here and if
you just have stray molecules around
and the wind comes, you might expect that
we'd have no oxygen left to breathe.

OK, so I talked about
the condensation.

Now what about precipitation?

It does rain, although not
too often around here.

So, what causes the rain?

Well, if you listen to
the weather people,
they'll talk about pressure and
they'll talk about temperature
and I don't know about you but
I've never been able to understand
how this combination of temperature
and pressure could yield rain.

So of course, another question that
people here are likely to raise is,
what about charge?

There's somehow charge involved
in weather and bringing rain.

We know that there's
charge there

and I'd like to bring up the
principle of induction.

This is Faraday induction which I
think is known to many of you.

So if you have a positive
charge sitting up here,
if it's really far away doesn't do
a whole lot but if it's closer,
it'll begin to induce opposite charge
down here and the closer it is,
the larger the opposite
charge that's generated.

It doesn't matter whether this
charge is positive or negative.

Basically the same thing occurs and this
force is always attractive, that is,
if you have the negative here you'll always have
positive here and they attract one another.

And I think this principle, this simple principle
that we all know about is really critical.

An example of it is here.

You take a balloon and you
rub it on your shirt.

And notice same shirt as in the
movie, it's the only shirt I own.

Embarrassing moment.

And you put it next to the faucet and
the faucet bends quite appreciably.

It's a fun thing to
demonstrate for kids.

And what's going on?

Well, the balloon is charged
by the triboelectric effect,
rubbing on your
shirt or your hair,
induces opposite charge and the two are
attracted and so the stream bends this way.

So, we have the same
principle going.

We go back to the cloud
and in the cloud,
we have the negatively charged vesicles containing
the water and we have positive charges.

They come together to form a
negatively charged cloud.

And when positive charge, more
positive charge lowers the cloud,
right, it comes closer to here, there's an
inductive force, positive here negative here.

And this pulls the
water from the cloud.

It's a simple pulling

force that can do that.

So, I think a possibility is that precipitation occurs inductively.

I'll go back to

that in a moment.

And what about wind?

So, we know the wind occurs and we sometimes think that it's a fire of the Dragon that creates the wind, but, what creates the wind?

We, you know, we don't know.

Is it pressure gradients, which I think is what you'll read in the textbook.

But it's kind of difficult to understand how you get a wind gust? Gust is pretty local and of course the gust can be powerful as you see here.

And I think it's possible that charge gradients are responsible for wind.

And why do I think so?

So, here's diagram that you've seen.

Here's the earth and here's the positive charge in the atmosphere and it's known from measurements that protons diminish with increasing altitude.

So here you have the
highest electric field,
and it diminishes with
increasing altitude.

At night, It's very small, possibly
because there's not much evaporation
and the positive charges don't
get into the atmosphere.

During the daytime, it gets much
higher and this is well known.

This is not conjecture.

So here is low electric field
and here's high electric field.

Now this is taken from
a published paper
and what we're seeing here is the electric field
up high in different places on the earth.

So, forget this one
for the moment.

That's integrated
over all of them.

Let's look at Africa and Europe
and this is GMT so we see that the peak
electric field in Africa and Europe
occurs at 14.00 roughly GMT.

So, this is in Africa and

Europe roughly early afternoon.

It's when the sun

is the brightest.

Sun is really shining and you see

it's much bigger than in the evening.

Look at the Americas.

The peak occurs at about 21.00.

It occurs later than here.

Again, it corresponds to when the

sun is really up high in the sky.

And the difference between nighttime and

daytime is huge, it is a factor of 10.

There's a big difference

between the two.

So, think about it.

The electric field is high

here and it's low here.

So, that means you've got a gradient:

high electric field, low electric field.

So, in this case you've got a lot of positive

charges here and very few positive charges.

Positive charges

repel each other.

They want to escape.

Where are they going to go?

Well, they're going to go this

way and that gives you wind.

And I think, with this,

I don't have time,

I think this can explain both the trade

winds that blow from east to west

and the prevailing westerlies or jet

stream that flows from west to east.

They occur, originate at the two

different light / dark boundaries.

That gives you wind.

So, what about a gust of wind?

Well, I think a gust of wind could

occur with a local charge gradient

depending on the plants and the

structures that exist there.

I think they, it's possible

that the origin of wind

comes from atmospheric

charge gradients.

Now what about exotic weather?

Seattle is not like Phoenix.

This is what it looks like

in typical winter time

and we get a fair amount of rain

and people get caught downtown,

you know, without their umbrellas

and they rush to their cars.

So, what's going on?

Why, the question is, why in Seattle

do we get a lot of rain in the winter

whereas the summertime it's a bit like

Phoenix although a little bit cooler.

And remember, this is the mechanism

that we've deduced for clouds.

You need the humidity

with negative charge

and you need positive charge

to bring these together.

And of course you need enough

positive charge to bring it together

because if you have a trivial

amount, it won't happen.

So, think about the

winter in Seattle, OK.

Now, when it's

winter in Seattle,

in the summer the earth is tilted in such

a way that in the southern hemisphere

you got a lot of sunshine

occurring, right?

And this lot of sunshine builds positive

charge way up into the atmosphere.

We don't get it here

but we get it here.

Now, where does this

charge want to go?

Well, the charge wants

to escape from here,

the high atmospheric charge,

so it goes this way.

Meanwhile, you have the prevailing

westerlies going this way

and the two are combined to bring

moisture into Seattle in the wintertime.

And so, you're getting a lot of charge

coming and the situation is like this.

You have a cloud, charge comes, right,

and the addition of more positive charge

reduces the negativity

so the cloud gets lower.

And of course, sorry,

a lot of these vesicles begin to be

attracted to these positive charges.

So the cloud begins to, the cloud, because

of the positive charge begins to lower

and because of additional positive charges these

clouds can actually merge with one another

so not only do they get lower but they

get larger and this keeps happening.

Gets lower and it reaches the point
where you have an inductive force,
the negative charge induces positive
charge and that brings the rain.

If it's low enough and it
induces enough positive charge,
the positive pulls the negatively
charged vesicles and we get rain.

The rain is actually
pulled toward the earth.

So, rain or no rain it's, I think,
the cloud must lower sufficiently
past the critical point of inductive
inevitability, then it rains.

It's sort of like an orgasm, you know,
you're almost there and then you're there,
if you will.

Interesting scientific fact.

Some guys, not this
one, this one.

Some guys used high-speed
video to record rainfall
and we all know, if you have
a droplet that's falling,
based on its size, and physical

properties, you can compute the velocity.

Well they measured the velocity and they found that it was up to ten times higher than you could imagine due to to the fall and so they concluded, this is published in Nature, they concluded that there's a pulling force that brings it to the earth.

I need about three minutes, OK.

Now, exotic weather.

For the Australians who are here, I think, this comes from Australia.

We have these thunderheads which can yield intense rainfalls and notice the curvature around here.

If you think about the earth that's rotating, you know.

If you're standing on the equator, it's rotating really fast.

If you're standing up here, the speed is pretty slow.

And so, there's a gradient along here which means, because this is always faster than

this clouds will always rotate
in the counterclockwise in the
northern hemisphere we see here.

So, if you think
about a hurricane,
so here's a cloud that
has negative charge.

It's moving in this direction
at least initially
because the trade winds
push in this direction.

But think about the atmosphere, the
positively charged atmosphere.

So, this cloud is moving in this direction,
compressing all of these positive charges
whereas behind it, it's already passed
through, there's not much positivity left.

It's left a swath where there
shouldn't be positive charge.

So, this negative charge is attracted
to a lot of positive charges.

The two will tend to combine and
when they combine, what happens is,
remember you get more positive
charge with the negative,
this part of the cloud descends.

It releases its rain
and it becomes clear.
And this will be the
eye of the hurricane.
Meanwhile, the cloud is
rotating in this direction
for the reason I showed
you in the last slide
so you come to here and again the
same thing happens with this region
and so the eye becomes larger.
And it starts curling around until you
reach the state where a negative charge,
right, induces positive charge
and the ice sticks to this.
And it keeps going and
building like that
and eventually you get a structure
that looks something like this.
This is a typical hurricane.
And sometimes, you know, you
can get one of these typhoon,
not typhoons, but tornadoes
and think about it.
Again, we have the
rotation occurring here

and what keeps it all
together is the first point
and most of these particles
here are negatively charged.
So, you've got positive charge
that keeps it all together
by the like-likes-like
mechanism.

And by the way, you often see
lightning discharges in these.

So, it's kept together and because it's kept
together this entire thing is rotating.

You get fierce winds out here
and because of the charges,
the induction force pulls
up refrigerators from here.

So we get some idea of what is
responsible for the tornado.

So, I've gone quickly
through the entire cycle.

Evaporation, condensation,
precipitation, ice and snow, and so on.

And I'm suggesting to you that
not only are the mechanisms
different from what
we've all learned

but that central feature

for all of this is charge.

Negative charge and

positive charge.

So, I would leave you with,

charge is absolutely critical

and there's not a single weather

forecast that I've ever seen

that says hey, the charge in the

atmosphere is such and such

and because of the charge we may

expect this kind of weather.

So, I think one day if the atmospheric

people begin to take into account

that the universe is

really electrical,

we'll know whether to bring

an umbrella to work.

And before I end, I have to talk one slide

about the Institute for Venture Science,

because well, for a number

of reasons including,

the next speaker is

deeply involved in it

and Dave Talbott was also involved in getting

this and Susan, getting this started

and the Institute funds promising ideas
that challenge conventional thinking.

And we received more
than 200 pre-proposals.

They've all been reviewed and out of
those 200 we picked a dozen or so
that are extremely promising.

And the people, those people are
now drafting full proposals
which we expect to receive in about, well,
two weeks and this is a going concern.

Of course, we're looking for donors
and anybody who knows people of means
who have done well and would
like to give back to society,
I think this is a really wonderful
way of returning to society
in a way that is meaningful.

So, I end with the book.

The book has become popular
and a lot of the ideas and issues
that led to the speculations,
which is really what they
are, that I presented to you,
come from this book, where
you'll find the evidence.

Thank you very much!

Comet Siding Spring

The discovery occurred on January 3rd, 2013 -

a comet racing toward the inner Solar

System, it just past the orbit of Jupiter.

at the time of the discovery

the comet was 670 million miles

from the Sun - that's about 7 times

the distance from the Earth to the

Sun. So, why would a comet begin discharging

in such a remote deep freeze? The first to

observe the comet was Robert McNaught

at the Siding Spring Observatory in

Australia - that's the name, C/2013 A1

Siding Spring. Calculations soon showed

that the comets trajectory could bring

it into a collision with the planet Mars,

but whether the comet's arrival would lead

to a collision with Mars, or a near

collision, cameras on the surface of Mars

and in orbit around the planet could

record the event. And, that possibility

provoked excitement amongst comet

investigators and planetary scientists

exploring Mars and its environment.

New calculations soon gave more precise

figures for the comet's trajectory.

It would not collide with Mars, but approach the planet within some 88,000 miles (well under half the distance from Earth to the Moon). Under standard comet theory this would be a visitor from the conjectured Oort cloud, surrounding our Sun in a remote space. So, comet scientists expected that instruments on the surface of Mars and in telescopes orbiting Mars would provide an unprecedented look at the ingredients of an Oort Cloud comet.

"Comet Siding Spring - an Oort Cloud comet that may contain material from the formation of the Solar System some 4.6 billion years ago."

Estimates place the size of the comet in under a half mile in diameter, however that calculation was not based on direct observation of the nucleus - it was derived initially from assumptions about water production. Astronomers just assumed that the hydroxyl molecules initially detected were created by water molecules from sublimating ices interacting with ultraviolet light from

the Sun. That would require heating at the comet's surface up to the level necessary for surface ices to sublime.

Icy surfaces in Jupiter's deep freeze do not sublime even close to the rate of water production that we observe with an active comet at such distances.

That's not a fact to be ignored, and keep in mind that laboratory experiments decades ago had already demonstrated the production of hydroxyl electrochemically with no contribution from water.

For electrical theorists, that's the overriding question: would electrochemistry play a role, possibly an indispensable role, in the encounter?

Well prior to its arrival at the Martian orbit, the comet was ejecting dust at three times the rate projected by theory, and the velocity at the ejected dust particles was more than double expectation.

That mystery has yet to be resolved.

Of course, the electrical theorists were most interested in any contribution of

negative charge from the comet to the upper atmosphere of Mars.

On its arrival at the Martian orbit, Siding Spring was traveling about 35 miles per second and the effects of the planet's entry into the tail of the comet were quite spectacular and almost instantaneous explosion of electrons in the margin upper atmosphere.

Investigators speculated that this blast of electrons was due to ionization of cometary dust. The dust particles must have collided with air molecules from Mars stripping away free electrons but, even at its surface, the Martian atmosphere is well under 1% of the density of Earth's atmosphere and the uppermost region, the ionosphere, of Mars is an extraordinarily rarefied layer.

Could ionizing collisions actually explain the remarkable changes in electron density, a sudden doubling in the electron count? We can only pose the question here, since data is still sparse but electron densities in the vicinity of comets have puzzled

scientists since the first encounter

with a comet in the mid 80's.

That was when more than one probe reached

Comet Halley to find a density of

negatively charged particles,

forbidden by prevailing theory.

Earlier theoretical challenges should not

be ignored when new discoveries bring

similar challenges. Could the litany of

comet mysteries be due most fundamentally

to a theoretical mistake, a failure to see

the electrical nature of these bodies?

It was the most ambitious undertaking in

the history of comet science: the

European Space Agency's Rosetta mission

to Comet 67P Churyumov/Gerasimenko.

The probe was launched on March 2, 2004

beginning a 10 year journey

to 67P arriving at the comet in the

summer of 2014. Following orbital

corrections from May through July 2014,

the Rosetta craft was placed in orbit

around the 67P nucleus. Then, in August

and September, onboard instruments began

gathering data including the first

mapping of the surface. It would orbit

the comet nucleus for well over a year
and the mission would include the
anticipated touchdown of a lander named
Philae, on the surface of the comet.

From the moment of Rosetta's arrival at 67P,
investigators faced a succession of
surprises, all told, a challenge to every
standard assumption about a comet as a
'dirty snowball'. The unsolved mysteries
included two distinct lobes joined as
one by an improbably narrow neck; no
appreciable water ice, even in the most
active regions of the nucleus, for theory
would require at the very least some hint
of ice at the source of the comet's jets.

The rudimentary molecular building blocks of
the Solar System billions of years ago -
nowhere to be found. Though, confirming such
stardust in comets was an original
purpose of the mission. A rock-like surface,
partially covered by dust, but so hard
that the Philae lander bounced off the
surface and was nearly lost.

Fields of rocky debris scattered across the
surface, all suggesting formative processes
flatly disallowed by the standard

theory about of a 'dirty snowball'.

Exposure of cliffs with well-defined terracing,
but no common orientation, just a jumble
of segmented blocks (as if) carelessly
thrown together. Pervasive small
nodules that should not be there but
are seen embedded in the surface relief
wherever the hard surface is exposed.

So-called 'sand dunes' and wind-streaks in
the regions of gathered dust with no
wind available, in the extreme vacuum of
space, to create them. A bizarre alignment of
the wind-streaks, north to south, but no
reason given for this consistent
directionality; baffling changes in the
dust configurations during the period of
observation, something never expected and
too (obviously) prohibited
under standard assumptions.

Acceleration of voluminous dust away
from the comet at velocities simply
unachievable by mere sublimation of
surface volatiles; absence of any
openings to the imagined pressure
chambers beneath the surface, the supposed
sources of the comet's jets. And, no

energy profiles of the jets that would be consistent with the theorized the explosive release of pressurized gases.

The confinement of the comet's jets in narrow filaments, in stark contrast to the well-known explosive expansion of pressurized gases in a vacuum.

Enigmatic electromagnetic oscillations, or so-called sounds of the comet.

A cloud of high-energy electrons close to the nucleus, though the presumed neutral body and neutral space gives no electrodynamic basis for such charge separation. Abundances of molecular oxygen, or O₂, though this molecule is far too reactive to survive across the imagined epochs of Solar System evolution.

Concentrations of hydroxyl ions and water molecules in the coma with virtually no water on the surface to account for them. From one comet visit to another, it seems that the mysteries have only deepened.

But, the first requirement for progress in science is to make sense of the surprises; if every major discovery comes as

a surprise, that pattern demands a new
theoretical framework: comets are not
what we thought ...

In the review that follows, we will show detail
by detail that the great surprises of
comet science are, in fact, the
predictions of an electric comet model.

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts.info

The geological features of our planet tell an astonishing story, a story that defies explanation based on standard theoretical processes.

In this series of videos, Thunderbolts contributor Andrew Hall, has explored theoretical pathways which draw analogs between Earth geology and some of the most powerful atmospheric phenomena seen in the solar system. As Andrew explains in Part Six of his ten-part series, the key to understanding this analog, can be found in the properties and nature of water. In Part Five of this series, we looked at “boot print” craters and found there are cyclones raging on Jupiter right now that can explain them. Shock wave patterns in the crater rims provided confirming evidence. We also looked at California's mountain and valley structures and correlated those with a storm on Jupiter that displays in great detail the very same features. The examples we've looked at point to one

significant observation: that fractal forms associated with the process of charge diffusion, can be found in both geology and weather. Why geology and weather should match really isn't hard to understand. Capacitance between Earth and sky are responsible for that, forcing charge to diffuse through each layer in mirror image. And that should suffice for an answer if our atmosphere were considered a plasma; charged particles responding to Earth's spherical capacitance would make sense. But Earth's atmosphere isn't considered a plasma. Neither is Jupiter's for that matter. Where are all the charge carriers? The answer isn't in particle physics. It's in the molecule of water. Water is the charge carrier - the electric wires of the circuit. Water is bi-polar and so adopts polarity in an electric field. This produces something called "bound current". Unlike a current of free electrons and ions, a bound current is carried by a bulk material that can be polarized or magnetized. An example is a

ferromagnetic fluid that takes structural form in response to magnetic fields. Water is an example of bound current due to polarization of the water molecule. Water also changes phase: from vapor to droplet to ice crystal, all in the course of a weather cycle, which changes its electrical properties. And it's self-ionizing, readily shedding electrons to generate plasma. A cold plasma is only partly ionized, a few free electrons and ions floating about. But magnetic fields are created with any moving charge and magnetic fields influence their motion, and water follows because it polarizes and acts like a big, fat charged particle, making clouds into conduits of current generating stronger magnetic field. Star-like filaments and concentric rings form in thin cirrus of the upper atmosphere. Condensate filaments make turns and shoot tendrils at 90 degrees, crossing other filament paths and interfering in herringbone patterns. These are drift currents, responding to the pull of far-field

potential within that layer of strata.

Closer to the ground fat water clouds form cellular structures often in tetrahedron shapes which amplifies water's polarity to a macro scale. Watch puffy cumulus gather for a storm, ultimately knotting into a torus around up-welling winds to birth a mesocyclone, and you are seeing a fractal electromagnetic structure of Nature at work. Airborne dust, pollen, aerosols and dander cloud the air close to the ground and react between surface and sky to form a charged sheath, polar-opposite to the water clouds.

Higher up, where ice forms, wispy cirrus change polarity again. The result is multiple layers of charged, cold plasma between the ionosphere and Earth's surface. The sky is electric but consensus science doesn't seem to recognize that. They will say there is no evidence of charge densities high enough for plasma. That distances are too large to create double layers and develop capacitance. What they don't recognize

water's role, and frankly I don't think they're looking. They are looking for answers to their preconceived notions about carbon's minor role in all this and aren't even asking the right questions. Just look at the clouds and what you see is an electric field, writ large across the sky. It really couldn't be more obvious. Just ignore the scientists and use your own noggin. It's better if you're not institutionally taught to ask the wrong question. Then take a look at Google Earth and compare to NASA's images of Jupiter. You will see all the patterns of Jupiter's storm clouds reflected in Earth's geology. Mountain ranges and desert dunes carry the shape of the winds that formed them. Rising columns, violent downbursts, precipitation, whirlwinds, and lightning brushed the land like a painter and left indelible brushstrokes. The similarity of shapes and weather comes from internal circuitry of the planets. This means that Jupiter and Earth are very similar in that regard.

Repeating fractal forms at different scales is one proof of a fractal process. Fractals emerge naturally in chemistry, fluid dynamics and biology, but the process that defines them all - the common denominator - is the process of charge diffusion in an electromagnetic field. It manifests not only at the particle scale, but the atomic, molecular, and cellular scale, and produces fractal forms at the macro-scale because they are made coherent with electromagnetic fields.

Now let's raise the voltage a bit on Earth and see what happens. A correlation between the Colorado Plateau and the Great Red Spot (GRS) on Jupiter has similarities of such complexity in detail that it seems absolutely surreal.

Inflow to the GRS appears in two sinuous lanes of rolling winds that correlate with the mountain ranges in the Pacific Northwest.

These snaking flows of wind feed a giant thunderhead that occupies the lower third of the image of the GRS, where white anvil clouds obscure what's below. Such

a mesocyclone careened over the Great Basin, extending its entire rotating wall cloud clear to the ground. The Great Basin was formed by rippling waves of dust-laden winds spun beneath a 100 mile wide funnel, lashed by torrents of rain. The parallel rows of basin and range mountains, that march like rippling dunes across Nevada, were laid transverse to the wind. In the annotated image, wind fronts are denoted by dark blue lines, and there's an S-shaped range at the inflection point where the in-flow winds bent to the rotating updraft. The blue and violet lines denote the wind direction, exiting east at high altitude over Provo, Utah where it made no mark on the land - until it water-fell on the other side of the shear zone that formed the Wasatch Range, spilling a violent downdraft into the Uintah Basin. Another, large flanking downdraft flows south over the Wasatch shear zone and spills down to form the Mogollon Rim, the southern extension of the Colorado Plateau arcing south-east from roughly, the Kaibab rim of the Grand

Canyon to the Gila River in New Mexico.

The wind formed rim is intermixed with volcanoes. This was a wet, rotating mesocyclone, carrying considerable moisture which precipitated out and evaporated, forming salt basins behind ranges and culminating in a rain curtain over what is now the Great Salt Lake and Bonneville Salt Flats. The long, linear mountain ranges of the Great Basin are in many cases windswept dirt. Hard rock, which indicates heat and recombination of ionic matter is absent, or minimal in many cases, which indicates low-density lightning in this region. The triangular faces of shock wave reflections earmark the wind direction. Often, no triangular shock features are present, indicating subsonic flow, so many hills take a recognizable sand-dune shape. Where the storm down-drafted to the northeast, it landed in the Uintah Valley and joined the ground winds of another rotation. Actually, it's two primary rotations that sucked wind from the north, to form

enormous pressure ridges perpendicular to the wind direction: the wind river and Uinta Mountains. The mountain ranges formed as lightning arced to ground and charged diffused across the land and channeled currents which form dikes. Dikes are walls of rock formed from the country-rock fused together, and often display troughs alongside where material sucked to the current. An example is the Tetons, where Grand Teton itself is a lightning generated fulgurite surrounded by smaller fulgurites, blanketed with wind driven dunes. The Teton fulgurite extended a dike to the south which collected dust against it, which drew more lightning to it creating a mountain lobe. Wind piled material against dikes to build a mountain lobe and leave one flank patterned with the sonic shock of the wind. Winds deflecting horizontal to vertical left ruler-straight ridge lines of tetrahedrons where shock reflections patterned diamond-shaped regions of expansion and compression. The wind was pulled by twin

whirlwinds created by a grounded
current loop. Its footprint is a dome and
crater pair. Dome and crater pairs are
created by what I call a coronal loop,
because, electrically, it's the same as a
prominence on the Sun. It's a ring
current couple to the land and wind
sucks up one side in a mesocyclone
that leaves a dome, walled by inward-
pointing shockwave tetrahedrons. The wind
loops from the thunderhead anvil to feed
the center of a down-drafting cyclone,
the footprint of which is a crater with
outward-pointing tetrahedrons. This pair
is squished into almost polygonal shapes
because it's pressed between larger
rotations. The Wyoming vortex is the
smallest of three primary vortices of
the larger multi-vortex storm in the GRS.
It isn't apparent in Jupiter's clouds,
but I suspect it's there underneath the
anvils. From the South, hot dry winds
scorched across Mexico and the American
Southwest with counterflowing winds.
Along the turbulent shear zone between,
kinks appear in the Sierra Madre

Oriental, where north-flowing jet streams mixed with a south-flowing stream that formed the Sierra Occidental and the alto-plano in between. The kinks in Mexico's Cordilleras match remarkably well the kinks of turbulence where inflow and outflow winds mix adjacent to the GRS. That's probably an understatement. There are details here to fill a book, but take a close look on Google Earth at these kinks to see some amazing wind and shockwave features. We looked in an earlier episode at the overall morphology of winds in the very eye of the GRS and the Colorado Plateau. So, now let's take an even closer look. The eye is a multiple vortex cyclone, which displays a complex system of coronal loops that twist the wind into a crocheted doily pattern. There are several paired updraft domes and downdraft craters centered on the Colorado Plateau and Rocky Mountains. The most distinctive is the San Rafael Swell in central Utah. The swell is ringed by explosively charged, dense region of

recombination and magnetic pinch known as the San Rafael Reef, where its rows of dragon's teeth - tetrahedral monoliths of hard, fused sandstone - provide evidence of a shock wave at the boundary of the updraft. The reef is the rim of an updraft dome formed beneath an intense coronal loop that raged electrical havoc on the land at the sharp end of the storm. The dome behind is shaped like one lens of an eye glass, the other lens an inverse copy, made by the downdraft of the same coronal loop. The downdraft crater has a central peak of lightning-struck mountains where a material drew up in winds generated by the return stroke of the lightning. The rim of the crater forms Capitol Reef, where more monolithic tetrahedrons display wind direction and Mach angles pointing outwards. Another example of an updraft dome is Monument Valley, Arizona. Its shark's teeth rim is formed by inflow winds expressed in the triangular sandstone layers of Comb Ridge. The interior of the dome is the sputtered remnants of

lightning-diffused mesas and pinnacles,
preferentially left behind as the
landscape around lifted away in the most
intense electric field in the eye of the
storm. The downdraft leg of the Monument Valley
ring current lies in the bend of the San
Juan River, as it passes through the Four
Corners region. Annotated to distinguish
the features, the same eyeglass shape is
evident where this Corona loop connects
with Earth, but the shape is skewed to
the ambient counter-clockwise rotation of
the entire storm system. The downdraft
lies at 90 degrees to the up draft because
of fractal symmetry - something we'll discuss
more later - and the ambient rotation of the eye.

Once again, the crater has a central peak
of lightning-fused mountains, but its
crater rim has largely been swept away
and its face flattened by the pressing
rotation of winds. This is "ground zero"
for the eye of the storm. Note, the San
Juan River arcs around the downdraft
after it passes through the center of
the updraft, just as the tributary of the
Green River wrapped around the Capitol

Reef downdraft crater and then shot through the heart of the San Rafael Dome. These are the fractal forms of surface conductive discharges, or “arc blast” and the rivers are part of it, which we'll also discuss in future articles. A shear zone separates the Wyoming vortex from the eye rotation over the Plateau. At this shear zone, like others, mountains formed beneath upwelling updrafts. In this case, nestled against the powerful updrafts of the San Rafael Swell and surrounding cyclones, it formed in the shape of an oxbow. Here we see one of the wonders of fractal forms. The “oxbow” on Jupiter is a distorted image of the “oxbow” on Earth, with the bows curving in opposite arcs. It seems odd, but nature is kind of dyslexic. Fractals display rotational and translational symmetries, meaning a shape can be in any of several orientations - rotated at 90, or 180 degrees, or flipped about one axis in mirror image, or translated “back-assward”. When this happens, it doesn't change the overall structure it's a part of and the

energy balance remains the same. Harmonic repetitions also appear. The most striking example lies smack between the updraft dome and the downdraft crater of the San Rafael coronal storm loop.

Watch this fractal expression expand in scale. Images are taken along a "z" axis in space from a single point on the ground at varying altitudes. The fractal repeats but the center point of each fractal expression stays in place. It morphs in form with emergent effects, but the fundamental circuit relationship remain solidly displayed. They are the same weather patterns we have today, but of a super-Olympian scale, as told in countless ancient accounts. We need to start listening to the ancients because they knew things that we don't.

Eye of the storm has presented an aerial view of the coupling of Earth's atmosphere to its surface, so far. Next episode, it's time to switch and talk about the other side of the mirror - the dark side of the mirror. Below Earth's crust lie dragons and demons. Thank you.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
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at Thunderbolts.info

Of all our planetary neighbors,
perhaps none have proved more
surprising to space
scientists than Venus.

As late as the mid-20th
century, some renowned
astronomers including Fred Whipple, the
father of the dirty snowball model of
comets, continued to argue that Venus, the
so-called twin of planet Earth, might
have water clouds.

Instead, when the first space
probes touched down on Venus,
they found it to be the
hottest planet in the
solar system and drier
than any desert on Earth.

For many decades, Venus has
only grown more puzzling.

From its absence of
so-called impact craters, to its

retrograde rotation, to the super-rotation of its atmosphere, to the planet's vast comet-like tail which has been found to interact with the solar wind "like a comet."

In fact, only one scholar successfully predicted Venus's superhot temperature and comet-like characteristics.

In his best-selling book *Worlds in Collision*, Dr. Immanuel Velikovsky presented his thesis that Venus was globally remembered as an Earth-threatening comet and will thus be extraordinarily hot due to its recent birth.

In subsequent decades, a number of scholars, originally inspired by Velikovsky, began the process of reconstructing the catastrophic events Velikovsky suggested, applying a rigorous cross-cultural comparison of world mythology.

The evidence overwhelmingly demonstrates that Venus's extraordinary role in ancient astronomy,

myth and religion, cannot be explained in terms of anything observed today.

One of the leading comparative mythologist to explore this question is Ev Cochrane, a colleague for several decades of David Talbott and the late Dwardu Cardona.

As Cochrane exhaustively outlined in his books *Martian Metamorphoses* and *The Many Faces Of Venus*, the relationship between Mars and Venus is just one extraordinary clue to the celestial catastrophes recorded in ancient testimony.

In part 1 of this two-part presentation, Cochrane begins by explaining the genesis of his own research including his and his colleagues' conclusion that certain aspects of Velikovsky's thesis were incorrect.

My initial interest in Velikovsky's work centered around his claim that certain archetypal mythological themes, such as the dragon combat, trace the celestial determinants in astronomical events.

So for example, the universal motif of the dragon, he

identified as a memory

of the Venus Comet.

And so, my earliest articles in

this area sought to investigate this

particular claim, and so I focused on

dragon imagery and the mythology

attached to Inanna and

Ishtar in ancient Mesopotamia.

I was at Iowa State pursuing

my master's program and then

I learned of Dave's research in 1981

and so I reached out to him and visited

him in Portland and slowly but surely we

agreed to collaborate on a series of

articles for Kronos

on the Venus comet.

Dave and I knew from almost day

one that the Venus and Mars cataclysms

were prehistoric in nature and thus

predate by thousands of years the

historical reconstruction advanced in

Worlds In Collision.

So that was a major flaw,

to put it mildly, and so a

fundamental flaw at Velikovsky's entire

methodology was the fact that he tended

to focus on Hebrew and Greek lore, and as a result he often overlooked the precise parallels to be found in the much more ancient Egyptian and Sumerian traditions. Yet, it stands to reason that the oldest traditions, the ones, you know, closest in time to the actual catastrophic events in question, should preserve the most complete record of the events, and so by generally overlooking these ancient traditions, Velikovsky's entire enterprise was compromised.

At the same time, Velikovsky was an amateur mythologist at best and just did not give serious enough consideration to methodology or to comparative mythology and comparative linguistics.

He identified Aphrodite with the Moon, for example.

Had he given the matter much consideration at all from a comparative standpoint, he would have understood that Aphrodite had to be identified with Inanna and Ishtar, and thus had to be the

planet Venus, not the Moon.

Likewise, his attempt to identify certain mythological characters such as Oedipus and Noah with historical figures, is just simply misguided.

As late as 1951, most astronomers believed that Venus was Earth-like in nature and likely home to lush vegetation and various forms of life.

But, as I pointed out in the Many Faces Of Venus, it's a historical fact that conventional astronomers have gotten virtually everything wrong about Venus, so why should we believe them now when they tell us Venus has been moving on the same orbit for billions and billions of years?

At the same time, it's important to distinguish between ancient terminology and modern scientific definitions.

So, in describing the planet Venus as a prototypical comet, the ancient sky watchers were not employing scientific language and somehow implying

that Venus moved on
a wildly erratic or
elongated orbit --
characteristic of modern comets.
Rather, in describing Venus as a
dragon star or long-haired star or comet-
like, the ancients simply meant that
Venus took on the appearance of a
dragon-like object or presented
wildly disheveled hair.

In each case, it's possible
to reconstruct the history of
the symbol in great question during
its historical evolution.

The serpent, for example, after
a period of disorganized
activity, ultimately came to
encircle the planet Mars.

Similarly, in the phase marked by
cosmic disorder, Venus's comet-
like hair was wildly disheveled and
spread out, but during the later phase
marked by the encircling of Mars and the
crowning of the warrior hero,
Venus's hair is tied up or bound or
otherwise brought under control.

And during this latter phase Venus's hair is typically described as green or turquoise blue in color, a clear pointer to the remarkable nature of the events in question.

As noted, Venus's extraordinary role in ancient myth, religion, and the earliest astronomies, has never been satisfactorily explained by astronomers.

We asked Ev for his thoughts on occasional attempts by mainstream scientists and academics to explain the anomaly.

In numerous recent books on Venus and/or ancient mythology, astronomers or scholars are always trying to dream up some explanation for why Venus is associated with this or that characteristic.

So for example, Patrick Moore, the astronomer, was trying to explain why Venus was always regarded as a female.

So he said, "A female association is in fact general; this is natural enough, since to the unaided eye Venus is the loveliest of planets."

I mean, talk about a ludicrous idea, I mean, why would being just lovely have anything to do with being female, why would it be found in cultures all around the world, they'd all arrive at the same exact idea.

Similarly, the astronomer David Grinspoon and Ed Krupp, they both pointed to Venus's phase of a morning star being roughly two hundred sixty three days, and they claimed that because that is a close approximation to the gestation period for a human female, that that explained why the planet was associated with fertility or love.

As if these indigenous tribes in South America were carefully marking out the two hundred sixty three days of Venus's orbits, you know.

So again, it's just laughable that these guys come up with these ideas.

One of my favorites is from the top scholar in Inanna religion from ancient Mesopotamia, and this gal's conclusion was that "Inanna's function as a bestower of kingship and the protectress of the

city-state of Uruk may have given rise to her warlike character, since kingship followed the fortune of arms."

And yet, one page later she gives a different explanation.

She says, "Goddesses of war and victory predominate like Inanna and Ishtar."

And she says, "This may stem from a battle metaphor in which women in childbirth, men in battle were seen as struggling with elemental forces of life and death."

Again, a very distinguished scholar, it

never occurs to her to check and see how Venus was represented in ancient Mexico or ancient China, or these other cultures in which case she'd find that they've represented her as a warrior there as well.

And as a raging goddess, that type of stuff that was comet-like in nature, her idea just falls to the ground almost immediately, as just laughably inaccurate to the puzzle in question. As I tried to demonstrate in various books, Venus's traditional femininity and

catastrophic histories are recorded around the globe, so just a list of the goddesses; you have Inanna and Ishtar in Mesopotamia, you have the Persian Anahita, the Greek Aphrodite, Arabic Al-Uzza...

I chronicled dozens and dozens of goddesses in South America that are typically lumped together under Star Woman category that share the exact same characteristics.

So for example, Star Woman is virtually indistinguishable from Greek Aphrodite.

In other cases however, the original identification with Venus was not preserved, so for example, one of the most prominent symbols in Egyptian literature is the Eye of Horus, and it's clearly a celestial agent, it's clearly a catastrophic agent, but it is nowhere explicitly identified with the planet Venus and yet, the mythology of the Egyptian Eye of Horus is

identical to that of Inanna and Ishtar.

Dave and I have written numerous articles on that subject, documenting that beyond any shadow of a doubt.

So too, the Indian goddess Kali and the Canaanite goddess Anat are both indistinguishable from Inanna and Ishtar as warring goddesses, and yet they were never identified with the planet Venus to the best of my knowledge.

The history of scholarship, with respect to the analysis of Venus imagery, presupposes that the ancient sky watchers were describing the familiar Venus, peacefully moving on an orbit millions of years from the Earth and that nothing could have changed in the planet's appearance and behavior in the meantime.

Yet, such an assumption is entirely unfounded.

Indeed, the mere fact that the planet Venus was described in an Inanna-like terms around the globe, should be enough to refute this conventional position.

How else but upon the basis of common experience of the Venus comet are we to account for the fact that ancient

descriptions of the Venus around the globe are so similar?

As noted previously, it's a mystery unresolved by mainstream science and academia, why the planet Venus would be historically identified as "feminine" and why the planet Mars would be identified as a "masculine" warrior.

In fact, as Ev explains, a remarkable number of cultures described a mythical union between Mars and Venus, which became the basis for many sacred marriage traditions.

The old saying "men are from Mars and women are from Venus" is not of a recent origin.

I mean, this idea has been around since the dawn of time literally, and the identification will hold around the globe, even though there's nothing in the visual appearance or behavior of the planets currently that could ever inspire such traditions.

So, just to take a familiar example: in ancient Greece the planet Venus is inseparably associated with sacred

marriages -- the union of the sexes.

So, Aphrodite is specifically identified as the bride in human marriages, while the bridegroom is, specifically in early Greek documents, identified with Ares.

This is exactly the situation in ancient Mesopotamia, where Inanna is the subject of the sacred marriage and identified as the bride or the female participant in the sacred marriage and Dumuzi is the prototypical bridegroom.

Now, we know this mythology traces to celestial determinants, because the very same situation is found in the New World, where the Skidi Pawnee of North America, have a sacred marriage involving Venus as the female bride in a sacred marriage, and the planet Mars as her husband.

According to the Skidi account of creation, the union of Mars and Venus sparks creation, and in each of these three cases: Mesopotamia, Greece, and North America, the marriage takes place in a verdant garden and promotes fertility throughout the world.

So these coincidences are just too specific
and remarkable to be coincidences alone.

We believe they trace
to common observations.

Stay tuned for part 2

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts.info

New scientific reports from Nasa's Insight mission reveals startling data about the planet Mars. Data which challenges some fundamental ideas in planetary science. In late November of 2018, the Insight Lander touched down on the red planet's surface. One of the most surprising discoveries for investigators came in April of last year, when the Lander detected a rumble of seismic activity. According to investigators, to date they've detected a total of 450 quakes with an average magnitude roughly the equivalent of a 3 to 4 magnitude earthquake. The discovery is highly significant, since space scientists have previously ruled out the possibility of plate tectonics in the Martian interior - the hypothetical mechanism that geologists have long believed causes earthly quakes. As noted in the February report by Smithsonian magazine, "mysterious is the origin of these extraterrestrial trembles. While

earthbound quakes arise when our planet's tectonic plates grind up against one another, Mars lacks the same internal architecture, leaving researchers puzzled about the source of its quakes." However, as is often the case in the space sciences, the notion that plate tectonics cause earthquakes, is a questionable hypothesis, mistaken as fact. Indeed, the existence of seismic activity on Mars, is just one among several reasons to explore new theoretical pathways in Earth seismology. For decades, a number of scientists have proposed that the Earth-Sun connection plays a major role in triggering earthquakes. Some of the evidence that seems to support this view, includes the apparent correlation between sunspot activity and earthquakes. Along these lines, it's been proposed that changes in the geosphere result from a temporary intensification in Earth's magnetic field. In 2020, geoscience has yet to explain a host of strange phenomena that have been

observed for many centuries preceding large earthquakes, including mysterious low-frequency electromagnetic emissions, rapid unexplained changes in the ionosphere, major temperature anomalies seen in satellite images, the observation of so-called earthquake lights from ridges and mountain peaks, and unexplained animal behaviors, including migration several days before a destructive quake. As early as 2003, Dr. Friedman T. Freund addresses these anomalies in his scientific paper: rocks that crackle and sparkle and glow, strange pre-earthquake phenomena, published in the Journal of Scientific Exploration. Dr. Freund proposes an explanation for earthquakes which would actually place the phenomenon in the realm of semiconductor physics. In the paper, Freund states that rock acts like what is known as a p-type semiconducting material when placed under stress. Deep within the Earth "positive holes" are liberated and flow to the Earth's surface, collecting there without being

reabsorbed, which is the proposed mechanism behind earthquake lights. In the 2013 paper, Nature of Pre-Earthquake Phenomena and their Effects on Living Organisms, Dr. Freund offers a simple summary of his hypothesis, which could explain some of the anomalous earthquake-related animal behaviors. "Earthquakes are invariably preceded by a period when stresses increase deep in the Earth. Animals appear to be able to sense impending seismic events. During build-up of stress, electronic charge carriers are activated deep below, called positive holes." "Positive holes have unusual properties: they can travel fast and far into and through the surrounding rocks. As they flow, they generate ultra-low frequency electromagnetic waves. When they arrive at the Earth's surface, they can ionize the air. When they flow into water, they oxidize it to hydrogen peroxides. All these physical and chemical processes can have noticeable effects on animals." In the Electric Universe,

the electrical nature of the Sun itself provides the missing link between sunspots and earthquakes. The Sun is connected to the larger electrical circuitry of the galaxy and the same electric discharges to the Sun that cause sunspots can affect our planet's ionosphere. As physicist Wal Thornhill explains in his 2005 article, "Electric Earthquakes", "The ionosphere forms one 'plate' of a capacitor, while the Earth forms the other. Changes of voltage on one plate will induce movement of charge on the other.

But unlike a capacitor, the Earth also has charge distributed in rock beneath the surface. And if the subsurface rock has become semiconducting because of stress, there is an opportunity for sudden electrical breakdown to occur through that rock." Thornhill proposes that underground processes occurred similar to those found in atmospheric lightning. The small-scale traveling of charge results in precursor electromagnetic effects, perhaps similar

to the so called stepped leaders between cloud and ground with lightning. However, larger earthquakes may involve a vast electric circuit from below ground, through the atmosphere, to the ionosphere.

In other words, Thornhill suggests that the Earth stores internal electrical energy, which can trigger subterranean lightning which may cause deep earthquakes. In this view, massive disturbances of the ionosphere, accompanying major earthquakes, are expected. The Martian environment is of course very different from Earth's. On our planet, Birkeland currents entering the poles, spark aurorae and modify our planet's magnetic field.

However, Mars is said to have no global magnetic field and its atmosphere is extremely tenuous - only about 0.5% as dense as Earth's. When solar storms impact Mars, the result can be a global aurora which NASA's MAVEN spacecraft observed in 2017, along with radiation levels at the planet's surface that more than doubled previously

detected levels. In recent years, scientists have observed other dramatic atmospheric and geologic events, which have coincided with impacts from solar protons storms at Mars. For a number of years, astronomers have puzzled over dramatic dust plumes, sometimes seen erupting up to hundreds of kilometers into Mars's upper atmosphere.

As we reported in 2016, scientists studying Hubble Space Telescope images of Mars, found an apparent correlation between one such plume and the likely arrival of a CME at Mars. The lead author of a Nature paper on the Martian plumes said of the discovery, "There is a coincidence of both events at Mars, the CME arrival and plume observation. Therefore, it seems plausible there was a relation between both events." The New Scientist report states of the finding, "One possibility is that plasma could be interacting with ice grains or dust lower down in the atmosphere and electrically charging them, boosting them higher, but it's not

clear how the effect would be big enough.”

In fact, dust storms on Mars which sometimes last for months and engulf the entire planet, as well as the towering dust devils which reach the size of Mount Everest, remain unresolved mysteries. Again, with an atmosphere only about 0.5% as dense as Earth's, how is the dust excavated from the surface and held aloft in the near vacuum of Mars's upper atmosphere?

What accelerates the winds and dust, up to speeds greater than 250 miles per hour? And why should the storms be composed of packed congregations of dust devils, as seen in this image from the Mars Odyssey mission? For well over a decade, NASA investigators have noted the tremendous electric fields associated with the dust devils. From the Electric Universe perspective, dust devils and tornados, both on Mars and on Earth, are themselves forms of electrical discharge. The Electric Universe has always predicted that the Martian ionosphere is electrically charged even though, unlike

Earth, it has no thunderstorms. This viewpoint is outlined in the 2005 TPOD, 'When Dust Storms Engulf Mars'. "On Mars, electrical effects will reach directly the ionosphere to the surface without the ameliorating leakage via storm clouds that we see on Earth.

Unlike radiant energy from the Sun, electrical energy can accumulate in the 'planetary capacitor' for some time, with a potential for planet-altering events when the atmosphere finally 'breaks down' and massive discharge activity is initiated." On Mars, as on Earth, could an electrical circuitry from beneath the ground, to the atmosphere, to the ionosphere, be driving seismic activity? Of course, planetary science has only begun exploring the Martian environment, so from any vantage point surprising revelations are to be expected. However, the discovery of seismic activity on a world with "no plate tectonics," is not a surprise to proponents of the Electric Universe. But it might serve as a call to planetary

scientists, to begin exploring
theoretical alternatives, such as those
offered by the Electric Universe.

[Music]

welcome to space news from the electric
universe brought to you by the
thunderbolts project at Thunderbolts dot
info it is a great paradox in comet
science we are told that a comet nucleus
is a ball of ice or dirty snowball or
icy fluff ball it accreted billions of
years ago in the solar system's infancy
comets are said to sublimate ices as
they move toward the Sun and solar
warming is responsible for much cometary
activity including the energetic Jets
and the production of the familiar coma
entail more recently as the required
ices have not been observed on comet
nuclei scientists and science media have
taken to referring to comets as quote
deep-fried ice cream insisting that the
body of ice must be present but is
buried under an outer crust if his
reasoning leaves unexplained countless
puzzles and comets science for instance
it is an unresolved mystery how a
so-called ball of ice deep-fried or
otherwise can survive an extremely close
approach to the Sun as we see with

occasional sungrazer comets in 2011 the Comet Lovejoy astonished astronomers when the comet nucleus somehow survived intact after one hour in the Sun's corona also unresolved is the question of how comets begin producing evidence of water in their comas and vast distances from the Sun much too far to explain through solar heating such was the case with the comet 67p whose apparent water output as well as the production of an amazing abundance of rich molecules was first detected while still hundreds of millions of kilometres from the Sun and countless other enduring puzzles abound we asked the question can the science of electrochemistry provide the answer to many Comet mysteries dr. franklin anariba a specialist in electrochemistry was a featured speaker at the Thunderbolts project's international conference the tipping point in 2013 dr. anariba is also scheduled to speak at the forthcoming 2015 conference path of discovery taking place June 25th

to 29th in Phoenix Arizona we now
present you in full dr. anariba z-- 2013
talk commentary electrochemistry a
transcript of the talk may be found in
the description box of this video ok so
what I want to do here is try to give
you an illustration of what can happen
actually in comets so as you can see the
time of my my talk here is cometary
electrochemistry and actually that's the
only thing that's new here is the term
when you look at the leadership for
instance you see the astro
electrochemistry actually is this plenty
of material air
I sure do chemistry means that allowed
the reactions that happen in space
I actually driven by a potential
difference in addition I came across a
series of Russian scientists who
actually proposed that electricity in
the nucleus of comets can actually drive
that the icing process of say water of
methane so those ideas and their new
ways new here is the idea that you have
electrochemistry or electricity driving

chemical reactions either in the nucleus
of the comments or in the comments or
the comments that's what's nice and
that's what I want to talk about and I
figured that most of you don't know who
I am and so I just wanted to point here
the fact that I live in Singapore
I've been work living working there for
4 years and I think some of you I think
I talked to being there before alright
so this is the outline of my talk it's
going to be brief and I'm gonna keep it
simple because of the audience is very
diverse tell you a little bit about what
is electrochemistry why is the
composition or comets and how the
combination of these two concepts can
actually allow us to provide with a you
know it's like a framework of reactors
happening in comments I'll also mention
the other chemical model in question the
question about cyanide production and
how the model can explain this and I
just make a 1 prediction if this model
is correct there should be one
observation that which

to see in the future okay so what is
very interesting for a chemistry
standpoint is that energy in a way
electricity it's kind of freeing nature
this is a very good example here and you
probably know this this is a zinc
material and here we have a copper and
once we connect this to what's going to
happen is that electrons that are
actually in the zinc we actually go in
direction of the copper now electrons
going
flowing in a particular direction is
electricity this happens in
spontaneously so nature I should give us
free energy the energy that you need to
spend is in how you arrange these
materials so that's that's the main
concept here now another concept I want
to I want to be pouring here is this in
electrochemistry if you have this
particular self which is suitable take
cell as a function of time what's going
to happen is the zinc material will
actually dissolve it give us of the
electron and a same time dielectric come

from the atom they actually covers a higher right so in the negative side in a negative region of the particular cell you get the solution and on the positive region here in the copper you're going to get a accumulation of material this material comes in because this is this copper here is in solution this is a copper solution right but any other material be attractive because in this region you're going to have extra electrons so they'll be attracted to it will capture this electrons and the material we accumulate so a key point here is that you have active electrons you're going to have this solution on the negative region you can have accumulation of material in the positive region that's the key part in this slide now energy like I said before is naturally storing metals we can harness it it's not difficult to harness it we actually do it all the time the example this is a batteries batteries is its energy right this is story in the only difference here is how

is a range that's it
another concept that I want to introduce
here in this slide is the idea having
inner electrodes here show you active
electrons they actually the electrode
itself actually dissolves accumulates
and in this particular example here I'll
say that
have electrodes which actually provide
only the surface with the
electrochemical reaction occurs good
example these are carbon gold palladium
platinum for instance because there are
no reactive materials right now this
will come handy when you think about the
nuclear of comment interactions actually
occurring in that particular case in
location now I know some of you have
know began to chemistry the chemist is
actually a very difficult subject so
what I'll do here is I'm going to tell
you what is the main concept of
electrochemistry it's very simple you
can have a reduction in oxidation
reaction here's an example of an
oxidation reaction which occurs in a

negative charge region and I'm doing this on purpose because the terminology that we use electrochemistry is different from physicists and engineers in terms of cathode and anode so in the negative charge region you have the say for instance I add some of our atom it gives up three electrons and you get an iron right these electrons over here if you're able to push them in a particular direction is what give us a current and the reduction will actually occur in the positive region

yeah good example here two protons plus two electrons will give you a hydrogen gas all right so now this is the basic electric current this is what cannot survive to carry at this point well well do now is talk about comments why is the compositional comments well now we know the comments are actually formed by several minerals kind of minerals this is a good example over here this is olivine associated walk this means that you probably associated with high temperatures maybe with lightning and

this is just various forms of olivine
and while pinpoint to you is the fact
that they have the rich in transition
metals so this issue metals are
important in actor chemistry because
either they provide a surface or they
provide electrons that easy to reduce an
oxidized
they have various oxidation states
another point about the people in here
is it is all silicates silicon and
oxygen silicon oxygen a very abundant
oxygen is a very rich lecture or atom
electron rich which can also provide the
lectures to provide current
provided you have a potential difference
another example is vision height
associated with Mars and moon meteorites
again very reaching iron Cuba Knights
copper iron and sulfur form in liquid
water this has been found in comets this
is very interesting because that means
the very complex chemistry going on here
also rich in in iron
another decision made at that have been
found in the nuclei of comets are

titanium vanadium in the form of nitrous
platinum Ozma vitinho toxin malignant
just to mention a few
so you can see is very complex the
compensation for electrochemical points
complex in comments in the comment or
comments this is the several gases that
we identified carbon monoxide carbon
dioxide series of oxides with nitrogen
software oxides hydroxyl and I left our
oxygen a night a molecular molecular
oxygen molecular nitrogen so did you
find all this compounds in comets that
will tell you already that this is very
complex chemistry going on here in
addition to that you find organic
molecules methane cyanide meth no eating
anything
ether ammonia carbonates D so again the
level of complexity is beginning to get
more higher I would say and more complex
organic molecules I'd be identifying in
comments I mean let's use natural for
instance vinegar or acetic acid
amorphous carbon you can think about
charcoal polycyclic hydrocarbons with

very important in in in agriculture for
instance people who you know the work
and culture they always talk about P
ages because they control basically the
pH and in soils for instance and
surprisingly dry soon this is an amino
acid so how can this motor work twelve
artists of chemistry I'm talking about
the composition comment so how can we
apply this major chemical model here is
a cartoon and it's not up to scale as
you can see

thusly we have the Sun and here we have
the solar wind which are called the
proton flux because that's mostly the
composition even though there is no
electrons in there and here we have
nuclear a nucleus da steel ion plasma
tail in a coma this is what this is what
we see right this is the typical
observation for comments so why am i
proposing here is this paradigm or this
model can be true if we show that we
have a potential difference in this
particular case making the Sun the
positive region because of that or the

other protons and of the solar wind and
the nuke the nickels would be the
negative region now if you're able to
show this then you can apply with our
fear and to chemical model so this is
the key part I think this is why it's
going to take us a lot of time in the
future try to show that there's a
potential difference here you can do it
indirectly now in detail how is this one
going to work well we work at the
following way here is a electrical
negative region which is can be the
nucleus right because it's rich in
minerals with silicates and to set your
meadows and here it would be the solar
wind which surrounds the nucleus as the
comet approaches the Sun okay so what we
need to do here like I said before is to
have a potential difference if this is
the case this would drive any reaction I
saw you know the key part here is that
the potential difference is big enough
to drive there any reaction that you
want we do this in a lab all the time
now this potential difference is going

to create a current flow from the nucleus towards the positive region which is the solar wind while doing so you can see the comet why because what happens is you have this flow of electrons the electrons gonna collide with some of the electricity on these molecules say for instance carbon monoxide right so the electron there's been driven from the nucleus towards the positive region we go to the coma live with some of gasses it's going to excite electrons first we'll see concealed carbon monoxide to a higher energy state we need the case down it is going to give off energy this energy is the one we see in terms of you know in the visible range right so the intensity of the coma and the colour of the coma would depend on what kind of gas is being excited right so it depends on the abundance now what kind of reactions can we have on the nucleus and if I get it will be a complex of some of you because this is chemistry but I will keep it

simple here we know that iron two-plus
for instance exists in these minerals
right it's a really iron but if you have
a potential difference thermodynamic
squeaking this is possible you can give
up an electron this electron means
current the same for manganese and so on
so forth even you can even have
manganese right with some of the other
water vapour or gases that can be in the
coma you can have more complex
structures you can find you can find
solids manganese oxide for instance and
again you get current some of the
silicate material that I show you I cook
the a part of the mineral can react with
protons from the solar wind and you can
get some of hydroxides I mean the
possibilities are endless right because
we all know exactly what's really
happening there the point here is you
can get current and you can get material
what happens when the part of the sorry
on the positive side I can envision only
one type of reaction and it is the
formation of hydrogen gas that's it all

right okay so in more detail if we have
you if we have a common here this is a
cartoon this model can actually explain
the plasma formation of the coma right
depending again on put or the abundance
of all these gases maybe all the gases
are left up so for instance if you have
80 % light abundance you get one
particular color but again tensi-
ty if you have oxygen a higher abundance
80% the color of the coma and intensive
the coma is going to be different well
let me see if I can finish this up soon
the plasma tail can be explained by the
formation of ions the plasma tails most
positive ions you can explain here in
addition to the
the dust tail can be explained by the
formation of these solids oxides
hydroxides in addition to that also some
chunks of minerals and most importantly
here is a I wanna start talking about
and thinking about this particular model
I predicted the formation of hydrogen
gas
even before I read the literature

because I have no background on comets
and was able to see here is that I was
it was very exciting
he's a help Bob for instance comment a
hydrogen cloud was actually observed
very large hydrogen cloud
so this mod also explains that now how
can we know it is he like to connect a
Prosecco hang on in comments there was
this particular exhibition four years
ago silent information and not dust
formation so what happened here is this
in the standard model whenever you have
sublimation of a gas dust will always
form because the idea is that you have a
dirty ball or dirty ice ice wall right
so sublimation of say water will
actually bring out formation against
excuse me of particles in this case we
don't see that so how can we how can we
explain this electrochemistry two
different ways one way is the standards
of chemistry where their action actually
occurs in the nucleus right you know I
was able to see for instance and I'm
rushing here because of time was able to

see here is that I mean amines I should
precursor for signed affirmation
provided you have acidic conditions in
the presence of protons so that in the
solar wind is it's a it's makes it
amenable viable so this is a methylamine
we have a glycine a more complex it
means well so as you have these
structures they're in a coma and the
nucleus you can get you can get cyanide
and I'm going to skip this like ago I
just gonna make sure very quick is that
this is a way that you can actually do
experiments on the lab you can actually
have those gases in this container here
you have two electrodes tungsten and
soon still you apply a potential and you
carry the reaction what you have the
reaction you apply electric field you
push it into a mass spectrometer and you
can detect the product and this work has
been done already by
Navaro Gonzalez in national university
of Mexico he was trying to simulate time
to simulate the reactions in the
atmosphere of Titan and that's what he

did so this is elect in 1967 work by
Matthew see in Matthews I think was
mentioned yesterday that this particular
experiment will actually give you amino
acids but this particular experiment
also give you if you have a combination
of methane in ammonium once you give you
sign our articles if you have a coronal
discharge and this has been done this
experimental data you'll also get
hydrocarbons in Sinai importantly if you
simulate lightning in nitrogen and
methane

you also get had the carpets in silence
so there's two possibilities here and I
got a few more slides I think to go here
what I'm going to show you here briefly
is that you can have a reversibility
between CO and in alcohols CO and
alcohols Co and alcohols and methane so
there's no direct connection between CO
and in cyanide which I was looking for
it's a two-step process you can have the
reduction of CL into into into methane
and then this can be - you know maybe
electrical discharge form cyanide this

is the two-step process I didn't find
one voice directly and this is the last
slide here so please bear with me I got
17 minutes I think I got one minute left
this is a soccer ball tomogram some of
you have never seen this before
alright so let me see if I can I can
help you out follow it this is a graph
of voltage in this direction and current
in this direction I did I didn't write
it here mine my negligence this is
current this is voltage if you start up
voltage a and I give you the direction
over here this is you know you have two
electrodes and you have a solution for
instance or you have gases if you if you
go from voltage a voltage B and you have
chemicals in his system you be able to
see sort of reduction process here so
whatever chemical it is it will gain an
electron or several electrons and you
move it all the way to bowl touch B and
then if you reverse it right whatever
compound you you form here by the
reduction process we
oxidize and it make sure you get to this

point so here you have a reduction
oxidation this is a typical typical
soccer ball time entry process now how
can you supply to comments well if you
this is the the sound here's the idea
about the comment a little bit and this
is the direction come if you go in this
reaction for instance as the comet
approaches the Sun you should be able to
see a reaction why every reaction would
that be depends on the composition as
the comment departs the Sun you should
be able to see another type of reaction
if it is reversible you should be the
reversibility here but okay maybe it's
not reversible but you should be able to
see a reaction here and no interaction
here so this is the prediction that I
make a good example here is going
between amino and in cyanide right I
don't know if NASA had to make these
reservations but this should be
something that you occur all right so
this is the last slide here thank you
for your time and well basically saying
here is that this is a illustration this

is still not a theory
this is just an illustration because I
don't have four weeks to work on this
but it seems to be the distance to
chemical model while you have provided
you have I said I repeat the voltage
difference can account for the hydrogen
gas formation the plasma and the coma
does tale information and the ionized
plasma that you see do you see there and
actually these are and also any other
reaction that doesn't involve dust dust
formation and this model can actually
allow us to predict based on the
reversibility of electrochemical systems
what will happen well thank you for your
time
for continuous updates on space news
from the electric universe stay tuned to
Thunderbolts dot info

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you

and there is nothing to fear.

Discourses on an Alien Sky

With David Talbott

The Myth of the Heavenly Twins

In recent episodes of this series, we've

reviewed the mythic ship of heaven,

a vehicle of the

ancient sun god.

Close to the Earth, a crescent on the

face of the immense planet Saturn,

turned in the polar sky, brightening

and dimming in an archaic daily cycle.

Ancient words and symbols for

this cycle invariably reflect

the symmetrical opposition of the

crescent, in it's contrasting phases.

A phase of growing bright

and a phase of growing dim.

Crescent to the left and

crescent to the right.

Crescent above or below, all in
explicit connection to a daily cycle
with no counterpart in any
celestial behavior observed today.

This unique behavior,
by it's specificity,
gives us an ideal opening to the
ancient Myth of the Heavenly Twins.

It seems that every well-documented culture
preserved memories of the primeval twins,
but few researchers appear to have noticed
the underlying unity of this theme.

The closer we can get to the more
archaic cultural expressions,
the more clearly the improbable
unity will stand out.

Some of the particulars
are long familiar.

Astrologically, the cosmic twins find their most
popular expression in the constellation of Gemini.

Of course, this story itself

is never explained ...

and the constellation is just one of numerous
echoes of the global archetype in later times.

But what inspired

the original idea?

In our reconstruction

of the ancient sky,

the answer comes from the fundamental

role of the rotating crescent,

reflected in the strategic placement and

unique gestures of the cosmic twins

around a central figure and

we see the same geometry

in the two faces of the

ancient god himself.

Two contexts of the

mirror images standout.

The first points back to the

crescent above and below,

and the second to the same crescent in it's

positions to the left and right in the daily cycle.

By far the most data comes

from the Egyptian symbolism,

expressing the mirror-like aspects of the

crescent in the concept of the symbolic Ka,

usually translated as a double.

But why was the Ka hieroglyph

simply a pair of arms?

Our explanation is that the crescent-form,

when seen behind the polar column

that is so fundamental
to this reconstruction,
readily provoked an imaginative
interpretation as two arms or wings.

In fact, the Egyptian Ka symbol was the perfect
expression of the twin-like aspect of the crescent,
one position in the daily cycle appearing as
a mirror or "twin" of the opposite position.

Upright arms in the phase
of growing bright,
inverted arms in the
phase of dimming.

The concept of a "double" in the sense of a
mirror image could not be more appropriate.

The symbolism is abundantly evident in
iconography of the Phoenician goddess, Tanit.

In ancient Egypt, the concept also found
expression in the oppositely placed
twin goddesses

Isis and Nephthys,
in mirror positions to the left and
right of the central sun god Ra
or one of his mythic
counterparts.

This connection to the enclosing
crescent will explain

why the arms or hands
of the twin goddesses
so frequently displayed an enclosing
aspect in relationship to the king.

When paired as twins, divine figures represented
the two halves of the celestial kingdom,
marked out by a revolving
crescent in its daily circuit.

In the Pyramid Texts, the king declares,
"Isis is before me, Nephthys is behind me".

Or, "The two mistresses of Buto
accompany you to the right and left".

Or alternatively, the king
declares that the goddess
"Neith is behind me, and
Selket is before me".

Again, nothing in natural experience today
will account for the pervasive imagery.

The twin aspects of the
giant sphere of Saturn
came to identify that sphere as
the vast womb of creation itself.

"Oh you two who conceived Ra,
you shall give birth to me...

The two great ladies (Isis
and Nephthys) bore you".

"My mother is Isis, my
nurse is Nephthys".

The king ascends upon the thighs of Isis, the
king climbs upon the thighs of Nephthys".

Elsewhere, in imitation of Ra,
the deceased king aspires to
"shine between the
two thighs of Nut".

Keep in mind, that these roles of goddess figures
placed into the service of crescent symbolism
must not be confused with the role of the
planet Venus, the prototypical goddess,
in our reconstruction, a quite
different topic discussed earlier,
with much more
discussion to follow.

Our point here is, that the cosmic
twins find a persuasive explanation
in the twin-like aspects
of the revolving crescent.

For example, the crescent as
the image of a cosmic ship.

See that connection, and the
identification of the sun god's boat
with the cosmic twins comes
as no surprise at all.

The twins, Isis and Nephthys,
were named the "two boats."
Or alternately, the Egyptians invoked
the two boats as Atet and Sektet.
Atet, the descending
boat of "growing strong"
was linked to the left side of the
primeval sun, as we would expect,
while the ascending Sektet boat, meaning
"growing weak" was linked to the right side.
These twin aspects of
the revolving crescent
give us a key to the larger
panorama of Egyptian symbolism.
For the Egyptians, the position
of the crescent above and below,
marked out two regions
called the two "Aterts".

Chapter 141 of the
Egyptian Book of the Dead
identifies the upper Atert
with inactivity or dimness,
usually mistranslated as the
region of the Night-ship,
but literally meaning the ship in it's
phase of dimming or growing weak,

at the top of it's circuit.

Conversely, the texts connect

the so-called "Day ship",

literally the ship of brightness with

the lower Atert, all in perfect harmony

with the symbolism we've already

noted in our previous Discourses.

Right and left, above and below are the

essential qualities of the cosmic twins.

For example, in Egypt we see

the aspects above and below

in the symbolic pairing of

the figures Nut and Geb.

The goddess, signified the upper

region and the male half,

the lower portion of this circuit,

was defined by the male power Geb

denoting also the twin peaks

of Akhet, the world mountain.

Together the two mythic images meant

the unity of the celestial domain,

considered as the prototype of Egypt:

the two lands, upper and lower,

seen as a copy on Earth of the Divine

Plan first displayed in the sky.

The idea was stated

emphatically by Henri Frankfort

in his groundbreaking book,

"Kingship and the Gods".

The so-called 'two lands of Egypt' he said,

"reflected the original order of creation itself".

"A state dualistically conceived must have appeared to the

Egyptian the manifestation of the order of creation."

Indeed, every primary interpretation of

the revolving crescent was, predictably,

linked to the dualities of above

and below, or left and right.

It was not just as a pair of outstretched arms

that we see the twin roles of the crescent,

upright in the phase of growing bright and

inverted in the phase of growing dim.

And not just in the symbolism

of the cosmic ship.

We've seen the same symbolism

of the archaic day and night

in oppositely (or symmetrically)

positioned horns.

And most incongruously, the upright

and inverted twin peaks of heaven.

In all instances, the

upright and inverted forms

express precisely the same connections

to the phases of the daily cycle.

The most fundamental fact about the cosmic twins is that they are not just twins, but they surround and enclose a venerated god, or king, or central star.

Confirmed by simply observing how the symmetrically placed arms, or arms and wings, so frequently enclose and protect the king.

Amongst the most famous of primeval twins were the Greek Dioscuri who, according to the leading expert A.B. Cook, represented two halves of a celestial circuit.

Here we see the Dioscuri in a pose directing us to ancient symbolism of two enclosing arms about a central orb, or star, or divine figure.

Since the cosmic twins are mirror images of each other, it's not surprising that the Greeks retained the connection by placing the central star and the two Dioscuri on a mirror.

In mythic terms, the contrasting twin-like

positions of the illuminated crescent
were the two faces of the
primeval power Janus,
giving rise to the so-called
Janiform countenance.

Thus, Joannes the Lydian,
describes the ancient celebrants
honoring the god Janus on the
first day of January, his month,
"dressed up in a two-faced mask,
and people call him Saturnus,
identifying him with Kronos
(the Greek god of Saturn)."

Of course, the entire idea
can only appear absurd.

But from the vantage point
of our reconstruction,
it is the predictable, the
inescapable, astronomical connection.

And by this reasoning from ancient
facts, we acquire a starting point
for a new and radical
interpretation of the cosmic twins,
a subject to which we'll return
after laying further ground
on the visual dynamics of

the Polar Configuration.

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Tr

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info in part 2 of this presentation we continue our discussion of late pioneer Halton Arps contributions to science and astronomy proponents of plasma cosmology in the electric universe have paid special attention to Arps theoretical research including his thesis of intrinsic redshift Arps discoveries allow for a new cosmology free from the assumptions of the Big Bang and it's bizarre mathematical speculations ops contribution to the electric universe is of fundamental importance because both are based on observation and experiment instead of mathematical speculation Arps discovery of the quantized redshift of quasars revealed the nonsense of particle physicists who believe that quantum effects only apply to the subatomic realm quasars are ejected from the nucleus of an active galaxy at a good fraction of the speed of light which implies the matter in the quasar

has extremely small initial mass the quasars then slow down to become a companion galaxy which implies their mass increases in quantum jumps over time up was very interested in the implications of his discoveries he related the frequency of the redshifted light from quasars to the youthfulness of newly created matter he wrote in seeing red the younger the electron making the orbital jump the less massive it will be and the weaker that is more redshifted will be the emitted photon moreover as the particles age they become more massive therefore the ensemble becomes more luminous as its luminosity grows its redshift drops evolving into what we consider normal galaxies like our own also as the assemblage ages its growing mass slows its initial high ejection velocity in order to conserve momentum the galaxies finish with very slow relative velocities as observed this is the kind of theory we're looking for simple capable of being visualized one that can

connect together the puzzling
observational facts that presently
confound understanding that's the end of
that quote

however this is a radical assault on the
beliefs of physicists because it puts a
searchlight on the fact that they have
no real explanation why matter has mass
it also shows that some of the cherished
physical constants are quantized
variables are throat and I quote for the
first time we have hard observational
evidence for the evolution of different
forms of organized extra galactic
objects the birth and maturing of
younger objects into older objects end
of quote

this is a completely different view of
the universe from the incoherent Big
Bang it Accords perfectly with the work
of plasma cosmologists who can explain
the beautiful spiral form of galaxies in
electrical terms up was aware of plasma
cosmology and the electric universe and
had come independently to much the same
conclusions concerning the Big Bang and

the need for a new cosmology plasma
cosmologists have an electrical Galaxie
model where current flows along the
spiral arms to the center of the galaxy
where it is stored and intermittently
released in Jets along the spin axis the
Centers of galaxies are simply explained
not as impossible black holes but as the
most concentrated form of stored
electromagnetic energy known in the
laboratory as a plasma focus and used
sometimes as a particle gun so quasars
are shot from the heart of their parent
galaxy by prodigious electromagnetic
forces of course mass and energy are
related by the well known equation
 $E=MC^2$ so the mass of the
galactic plasmoid at the centre of the
galaxy which may be less than the size
of our tiny solar system and composed of
relativistic charged particles can
produce the observed gravitational
effects of billions of stars there are
no black holes the electromagnetic jet
that connects the parent galaxy to its
baby quasar is the umbilical cord that

carries the electrical energy to
increase the mass of its embryonic
galaxies over time should we be
surprised that Arps view of the cosmos
has almost biological overtones in the
final paragraphs of quasars redshifts
and controversies we see the measure of
a real scientist as ARP writes of his
thoughts on matter generation in active
galactic nuclei and quantized redshift
it is still just a working hypothesis to
be discarded or modified as further
observations are made to test it in fact
it's major usefulness is probably only
to promote further observations yet
always the hope is that we have achieved
some fuller deeper understanding of the
universe we live in end of quote
the electric universe acknowledges the
brilliance and courage of Helton up like
Galileo his contribution to science will
be acknowledged for all time for
continuous updates on space news from
the electric universe stay tuned to
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[Music]

[Music]

Prior to the launch and successful commencement of operations of the James Webb Space Telescope, I made three Thunderbolts videos in which I discussed the Webb's significance in the context of Electric Universe cosmology issues. And I made several predictions of what the Webb Space Telescope would reveal.

This is the second episode to report on success in relation to those predictions that emerged in the very first release of Webb imaging. Before proceeding with an analysis of those images, I need to deal with a few matters to set the scene.

Redshift refers to an increase in the wavelength of light, measured as a shift in the frequency of spectral emission - or absorption lines that are characteristic of particular elements or chemical compounds, when compared to the wavelengths emitted by those elements or compounds in the laboratory. In Standard Model astrophysics, the redshift of a particular object can be a mix of three separate components. The first component is cosmological redshift. That expression refers to an object's redshift that is due solely to the expansion of the universe, the

expansion of space-time itself. This results in a recessional velocity between galaxies that are at rest in their local frame. The second component is redshift arising as a Doppler effect from the object's motion in relation to other objects in their local frame. Such motion is referred to as proper motion or peculiar motion. The third component is gravitational redshift which refers to an effect predicted by general relativity, namely the lengthening of light waves traveling out of the gravitational field of a massive object. The first two components give rise to a level of confusion for laypeople, precisely because the word 'velocity' is used by astrophysicists and cosmologists in both contexts. The word 'velocity' is routinely used to refer to the rate at which galaxies and other extragalactic objects are receding on account of the expansion of space, rather than their proper motion. On the other hand, the word 'velocity' is also used to refer to proper motions inferred from small differences in the redshifts of, for example, interacting galaxies; or galaxies within a galaxy cluster; or differences measured within a galaxy or a cloud. And in the case of galactic jets, much larger differences in redshift are correctly attributed to proper motion. When an active galaxy with a particular redshift has bipolar jets, one jet will

have lower redshift, indicating that matter in the jet is traveling towards us. The other jet will have a higher redshift, indicating matter in that jet is traveling away from us.

Nevertheless, in the Standard Model, the redshift of all galaxies and quasars beyond our local universe, is almost entirely cosmological redshift, arising from the expansion of the universe.

It was Hubble's observation and the spectral analysis by Milton Humason, that established the correlation between luminosity and redshift. In every direction that Hubble observed, decreasing luminosity correlated with increasing redshift. It was the interpretation of redshift as a Doppler effect, arising from recessional velocity, which led to the conclusion that the universe was expanding.

Simple extrapolation backwards in time drove Gamow and others, to conclude that the universe must have started with what later came to be called the Big Bang.

It is commonly said that Big Bang Theory is based on three main categories of observational evidence, called the three pillars:

the expansion of the universe, proved by the Hubble redshift luminosity relationship; the cosmic microwave background; and the abundances of the light elements. However, it is the first of these that is the essential foundation of Big Bang cosmology.

If the universe is not expanding, then the whole basis for theorizing about the consequences of a Big Bang is removed.

Make no mistake, it is the expansion of the universe embodied in the Hubble law, that is the essential foundation on which the whole of Big Bang cosmology is erected. If the observed correlation between redshift and luminosity was not due to a Doppler effect, but due to something else, as Hubble suspected and as Halton Arp demonstrated, then that foundational axiom is destroyed and with it, the vast edifice that is Big Bang cosmology collapses. Galaxies and quasars with significantly different redshifts may appear close to one another on the plane of the sky.

However, in the Standard Model, this must be a chance alignment, because a significant difference in redshift must mean that the objects are in different

parts of the universe such that any physical connection between them would be utterly impossible. Similarly, in the Standard Model, viewed from Earth, it would be utterly impossible for a high redshift object to be in the foreground of a low redshift object. This is a bit like the proposition 'all swans are white'. Just as finding a single black swan would disprove that proposition, finding a single example where objects with significantly different redshifts were physically connected, or where a high redshift object was in front of an object with much lower redshift, would destroy the essential foundation on which the whole superstructure of Big Bang cosmology is erected. Of course that analogy is imperfect. In the case of quasars and high redshift galaxies, the astrophysicists have never in fact seen any of these objects up close. They do not know whether the redshift of these objects represent a distance arising from expanding space. They have never demonstrated that any of those 'swans' are white. In my June 21st, 2021 Thunderbolts video, I noted that quote, "Arp's research into high-redshift quasars shows they are

local.” Unquote. That is, quasars are not at the extreme distances indicated by the Standard Model interpretation of their high redshift. I made the following prediction quote, “So my first prediction is that the James Webb Telescope will support Halton Arp’s research which shows plainly that high-redshift quasars are born in pairs and emitted in oppositely directed jets along the spin axis of a low-redshift active galaxy. They are not at the edge of the visible universe; they are in the neighborhood of their parent galaxy. Therefore, they are not incredibly distant, bright and large. There is no superluminal motion; they are nearby and youthfully faint.” Unquote. A final adjudication on that prediction will require a substantial accumulation of Webb data. That will take years, and yet Webb’s first science images provide a vindication of Arp’s basic contention that cosmological redshift is intrinsic, and not due to the expansion of the universe, and its theory of quasar birth from active galactic nuclei. The first piece of evidence arises from the Webb images of Stephan’s Quintet, and a quasar appearing in the main field of

the galaxy. Quasars became central to Arp's research program. He gave an account of the origins of that research program in a contribution to an edited volume "Against the Tide. A Critical Review by Scientists of How Physics & Astronomy Get Done." Quote: "Quasars were discovered in 1963 [by radio astronomers] and [optical] astronomers rushed to observe them because they assume their high redshifts meant they were at great distances and that the nature of the universe would thereby be revealed. The Caltech radio astronomer who isolated the positions of the first quasars asked for telescope time to observe their spectra and obtain their redshifts. He was told, only certain of the faculty could observe with the 200-inch telescope. Those select few went on to measure the spectra and reap the headlines and the original discoverer left the field in disgust. As a Carnegie astronomer I was observing on the telescope but the radio positions of the quasars were kept secret and so I did the next best thing - photographing peculiar and disrupted galaxies to see how they were formed and evolved. Ironically, in the end, they turned out to be surrounded by quasars which were obviously not out at the edge of the universe.

That news was not welcomed by the observers who had inflated their reputations with discoveries of a new quote 'most luminous object in the universe' every few weeks." Unquote. It was ironic indeed because quasars took center stage in the evidence of anomalous redshift assembled by Arp and others over the following decades.

This is a Hubble image of Stephan's Quintet released in the year 2000. It's a composite of three images obtained by Hubble's Wide Field Camera II. Two were in visible light and a third at 814 nanometers in the very near infrared.

NGC 7319 is the Galaxy at the top of that image.

In the early 2000's Arp was part of a team that identified an ultra-luminous X-ray object as a high-redshift quasar, apparently in the foreground of NGC 7319.

That discovery was announced in a paper published in 2005 entitled, "The Discovery of a High Redshift X-Ray Emitting QSO Very close to the Nucleus of NGC 7319." It's required reading for all cosmologists while looking at the relevant images. This is a portion of the 2000 Hubble image with processing to increase contrast and saturation which appears in that paper.

The Galaxy NGC 7319 has a redshift of $Z=0.0225$, whereas the quasar has a redshift of $Z=0.2114$,

numerically almost ten times greater.

On the assumption of the Standard Model's redshift - distance relationship, and using Ned Wright's calculator with default values, NGC 7319's measured redshift of $Z=0.0225$, places it at a lookback time, or distance of about 311 million light years when the light captured by Hubble was emitted.

On the other hand, the quasar has a measured redshift of $Z=2.114$, placing it at lookback time, or distance, of about 10.58 billion light years when the light captured by Hubble was emitted on the Standard Model. That is some 34 times farther away than NGC 7319.

Even on the Hubble image, it was obvious to Arp that the quasar was in the foreground of NGC 7319, and therefore closer than NGC 7319. Look at the dark dust lane that passes on a diagonal path that visually encloses a portion of the quasar. Not only did the quasar appear in the foreground, as this image plainly shows, there is also a V-shaped jet extending from the core of the galaxy to the quasar.

The existence of that feature, previously identified by mainstream astronomers, was confirmed in radio observations by Arp and his colleagues.

Arp writes, "This is the only system found so far in which there is the possibility of demonstrating even more clearly that the QSO and Galaxy are interacting."

It was striking evidence that the quasar had been ejected from the nucleus of NGC 7319. Arp's Standard Model critics insisted that the Quasar was at the unimaginably enormous distance indicated by its redshift and therefore had to be a background object, but so bright that it shines through the entire dust and plasma of the disk of the galaxy. And as for the jet, well whatever. Subsequent to that paper in 2009, a further Hubble image of Stephan's quintet, obtained with Hubble's upgraded Wide Field camera III, was released. Here is the indicated portion of that 2009 Hubble image with the quasar marked by an arrow. That image did not change the arguments, notwithstanding that it seemed even clearer that a dark dust lane passed behind at least some portion of the field of the quasar. The dust lane has a ragged edge - perhaps there was a deviation of the dust lane at precisely

the point where the quasar appears.

As we shall shortly see, Webb images of

NGC 7319 within Stephan's Quintet now put

the issue beyond any reasonable argument.

[Music]

Hello everyone! So, my title. My talk is titled; Creator's Second Hand but I probably wouldn't be able to explain this title, not until the very end of my talk so I ask you to wait a little bit for it.

Now I'm gonna give you some introduction on what I'm going to talk about and that will be, first of all I'm gonna give some general questions, general points about electricity and gravity in space and what we can probably explain with the help of electromagnetism. And then I'm gonna give you a couple of theories by Pavel Mantashyan shine on alternative to dark matter and formation of the solar system. And then I'm gonna give you a promised conclusion about the title of my talk and what is what, what's the point of my talking in general, OK. So now, since I've known, since I've mentioned Pavel Mantashyan, I'm gonna say a couple of words about him. He's an inventor and author of more than 60 inventions, four books and 30 articles, but since they are in Russian, I

don't give any names here. It's actually
that we've never met in person. It's that I
read his books and I really like them
and since I've already, I was
into Electric Universe stuff at that
time, we've agreed that
I will come here and give a talk because
Pavel Mantashyan cannot give a talk
in English, so it ended up like that.
Okay now, we've never met in person as I
mentioned because he lives in Russia but
I live in Belarus and maybe some of you
might wonder where it is; so I'm going to show you.
Here's a map of Europe with my country.
And it just so happens that Immanuel
Velikovsky was born in Belarus; he was
born in Vitebsk, a couple of hundred
kilometers from where I was born and
where I live in Minsk. And OK, so that's
kind of where it all started right. And
so at the right you can see our
national flag and I wouldn't put it here
if it weren't for this vertical band
that you can see on the left.
This is a really archaic piece of
ornament and I might be a bit paranoid

but it looks kinda like Peratt's Squatterman
or something like that, OK. So I'll
just give this bait so maybe you would
come and search more info about my
country. OK, since I've shown you where
Belarus is, I'm gonna ask you where we are
in terms of theories and ideas and
hypotheses, and of course if you look at
modern astrophysics you would find that
it is pretty much dominated by gravity.
OK, so we kind of have this huge thing of
gravity and only a thin layer of
everything else on the top of it, OK. So
just like Don Scott have quoted that
"If there is electromagnetism, well, it
probably doesn't do anything." OK, it's just a
decoration of sorts. And so, there is the
principle of charge neutrality of cosmic
objects whether it is explicitly stated
or implicitly, kind of being there,
OK, which states that there are no
electric currents there, there is no
net charge separation etc etc. But when
people try to
kind of use this worldview to describe the
real data that we have from observations,

they have kind of, they get kind of odd results and in order to fit those results into the hypotheses and theories; they have to invent some sort of crutches or even peglegs maybe. Those artificial things like dark matter and dark energy and many, many other things. Well, I'm gonna talk about dark matter a little bit later but I just want to note about the dark energy that when people say that universe is expanding and the space is expanding, in my opinion this is logically incoherent statements. Well if you say that the ether is expanding, well that's ok with me. I find it a good idea but the universe cannot expand. If you try to define all the notions really carefully, you would find that this is a logically incoherent statement. But if you want to discuss this please contact me, I don't have much time to discuss it here, ok? So, since we kinda know where we are now, where can we go from here, OK.

So we can we can suggest or hypothesize that there is charge separation and electric currents in space and maybe

that would allow us to throw out all of these crutches and go along on our own feet, OK. So maybe we should hypothesize that electromagnetism plays a major role alongside gravity in the universe. And so the central hypothesis of the proposed theory by Pavel Mantshyan, and I'm going to reinstate it a little bit later, is that electric charges do exist in space and he says that they exist actually on stars, OK. And now some general points that I've promised on electromagnetism. I've here listed the field of applications of electromagnetism, of possible applications. Now magnetic fields in space, I'm pretty sure that you are aware that almost every object in the universe possesses at least some sort of magnetic field associated with it whether it is an induced magnetic field like. for example. on Venus or it is an intrinsic magnetic field like in the bar magnets or on Earth etc etc And if you take a look at Maxwell's equations you would find that the magnetic field actually arises wherever we have a changing electric

field and the changing electric field means that we have a motion of the source of electric field and the source of electric field are charged particles and when we move charged particles we get electric currents. So, there's a pretty much straight forward connection between the electric currents and the magnetic fields. So if we acknowledge the existence of electric currents thus we can explain the existence of magnetic fields. It's as simple as that, OK.

Now solar wind acceleration. I'm pretty sure that you're aware that the fast solar wind that's coming out of a coronal holes is getting accelerated like from 3 solar radii to up to 10 solar radii, from 350 to up to 800 kilometers per second and slow solar wind also gets an acceleration of around 100 km/s. And so, how can we explain this acceleration?

Well, the most simple idea that can be probably out there is to suppose that really the Sun possesses some electric charge, and this electric charge just

accelerates these photons, excuse me,
protons of the solar wind outwards
by simple electrostatics, OK. Of course in
real in real life so to speak there would
be complications with certain plasma
effects like Debye screening and maybe
some other things but
I think it's a good start to start from
here, OK. Now sunspots formation, I noted
here that there's a theory by Pavel
Manteshyan about how vortices form in
general.

Unfortunately I cannot give many
details on this but just in a couple of
words, the theory states,
well basically, that the motion of charged
particles in a magnetic field creates
the rotation of these particles due to
Lorentz force. And if we have a big
quantity of such particles, they start
building up angular momentum in this
field and thus we, due to fluid dynamics,
the whole system starts to rotate. And
that's how that's how we get
these vortices. Like, for example,
tornadoes or cyclones or anti-cyclones

on Earth or eddies in the ocean or gyros, and that's basically what is a sunspot from the Manteshtan's theory. And, of course, Ben Davidson has his theory of earth-spots, and this is pretty much it in my opinion, OK. So in sunspots the charged particles on the surface of the Sun move in the magnetic field of the Sun and build up this angular momentum and create this vortex, the circular current essentially, and this current, because the particles are charged, creates a magnetic field of its own, and we get the essentially the sunspot, OK. So that's one of the ways of explaining it.

Now lensing, I'm pretty sure that all of you have heard about the gravitational lensing, right, but you might ask what's so gravitational about it, OK.

So maybe there is another explanations. I think at the previous EU conference there was Edward Dowdy talking about this about the refraction of light in plasma actually not due to

gravitation, and I think that this is a good idea that plasma really can refract the light, in principle, in theory.

I'm not saying that it really is doing that but we might suppose that it is doing that and so that this interstellar plasma and plasma around galaxies might actually refract the light and act as a lens. But more than that, I want to add here that we have an electro-optical effects like Pockles effect and Kerr effect, they actually amplify the refractive index of matter due to electricity. So if we have an electric field applied to this plasma, the refractive index might might be bigger than in a sort of an ambient plasma, and we might get stronger lensing. This is also an interesting possibility in my opinion. OK, solar system formation. I'm gonna talk about this later and differential rotation too. Galactic rotation curves, that's where the dark matter comes in, OK.

Now, on the left you can see this picture where we have the velocities of stars or molecular clouds or whatever else plotted versus the

distance from the center of galaxy, OK.

And so we can notice that somewhere around the middle of a spiral arm or maybe somewhere closer to the core, we get this discrepancy between the measured velocity and the velocity that we can calculate through Newtonian gravity and Keplerian motion, OK. And if we look at the bottom to the right, we can see that the measured velocities are getting much, much higher than what we can calculate and on the bottom of the right you can see the simplified form of the Second Newton's Law. And what it states basically is that the square of the velocity is proportional to force, OK. And what does that mean if we have an excess velocity, then we should have some excess force that we cannot account for, OK. And so people are thinking: "Okay, if we have only gravitational force in space that means that we have some extra gravitation we cannot account for. And since we all love our gravitational constant and want to keep it constant,

probably right, then it means that we have extra matter, extra mass that we don't see. And that's how the dark matter was invented. But maybe there is another explanation to it. Let's remember what I've said about the magnetic fields, everything possesses some sort of magnetic field. So, let's take a look at magnetic fields of galaxies. Now on the left you can see a view of a really oversimplified view of a spiral galaxy as viewed from, for example, the northern side and the southern side and thus the plane of picture coincides with the plane of galaxy, OK. And these arrows, they depict the direction of the magnetic fields. And we have this picture that, for example, on the northern side of the spiral arm the fields are directed to the core, from the ends of the spiral arms, OK. And on the south, we get the opposite direction. And so, in general, it creates the picture of sort of wrapping around, sort of Birkeland current but with the other geometry, OK. And on the right we can see another component of

the magnetic field of galaxy; it is
a dipolar type field.

L is the distance from the plane of
galaxies. So kind of imagine that the
vertical line is a plane of galaxy and if we were moving northwards where L increases, the
field starts rising and then it starts
falling off like a field of a bar magnet.

And to the southern side we get the same
picture but the sign is inverted, OK. So
these are kind of basic components of
the magnetic fields of galaxies. And of
course, the real magnetic field of galaxy
looks much more complex, and I'm gonna
show it to you how it should look like,

OK. This is the data from ESA Planck
mission, of course, what we see here is
the direction of polarization of
electromagnetic radiation which
supposedly coincides with the magnetic
field lines and the color depicts the
intensity of light which is proportional
to the density of matter, OK. So we really
can see that we have these magnetic
field lines going along the spiral arms
in the plane of galaxy, and we also
have this dome-shaped bar magnet-type

field around it

to the both sides of of the plane of galaxies, OK. So how can we create such magnetic field? I told you that the electric current is the most simple way of creating magnetic field, OK. So here's this hypothesis again reinstated: the stars have an electric charge, OK. And let's let's take a look and maybe we can create these magnetic fields with this hypothesis, OK. So, here on the left we again see one of the spiral arms with a piece of a core of galaxy from both sides and on the right we can see a slice of this spiral arm along this red curved line so it's kind of we're observing the array of stars moving along their orbits kind of in parallel but they move on us or from us that really doesn't matter

OK. So let's suppose that these stars have positive electric charge. This is to this pretty much arbitrary thing but we should at least make some supposition about it.

OK, let's suppose it's positive and the

stars move outwards from us into the plane of picture. That would mean that they create the circular magnetic field that is actually clockwise directed, right. Each star creates a magnetic field of its own. But if we sum the magnetic fields from each star, we would get this wavy pattern, OK, going for example at the northern side it goes to the right and at the southern side to the left, OK.

So we get really this picture of magnetic field lines going in one direction at the northern side and returning at the southern side. So we get this sort of wrapping around thing, OK. I think this is pretty pretty simple and pretty elegant but let's think about this. Let's think how would these fields act on the stars themselves because the stars as electric currents should, should be I mean the magnetic field should act on these stars because the stars are electric currents, OK, if they move. And so we can apply the left hand rule, for example, of four fingers shows the direction of the motion of the positive

charge, which is in the plane of picture and magnetic field lines enter the palm of our hand then the thumb would show us the direction of the Lorentz force that is acting on the northern stars. It would be directed southwards and for the stars on the southern side, it would be directed northwards. So what we get is that spiral arm gets squeezed. Again, the same type of behavior as with Birkeland current filaments, OK. But the geometry is different. And in my opinion, this is one of the explanations of why the galaxies are so flat. Why do they have this pancake shaped form, OK. But let's think about another thing. How would these occurrence, i mean the stars, interact with each other?

The parallel currents, as we know, they attract; this is called the Ampere's law. And this is actually how the definition of Ampere as a unit of electric current is defined through this attraction, OK. So this would be of course the different component of the magnetic field, a vertical one but still they would

attract and how would this attraction look like in the middle of the spiral arm, in radial terms? In the middle of a spiral arm, we would get pretty much the same quantity of stars closer to the core and closer to the rim so we'd be attracted in both sides with pretty much the same force and it would compensate, OK. But when we are moving closer to the rim outwards from the core, the quantity of stars closer to the core would increase and the quantity of stars closer to the rim would decrease, and we would have this excess attraction to the core. And here on the left, for example, you can see again this is a really simplified version of this graph, this is an Ampere's force, R is the difference from the distance from the core, excuse me, and at some distance you can see that the force is 0 but if we are getting closer to the rim we're getting attracted to the core and this kind of may give us really this unaccounted for force which people explain with dark matter, OK. And on the right we can see

the sum of this force with the gravitational force one over R squared. It gets a little rise on the at the end of the spiral arm, OK. And that can, in principle, this might explain the excess force that we need, OK. So that's that's that would mean that we don't need dark matter actually, OK. So, this is one theory and another theory, of course there are questions because for example closer to the core we would have the force that drags us to the rim but I'll leave this questions this this is sort of a second order problem. I'm getting the the principal theory and I think it really might account for what we observe.

Now about the solar system formation, there are of course a lot of models a lot of theories but they all face the same difficulty, which is explaining the angular momentum of the system.

Why is it rotating? And the angular momentum is a sort of a measure of this rotation. If we look at the expression, it says that we should take a sum of all

the particles that we have and we should take a product of their masses, their distances from the axis of rotation and their velocities. So the more massive particles we have, the farther out they are from the axis of rotation and the faster they go around, the more angular momentum we would have, OK. And the solar system actually possesses quite a big angular momentum. Of course, everything is relative here but the important point here is that the angular momentum should conserve in the closed system. So if we had, for example, a nebula that did not rotate and it for example would condense by gravitation it wouldn't start rotate on its own, it would need some external driver to make it to spin it up, OK. In the solar system the angular momentum is mostly due to Jupiter. And if we take all of the giant planets, they have like 99% of the angular momentum. So as I've said, we need to have some external driver and pretty much in gravitational paradigm the only driver is probably the passing star. So

maybe if some object have passed nearby the solar system it may have spun it up like wind blowing to the windmill makes it wheel spin ok. But is there another explanation?

Mantashyan proposes actually another explanation and again centers on the Lorentz force. So if we had an external magnetic field, like for example a galactic magnetic field, and if we had charged particles if the planets and the Sun were charged they actually might get this angular momentum due to interaction with the external magnetic field of galaxy and here's another hypothesis explicitly stated that during its formation the Solar System was exposed to a powerful galactic magnetic field, which was perpendicular to the ecliptic plane. Now I must note here that we don't actually need to have a an ecliptic plane here, what we need is only the charged Sun that is moving in this magnetic field and sort of I'll try to show later how the charged Sun moving in a magnetic field can get its rotation.

That's when you get the equatorial plane and the ecliptic plane would pretty much coincide with the equatorial plane. But in this model the planets are being born by the Sun itself, they're being ejected out of the Sun. So let's suppose that young active and electrically charged Sun ejected some plasma in space filled with galactic magnetic field.

Those would probably be like a today's coronal mass ejections but much more massive and basically much more intense and those were the proto-planets ejected out of the Sun. So I asked a question, what conditions should be met for the plasma to turn into a real planet? And the answer is that we should eject from the equatorial plane.

Because, well, think about the launch of the artificial satellites from Earth, we need to launch them from the equator if we need to get the same orbital direction like the spin of the earth, OK.

Because that's that's how earth helps us with its own rotation, it gives us additional velocity, additional energy

and additional angular momentum too and thus the external magnetic field that I've mentioned would provide the most angular momentum. And that's what I'm gonna illustrate right now. Now on the left we can see a view from the side of the Sun ejecting some piece of plasma somewhere a bit northwards, OK. B is the magnetic field lines of galaxy, I mean the lines of the magnetic field of galaxy, v is the velocity of this piece of plasma and the Lorentz force would be directed into the plane of picture if we suppose the positive charge. So the Lorentz force would be equal to $QvB \sin \alpha$. Now Q is the charge of this ball of plasma, v is velocity as I've said, and B is the magnetic field strength. Now, α is the angle between the velocity vector and the vector of the magnetic field. So, if we look at it, when will the Lorentz force be maximal? It will be maximal when we have the $\sin \alpha$ equals to unit. That would be when the α , when the angle would be perpendicular, when the velocity would be perpendicular to the magnetic field and

that would be at the ecliptic plane in the equatorial plane of the Sun, OK. Why would we need this Lorentz force? Again, think about how the satellites are launched.

They do not fly straight up, OK.

They fly straight up to a certain height and then they start tilting the rocket and kind of fly fly up and then they're flying sideways so they get this circular orbit, OK. Because if you fly straight up, what would happen is that upon the return to the Earth at the perigee, you might be too close to Earth.

You might actually fall down to the Earth, OK.

So that's what

we need, this kind of sideways force that draws us to the side. And here the Lorentz force plays the role of such force, and the Lorentz force provides us the circular orbits, OK. So when we are launched on the right, you can see the view from the North Pole of the Sun. Here is this piece of plasma being launched and then it goes sideways due to the Lorentz force, OK. And kind of upon the next approach to the Sun, it wouldn't be too

close to the Sun and would, might survive actually. And the Lorentz force would help to build up angular momentum of the system and make its orbit to expand its orbit make it more circular overtime, OK. So I promise to explain how the spin actually, is being acquired so the same story would be the same story would actually be for the Sun and the planets so I'm gonna talk only about the Sun today right now. And on the right you can see a schematic of the Sun. We have the rigid solid body core presumably, OK. By this point, I'm pretty sure that you've noticed that I'm a little obsessed with red color. So we have this rigid core, then we have this liquid layer on top of it if we are to believe Pierre-Marie Robitaille, then we have a charged surface layer where the charge of the Sun is situated, OK. So when the thing moves in the magnetic field of galaxy, what happens is that the charged particles again they start rotating due to Lorentz force and this rotation builds up angular momentum and due to liquid dynamics the whole

charged surface layer starts rotating, OK.

And what that would mean that would mean

that due to friction, the liquid layer

would start rotating, OK. And then the

core would start rotating

and we will get the the magnetic field

eventually, OK. So that's how in this

theory the rotation

was acquired by the Sun and by the

planet's later. OK. And I've promised to

explain how the differential rotation

might appear. Now if you take a look at

this horizontal lines in the liquid

layer I've drawn there, then there for a reason.

You might notice that in the

equatorial region actually the thickness

of this liquid layer is the smallest and

as we get closer to the poles it

increases and so it would be kind of easier for

this liquid layer to rotate in the

equatorial region and it might get a

bigger velocity there. And thus we can in

principle explain the differential

rotation of the Sun and giant planets, OK.

So, what factors would be at play

in this rotation? The rotation would be the

more intense, the more electric charge we've had, OK. So we need to be big and carry enough electric charge; that's first of all. And then the charge might be diminished by the solar wind or see another CME's or anything like that, OK.

So we need to be as far from the Sun as possible to avoid diminishing of, the blowing off of charge due to the solar wind from this charged surface layer, OK.

So the farther out we are from the Sun and the bigger we are, the more rotation we would get, OK. So that would mean that the giant planets should spin the fastest in the solar system. And guess what, we get actually that's what we observe. Now Jupiter, take a look at this, this is the biggest planet and has the lowest spin period and the smallest which is somewhat ridiculous, isn't it? So the Jupiter was really big, it had a lot of electric charge and it's relatively far out, OK. Saturn was a bit smaller but it was also farther out, so that this relative solar wind density was smaller at the orbit of Saturn and is

to this day. And the same story with Uranus and Neptune pretty much. And with the other planets. Now of course there are concerns about Venus and stuff but I'm not gonna talk about this right now. So now, what about these young planets? They are still hot in plasma but they are already rotating and have their magnetic fields. Why wouldn't they eject some piece of plasma of their own? That might be possible and actually Mantashyan thinks that it's what what was really happening, OK. And so that's how the satellites might have been formed. They might have been rejected out of the planets and gain their angular momentum and their circular orbits in the magnetic field of the mother planet, so to speak, OK.

So what characteristics should they possess for us to say that really they were born in such a way?

Well first of all, they should have low eccentricity excuse me low-inclinations so they should be pretty much in the equatorial plane of the mother planet because I've shown you before why

would that be. And also they should have low eccentricities because Lorentz force gives us circular orbits and also they should have the same direction of rotation because they were launched from the planet itself. Now I mean the same as the spin of the planet. Now I'm pretty sure that you know that there are a lot of satellites that do not possess these characteristics, OK. So how could they form? Well, standard theory says that they are probably the captured bodies.

Well, it might be that but in Mantashyan's theory another explanation is possible, is that these satellites actually are kind of a brothers of the the planet. So they might have been born out of the same ejection that gave birth to the the planet itself. Maybe there was not a uniform piece of plasma going around but maybe there was some additional splashes or something like that or maybe there were several pieces of plasma, some of them merged and some of them, was small but they've somehow managed to survive and

they could have formed all of these so-called irregular satellites, OK. This is a possibility. Now, let's take a look at some examples. Jupiter, pretty much all of the inner satellites including the Galilean, the most massive ones, have a low inclination and low eccentricities.

So in this theory, they were actually born by Jupiter itself, OK. And the outer moons like starting from 9th, they have a pretty high inclinations and eccentricities, and starting from 16th, they have retrograde orbits so they orbit in the opposite direction, OK.

So we get this picture, so they are probably either the brothers of Jupiter or they are captured bodies, OK. Now if we're talking Velikovsky by the way I just wanna note that maybe if Venus was actually born out of Jupiter maybe it was from the big red spot where it was born, OK. But this is just a thought.

Now Saturn, the same story as with Jupiter but the Titan, of course, dominates the whole system, and it has also a low inclination, low eccentricity so it

probably was born from Saturn, OK. And the first 24 moons, they too have low inclination and low eccentricity, and the outer moons mostly have retrograde orbits, high very inclined and eccentric orbits so they're probably either the brothers of Saturn or they were captured bodies. Now the same story with Uranus but the important exception is that the equatorial plane of Uranus is very inclined. It's almost perpendicular to the ecliptic so Manastryan thinks that what happened is that when Uranus had its spin and magnetic field its orbit, I mean its spin axis was inclined due to some reason. I don't know what the reason might be, maybe a collision maybe something else, and that's when it started to give birth to its satellites that we observe today. Because the inclinations are relative the modern equatorial plane, which is highly inclined, OK. So OK now what about Neptune, we get this moon Triton which is really big and it moves in a highly inclined and

retrograde orbit. So under this theory probably was born out of the same ejection so it's kind of a brother of Neptune. The other moons possess kind of the same qualities that are for the other giant planets. Now important thing, Mars and Earth, OK. Phobos and Deimos have little inclination and little eccentricity so they were probably born out of Mars under this theory at least. Of course there are other hypotheses. Now the Moon, what's interesting, it has a relatively high inclination, high eccentricity so it couldn't have been born out of the Earth probably. And it also has a lot of mass, it's more than one percent of mass of the Earth and it is a unique case in our system. And as Mr. Thornhill noted yesterday, I think, that actually the Sun pulls the Moon more than two times stronger than the Earth pulls the Moon. So actually the Moon is going around the Sun, it's not orbiting the Earth. The Moon is sort of a sister planet for the Earth and the orbit of the Moon you can see on the right

that's what the orbit of the Moon
might look like as you might think but
I've crossed it out because this is wrong.
The orbit of the Moon around the Sun is
elliptical, it never does these curls
around the Earth, OK. Its elliptical. Of
course it has little waves because of the
perturbations of the Earth but in general
it moves around the Sun not around Earth. So the
Moon is a quasi-satellite of Earth. And this
is one of the pieces of evidence for
for this theory, I think. You can Google
what a quasi-satellite means and compare this to
this elliptical orbit around the Sun, OK.
So I'm close to the end. The points in favor
of the proposed model is a relatively
high angular momentum that we can explain with
this external field, the existence of the
ecliptic plane, the circularity of orbits
due to the Lorentz force, the spin
characteristics of planets which are,
this is a really interesting point and
so the red colored ones they
actually cannot be explained
through only an accretion, OK. We have
some,

we should have something something else to it. Of course, there are questions now, where do these magnetic field go, how strong it was, where did the charges go, whether they just withered away because of the Sun or something else. There are a lot of questions, I admit. And I think for example, if we suppose that the magnetic field suddenly changed or even depolarized to the opposite, there might have been this epic of instability and catastrophes because the Lorentz force would change and the orbits would suddenly change and there might have been all of these catastrophes with charge exchange and electric discharges and everything else.

So this is kind of a point where we can dock this into a more traditional so-to-speak Electric Universe theories, OK.

Now, if we look at the Sun in a galaxy what we can see, this is what Mantashyan calls the Mathrushka model or a Russian doll model you might call it, OK.

The idea is that the the satellites were once embedded in

planets and the planets were embedded in the Sun and the Sun work was probably embedded in the galactic core or something so it might have been ejected from the galactic core one day and the galactic core might have been ejected from somewhere else like a super cluster core and it all happened in the magnetic fields of larger and larger scale, OK.

So we get this really fractal structure of things, kind of evolving and differentiating on smaller and smaller scale to get this Herbert Spencer type evolution. And here the Lorentz force plays the role of universal transformer of this linear motion into circular rotation. And in my opinion, this is one of the explanations for the ubiquitous character of the circular rotation in our universe.

Because in the gravitational field alone you would have an arbitrary eccentricity, you wouldn't have exactly the circular orbits. We don't have exactly the circular orbits but they are too frequent in my opinion to form by accident, OK.

So that, this is what I've promised to you
in order to understand the Universe we
need to observe the work of both hands
of the creator, the gravity and
electromagnetism. So if we focus on only
one of those, we lose perspective and kind
of perceive the world with only one eye
out of two that the nature gave us. So I
hope that it really explains the title
of my talk because we should have this
linear gravitational attraction and this
Lorentzian thing that gives us really all
those structures that we observe. OK, you
were a beautiful audience thank you for
your patience, thank you for your
attention.

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you, there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you,

and there is nothing to fear.

The Labyrinth

The Crane Dance of Theseus

In following the ancient

story of the labyrinth,

the most obvious question is why?

From what human experience did

this remarkable ancient idea arise?

In our investigation of

the theme, the first clue

emerges from the archetypal

personalities we've come to recognize.

Mother goddess, warrior

hero, and chaos monster,

all with a displaced

sovereign power

lurking in the background.

For several decades, we sought

to illuminate such archetypes.

In that work, we've
described the emergence
and progressive evolution of an
extraordinary spectacle in the Heavens.

A gathering of
planets close to Earth.

Planets, inspiring the myth-making
epoch of human history.

A radical claim is that the
archetypes, the global patterns,
are explained uniquely and concretely by
the planetary history we've reconstructed.

Specifically, a gathering of
planets extremely close to Earth.

Yes, that idea will
appear preposterous,
but preposterous only until one
sees that hundreds of archetypes,
hundreds of global cross cultural
themes become predictable.

And not just as general themes
but down to hundreds of
highly specific details.

As newcomers to this topic
will quickly discover,
it's the apparent absurdity of mythology

that ultimately changes the picture,
to the extent that things
begin to make sense.

Nothing in our familiar experience
would anticipate, much less account for,
the archetypal theme of
externalized intestines.

A theme we noted briefly
in our prior discourse.

That theme arose in relation to the remarkable
face of the Mesopotamian giant Humbaba
displaying nothing else
than knotted intestines.

But actually, it's this transparently
absurd feature that opens the door
to a much broader
field of evidence.

From the Americas to Africa
and the South Pacific,
we find recollections of the
dancing warrior trickster hero
either unraveling
his own intestines
or the intestines of
an alter ego figure.

That such bizarre imagery would

occur from one land to another,
surely requires an explanation.

And a believable, fact-based
explanation must be possible.

One of numerous examples will be found
amongst the North American Ojibwe
whose trickster Nanabozho
loses his intestines
in his wanderings and
hangs them in a tree.

Well, that's not an idea one would expect
in the normal course of human experience,
either primitive or modern.

In some tales, intestines are pulled
from the trickster causing his death.

In closely linked stories, they
become food for other creatures,
or the trickster himself eat
fragments of his own intestines,
thinking they are food.

Well such absurdities are, as
we've repeatedly discovered,
the window to the hidden
substructure of collective memories
crying out for investigation.

For those who will follow the logical

ground rules of this investigation,
the outcome will be a full and
convincing explanation of world mythology,
down to virtually all of
the recurrent patterns.

If our fundamental
observation is correct,
it could not be otherwise.

It seems that the labyrinthine
dance of the hero Theseus,
as cited in our
previous Discourse,
gives us some powerful clues.

The dance had its own
unique and awkward form
called the crane dance,
made famous by the Warrior's successful
entry into the Cretan labyrinth.

At the level of common perception, the
whole thing is indeed ridiculous.

But that's why it's so
essential to view the story
through the lens of
our starting point,
the reconstructed
polar configuration.

Suddenly the crane dance of
Theseus becomes predictable.

A uniquely appropriate visual
image of the off-axis movements
of the legendary warrior,
the masculine power Mars
in his labyrinthian dance.

This awkward bobbing movement
would not even be possible
without the off-axis
displacement suggested here.

Of course, given our overarching
interest in the global sub-structure,
we could not possibly limit our
attention to test one localized idea.

Numerous Hindu myths
describing the dance of Shiva
are complemented by wide-ranging
images of a hero or trickster
whose arms and legs mimic
the whorl- or swastika- form
of the discharge streamers we've
noted in our previous Discourse.

It was said that the warrior Shiva
held his consort Sati above his head.

Again, as we should expect.

And in their violent whirling
movements the body or essence of Sati
was dispersed in flame.

Another seeming absurdity,
but a perfect reflection
of the discharge activity,
we've located at the visual
center of the labyrinth.

Here's the description of Shiva's
dance by Stella Kramrisch

in her book The
Presence of Shiva,
"He danced exceedingly,
his arms flailing the regions,
The stars were scattered
by the swish of his hair.

Death, love and despair syncopated the
escalating speed of his Tandava dance;
the earth shook while Siva went on
dancing in frenzy, his eyes whirling...

As Shiva danced on and on, the body
of Sati became lighter and lighter,
and he saw that limbs and
parts had fallen from it."

In the end, all that was
left was the mythic yoni,

the core feminine
identity of the goddess,
which means of course the
archetypal goddess, the planet Venus.

A comparative analysis will
show that the god's forearms,
here described as
flailing the regions,
are beyond any reasonable doubt
the arms of the equal end cross.

The cross that in prior,
more stable phases,
marked out the four regions of four
quarters of the celestial habitation.

In other words, the seemingly outrageous
depictions are indeed internally consistent.

As noted in our
previous Discourse,
when the fourfold discharge
was set in a whirling motion,
the effect was a
swastika-like pattern.

And so in ancient Sumerian symbolism
we see the arms of the swastika
in their undeniable connection to the
long flowing hair of female figures,

reminding us of the words of the
Sumerian Inanna, the planet Venus,
to her consort Damuzi,
"I will whirl my hair
in heaven for you."

When the mythic imagery is
seen in its original context,
no image of the swastika
makes more sense
than that of the goddess's
luminous whirling hair
at the center of the labyrinth.

An obvious complement is the
occasional image of the Medusa head
with its wildly disheveled hair
at the center of the labyrinth
giving rise to the symmetrical
three legs of the Triskelion.

As we previously observed,
it was from that chaotic
discharge activity
that the more stable symmetrical
discharge phases emerged.

Consider also the underlined similarity
of Theseus's archetypal dance
to the famous dance

of the hindu Shiva
also occurring in
conjunction with a goddess,
who becomes the warrior's
consort as we should expect.

And not just a goddess,
but the goddess Venus in
particular, as we should also expect.

In the Iliad, Homer tells us that the
legendary King Daedalus, quoting here,
"once wrought in Knosos broad a
dancing-ground for fair-haired Ariadne."

Of course the fair-haired Ariadne is a recognized
alter ego of the fair-haired Aphrodite,
or Venus.

But perhaps the best clue is provided
by the golden thread of Ariadne,
said to have been unraveled by Theseus
as he danced through the winding passages.

By this identification,
the unraveling thread
becomes a perfect analog
to the unwinding intestines
appearing in other variations
of the same archetypal theme.

As we repeatedly noted, the

symbolic spiraling life breath,
in its mythic interpretation as
a coiled cord or lock of hair,
meant nothing else than
the cometary essence
of the Venus goddess herself.

In this realization, it becomes clear
that the hero's unraveling of the thread
in his meandering dance
is in fact a corollary
to the Hindu Shiva's
whirling dispersal of the
essence of his consort Sati,
the goddess Venus.

To oversimplify a complex story, we can see
that the hero unwinding the golden thread
means the same thing as the hero
unwinding his own intestines,
which means the same
thing as the hero
making his way through the
passages of the labyrinth,
which means the same
thing as the awkward dance
or the crane dance of the
hero and the goddess.

So the seeming competition
between incompatible storytelling
is instantly resolved by allowing the
underlying events to shine through.

Welcome to Space News from the Electric Universe,
brought to you by The Thunderbolts
Project™ at Thunderbolts.info

Hi, this is Andy Hall with Space News.

I'm presenting part nine of my series
Eye of the Storm, where we look at
electrical scarring on the Colorado Plateau.

In the past few chapters of Eye of the
Storm, we looked at surface conductive
discharge in the landforms it creates.

Ground-to-ground surface conductive
discharges formed river channels, fractured
the land with arc blasts, built mountains,
ripped them apart, and induced electric
winds that competed in a global plasma
storm on our ancient planet. We've
discussed how surface conductive
discharges match the description of
dragons in myth; how they must be
discharges from an alternating current,
superimposed with the direct current
bias that forces its path across

Earth's surface electric field, blasting
its way in fits and starts, as resonant
frequencies built and relaxed,
bifurcating the current reactive power

surges. The electric field is from a buildup of charge on continental surfaces, due to capacitance in the continental plates.

We've discussed how such discharges emanate from beneath Earth's crust through a continental fringing field.

Capacitance dictates there must also be charge built on the opposite side of a plate, which creates that potential difference.

This doesn't mean one side of the continental plate is all positive and one side negative.

Ionization of native materials generates plasma, which by definition is a mixture of positive and negative charge; but plasma self-organizes, producing regions of high intensity positive or negative bias, surrounded by shells of weaker plasmas.

Coherent structures evolve, as waves of energy pass through at varying frequency, forming patterns of compression and rarefaction in the fashion that sonic vibrations produce cymatics. Potentials oscillate between regions of high intensity, sometimes spiking to extreme levels from harmonic feedback and constructive interference in the manner of circuits, commonly

referred to as RLC circuits in electronics.

It's the spiky surges that send sparks flying. We will now discuss the underbelly of North America from where these sparks originated and what we can infer about its features.

In keeping with the ionic storm protocol, we'll use Earth's geology, the planet Jupiter and the fractal self-similarities of charge diffusion as our living laboratory for evidence. As discussed in the previous chapters, river channels align with faults that are cracks in the earth caused by the intense heat, pressure, and charge depletion of an arc blast from surface-conductive discharges.

They are literally the dragon's footprint; but not all dragon prints result in river channels. In some places, surface-conductive discharges created faults that were later buried, or somehow isolated from the watershed, so no river resulted.

The San Andreas Fault is one such beast.

It was created in the same discharge event that created the Colorado River.

A resonant-frequency reactive discharge sent a filament of induced current

northwest, while the mainline current of the Colorado filament turned 90 degrees east to the Colorado plateau. This filament is the San Andreas Fault system, extending from the Gulf of California along the western fringe of the continent, to the Juan de Fuca plate. The fault follows precisely a portion of continental plate boundaries, surrounding the Pacific known as the Ring of Fire.

What this means is that the San Andreas Fault is the result of a surface-conductive branch filament of the Colorado discharge, induced along the plate boundary.

This branch formed a parallel circuit with the Colorado River branch, thus forming a parallel RLC circuit.

The parallel RLC circuit has a characteristic ability to amplify frequency, to the point of producing resonant frequency reactive power discharges, which is what we see along the Colorado River.

Not all dragons are necessarily parallel circuits. So the Colorado San Andreas system has some exceptional features and may be unique, at least on Earth. The fact

that the San Andreas is a filament of current
discharging along this path, can be demonstrated
by looking at a real-life dragon in action.

Of course, this means looking to Jupiter,
where a similar circuit is in action
right now. Capacitance forces a mere
response to subsurface charge
accumulation on the continental surface
and in the atmosphere. So, the landscape
and atmosphere reflect the ground currents.

This image of a long oval storm system
on Jupiter has been presented before,
in chapter 7 as an analog for the storm
that created the San Joaquin Valley in
California, and its ring of mountains,
including the Sierra Nevada range. The red
line traces the San Andreas Fault analog
that exists beneath Jupiter's clouds in the
same geometry. It rides next to long, thin, dark
filaments making French curves in the clouds.

These dark filaments are where low-level winds dive
beneath higher shelf clouds, to feed the jet stream
that follows the discharge, creating the fault.

Where it meets the branching Garlock Fault,
it created a triangle of Venturi winds.

Similar faults, or currents, are embedded in the

Sierra Range where you can see dark filaments in the cloud. In other words, you're seeing a dragon from above, the jet stream being a charged plasma wind generated by induction along the path of the ground current, which takes an identical path through the storm system that the San Andreas does, due to the fractal symmetry of charge diffusion in similar circuits. Two similar circuits will create similar patterns of charge diffusion; never exact, but similar, like fingerprints and snowflakes.

Both circuits create paths of current with capacitance and inductance that form self-similar diffusion patterns in the form of weather and discharge. The difference in size between Earth and Jupiter doesn't matter.

The processes are all scalable, and the difference in chemistry matters little, because the patterns are formed by charge diffusion, which is regulated by the circuit.

The circuit dictates the plasma behavior and arranges the chemistry to suit.

One could say the circuit creates itself, like Escher's hand that draws a hand that draws itself.

That's a big insight, by the

way. I hope you noticed.

As far as Jupiter is concerned, what this means is there are crustal ground currents on Jupiter that form circuits geometrically similar to certain ground currents on Earth.

We don't have any direct evidence for what constitutes ground on Jupiter, but the evidence that ground currents are there, is in the shape and actions of the clouds. Capacitance between ground and atmosphere dictates the presence of ground currents, producing self-similar storms in feedback with currents in the atmosphere. Why Earth and Jupiter should have geometrically similar electrical circuits within their crusts, may seem a ridiculous coincidence, if you accept the consensus view on planetary formation.

So don't. Planets are formed as drops and bubbles, spit out at bigger planets or stars.

Drops and bubbles are fractal entities shaped by electrical bonding, surface tension that is.

Or as I like to say, spherical capacitance.

It should be no surprise that complex fractal bubbles will also have

complex fractal surface features.

Fractals, being fractal, self-similar that is,
and planets everywhere being drops and bubbles,
they should all display similar features.

But you will not see the similarities, if
you categorize and analyze them
as solid or gaseous structures,
or as thermodynamic or chemical entities, or as
gravitational bodies caused by wiggly space-time.

They only make sense if you analyze them as
circuits. Then it not only makes sense, it yields
real useful knowledge, to see Earth and
Jupiter with nearly exact fractal symmetries.

The presence of the San Andreas Fault also
betrays that the plate boundary hides a telluric,
or subsurface current, formed by
charge accumulation beneath the plate
in the fringing field along the plate's edge.

We'll now look at the evidence for this
subsurface current. We can't see what's beneath
the crust, but we can make some assumptions,
based on surface features.

We know subsurface currents
must generate heat, given
resistance in the ground. So, we cannot
expect to find volcanoes and seismic activities

concentrated on these currents. And so we do.

Charge collapses within and beneath the continental plates, because they present a sheet of dielectric matter to energy flowing in and out of the earth.

As charge connects beneath the plates, it migrates and concentrates at the plate boundaries. The fringing field at the plate boundary is the reason.

The transition from thick continental plate to thinner oceanic plate, or any cracks in the plate, creates a fringing field that provides better connection for the pent-up charge beneath the plates to escape. But the potential still has to be large enough to make a spark to close the gap across the fringing field. And in the meantime the fringing field accumulates charge.

Filaments of current are induced along the length of the fringing fields at the plate boundaries by earth's magnetic and electric fields, forming circuits. You should notice that the plate boundaries connect in continuous, looping circuits around the earth. To illustrate, one of the better examples is the Caribbean plate, or more precisely, what I call the Caribbean current loop.

[Music]

Notes Toward an Electric

Catastrophist Model for Geology

Good afternoon!

My talk is going to be based on the

Venus section of Worlds in Collision.

It's not really the words of Dr. Velikovsky

but the survivors', that he quotes.

And the description of the

events that took place.

The dates are not important.

I'm comfortable with his dates.

It doesn't really matter.

It could be Nibiru, could

be Saturn, Jupiter, Mars,

but I'm comfortable

with Venus as he thought.

Let me get a different

image there.

The picture that's painted

is dust, sand, gravel, rocks, very

large boulders falling from the sky,

mingled with a river of fire.

Dr. Velikovsky thought that was

oil. In many cases it might be

but it might also be plasma,

similar to the Aurora.

The dusts and rocks and gravel and
boulders were mingled with a river of fire.

According to the Mesoamericans,
the rocks were glowing red hot.

If you can heat a rock to
incandescent, incandescence,
it would be much
easier to heat dust.

So you have molten material.

The electromagnetism might
pull in iron preferentially.

It's raining oil for
days and nights.

The oil's running through rivers, people
climb trees to escape it and drowned.

According to the Mexicans, I
think, it killed more people
than the rocks and
everything else combined.

There's a hurricane going on.

Beyond our description,
worse than Andrew,
which almost killed me,
might have actually.

The Sun rises where
it used to set.

That's a tough one. And
it could be a tippy-top,
but from what I see in the field it
really looks like it stopped rotating
and went the other way.

You can go to the headwaters
of the Colorado River.

Rocky Mountain National Park, Fraser,
Colorado, spend quite a bit of time there.

You can see the valleys are full
of sediment to a large height.

Flat on both sides, equal heights as if
water was pushed up from the equator.

There's a 13 and a quarter mile
bulge of water at the equator
because of centrifugal force.

If the earth ceases to rotate,
according to Dr. Velikovsky,
the water would rush
north and south.

The dust, it's falling, would
be part of the flood.

That is what I believe is the sediments
up at the top of the Colorado drainage.

So it's really a mess
and it's electrical.

Ah, an interesting image from

Wiki images, Wiki Maps...

The yellow is sediment, I believe

that's part of the flood.

It was basically under

water, being moved around.

The part that's not yellow, this

area here is circle right there,

are mountains in a

circular pattern.

Within that circular pattern, which I think

is a vortex, there are more vortices.

Right here and right there, we'll

get into those a little later.

But what's kind of interesting, we were

looking at Valles Marineris earlier, Wal

seeing the shape of the galaxy.

I see mountains coming up through

Canada, curving to the left,

they actually go through

Alaska into Far East Russia

and in an arc of

volcanic islands come down.

Coming out of the south of this, you

have mountains curving to the right!

Oh, the Canadian Rockies

are a little blip there,
you got Baja here,
kind of similar to the Canadian Rockies
on the right-hand side of this.
These mountains come down substantially
cut through Mexico, Central America,
actually go through
Columbia, Venezuela,
with an arc of volcanic islands
coming back into Mexico!
It seems to look a little like a
galaxy or a huge low-pressure area,
like a giant hurricane.
That shows the mountains going
through, coming around and back.
Again, down, around and back.
Could be a coincidence
that in an Electric Universe,
I picture Venus
sitting over here,
as it bops up and down. As Dr. Velikovsky
thought it would come in close,
there'd be a discharge, it would
release it and it came back down,
during the plagues of Egypt, during
Exodus, that's how he describes things.

These are volcanic formations.

They swing around here, they
go up, come around down...

A lot of these volcanic formations
have something in common;
Missing volcanoes.

The volcanoes have gone away,
they've disappeared completely.

The geologists are fuddled,
they go out to look for them,
they can't find them, they
know they have to be there
because there's the salt!

What else could possibly heat
dirt other than a volcano?

Except in an Electric

Universe, with a river of fire
we now have another option for
molten rock, heavy with iron.

Electromagnetically, possibly, pulling
in iron from a dusty atmosphere.

As a friend of mine points
out, it's dusty plasma.

So it's going to be affected by an
electromagnetic event hovering over here.

10^{39} or a lot more than gravity.

It could be pulling in dust as we interact
with comet Venus from thousands of miles.

Shaping it with a hurricane-force wind
and accumulating it in mountains.

These are plutonic, this is
granite and its cousins.

It's interesting and that on the left
side of this, there's a lot of granite.

On the right side of this, there's a lot
of granite, it seems like a mirror image.

Oh also, this is
kind of interesting.

This is the Sierras, is a 400 mile
long pluton of solid granite.

The largest pluton
on the planet.

Under the pluton of
granite is sediment.

The granite supposedly
bubbled up from below.

So how does sediment get
in between that?

There should be a tongue of granite going
down to wherever the granite came from.

So geologists have the Pacific plate
shoving sediment underneath of the granite

because they have to explain it.

But if the granite

came from the air,

it would be sitting on top of the

sediment that was there to start with.

Now we come over to metamorphics.

The Sierras have metamorphic rock but not

enough to show up on here dramatically.

But the coastal range does. And you can

see they're sort of a circle there.

And then we have the Canadian Shield

with Hudson's Bay in the middle.

This is all flat and

it's all metamorphic.

This might have something

to do with that.

It could be a positive, negative,

negative positive, I'm not sure.

I'd like to have EU

folks sit around and

drink and talk about this in the

evening while I can listen.

But it seems as if something

happened over here.

And I'll show later on that it seems to have been

rapid and it seems to have been one event

for all the mountains. And I
don't want it to be that way,
I'd like it to be
simple and embraceable.

But it's not, it looks like it
was really a horrible thing,
with very few survivors.

And in 'Worlds in Collision', the survivors
thought they were the only ones.

They came out of their caves.

They were the only
ones that made it.

They don't know anybody
else in the neighborhood
for a 100 miles, there's
no communication.

That's a recurring theme.

It happens in Mexico,
it happens a lot.

This is on a highway
93, north of Las Vegas.

This is welded tuff.

It's a wonderful formation.

Welded tuff is red-hot dust that comes
out of a volcano and blows downwind.

It's so hot that it sticks to the

windward side of obstructions.

Sticks to the windward side of obstructions
and grows back and up into the wind.

This is an accepted
geologic process.

The problem is, many times this is
40, 60 miles from a missing volcano.

And if you look at a volcano at
night when the dust comes out,
its incandescent.

It blows downwind a very small distance
and it's no longer incandescent.

So 40 miles downwind, it's not going to
make rock, it's going to make dirt.

You need something to keep it
hot, like a river of fire.

It's a close-up photograph of it.

It's 30, 40 feet
thick on the top.

Solid rock, not like partial
rock, this is gnarly rock.

This is the edge
of the formation.

We have windward over here
and leeward over here.

The wind is blowing

from here this way.

It gets to this Ridge

and it goes beyond, it's...

At first I thought these

were dunes, everywhere.

But dunes only

happen with dry sand.

This isn't dry. This is either wet dirt, clay,

mud, sticking or it's incandescent, sticking,

sticking to windward and it

can't accumulate on leeward

because it blows past it.

So you get layer after

layer building up,

and you can see how these

layers accumulate it.

This is not wild speculation, this is a

geologic process that's accepted universally.

The welded tuff process.

When my friends and I discovered

this, it was really convenient,

it made everything so much more

simple than it had been in the past.

You don't need a lot of post-

process activity to do this.

It happens on its own and it makes

a dendritic ridge along the side.

That's Mars.

That's this process, they

kind of, look like cousins.

So it's hard,

if you can't say that electricity can't

make dendritic ridges. It probably can.

But there's a lot of other processes

that seem to produce dendritic ridges.

Mount St. Helens after the

landslide of pyroclastic flow.

There were explosions in the valley

where this material accumulated.

After the explosion, the sides of the

formation that was created by the explosion

started to slough.

It created dendritic ridges.

There are dunes in San

Francisco after a storm.

As with the landslides, it

created dendritic ridges.

There's a number of fact, number of

ways to make the dendritic ridges.

And this seems to be one.

Right along here you can see back here,

there's another one, another one back there.

This is the area the
wind's coming this way
and these welded tuff formations
go all the way across Nevada.
Hundreds and hundreds of miles
of mountains made of welded tuff.
I think they're external, I
don't think they fold it up.
I've been looking for folded mountains. They
might exist, then I'd be happy to find one.
Dr. Velikovsky thought
mountains were folded
because of the stress of
this ceasing of rotation.
His advisors gave him the
standard geologic model.
I hate to disagree with them but it
seems like there's other options.
So this is an area,
west of there.
These mountains seem
rather circular.
And the circularity of them
goes back to that point.
There are circular mountains over here
right at the base of the Sierra.

This one here in particular.

These are welded tuff but on top of a lot of these mountains is dolomite.

And dolomite is a big problem for geologists.

If you had googled 'dolomite problem', you'll get page after page of links.

It doesn't form at the bottom of oceans the way geologists wanted to.

They need it too but it doesn't do it, according to chemists.

They've tried to make dolomite precipitate out of ocean water.

They can do it but they have to boil it and fill the water with uric acid.

So, picture dinosaurs urinating in a boiling ocean.

600 million years ago.

And then that dolomite, that can't happen, is thrust up on top of mountains, like the dolomites in Italy.

The top of the mountains have the dolomite!

Some was like I wrote the reports about the dolomite myself.

The beauty of dolomite is when

they went to comet Halley.

They found 7% dolomite, according to NASA, and they claim it's understated.

Because its tiny little crystals (are) microscopic and their spectrometers miss a lot of it.

So there's probably more.

So you have comet dust that can answer the dolomite problem.

All over the world you have this dolomite.

It's, it's my best friend.

It's just the most wonderful stuff.

So this whole thing seems to be a vortex.

As part of that larger vortex that we saw earlier, this would be the western part of it.

That shows you where the center is, that shows the mountains.

There's a dolomite mine right there,

I'm friends with the general manager, I think he might give us a tour on our tour.

It's the largest one in California but

the dolomite seems to be circular.

This is Four Corners,

we're down here.

This red thing here are granitic

and metamorphic mountains

that seem to be in

a circular pattern.

This goes over to

Highway 93 right there.

So this seems to be the eastern

vortex with a vortex to the west.

And that's where

they come together.

And if you have two vortices, you might

actually have a double layer in between,

explaining all that melted stuff.

And there's other things going on up here

which I'll get to a little bit later.

Actually they're right there.

Could be a coincidence all

this, I really don't think so.

This is the welded tuff.

This is actually dolomite

down here, trending this way.

The welded tuff trend

were at the, on the leeward side.

Welded tuff trends back

in the other directions.

These seem to have been

fairly simultaneous.

I would think that these were

first and then this covered

the area going behind so it gives you

a feel for the layers of dolomite,

layers of shale, the

dolomite comes in layers

and it's up to 6,500 feet thick.

And then on top of one formation

like the Bonanza King,

which can be up to 6500 feet thick, there's

more dolomite and limestone underneath of this.

Limestone comes

from comet dust too.

From comet Halley.

I'll get into the oil from comet Halley

a little bit later if I have time.

There's cubic kilometers of

it on this little tiny comet.

This is welded tuff south of

Pahrump, gives you some idea.

It seems like the current

density goes up and down.

I picture Birkeland current spinning. One positive filament, one negative filament.

They're attracting different things ionically.

So they're pulling dust and making layers.

Dolomite shale, different types of welded tuff layers.

Everything has an ionic nature, it's going to be attracted ionically.

But as it spins you get different types of material.

These are mountains. I just spent time here recently.

This is dolomite and it's alternating layers and it makes dendritic ridges on the leeward side.

It's just a natural part of the process, you don't have to add anything.

It comes out this way.

I've done experiments with spackled wall stuff and it builds back up in the direction that you're spraying it from kind of similar to this. And it

makes a cliff on the leeward side

This is looking from the side

so that you can see

the layers go through.

They're not just a surface feature.

One layer, another layer,

all the way through.

Dolomite shale, dolomite

shale, dolomite shale.

I'll get into it all right now.

Almost all of the oil we've recovered, up

until very recently, has come from dolomite.

Because it's porous. We

couldn't get at the shale oil.

Dolomite, being porous, you should put a hole in, a,

earth, open pipe, the pressure pushes it in

and because it's porous

it can keep pushing.

With shale it's a solid rock, you

have to frack to get it out.

Comet Halley has the equivalent

of cubic kilometers of oil.

Almost identical to

the oil in oil shale.

That's really convenient from a

little tiny comet, 12 by 8 miles.

So think about Venus

being 8,000 miles across.

Scary comet, eats people, we saw

Dave's pictures at all that.

It gives you the opportunity to

explain the dolomite and the oil.

They come together, they're a package, they're

part of comet dust according to NASA.

If you search shale oil, the

last paragraph on Wiki,

well it talks about

extraterrestrial oil and comet Halley.

And the cubic kilometers. Each cubic

kilometer is 8 billion barrels.

Think of the potential for Venus

and think of 'Worlds in Collision'.

And eyewitnesses emotionally describing

rains of oil for days and nights.

And it runs down

rivers into lakes.

Just north of here, not too far, is the

Green River Basin. North of I-70 in Utah.

There are 3 basins

associated with 3 lakes.

(It) has 4 trillion barrels of proven reserves,

more than half of the oil in the world.

Proven reserves, there is oil
everywhere, it's not theoretical.

I think, that yellow map
shows what caused it.

It's where the oil came from. It
comes from comets, not dinosaurs.

And it doesn't...

The abiotic oil people have it coming
from volcanoes under the ground.

And it gets
really complicated.

If you listen to our ancestors, it
came from above. It's common oil.

In my humble opinion.

This is Oregon, Smith Rocks.

This is welded tuff.

That's windward, that's leeward,
these are the dendritic ridges.

The missing volcanoes (are)
over here. They went away.

I want to do a charity
for missing volcanoes.

This is a map showing it, you
can see that it makes pinnacles.

That's the process. These are individual,
they start to grow together over here.

That's my photograph.

It makes triangles!

This is the flat, leeward side,
when the current density is high.

It seems like this
process is exacerbated.

And it grows back, the
wind's coming towards us.

This can't grow because the wind is coming
around here and the dust is blowing past it.

It blows into water, it gets washed away.

Even if it's red-hot, it's now dirt,
gets washed away.

This is the water
line, you can...

There's actually a creek
that comes by here,
must have been flooded
during this flooding stage.

But these shapes are
really important.

We're going to see Mount Whitney
shortly, which is granite.

It has the same shape and a completely
different explanation from the geologists.

I'll get into some funny

stories about that later.

This is Mount Whitney.

This would be windward, this

is leeward, here's the cliff.

Here's what I like to

call the water-ski-ramp.

It's nice and flat, building

back and up into the wind.

It's hard to see the layers of

granite because it's so molten.

The layers seem to

have blended together.

This is looking at it from above.

It's hard to see a little bit,

here's the ridge line, right there.

This goes down to the Kern River. Goes

down, empties out down by Bakersfield.

And then these mountains start

again with a ridge and a windward.

This is leeward again and windward. It's

like the wind was coming from the West,

making these

mountains of granite.

This one shows it more clearly.

Windward, leeward.

Same thing there.

There's Mount Whitney.

Reminds me of welded tuff.

And if this is

bubbling up from below,

it shouldn't look anything

at all like welded tuff.

Has a completely

different explanation.

They seem to be cousins.

This is Maroon Bells,

south of Aspen.

This is conglomerate, people try to

climb it. They die, their anchors fall.

And then the Rangers

have to carry them out.

They gave me all these descriptions

of how difficult it is

to carry dead weight

out of the mountains.

It's not consolidated.

This is leeward.

This is the other

side of the valley.

This is windward. The next

mountain is the same.

They repeat themselves. The wind

is from the same direction.

Although these are not straight-line
winds. In many cases they're vortices.

And the trending is different
from one side to the other.

Which is difficult for
plate tectonics to explain.

They don't have just one
plate bumping into another.

They have to have a
disappeared plate.

Really, oh wow, all right.

This is Frenchman Mountain.

Just east of Las Vegas.

You can see the layers. They all go back. These
are the same layers as the Grand Canyon.

Right here at a 50° angle,
that's one extra layer.

This is leeward.

It's building back.

The wind for this is all
from the same direction.

If the wind was from the south this would
be covered. You won't be able to see it.

If the wind was from
the west on this side,

it would cover it, all

that would disappear.

Unfortunately, this looks

like it's one event.

Down to the

Vishnu schist.

And the granite that's at the

bottom is same as the Grand Canyon

I don't want to

make it so dramatic.

But unless the wind was from the

same direction for multiple events,

you wouldn't get this.

And that makes it

really spectacular.

I'd like it to be less spectacular.

It would be more embraceable.

But it's as if that happened

during the plagues of Egypt

while that vortex

was taking place.

There's going to be a discussion

later on, this evening at 6:30.

Informal, with a computer where I can

use Google Maps and all my images.

And we can go through

all these things.

That's the leeward side
of Frenchman Mountain.

The Vishnu schist is down there.

You can see the layers building
back. It makes dendritic ridges.

They come ... Five
minutes, finished.

Cool, it's better than

I was hoping for.

This is the majestic catalinas,
just north of Tucson.

This is nice.

It's metamorphic, you
can see it trends back.

This is granite, it's
unbelievably thick.

This is like a couple thousand
feet thick of solid granite.

This is the leeward
side on the back.

You can see the "water ski
ramp", it's nice and smooth.

The wind was coming towards us.

This is Snowdon Peak. It's
quartzite, it's metamorphosed quartz.

There's missing pieces. I think

this was electrically removed.

You can see the layers, if you look at the
photograph where it's clear on a computer,
building out back towards us.

This is the leeward side,

the kind of dendritic.

But you can't see those gaps,
because the energy that created them, I
think, was coming from the windward side.

It didn't get through.

This is the base of it. It's all
dendritic, on the leeward side.

This is Zion park. When I
talked about Snowdon Peak,
when I was writing this, or sort of
writing it, there's not a lot of words,
I said that I had never seen a canyon that
would seem to be excavated electrically.

Although I was open to it,
I'd love to find them.

But they don't seem to
be produced that way.

But these are, these are three thousand
foot canyons that are straight.

And it seems as if the electricity went right

through it. It goes past the high point
where the dendritic canyons,
which I think are fluvial,
stopped at the high point. They get
smaller as they go up. There's less water.
They don't go past the ridge,
these go past the ridge.
This is Snow Canyon. Over
here, this is Kolab, Zion.
These are all zapped.
These are where the two
vortices are coming together.
And it seems as if something came from
the south and ripped these suckers out.
This is shale, this is mud. Up
at the top of these formations.
That's how high it is.
These formations have the
same mud on the top of them.
The current couldn't get to it.
But originally, this must have
been covered just like that.
And then these
canyons were removed.
It removes the sediments much easier than
it removes the welded tuff formations.

That's the close-up.

Now you can see the slosh here. You
can see the depth of the canyons.

They go straight, they
don't follow the drainages.

They don't follow the
dendritic paths.

There's rivers running
through here.

They don't go where the path would be easiest.

They just rip right through a mountain.

So I've been looking for electric canyons.

Wanting to find them for 6 years.

And finally, I've missed them because

I was looking for dendritics.

In reality, the key to this is just
like the rilles of Mars and the Moon.

They're straight.

And I think it's like a ray gun, probably
electrons, going right through it.

Although, I'd like to hear Wal and Don
and Mel and folks talk about this.

Again with a lot of liquor.

This is what happens.

This one, last one.

This is at the edge. This isn't

in the canyon that's removed.

This is where the

process is slowing down.

This is what the process is like.

It scratches the material away

and disappears it into dust.

This is the marks, these are

the marks that you look for.

They're in Las Vegas,

at Red Rock Canyon.

You can see how things get

affected electrically.

This is the Electric

Universe version of geology.

Please stop by.

Welcome to Space News from the Electric Universe brought
to you by the Thunderbolts Project™ at Thunderbolts.info

[Music]

Victory for one theory should
mean defeat for its rival.

A European Southern Observatory press
release boasts, “Pulsating Star Mystery
Solved” Cepheid variables

are stars whose rates of
pulsation vary with their
luminosities: the brighter the star,
the longer it takes to complete a
cycle of variability. It’s called
the period–luminosity relationship.

By timing the period of pulsation, the
absolute luminosity of the star can
be calculated. By comparing that quantity
with the star’s apparent brightness,
the star’s distance can be determined.

Edwin Hubble’s discovery of Cepheids
in the Andromeda galaxy in 1924 was
the key to proving that the “spiral nebulae,”
formerly thought to lie inside the
Milky Way, were actually independent
galaxies far outside the Milky Way. Until
now, two theories that predict properties

of Cepheids have been in conflict.

The press release explains: "Predictions of their masses derived from the theory of pulsating stars are 20-30% less than predictions from the theory of the evolution of stars. This embarrassing discrepancy has been known since the 1960s."

The newly discovered Cepheid is a member of a binary system in which the two stars pass in front of each other as seen from Earth.

This configuration enables astronomers to measure not only variations in their luminosities but also their orbital velocities. From these measurements, the stars' masses can be determined with unprecedented accuracy. The press release states, "The mass of the Cepheid is now known to about 1% and agrees exactly with predictions from the theory of stellar pulsation. However, the larger mass predicted by stellar evolution theory was shown to be significantly in error." Also significant is this last result is passed over without further comment.

One can presume that the aforementioned

“embarrassing discrepancy”

has paralyzed advocates’ abilities

for critical thinking. The discrepancy can

only be embarrassing for an

orthodoxy of belief which admits,

with false humility, that

Cepheids are “not fully understood.”

The admission thinly hides the

implied obverse that Cepheids are

“almost entirely understood,” a

scientific conceit rightly deserving

embarrassment. That the result

confirms the stellar pulsation theory

necessitates that it falsifies

the stellar evolution theory. If

astronomers were philosophically honest,

they would declare the theory nullified in

accordance with Karl Popper’s

1959 proposal of falsification

as a criterion to distinguish a

scientific theory from a pseudo-

scientific one. Falsification

was to be a “convention”

that required scientists to agree not to adjust

a theory to accommodate test results but,

when falsified, to start over with searches for alternative theories.

Falsification is not a property of a theory that justifies acquiescence in orthodoxy, but a convention that enables opportunities for discovery of new theories and the overthrow of conceptual monopolies. But in view of past performance, stellar evolution theory will simply be “adjusted.” A substantially different theory will be put forward with the same name in order to maintain the illusion of continuity and the cumulativeness of conceptual progress. The only continuity will be the tenure of advocates; the only cumulativeness will be in their power and salaries.

The conceptual claim is fraudulent. In the Electric Universe, variations in luminosity are caused by oscillations in the currents powering the stars and are likely “atmospheric” effects. Mass is proportional to the charge on a body and may be unrelated to the oscillations unless they deposit or remove charge.

The process is “hardly at all understood” and is an opportunity for discovery and development. When Cepheids are used as indicators for the distances to nearby galaxies, a necessary assumption is that mass is invariant throughout the universe. But if mass varies with charge, each galaxy—and therefore each star in it—could have a different charge distribution with respect to the intergalactic plasma. Each galaxy could have an idiosyncratic period-luminosity relationship for Cepheids, rendering them unusable for determining distances to other galaxies. Halton Arp’s discoveries of connections between high-redshift quasars and low-redshift active galaxies have already brought “ultra-luminous” objects at great distances back to being “normally luminous” objects at much closer distances. The objects may even be “under-luminous” and located at nearby distances. With both redshift and Cepheids thrown into doubt, astronomers are left with no reliable way to determine distances

to galaxies. Astronomy is
once again open to new
fundamental insights. The
ornate knowledge with which the
Queen of the Sciences has
proclaimed herself to be draped
is turning out to be invisible. Perhaps
she should not have paraded herself so far
down the street without an
alternative theory at hand.

[Music]

You've just entered the
theater of an alien sky.

If the words and images seem strange
to you there's a reason for this.

Our world was once a
vastly different place.

To experience this won't hurt you
and there's nothing to fear.

In previous Discourses, we've noted some of
the remarkable ways the mythic ship of heaven
contradicts all of the usual
translations of Egyptian texts -

the very texts that give us the most concrete
information on this vehicle of the gods.

Translators sought to accommodate the
problem by mistranslating the literal
meanings of Egyptian words. But the
real problem has its source in the
inescapable motion of the ship itself.

The ship flatly refuses to cooperate
with any solar interpretation. Why, at the
beginning of the ancient "day" was the ship
described descending, while at the
beginning of the ancient "night" it was
rising? And why the consistent linkage of
the descending ship with the left and

the rising ship with the right? In fact, every detail of the cosmic ship becomes absurd the moment we attempt to relate the concrete language to the appearance of the Sun in our sky. In following the literal evidence of a revolving crescent, we've noted the ship above in it's phase of dimness, and below in it's phase of brightness. This consistent language holds vast implications for our understanding of the ancient sky. But it reverses every common assumption about the regions of the so-called day and night journeys of the ancient sun god. Historically, one misconception led inescapably to another. The regions above and below in the cosmic circuit invariably came to be translated as heaven and earth, a mistake that precluded any useful understanding of the ship of heaven. The two most frequently used Egyptian words for the regions above and below can be seen in the pairing of the concepts Pet and Ta. When standing in combination, Pet always meant "the upper region" and Ta always

meant the region "below". These are the accepted literal meanings of the combined words. In the Pyramid Texts, we find Night-bark of Ra sailing over Pet, the upper region. But what is this sun god doing above at night?

"Thou sailest on high in the evening barge" means literally, in the phase of dimming (above).

It's not literally our night, the ship was depicted above in the literal phase of dimming, mistranslated as a night journey.

The upper region Pet was also represented by the arching body of the goddess Nut, and we see the ship in it's so-called night journey, moving up and across the region of Pet, the region above.

And it's a wonder that virtually no one has asked why is the ship above in this phase of the daily cycle when the solar mythologists have claimed for a century and a half that the god crosses below the land at night to the place of sunrise. In contrast, the so-called day ship occupied the lower region - contradicting all standard treatments of the subject.

The best way to test an extraordinary idea is to force the reasoning to its extreme where logical implications can be confronted in the most explicit terms. If an idea is fundamentally incorrect the extreme cases will invariably reduce the idea to absurdity. In fact, the ship of heaven gives us some excellent examples of the logical tests. Just imagine the situation faced by ancient sky worshipers looking back to the age of the gods, but with inadequate conceptual tools to comprehend the symbolic language.

The crescent above, when interpreted mythically as a ship, would surely have provoked some enigmatic Egyptian responses to the afterlife journey of the king in this cosmic ship. How would the celebrants of this journey, regard a ship that was inverted - upside down - as it traversed the upper region. In fact, to the Egyptians the journey above, the so-called night crossing was fraught with peril. But why? There's an irony in the way the Egyptian priests

sought to protect the king, upon his death, from things clearly remembered about this envisioned voyage with Ra across the upper region. Exactly as we would expect, the texts convey a fear of traveling upside down during this passage. So there's a spell for not traveling upside down in the realm of the dead, and one says simply, "Not to walk upside down" ... "I will not be head downwards amongst those who are head downwards", reads another text. "The king will not be hanged head downwards". The deceased declares, "It is the Night-bark and the Day-bark ... I am not upside-down in the presence of Ra". The idea of a ship sailing upside down is well worth tracing to its origins, and the artistic traditions do not disappoint us, but they must be followed back in time to their archaic roots. In later times, when texts describe the ship's journey above, in the literal phase of dimming, the words were mistranslated as a night journey, a blatant contradiction. For us however, the problem is that the ship was

shown upright, not inverted, as our reconstruction requires. But the more archaic tradition we are looking for comes from the Papyrus of Amen-Hetep in the Cairo Museum. In the second scene depicted on the papyrus, the goddess Nut is shown in the usual arched or semicircular fashion as representative of the upper portion of the ship circuit. And the ship of the sun itself is depicted in its night journey crossing the body of the goddess. But here, unlike the more familiar versions of later times, the ship is not upright but inverted. And so we ask, is it possible that the graphic image speaks for an original tradition, later distorted out of a royal fear of "traveling upside down"? The answer comes from hieroglyphic evidence that preceded by many centuries the more familiar artistic portrayals of the night journey. In Spell 211 of the Coffin Texts, this voyage, literally the phase of dimming, is described in the instruction to the newly deceased king. He has to

learn the path of the right (Amentet, the ascending path), then to "ferry across the upper region when the divine land is turned upside down". The position of the ship at this moment is presented in the hieroglyphic text: not just the land of the gods, but the ship itself is upside down.

Perhaps the idea that the land of the gods could be turned upside down is no less mystifying than the inversion of the ship. But when we realize that the crescent-ship is the brightly illuminated portion of the divine land we see that the inversion of the crescent in it's so-called "night" position, literally the phase of dimming would be viewed as an inversion of both the land and the ship.

In our reconstruction of this ancient imagery, we've suggested that the ship revolved above and around a visible, axial column, remembered as the world mountain ... known globally under many names and mythic interpretations.

If this conclusion is correct, we should expect a direct confirmation of the

ship's connection to the mountain of the gods. Call it an inescapable prediction of the reconstruction. The Egyptian sources speak eloquently in confirming this very connection. In the words of the deceased king, the texts say, "I assume my pure seat which is in the bow of the Bark of Ra. It is the sailors who convey Ra round about the Mountain of Fire and Light, and it is they who will convey me around about the Mountain of Fire and Light".

Hail, Only One! Behold, thou art in the Sektet boat as it goeth round about the Mountain of Fire and Light".

In these quotes, I've used the literal reading of the Aakhut the cosmic mountain, not the inaccurate and highly misleading translation of the mount as a mere "horizon". That allows us to see the underlying symbolism in it's integrity. As we have previously shown, the pillar and crescent mean that revolving arms of the pillar god, the horns of the Bull of Heaven and the twin peaks of the world mountain, all predictably equated with the cosmic ship.

So once more, we're brought back to our earlier admonition: do not believe in coincidences. The ability of a concrete reconstruction to predict explicit details, when the details are simply absurd under common suppositions, is not to be taken lightly.

In fact, the contrasting phases of the ship of heaven in it's daily journey, will give us an ideal introduction to an even broader mythic theme - the cosmic twins as figures of the revolving crescent in it's archaic daily cycle.

That will be the subject of our next Discourse.

Welcome to the Electricity
of Life, brought to you
by The Thunderbolts Project™
at Thunderbolts.info

What is the role of electromagnetic
fields in health and healing?

Today, various electromagnetic therapies have
gained unprecedented acceptance and use, and
scientific studies continue to affirm the
influence of electromagnetic fields on life.

In Western medicine, the tradition
is for various specialists
to treat supposedly
disconnected parts and organs.

But the leading proponents of
electromagnetic healing propose
a new way of seeing the human
body and all living organisms.

One of the leading pioneers in this rapidly growing field
has been Dr. Jerry Tennant, an ophthalmologist whose book
series 'Healing is Voltage' describes his groundbreaking
research into the electrical circuitry of the human body.

Today, in part 1 of this two-part
presentation, Dr. Tennant begins by sharing
his own remarkable challenges which
catalyzed his scientific journey.

I always begin my discussions
with the disclaimer
that I'm not speaking
with my Texas MD license.

I'm speaking with my Arizona MDH license.

Arizona and Nevada have special
medical boards for Integrative
Medicine and homeopathic medicine
and I'm licensed under that Arizona
Board of Integrative and Homeopathic
medicine and that's the license
that I have this conversation
under and not my Texas license.

Well, I'm trained as an
ophthalmologist and did traditional
ophthalmology with a focus on
cataract surgery for 30 years or so.

I had a lot of fun being an
ophthalmologist, I was able to do a lot
of things that changed the way off
the ophtalmology is practiced.

I had a great deal to do
with bringing intraocular
lenses into this country,
and the use of them.

When I was trained, we would

simply take the lens out of the
eye and people would end up
wearing really big thick glasses.

Of course, those allowed you to see but they
were fairly disabling because everything
looked 30% too big and 30% too close and
it was hard to walk or drive or whatever.

So I was one of the early people
that put lenses in eyes after
cataract surgery and then there were
some problems with the European
lenses that we used in the beginning,
so I modified those and got
lenses to work better and then began
to teach others how to do that.

So that was one of the fun things I did.

When I was trained, we kept patients in the hospital for
two weeks with both eyes blinded, and of course the
elderly tend to become disoriented and even psychotic if
you keep them in bed and blind them for a couple of weeks.

So I developed a way to make a watertight incision so
that they didn't have to stay in bed and we could
actually get them up and walk them immediately from the
surgery table and that changed a lot of things as well.

And also we had a problem with people,
the elderly going into the hospitals.

You know, elderly people have a tendency to get a particular pattern of living, they eat certain things that agree with them and that keep their digestive and urinary processes working.

There are foods that upset them and so you put them in a hospital and change all of that.

They commonly get sick just from being outside their normal environment and often fall and hurt themselves.

One of the things we began then to work on was outpatient surgery.

So being able to operate on cataract and then have people go immediately home was a great benefit.

And we helped, along with my anesthesiologist and internists developed the techniques for that and taught how to do that.

And I guess, the next thing I did in ophthalmology that was kind of fun is, I did the majority of the research for the laser that's used in LASIK surgery.

So I did about 90% of that research

for the company called VISX.

But during that process of

doing the laser surgery,

we didn't know that the laser

wouldn't kill viruses.

And so I was using the laser

to carve the scar off of

the cornea of a fellow from

India that had leukemia.

And it carved the scar off well enough but

it also released viruses from his cornea.

And that went into my nose and into

my brain and I got encephalitis.

And so I got to where I could see

a patient, know what was wrong

with him but I couldn't remember

how to write a prescription.

I also developed spastic

movements, so I'd be sitting

there and all of a sudden

I'd do something like that.

Which doesn't work really well if you're

operating inside somebody's eyeball.

And I had overwhelming fatigue.

And so for all those reasons, I

had to quit work at the end of
November of 1995 and so I slept
16 hours a day, had two or three
hours a day in which I could
understand a newspaper and then like
a light switch, it'd go off and I
couldn't understand it anymore.
I went to the best doctors I could find in
Boston and New York etc, etc and they all said
well, you have three viruses in your brain,
we don't know what to do about it, good luck!
So during that two or three hours a
day I could think I had to figure
out how to get myself well and
so I began the journey of trying
to figure out how I might do that and
one of the things that resonated
with me was that every cell in
the body had the same hardware.
Even though cells look quite different,
just like a laptop looks different
than a desktop computer, they still
have all the same basic parts.
And I thought well, if I
can figure out how to
make one cell work I can

make them all work.

And so I started down that road and I

bought a bunch of cellular biology

books which I hadn't read in 30

years and began to read through

them and one of the things that

resonated with me it said that cells

have to run at a pH of 7.35 to 7.45.

Well, I didn't really remember much about

pH except it was acid-base balance, but

as an eye surgeon I didn't really need

to know much about that for 30 years.

And so, I began to study

pH and discovered that pH

is simply the measurement

of voltage in a liquid.

If you think about a copper wire used to turn the

switch on and electrons flow; you turn the switch

off and they stop, but in a liquid it can either

be an electron donor or an electron stealer.

And by convention, if a

liquid is an electron

stealer, you put a plus sign

in front of the voltage.

And if it's electron donor, you put a

minus sign in front of the voltage.

By convention also, you take the voltage and you convert it to a logarithmic scale from zero to 14 and call it pH.

So plus 400 millivolts of electrons stealer is the same as a pH of 0 and minus 400 millivolts of electron donor is the same as a pH of 14.

When you read then that cells have to run at a pH of 7.35 to 7.45, that's a synonym of -22 to -25 millivolts give or take a millivolt.

So I said oh, cells have to have voltage to work, that makes sense.

And so all of a sudden, this new way of thinking about things was obvious to me.

The next issue was how do you measure it.

Well of course, if you take a standard pH meter, it has a switch on it, you can switch it from pH or millivolts, whichever one you want to to have it read out and you simply stick the probe in a liquid and it'll tell you what the pH is or what the millivolts is and/or convert it to the logarithmic scale of pH for you.

So I said well, how do you measure it in the body,

and I found that a chap named Nakatani was the first person to use modern electronics to measure acupuncture circuits and published it in 1951.

So I got his rather rudimentary equipment, started measuring and where my brain should be running at -25 millivolts, I found it was running between -2 to -4 millivolts.

So then I knew why it didn't work, it didn't have the juice to do it.

So the next issue is well, what am I going to do about it?

So I began to do some more reading and found that a Russian chap had figured out the waveform that would more efficiently transfer electrons to cell membranes.

I began to try to learn about that and discovered that there was a Russian pediatrician named Zulia Valeyeva-Frost.

Zulia Veleyeva married the chap from London named Frost and moved to London.

And she was in the process of teaching people how to use this Russian device to transfer energy to cells.

So I called her and I said hey, I'm

interested in what you're doing.

And she said well, as luck

would have it, I'm teaching

my first seminar in San

Francisco in three days.

I said, sign me up, I'll be there.

So I went to that seminar and I got

the Russian device and began to

recharge my cells and in about six weeks

or so, things began to get better.

The other thing that happened about

that time was that I was on an

airplane and there was a nurse sitting

next to me from the Dallas area.

And she began to tell me that

she had lymphoma, had this big

tumor around her neck and

scattered throughout her body.

And that she'd gone to Mexico and

in a matter of days the tumors

were gone, even though MD Anderson

had told her to go home and die.

So I went down to visit with the docs that helped her

to see how in the world they did that and that was sort

of the beginning of my journey along with this other

business of the electronics to figure out how to get well.

And one of the things they taught me
was that essentially all tumors are
associated with infection in your
teeth, particularly root canal teeth.

And so she had gone down and they had
pulled her root canal tooth and cleaned
up the infection in her mouth and in a
matter of days her tumors were gone.

And she sent me not only photographs but
she sent me her medical records from MD
Anderson when she came back and they
proved that her tumors had disappeared.

So I had a root canal tooth here in what's called the
spleen stomach acupuncture circuit and so my Docs
here in Dallas said there's nothing wrong with that
tooth but I had also developed a bleeding disorder
and so I went back down to Mexico and had the dentist,
that had operated on this nurse, work on me and
when she pulled that tooth, there was so much infection
in the bone, it splattered all over her mask.

And yet I had no symptoms as far
as the tooth was concerned.

But 48 hours after she pulled
the tooth, my bleeding
disorder was cured and
that was rather amazing.

And then over the next six weeks or

so, my brain started to work again.

And so that's how I started going down this road of figuring out how the body really works and what the role of voltage is in the body, because it's obviously so different than what I was taught in medical school.

One of the things that I was led to try to understand was acupuncture.

Actually, that was part of a bigger picture in that I was sitting in my chair at home and I said to myself well, obviously traditional medicine that I was taught, told me go home and die.

And so that obviously wasn't working so well.

But sometimes chiropractic works, sometimes it doesn't. Sometimes acupuncture works, sometimes it doesn't. Sometimes essential oils work, sometimes they don't, etc etc.

So there are all these various medical models that sometimes work and sometimes don't.

So my thinking was, if I could figure out, there has to be a common denominator that goes through all of these.

Otherwise, because I mean if things work,
there's, it's because it's following
some basic laws, some basic rules
of how things are supposed to work.

If I could figure out what that common
denominator was running through
all of these different , then
I knew how to get myself well.

And it began to become apparent
to me that the voltage
piece was the common denominator
for all of these things.

Now, obviously it becomes very complicated when you start,
particularly someone like me who has no background
in electronics or even in physics, I had, you know,
freshman college physics and that was my background.

The issue is how do you figure
out what the common denominator
here is and I began to go down a
different road in that, I began
to understand that there's no
such thing as a bunch of little
balls of electrons spinning around
a charged ball in the center.

It's been known for probably
75 years or so that that's

really not what an atom is but

we still teach that.

And so I began to read and talk to, I

fortunately was able to talk to some various

people who had gone down that road

before me and began to understand more

about what an atom is because if you

don't understand what energy is, what an

atom is, even how the universe works,

you can't understand how a cell works.

And so I began to consider that

there were alternatives. So one

of the things that was a great

influence on me was the work of

Schauberger, the Swiss water

specialist who had figured out

how to make a flying saucer

that was fueled by water.

And he was captured by Hitler as

you probably know and made to

make as, you know, work in there

that in industry for the Germans.

He understood very well that

there are things that spin right and

concentrate into a point, concentrate

the energy into a point which of

course we call implosion and there's something that spins left that starts small and gets bigger and then disappears we call an explosion.

And that those are the two basic kinds of energy.

Schauberger's work with water and energy was very influential on my road down trying to figure out how the body works.

The other thing that was very powerful was to read the work that cells, I mean that muscles are piezoelectric.

And so I began to consider and in a and I was initially wrong.

I thought our muscles were wired up the way 12 volt battery is, you know, you take the cover off of a 12 volt battery and there are a bunch of one-and-a-half volt batteries all wired together in there.

And I thought, that's the way our body was wired up, that we had our muscles were just one big battery that provided power for the cells to work.

But then I began to notice that there were patients that had normal total body

voltage, as I measured it, but there would
be one circuit out or one organ out.

And I said well, then I have to be
wrong about how we're wired up.

And I began to consider that acupuncture
meridians were stacks of muscle
batteries wired together into one
single column that provided power.

And I was talking with one of
my colleagues, Dr. Evans, about
this and he said well, have you read
Tom Myers's book Anatomy Trains?

And I said no, I never heard of it,
and he said well you should read it.

So I get Myers's book
and Myers is a massage
therapist who had
access to cadavers.

And he would use blunt dissection and started
dissecting the fascia and discovered that it
would go all the way from the toe to the head
or all the way from your hands to the head
and surrounds muscle, a battery stacked one on
top of each other which is exactly what I had
come to the conclusion we had to have in the
body, but he'd already done the dissection.

So I started with Myers's work.

Now, unfortunately he stopped at the neck and a lot of the stuff I was interested in like the eye was obviously above the neck.

So, but I started with his work and I got anatomy apps which fortunately allowed me to look at if on an acupuncture 2D drawing, there's a line that goes from here to here, what muscle goes from here to here?

And I could go to the app and figure that out.

So what I was able to do was to develop a road map, an atlas of the muscle battery packs and come to the conclusion that acupuncture meridians are simply stacks of muscle batteries surrounded by a common sheath, or as common stocking, of fascia.

And the other thing that had been reported is that fascia are simply semiconductors.

So of course, you know better than I, a semiconductor is a collection of molecules that moves electrons at the speed of light but only in one direction.

So that made a lot of sense so then

the fascia that we have surrounding
our stacks of muscle batteries is
simply the body's wiring system.

So now we have a battery system,
we have a wiring system.

And that helped me begin to
understand why things that
didn't seem to make sense
actually made perfect sense.

So for example when I was
sick, I felt like somebody
was sticking an ice pick
in my left big toe.

My spleen was swollen and hurt,
my stomach hurt all the time.

I lost the vision in my left eye, the
macula of my left eye and I couldn't think.

Well, in any other form of Medicine you'd
never put all those things together, but it
turns out that that everything I just described
has the same power supply.

Duh, all of a sudden things make
perfect sense and that same
circuit goes through, guess
what, this root canal tooth.

So it became apparent that

dead teeth in a circuit act
like a circuit breaker and
just shut the circuit off.

Root canal should never be done.

The dentists are the only
physicians that think you
can get away with leaving
dead tissue in the body.

No other doctor believes that.

And that's what you do with a root canal,
you drill a hole on the tooth, you reach in
with an auger, turn it, rip out the
artery, rip out the nerve and kill the tooth.

Then you stuff it full of putty and assume
that it's going to stay sterile.

Well, that's nonsense.

It's still attached to the blood supply and lymphatics
at the roots, so there's certainly a
way for bacteria to get in there and a root canal
tooth is no different than having your big toe die.

If you leave it there, you die
of gangrene. Your appendix dies.

You leave it there, you die of peritonitis.

A root canal will kill you just
as certainly, it just takes longer.

So the fellow that popularized root canal

procedure was a dentist named George Meinig
and I think he spent the last years of his life
trying to get dentists to quit doing them.

He wrote this book called 'The Root
Canal Cover-Up' and even before Meinig
came along and wrote his book, Weston
Price would take in, pull teeth
from somebody who was sick, embed it
under the skin of a rabbit and within
the week the rabbit had the same illness
as a person who owned the tooth.

And he did that hundreds of times.

And so, the concept that dental infections
cause systemic disease has been known a
very long time but the dentists have done a
good job of trying to keep that covered up.

There's actually a popular Netflix
movie that's running right now
called 'The Root Cause' and this
fellow catalogs his journey
of being an athlete and then
being disabled after he gets a
root canal and then doing all
this stuff trying to get well.

None of it works until he goes and
gets rid of the root canal and

then he's back healthy again which
is exactly what happened to me.

Welcome to Space News from The Electric Universe, brought to you by The Thunderbolts Project at Thunderbolts.info.

In Part One of this presentation physicist Wal Thornhill began laying the foundations for a new theoretical understanding of our sun and all stars. Standard theory remains that stars are born due to the gravitational collapse of material in nebular clouds over vast spans of time. We're told that stars die when they inevitably exhaust their fuel, or simply explode. But for many years countless discoveries have contradicted these fundamental concepts. In this episode Thornhill further explores the Electric Universe predictions and explanations for a variety of stellar phenomena. So, let's return to the declaration of our esteemed internet lecturer that our sun was born about 5 billion years ago. There is no evidence whatsoever for this categorical statement. With the thermonuclear model discredited by the observational evidence, the complex life story of stars

is exposed as fiction. Two recent reports support this judgment, out of a countless number of others, expressing surprise at unexpected discoveries. On March 6, (2017) phys.org headlined a report, "Star clusters discovery could upset the astronomical applecart." It begins, "The discovery of young stars in old clusters could send scientists back to the drawing board." Because models of stellar evolution are based on the assumption that stars within star clusters formed from the same material at roughly the same time. However "back to the drawing board" always means embroidering the set of beliefs permanently inscribed on the board. No physicist shows the intellectual integrity to wipe the board clean of its own scientific Big Bang myth and start afresh; it's all too hard and scary. So, Dr. Kenji Bekky from the International Center for Radio Astronomy Research says, "The formation of these younger stars could have been fueled by gas entering the clusters from interstellar space." However, observations

showed “that there was no correlation between interstellar hydrogen gas and the location of the clusters we were studying.” “We believe the younger stars have actually been created out of the matter ejected from older stars as they die, which means we have discovered multiple generations of stars belonging to the same cluster.” The words “We believe” are accurate; the discovery of multiple generations of stars is not. The notion of the age of a star is based on plotting a point on the Hertzsprung-Russell diagram where the star leaves the main sequence after the exhaustion of its main fuel. But we have shown that stars do not exhaust their fuel any more than an electric light does. Stars don't die because their fuel runs out, or mysteriously explodes. The Hertzsprung-Russell diagram is simply a plot of points, and not an evolutionary sequence. Stars have been observed to change swiftly and inexplicably from one location to another on the diagram. When viewed correctly as a mirror image, the

diagram represents the change in color and brightness of a star as the electrical energy focused on it, increases along the x-axis. Sharp discontinuities exist in experimental gas discharges between dark mode, glow mode and arc mode. These discontinuities simply explain the sharply different appearances of faint white dwarfs, bright sun-like stars and red, so-called dwarfs, and red giant stars. The red color is due to an extensive anode glow and the faint white color is simply a coronal glow of a normally constituted stellar body lacking a bright arc mode photosphere. No imaginary ultra-dense dwarf object is required. There is no need to invent an ad hoc requirement for stars to have exploded and then somehow gather their widely scattering dust gravitationally to give birth to younger stars in the cluster. Stellar explosions are often invoked to clear dust and gas from star clusters.

Astronomers can't have it both ways, but critically, none of this complicated

"ad-hoc-ary" fits the observations of filamentary star birth inside molecular clouds. The second report appeared on May 18, last year in phys.org, titled, "Stellar mystery deepens." A Monash University-led research team made an unexpected discovery that a large group of stars are dying prematurely, challenging our accepted view of stellar evolution. Their results revealed that large numbers of helium burning stars are dying prematurely in the M4 globular cluster. Professor Lattanzio from the Max Planck Institute for Astrophysics said, Globular clusters are some of the oldest objects in the Universe. Although we have some ideas for what is going on in them, every time we look carefully we find something unexpected. They are both fascinating and frustrating at the same time." The international team found that about half of the stars tend to skip the red giant phase, instead becoming white dwarfs, millions of years ahead of schedule, demonstrating once again what's wrong with the modern scientific method

characterized as shut up and simulate.

Professor Lattanzio continued: "Computer simulations do not agree with this observation; so as well as continuing observations, new computer models will need to be generated to better understand what is taking place in the cores of these stars." But the computer models are built on missing or invalid concepts: there's nothing going on in the cores of stars, and globular clusters are not understood. So, the mathematical computer simulations produce a virtual, unreal cosmos that, like the movies, can be programmed to produce anything you can imagine and the artist's impressions we see in science reports are little more than glossy advertising material, but much more deceptive, because it is falsely labeled 'real science'. There is no real mystery here. With no nuclear fire inside, stars don't die by bloating to a red giant and collapsing to a white dwarf as their fire goes out.

The life and death stories of stars are fictional: the bloated appearance of red

giants is not due to internal pressure caused by hypothetical helium burning at 100 million degrees in the core of a star. It is a purely electrical effect, witnessed in laboratory low pressure gas discharge tubes. Red stars are those that satisfy their need for electrons from the surrounding plasma by expanding the surface area over which they collect electrons, by growing a large plasma sheath that becomes the effective anode in space. The growth process is self-limiting, because as the sheath expands, its electric field grows stronger. Electrons caught up in the field are accelerated until they become energetic enough to excite neutral particles they chance to collide with and the huge sheath becomes a uniform red anode glow: it becomes a red giant star. The electric field driving this process will also give rise to a massive flow of positive ions away from the star, or in more conventional terms, a prodigious stellar wind. Such loss of matter is the characteristic feature of

red giants; standard stellar theory is at a loss to explain this, since the star is said to be too cold to boil off a stellar wind. Arthur Eddington himself expressed his puzzlement about white dwarfs, "Strange objects, which persist in showing a type of spectrum entirely out of keeping with their luminosity, may ultimately teach us more than a host which radiates according to rule." He was right: a white dwarf appears extremely hot, white and under-luminous because it is a faint, white coronal discharge. As usual, a thin plasma sheath will be formed between the plasma of the star and the plasma of space. The electric field across the plasma sheath is capable of accelerating electrons to generate ultraviolet light and X-rays when they hit atoms in the atmosphere, and the power dissipated is capable of raising the temperature of a thin plasma layer to tens of thousands of degrees. The spectral lines are broadened, sometimes to the point of disappearance, due to the coronal electric field. This

gives the misleading impression that hydrogen, whose spectral lines are smeared the most, is missing in many of these stars and that therefore, they are remnants of larger stars that have conventionally lost or burned their hydrogen fuel. So, globular clusters are not some of the oldest objects in the universe. Their spherical shape of a dense collection of stars, and their elliptical orbits about the galactic center, hint at a quasar style birth process from the plasmoid at the heart of the galaxy. If so, the electromagnetic environment inside the globular cluster is different to that in open clusters of stars. So we should expect an unusual distribution of white dwarfs and red giant stars and the puzzling observation that some globular cluster stars have 100 times more iron than others, could also be explained by electromagnetic sorting of elements within the globular cluster at its birth. The fact we don't understand stars in the 21st century, highlights what Arthur

Koestler wrote in *The sleepwalkers*, “The history of cosmic theories, in particular, may without exaggeration be called a history of collective obsessions and controlled schizophrenia; and the manner in which some of the most important individual discoveries were arrived at reminds one more of a sleepwalker’s performance than an electronic brain’s.”

Science is still in its childhood and we behave as infants. We give far too much credit to scientists for knowing what they are talking about.

For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info. [Music]

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by
The Thunderbolts Project™
at Thunderbolts.info

New scientific reports provide
yet another devastating blow
to the standard theory
of planet formation.

In recent years, we've reported on
a stunning series of discoveries
that completely confound the more than two
and a half centuries old nebular hypothesis.

The Electric Universe theory has always proposed
that planets do not form from accretion
in gravitationally
collapsing nebular clouds.

Rather, The Thunderbolts Project's
chief science advisor Wal Thornhill
has always proposed two
mechanisms of planet formation.

One is the formation of planets by
the electromagnetic z-pinch effect
along the same filaments where
stars are now known to form.

And other planets are later ejected

from the cores of the gas giants.

The accretion hypothesis has failed
both experimentally and observationally.

As noted in a recent news report,

"According to the traditional story

of the origin of the solar system,

the planets formed

slowly from accretion,

as particles in the circumstellar disk

clumped together to great pebbles,

then slightly larger spheres, on and on

until they reached their current size.

But when scientists try to re-create this

story with computer models, it breaks down.

Rather than growing, these incipient planets

tend to splinter after reaching pebble size."

And today, new scientific research

into the planet-forming conditions

in so-called young star systems has delivered

another shocking blow to standard theory.

In a paper published in the

journal *Astronomy & Astrophysics*,

scientists describe their attempts

to determine how much material

is present in the

disks around stars

that are thought to be only one
to three million years old.

When they compared their estimates
to the masses of star systems
that have fully formed planets,
they realized that the so-called young stars
did not have enough matter in their discs
to eventually form planets.

The conundrum is described in a
recent phys.org report which states,
"Until now, space scientists have
believed that star systems form
due to space dust
coalescing into a star.

Once the star gets going, a protoplanetary
disk usually forms around the star.

It is believed the gas and
dust that make up the disk
are leftovers from material
involved in creating the star.

As more time passes,
the material in the disk tends to clump
together until gravity takes over,
attracting more of the
material in the disk.

Eventually, most of the

material from the disk
is incorporated into planets
that orbit the star.

But this new evidence suggests that there
is not enough material in the disk
of the average early star system
to create the average
number and size of planets
that come to exist a few
million years later."

A very similar conundrum has been posed for
the standard theory of star formation.

In our Electric Universe, it is not a
coincidence that stars tend to form in groups
along spectacular
snake-like filaments.

Standard theory had
originally proposed
that massive stars would form in
individual proto-stellar clouds.

But consider these images of a stellar
nursery in the aptly named Snake Nebula
where a number of stars are
forming along the filament
and the stars themselves
break up along a cylinder.

This is in stark contrast
to gravitational theory
which predicts that a
center of mass exists
toward which all of the
surrounding material in the cloud
tends to move and to congregate
to eventually form a star.

What's more, just as a fatal deficit of
matter is observed in the disks about stars
to form a typical
number of planets,
scientists studying
the Snake Nebula
found that the material needed to
be drawn in to form massive stars
is far less than gravitational
models predict.

In 2014, the Harvard-Smithsonian Center
for Astrophysics issued a press release
which stated,
"Previous theories proposed that high-mass stars
form within very massive isolated 'cores'
weighing at least 100 times
the mass of the Sun.

These new results show

that that is not the case.

The data also demonstrate that massive stars aren't born alone but in groups...

The team also was surprised to find that these two nebular patches had fragmented into individual star seeds so early in the star formation process.

They detected bipolar outflows and other signs of active, ongoing star formation."

Of course the detection of bipolar outflows does not match a gravitational infall model at all.

However as Wal Thornhill has proposed in his theory of electrical star formation, when material is drawn in radially into a filament and begins to form a star if the energy stored in the material falling towards the star exceeds a certain amount, it will discharge causing proto stellar jets which go out along the axis of the filament which has also been observed.

Yet another aspect of star formation that fits far better with the Electric Universe is the astonishing

abundance of binary stars,
an admitted intractable problem
in standard astronomy.

In the next episode
of Space News,
Wal Thornhill will explain why the
double-lobed form seen throughout the cosmos
is the product of the predominant
electromagnetic force
shaping matter at all
scales in the universe.

We now offer this brief
preview of his presentation.

On August 24th, phys.org published
The Origin of Binary Stars.

It makes the admission that
"The origin of binary stars has long been
one of the central problems of astronomy."

It's been found that
protostars and young stars
are more likely to be
found in binary pairs
strung at intervals along a
filament inside a molecular cloud.

"About half of the binaries are
in elongated core structures,

and they conclude that the initial cores
were also elongated structures...

One of their most significant
major conclusions
is that each dusty core of material is
likely to be the birthplace of two stars,
not the single star
usually modeled."

This raises the real issue that
astrophysicists don't understand
how either the filaments
or the stars are formed,
something that plasma cosmologists have
shown for half a century or more.

Here's an image taken at submillimeter
wavelengths of a star-forming core
showing that it contains
two young stellar embryos.

The caption says,
"Astronomers have concluded from a
systematic study of very young cores
that most embryonic stars
form in multiple systems,
and later some of
them separate."

The problem is that astrophysicists are

using a gravitational accretion model
based on the concept
of a center of mass
which doesn't lend itself to
preferentially producing pairs of stars.

Meanwhile, the plasma cosmology
model is electromagnetic
driven by a linear twisted pair
of Birkeland current filaments.

It's an inherently
binary phenomenon.

In the Electric Universe, stars and planets are
formed along the Birkeland current filament
by a powerful and long-range $1/\sqrt{r}$
electromagnetic scavenging force
acting on the diffused dust
and gas in a molecular cloud.

This compares to the puny short-range
 $1/r^2$ gravitational force
which cannot form a
filament anyway.

On the basis that nature doesn't
do anything the hard way,
gravity just isn't the answer!

I think as many of you know a couple of years ago three maybe three years ago I was able to fortunate enough to be able to develop a model a mathematical physical description of the structure of what berklund current should look like has to look like if the assumptions that led to the model are correct whenever we talked about force free fields and things like that if all that stuff is right then I know that mathematically my model is correct what we don't know is does that model does are the outputs what you think you're seeing does it correspond to reality I have a quote here from another electrical engineer who I very much admire and his name is dr. William Hughes he passed away and I think 2008 something like that was head of department in electrical engineering at I think in University in South Dakota and I think Oklahoma but his quote is all such models like mine our only models of reality rather than reality itself the final arbiter of the value of any hypothesis is and always

will be experimental evidence numbers
does it jibe or you it does your models
suggest any predictions and if it does
go see if they if they're born born out
so that's what I've been doing for the
last couple of years is to look for
evidence of what the look at the
berkland current model
says and so let's see if I can get this
to go there it is like what I've
entitled my talk is this morning is the
next step and what it is that next step
is simply to get some new evidence that
my model predicts reality and you've
you've seen some evidence of that in the
last couple of years yeah last night Jim
Ryder presented a picture much like this
one of the the galaxies the Galactic web
the Galactic Network and all the
galaxies as far as we can tell are
connected and the question is what are
they connected by and I submit they're
probably connected by berkland currents
well if they are then there should be
evidence of Scott's model in what we
observe well what kind of evidence can

that be

well my model of the berkland current
has several different properties but the
the most important one really is that
the berkland current and I've put that
in in emphasis font is a structure that
is a collection of hollow
counter-rotating concentric cylinders
some of you have seen the example of the
counter-rotating props on a ship that's
exactly what the berkland current
according to what my work came out with
should look like so if a berkland
current impinges on something like the
North Pole of a planet or a galaxy or
wherever there should be some sort of
evidence of things going in different
directions and the question is are there
and also the final note on there on that
slide is that in berkland currents
electrical current will spiral in many
different ways it spirals this way and
it spirals back at you this way
and current can go in both directions
there is a preferred direction and I
think Jerry Pollock not last night but a

couple of times ago I think Jerry said
that that water bridge is at least it
shows evidence of twisting and it shows
evidence of current going in both
directions more easily in one than in
the other but both directions that's the
kind of evidence that I'm looking for to
see that my model is right
well what I'm about to show you is a
video that was produced by the
thunderbolts group
Michael Goodspeed and these guys and it
brings I know that many of you have seen
that already but for all anybody here
who is new I think in a few minutes just
a couple of minutes it will summarize
everything I know
up till now as to the supporting
evidence for this this model of mine
welcome to space news from the electric
universe brought to you by the
thunderbolts project at Thunderbolts dot
info at the recent Thunderbolts project
Conference of teen paths of discovery
professor Donald Scott presented new
groundbreaking evidence of the

electromagnetic connection between the Earth and the Sun the electric universe theory states as the Sun is in essence an electrical discharge phenomenon powered by electric currents flowing along the arm at the galaxies electrical circuitry connects the Sun and all planets including the earth driving climate weather and Earth's Aurora's the tell-tale sign of berkland currents at the poles of planets counter rotational motions in atmospheric phenomena today dr. Scott discusses the new visual evidence that Birdland currents from the Sun are the cause of Earth's Aurora's the Earth's Sun connection which of course is I think the primary basic foundational idea of the electric universe at least historically that this marvelous investigator a region investigator Kristian Birkeland literally put his life in danger to go out on the North slopes of Norway in in the Norwegian winter and take measurements out there his idea was of

course the theorem were caused
electrically after a number of them when
he did this is around 1902 1903 I think
the idea of an electron had just been
postulated two or three years earlier so
it was not a very it's the word
ubiquitous idea that these electrons
were flying around and he was that his
burglar who was roundly chastised by the
astronomical community it's ridiculous
no none of these corpuscles I guess
berkland called them and also other
investigators call it call them
corpuscles as it's well but they could
never make it to hold 93 million miles
in the Sun of the earth it's ludicrous
idea and of course later on to make the
long story short after world war ii and
we sent rockets up into the upper
atmosphere we found that indeed that's
exactly what what was going on and
Sidney Chapman the prime what should I
say antagonist still a berkland was
certainly shown to be all wet so from
there it went on I got into the active
very late just a few years ago my

contribution really was I completed the derivation of a mathematical physical model of a berkland current what would this thing look like at NASA now calls them magnetic flux ropes and actually Hannes Alfven was the guy who coined that phrase I don't really like it very much because it kind of obfuscates the the idea that it's electrical all these these folks nowadays

NASA professional astronomers they are okay with the word magnetic that's fine they kind of pull that out of there and the bottle is so like a genie and oh if they there's something they don't notice that was most due to a magnetic field you hear ludicrous things like well there was a lump of magnetic field because that they don't still like to use the word electric although they're coming around even on that one but anyway this model that I I derive finished the derivation of it this derivation was really started by fella by the name of Lundqvist in 1950 but it was in his paper was very incomplete Oh

coefficients were not evaluated and the structure those equations implied was not discussed and anyway the one of the primary properties of that model is this idea of counter rotation if you think about a steel rod then you surround it with a pipe a hollow pipe and then surround that pipe with a bigger pipe and then yet surround that whole thing with a bigger pipe to keep on doing this for a number which I say pipes a number of radii and have each one of those pipes pick one of the pipes the pipe above it and the pipe below it would be going in the opposite rotational direction from its rotation so that's what I mean by counter rotation sort of if anybody's familiar with counter-rotating propellers on a ship that's exactly the way the tail shafts would work but anyway that's that's what five model at least came out with is that should be counter rotation and most people in well anybody who's interested in the electric universe I think realizes that water

one and a half conferences ago I presented a I thought a mind-blowing video my NASA video showing exactly that happening at the North Pole of Saturn one of the things that kind of bugs me a little bit is that astronomers are reluctantly agreeable to talking about berkland currents when it comes to the earth even there they're trying to call him some by some different names I favor an article you there what in the world is this guy talking about he's talking about a berkland current he didn't call it that I think maybe they are a little bit ashamed of the shabby treatment that berkland got from professional astronomers but anyway this is video from NASA was was just mind-blowing thing and this at this past comfort just last week's conference I was fortunate enough to find another NASA video this time of the planet Jupiter everybody's a big brother planet here and sure enough just blatantly there was these counter-rotating cylindrical I

mean when you looked at them down at
them like the North Pole Jupiter their
circular of course please remember this
we will see I'll be referring back to
this picture and a man's first saw the
video and actually counted or tried to
count the number of these
counter-rotating concentric cylinders
and I got up to 15 before I ran out of
steam and then when you got 15 different
counter rotating cylinders that mean the
pesticides really it's a lot of counter
rotation and then I thought about well
you know what about the earth I mean
everybody knows that the berkland
currents do power the Earth's Aurora is
there any evidence of counter rotation
there's I guess I proudly the internet
and I came upon several people who had
tried to video the Aurora most of them
didn't know what they were looking for
most everybody was looked at it says oh
isn't it beautiful it's because marble
is always gorgeous unlike me they were
not looking necessarily for evidence of
counter rotation of these hollow

cylinders until I came up on one
polishing fellow
I guess his nice bike ethnicity his name
is I think my check an ERCP and he had a
fantastically high risen resolution
video camera placed it on a very firm
tripod and the north tip of Scotland he
took these
this this video and I just I just
marveled at it and I if you asked my
opinion does it show counter-rotation
I would quickly answer you betcha
especially right at the opening of that
video and in the closing scenes it is
undeniable in my opinion in this
singularly and my one man's opinion
it is obvious that there is
counter-rotation going on there there's
also evidence of course that they do
occur and possibly at least on Neptune
and Uranus not particularly so mercury
for several reasons one of the what's
required is to have we have the planet
having a reasonable magnetic geomagnetic
field by christos Jupiter has one in
Spain so that's why I think of all the

planets the Jupiter's most obviously on the receiving end of a berkland turn so that's where we or at least I am at this point and I conclude from that that we now have evidence that several planets have Aurora's that are likely created by berkland currents feeding electric charges into their poles the Sun's heliosphere is probably inside of an interstellar berkland current we're not sure about that yet but those as Jim Ryder said last night that that evidence coming back through ibex showing the tails on the heliosphere those tails may indeed be at least remnants of a berkland current we don't know but they are we get to the nitty-gritty we've postulated the idea I have a lot of people have that galaxies are also connected by berkland currents and seeing the evidence of counter rotation in galaxies would indeed be the next step and that's why I called this little talk this morning the next step so the question is do we see it any observation of counter-rotating

bands of stars in a galaxy would be
difficult for astronomers to explain
reason I say that is think of it
yourself
are there any thermodynamic or
hydrodynamic fluid dynamic causes for
counter rotation there's plenty of
causes of rotation there's Coriolis
effect and all that sort of thing
that's all in one direction but what can
cause things inside of one another to
rotate in opposite directions the answer
is as far as I know one berkland
currents if you come up with another one
let me know I will make sure that I
don't say that again but I think that's
correct until a few years ago there was
only one galaxy that's M 64 M Messier
and the Messier Catalog a catalog number
64 was described as exhibiting any kind
of counter rotation
that's what M 64 looks like and in 1992
there was an Australian astronomer who
announced that they had found evidence
that the area within the dust Lane of M
64 was counter-rotating from the outer

spiral that was explosive
a lot of people didn't believe it that
was must be wrong
eventually that just sort of quieted
down and nobody said anything else Vera
Rubin the famous astronomer I think was
Harvard College Observatory I think I'm
mature finally came up and said yes she
saw she observed that counter rotation
too and the only possible explanation
astronomers had for this was a collision
with another galaxy
remember astronomers have not one arm
tied behind their back they've got one
arm and and four fingers tied behind
their back they only have one tool
gravity it attracts what what does when
you attract pretty good you get
collisions so collisions must be
the cause of everything also remember
that gravity does not mean inherent spin
gravity means crash together nothing
about gravity says it should spin as it
comes in nothing so but they were sort
of between a rock and a hard place
and finally there was this paper in 1996

and if you look very carefully I don't
know if you can see it the the authors
there are fella by the name of kiken
Fisher and I called Merrifield will hear
mera field in a couple of slides from
now talk about this and what he said if
I can I think I have a quote from that
paper yeah he said that he was in
response to this announcement by Bromley
as the Australian guy that said that
this thing was counter-rotating he said
that well alright the goal of the
present study has been to search for the
presence of counter-rotating stars no
new cases of stellar counter-rotation
have been found no more than
approximately 5% of the disk stars in
our sample galaxies are counter-rotating
with 95% confidence with 95% confidence
we can say that no more than 10% of
galaxies contain detectable
counter-rotating stellar disks galaxy
mergers provide the most obvious
explanation crashing together because
that's the only Omega so astronomers
have only one tool available to explain

new observations collisions and mergers
and I'm gonna show you a clip I think
it's the next slide is say another video
clip of Merrifield himself talking about
this and I want you to listen very
carefully he's he's very British and he
would speak very very fast so
one of the things he said a couple of
things he says I think you should grab
ahold of and hang your hat on number one
he says that 90% of space is empty it's
not 99 as Jim said last night 99
I remember 99 percent Jim said 99.99%
his plasma and plasma is not empty
that's the reason they laughed at
berkland right I can't put that stuff
across through an empty space sure he
can because it's all full of plasma also
he suggests that counter-rotating stars
are caused by at the very end of his
talk hot gas means plasma pouring into a
galaxy from some unknown source and in
the opposite direction from the way the
galaxy is rotating all right and that's
how you get the counter-rotation doesn't
say where the hot gas comes from or why

it should what why it should cause
counter rotation of stars anyway here's
the video so if you look in the disk of
the Milky Way all the stars go around
the same way it's kind of a one-way
system everything's going around in the
same direction in almost every galaxy
you look at that's what you find this
one is kind of unique because it's
actually exactly 50/50 as half a stars
going one way half the Stars going the
other way we're in the Virgo cluster so
the NIR is big cluster of galaxies it's
one of these galaxies called a
lenticular galaxy it was like a lens or
an s0 galaxy so it's one of these things
which has a disk which we clearly see
more or less edge on which is why it's
very skinny like this but doesn't have
spiral arms or any other features we
typically associate with the spiral
galaxies the original discovery was
something that Vera Rubin and her
collaborators discovered in the early
1990s she was doing a big study of all
the galaxies in the Virgo cluster what

they were doing in their survey is they were taking things called long slit spectra so basically they were taking and putting a slit of a spectrograph along the galaxies and measuring spectra all along that slit and what you expect to find for a galaxy like this is you expect to see absorption lines due to the various chem

the stars are made of but the absorption lines are all bumper shifted a bit that some of them are shifted towards the red end of the spectrum which means that those stars are moving away from you some are shifted towards the blue end of the spectrum so that means those stars are moving towards you so what you expect to see in a galaxy like that if it's an edge on disk is either rotating one way or the other so what you'd expect is all the stars on one side are red shifted and all the stars on the other side a blue shifted or vice versa depending on which way it's rotating so we can expect to find is that the dark bands for example here's one of these

dark bands you'd expect it to be shifted slightly towards the blue end of the spectrum at one end and shifted slightly towards the red end of the spectrum on the other side so you'd expect to see a kind of an S shape in there and what you actually see is not these S shapes but if you look closely you can see there's one going that way there's one going that way as well so it's kind of an X shape and that means that as well as the disk rotating one way which is what gives you this signature here the disk is also rotating the other way which gives you this signature here and because those lines are kind of roughly equal strength what you can sort of infer from that is that this is a very strange disk in the half the stars are going around one way and half the stars are going around the other way the obvious first question is well don't the stars just bash into each other if they're doing that what you got bear in mind is that a galaxy is mostly empty space so again if we come back to the

Milky Way for a second if you made the Sun this big then the next nearest star would be about 50 or 60 kilometers away so that means that really you've got one lot of empty space and another lot of empty space with a few stars dotted around in it

the simplest idea but sort of most obvious thing to think of is well maybe the way you make a galaxy like that has these two towns of contra-rotating this because you just have one normal disk like this and another normal disk like this and they just crash into each other and they end up merging to form one of these systems where the stars go one way half to go the other way unfortunately that doesn't work because what you find is if you start doing simulations of crashing disks into each other these as soon as you start smashing them into each other that destroys the disk structure and actually you are not forming a thing like an elliptical galaxy so that's where we came in one of the things that's happened since their

Aruban first discovered this galaxy is that we've got much better at actually analyzing the properties of spectra and in particular we can look at the strength of different absorption lines in spectra and use that to figure things out about the properties of the stars that that populate maydel so that's what we did we took some more very very deep spectra of this particular galaxy and what we found is that the absorption lines in one still a population are different from the absorption lines or the stars going around the other way and in particular those hydrogen lines are much stronger in one of the disks than they are in the other from which we can infer that that disk has to be much younger than the stars are going around the other way what we were able to show is that actually the dew populations have to be different one of them is younger than the other and that's exactly what you'd expect if an old disc formed and then gas started flowing in orbiting the

other direction which would then form a second generation of stars which would seem younger than the stars that were already there so probably the likely scenario here is this was a disc galaxies that formed formed with a whole bunch of stars all orbiting around one way that's a little bit of gas left over from the stars that are orbiting that way later in its life gas thought is flowing in in the other directions are rotating around the other direction the first thing that happens is that any gas that's coming around this way will bash into gas that's going around the other way because gas unlike stars is very collisional so actually it'll smack into it that'll all fall into the middle what you know sort of sweep up what guess there wasn't leftover from the first generation then if you keep feeding in gas in that direction you'll form a new disk of gas which is rotating in the opposite directions of the stars and then over time that new disk of gas will start forming stars of its own and

eventually it'll use up all the gas and form a second stellar disc that rotates in the opposite direction I think probably the reason why this was the first one that was discovered is that when you do end up with exactly half the stars going either way it's very easy to find if it were only like 10% you might not notice so actually you could have you know all the stars and you'd analyze it and you wouldn't notice the fact that there's a small fraction that seemed to be going around the other way if the disks were very different sizes so if there were a tiny little disk in the middle going around one way and most of the stars going the other way you might not notice that either so probably you know this was the first one that was discovered because it's the most blatant example subsequently we now know there's probably at least half a dozen other galaxies where there's at least some stars going around one way and some going around the other way so it's not a unique system it does happen

from time to time but of course that's
half a dozen now are the many what tens
of thousands of galaxies are those kind
of sizes that we know about so it
clearly whatever the process is that
makes this happen that's very unusual
it's not the common way of making the
galaxy wrong

it's probably the way most galaxies are
made and the fact that he hasn't found
any is probably indicative of the fact
that he hasn't really looked very hard
so if you don't want to see something
you probably aren't going to expend a
lot of time or effort looking for it and
it's very difficult to explain this

stuff you notice he didn't say well this
hot gas was coming from and the idea
that no the space and gal inter-galactic
space is empty it's wrong it's just
plain wrong

they also the idea that the hydrogen
he's quite good inspector octopus I mean
he the idea that he found that the
hydrogen was on the outside of that
that's galaxies hydrogen rich stars is

probably correct but for anybody who's
looked at the work of Guren Markland
there's a thing called Markland
convection Markland is a Swedish
engineer scientists physicists I guess
and he studied this and discovered that
in Markland currents that the elements
will distribute themselves radially in
proportion to their ionization potential
so sort of I guess to some people at
least anti intuitively counter
intuitively it sounded thing what we
find is that iron and carbon find
themselves at the middle of the galaxies
of the Markland current and if the
Markland card is feeding the galaxies
would be at the center of the galaxy and
the farther out you get I have a list of
them here's some place
the the oh yeah the list is iron sulfur
carbon nitrogen oxygen helium hydrogen
and those last two are very difficult
believe it or not to ionize I guess
because they have very few electrons to
ionize but it's easy to ionize iron and
so you find iron at the center of this

thing

so his discovery that there is indeed
hydrogen-rich a band of hydrogen-rich
stars on the outer edge is again
confirmation that this thing is a
berkland current because Markland
predicted and saw that hydrogen goes to
the outside it has nothing to do with
the age of the stars the reason he says
there young stars and that formed last
that's the stoppers I think in correct
stellar model there's nothing that says
that a hydrogen rich star has to be
younger than a carbon-rich star so it's
it was it was kind of interesting I
thought that he's of course his
explanation of this stuff but when we
tried it it doesn't work so the only
thing left is gas comes from someplace
the little green people come and pour it
in and but they really have no
explanation for this it's kind of like
what Jim said last night here is that
I'd like you to make sure you understand
what what's going on here let's see if I
can if I can do this yeah what everyone

got the wrong thing I just wanted well
I'm playing around with this I shouldn't
the the the the X shape that you see
there the star grouping that's in
magenta or purple is if you notice very
carefully what you what we got plotted
here the upper half of that plot is
where the light is longer wavelength
this is the wavelength is is vertical
and it's flooded if you can read it it
says velocity in kilometers per second
so they're they're saying that the
redshift is proportional to velocity
that doesn't that doesn't contradict
Halton ARP at all ARP is perfectly
willing to say that redshift can be
caused by recessional velocity it's not
the only way to form redshift but it is
one of the ways so they're right in this
case and so they on the upper left
corner of that picture what you are
our redshifted and the higher up you go
the more redshifted stars each star is a
point on that diagram and so and then
you look over and they on the right side
you see oh yeah but there's another

bunch of guys out there that are
blue-shifted
and so I'm sorry yeah that the other
ones are also red shifted and they're on
the other side of the galaxy and
therefore they're going away and these
guys are going away from you and then
when you come down through the middle
the middle is when you're looking at the
center of the galaxy and stars are just
going this way or that way and they're
not coming forward toward you were away
from you so there's no redshift and as
you get to the bottom of the diagram you
can see that they're ours that's blue
shift the the wavelength is less the
velocity and the recessional velocity is
is less so what it's notice one another
thing on the on the compare the purple
curve at the upper left to the black
curve at the upper right and you notice
that the purple curve extends farther it
is it has a higher redshift than the
other one then the black woman at the
upper right hand corner and it doesn't
the it extends farther out that he the

distance east to the north distance so
it goes faster and it's farther out so
that shows yes that the outer ring of
that galaxy is the one that's plotted in
purple do you follow me and the bottom
diagram is just dispersion of the data
but anyway see if I can continue on
that's what I just said
so Muirfield explanation of this was
right on spot-on
he knows what he's talking about when it
comes to spectroscopy it just he doesn't
really analyze it I think
well this is and any who have seen me
talk here before that's a typical
diagram that I always put up what a
berkland current looks like and you can
see the counter rotation and the the
shading the salmon color very dense in
the middle and the outer the middle ring
is a little less denser than the outer
ring it's even less dense it indicates
that there is there's collection of
matter at various discreet radius values
and what the the rest of this going here
the slide shows is that if you analyze

this in in great detail you will find
that it it is very probable to see in a
situation like this something that looks
like spirals spiraling inward not just
going around but spiraling inward I
submit those are almost optical
illusions those spirals exist the shape
exists but if you notice the little tiny
black arrows that form those spirals
some of the stuff is going in one
direction and some of the matter is
going in the opposite direction so those
spirals are not spiraling in there
they're like tattoos if you will on them
on the face of the galaxy well that's
not a very important point but it's a
it's a point ok I'm gonna go I think
fairly rapidly through the next few
slides these are all galaxies which have
been reported as showing
counter-rotation NGC 3628 contains a
band of gas plasma that counter rotates
with respect to the Stars and it looks
just I think like a berland current but
it it is perhaps caused by a berland
cart it's another 130 608

the maximum rotation velocity of the inner core was low but it's going the opposite direction from the outer parts of this of the group of the galaxy here's another one 57:19 so we've discovered in the last I think about 15 years about seven of these seconds seven or eight of them which are proven measured counter rotational galaxies oh well here's the previous one I think it was reported that only way the excuse was that for 57:19 which is this one it's the galaxy on the left of course it has been disturbed perturbed by its neighboring galaxies 57:13 that's the one on the right now I submit to you that that's a stretch those galaxies are light-years apart they're not the same kind of galaxies and they're not in the same plane of rotation such that one can be going one way when the one is this way and one is this way it's very unlikely that those two guys are in communication with each other except maybe a berklund current that might twist through there but one is not I

don't say it's it's a tough sales pitch
to tell me that this guy is affecting
that guy directly and causing stars to
go backwards in the other galaxies I
just don't believe it another one was
reported have counter-rotating rings of
both plasma and stars I see 719 3595
again all of these are definitely
measured counter-rotation
galaxies 4550 well that's the one that
you can see those vary if you look
carefully you can see some of those
things that look like spirals the dark
lanes I don't think those are really
indicative of motion I think you're
indicative of a structure
that's inherent in the berklund current
that's formed this um another thing to
keep in mind I don't know whether I have
a slide on it or not but who says that
berklund currents can't yeah this is the
one that Muirfield talked about who says
that berklund currents can't get weaker
with age they can and so perhaps if you
think of blong the lines of what Halton
Arps it how these things are ejected

from mother galaxies as they age they
may mature their umbilical cords make
because that's a sort of gross way to
put it but that's what a berkland
current is probably like to a galaxy and
here's a I think a beautiful shot this
was taken by an acquaintance of mine I
wouldn't say a friend but acquaintance
said that about lemon Observatory in
Tucson in Oro Valley if you look at this
thing it's almost unmistakably the shape
of a berkland current it has contains
several different rings and there
counter-rotating yes by Adam and a blog
if you just keep your eyes on that
picture and compare it with the picture
of a berkland current that tony peratt
gave me we superimpose the two what do
you think
so it's I think it's fairly certainly
what we're looking at here is a shape at
least of a berkland current I just want
to make sure I say everything that I
want to say yep yeah what about it
yeah well anyway many galaxies have been
shown to contain the counter-rotating

stars many don't this is what I was
leading up to before that they the
berkland currents can change with time
and therefore these structures can
change with time but of course over
millennial time over astronomical time
and as I say it's even easier not to
look for something you don't want to
find so anyway closer to home sort of
along the lines of what Gerry was
talking about last night we consider the
idea of a hurricane
now I've long laughed at the fact you
probably saw me chuckle and howl at the
NASA description of that Saturn
hurricane the counter rotation at the
top of Saturn is North Pole a hurricane
at the North Pole you got to be kidding
hurricanes eat hot air from warm water
that's the reason that when hurricanes
come ashore they fall apart so that's
not a hurricane I said also it's locked
in position at the North Pole of Saturn
we know that hurricanes move around like
crazy so there's a couple of reasons for
not calling that a hurt hurricane but

mainstream science claims that hurricanes rotate because of the Coriolis effect you know you take two guys on a merry-go-round and one has a basketball and he throws it directly at the other guy but by the time the basketball gets there the other guy has moved and can't catch the ball if you're a marksman and you want to shoot at the enemy airplane or something you lead it you don't shoot it where the enemy is you shoot it where he's gonna be when the bullet gets there that's the Coriolis effect but the mechanism cannot produce counter rotation even if Coriolis is the reason that hurricanes rotate on earth it the Coriolis cannot produce counter rotation and that's all right because hurricanes on earth don't show counter rotation or do they I got really shocked when I saw the next slide this is a hurricane I should know the name of this it perhaps it's on the slide but it's a fairly recent one there's in the foreground as the coast of South America and this is a

slice taken through the hurricane and
what you will notice is when I start
this up this is a video is that the
inner regions of the hurricane go the
way we normally think hurricanes in the
northern hemisphere do they rotate
anti-clockwise counterclockwise the
famous northeasters on the coast of
Maine always come in from the Northeast
because they're rotating around storms
that are coming up the coast and those
are counter clockwise rotations but if
you look at the outer regions like out
here and out here when this thing starts
this middle guy is going to be going
around counterclockwise but if you look
out here all of a sudden you realize
these guys are moving clockwise
see the clockwise movement here and out
here it'll happen again when it gets
closer they take another shot of it
closer to the United States it can you
notice these clouds sweeping up
that may be the end of it I'm not sure
no one more okay if there's plenty of
kind of rotation in downand is in this

right hand area anyway that's not it set
me back kinda edgy they do kind of
rotate and then I set back with a glass
of wine and said does that mean the
astronomers are right hell no it means
that this hurricane may be fed
electrically as well as by hot air from
the ocean below and it may well be that
a small berkland like current is coming
down on the top of this storm forming
that shape
we know that electrical currents from
space power thunderstorms the famous
elves and sprites and when is it blue
nuns or something and what they clearly
there's a circuit that comes right down
from space through into thunderstorms
that power those and give those
thunderstorms the electric charge that
Jerry was talking about last night so
red sprites recently photographed into a
thunderstorm and so maybe this guy who
said it was a hurricane and Saturn's
North Pole was correct but he didn't
know how hurricanes work that hurricane
has made strictly from there's no hot

ocean at Saturn's North Pole believe me
but he didn't know where that hurricane
was getting his power or its form anyway
tornadoes often exhibit that sort of
concentric cylinder look and I was
talking to somebody yesterday who said
that they knew a friend I think who had
looked at one of these guys straight up
the barrel and did indeed see
counter-rotation and a light in the
middle of it the light of course being
probably electrical like lightning the
main blast of current coming down the
middle of it and if I would give my eyes
teeth to come to get that thing to be a
video if it turns out to be
you know in counter-rotation then I
would be very happy by the way one way
when we saw that picture of the North
Pole of Jupiter and there were 15 of
these things counter-rotating that can
be and certainly is the way of berklund
current works but it can be the
explanation for what puzzles Merrifield
as to why these guys don't hit into each
other it's because there are in the case

of Jupiter 15 separate concentric
racetracks
and the runners are going in opposite
directions on each one of these tracks
so the stars are not colliding unless
you get some guide like happens here in
Arizona go the wrong way in the wrong
direction on highway if if they stake in
their right lanes there can be all sorts
of indoor reaction of counter rotation
and with no collisions at all oh by the
way another one thing he said which is
wrong all plasmas are collisional no
that's right right the the corona of the
Sun is not the collisional plasma
okay here's a picture the fellow I felt
my name last name is Gould are you here
in the audience tonight
this morning he dedicated he you type
and eats wrote me an email and said Don
there's a website called null school
dotnet and he learned about it from Ben
Davidson and it's it's a I think it's an
excellent site and it shows counter
rotation you can look here at the course
the South Pole of the earth and you can

see the counter rotation that's going on
notice it's moving very slowly but what
you're looking at are the ocean currents
and so the if I can see you here the
that's that's the equator goes around
there and so all of this stuff inside
here is in the southern hemisphere
anything outside of that line is
northern hemisphere but there's a
tremendous amount of counter rotation
where does it come from well I know it's
not Coriolis this Coriolis can't do that
so here's a again this is a little video
of that null school net site and you can
see again there's those are the ocean
currents they're not it's not so
obviously counter rotation at that point
but if you go if you go down to the
lower left like this is a video I can't
do it in life you get this control and
the height there's a 10 hecto Pascal's I
hectopascal it's like a millibar I think
so if you go way up in the atmosphere
way high up see any counter rotation you
betcha
and there's also well see in a second

there is a diatom instability there just
off the south tip of tasmania and one of
those if you go down deeper into the
atmosphere the circularity begins to
lose its beautiful symmetry and it
begins to get crunched and smooshed and
in fact you go down deeper and deeper
and the land masses begin to interrupt
those those flows which tells me one
thing the counter rotation the beautiful
circularity comes from outside not
inside the earth there's nothing to do
with stuff going around inside the this
molten center of the earth or whatever's
there empty service or whatever's in
there the circularity I maintain points
when you get down on the surface it's
almost impossible to see anything and it
doesn't move very much but if again if
you go out to that 10 Mille bar height
there's what you see and you under
feeding and you see the this a little
see that good thing right
that's as Tasmania off the south coast
of Australia and right there there's a
counterclockwise flow it's sort of it's

a daikatana instability between this
clockwise and this counterclockwise flow
anyway that's the evidence that I have
at this point and I think I'm confident
that if astronomers are willing to look
for more counter rotation in galaxies
they will find it let's see if this
observation of counter rotation is two
more bricks in the wall of evidence and
scientists who claim that electricity
doesn't do anything will live to eat
their words perhaps some of you know
this fellow and he was here and this is
what he said yes yes we know there's
electricity in space but it doesn't do
anything

[Applause]

[Music]

[Music]

you

[Music]

extraordinary ideas have driven the
greatest advances in science and in
human knowledge

the electric universe is the gateway to
the science of future in order to
progress we need to think the
unthinkable in the history of scientific
ideas there is a pattern of how new
ideas merge but if we can overcome our
self-importance we are poised now to
understand the Earth's electrical
environment in a way that will relate to
the park to the hole we are exploring a
world of new meaning and that is very
exciting

discovery by discovery one surprise at a
time all of science is coming into the
electric universe

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

Where did asteroids come from?

For decades, in the standard
story of our solar system,
we have been told that asteroids,
as well as comets and meteoroids,
are the so-called leftovers
of the early solar system.

In this view, comets and even
asteroids have been proposed
as a possible source
of our planet's oceans.

Of course, when spacecraft
have visited comets
they've not found anything like the
dirty snowballs of conventional theory.

In this conclusion to his
three-part presentation,
physicist Eugene Bagashov explores
the latest scientific papers
into the evidence for the water of the
asteroids Bennu and Ryugu, respectively,

and what it means for an understanding of the solar system's history and origins.

Spectral data from both Ryugu and Bennu seems pretty similar.

One of the prominent features of spectra of these bodies is the high absorption at the infrared wavelength of about 2.7 microns, and the researchers acknowledge that it must be associated with the OH- groups in the minerals on the surface.

However, their idea of how it got there is pretty peculiar.

They think that it's the remnants of the water that formed in the inner belt together with the parent asteroids of Bennu and Ryugu and later was evaporated when they migrated into the inner solar system.

Now of course, we are well aware of another process which is considered to be fundamental for the electric comet hypothesis, the idea that hydroxyl groups and water itself might be formed due to the electrochemical interaction

between the protons from the solar wind
and oxygen in the minerals on
the surface of an airless body,
such as a comet or an asteroid.

A few years ago, this process has been
confirmed in the laboratory experiments
that were simulating the interaction
of the solar wind with silicates.

For more details, I'd recommend watching

Thunderbolts Project documentary

The Electric Comet

and brilliant Franklin Anariba's talks available
at the Thunderbolts Project YouTube channel.

So in principle, the detection of OH
signal should be considered trivial
and not really indicative of
anything in the EU perspective.

These bodies might have

been formed anywhere,

including the inner

solar system itself,

and still demonstrate the

same spectral absorption line.

Nevertheless, with regards to

that, even in research papers

the scientists from both teams

keep repeating the mantra
that it was the asteroids and comets
that brought water to the Earth
whereas it is already known that there
is at least as much water in the mantle
as on the surface of our planet.

How would Ryugu and Bennu keep any
significant amount of water ice anyway
if the temperatures on their surface are
higher than the sublimation limit for water?

It's probably important
to emphasize here
that what Hayabusa2 and
Osiris-Rex are observing
is only structural OH-
groups, not the water itself.

Even more so, they have
to go quite a long way
to somehow get rid of the
water in their scenario.

In particular, Hayabusa2 scientists have to
imply a significant radioactive heating
of the parent body of Ryugu asteroid
in order to heat it up enough
to produce the water-poor minerals
that are observed on its surface.

And on top of that, they have
to imply impact scenario
as they note that in order to produce
the observed spectrum of Ryugu,
a short-term catastrophic
heating is also needed.

But at the same time, they note that impacts
would heat only a part of the surface,
so they need a lot of them.

So maybe in this case a single short-term
electrical heating would be more appropriate.

Otherwise, the spectra
of both Bennu and Ryugu
are more or less consistent with the
high abundance of phyllosilicates,
that is essentially
sedimentary rock.

Now, how would sedimentary
rock end up on a tiny asteroid
otherwise than as a result of its
ejection from a much larger planet,
is a good question that we should
address to the Astrophysical community.

Moreover, the present data from Osiris-Rex
shows that the specific spectral feature
of magnesium-rich Phyllosilicates

at 16 micrometers is not observed,
from which the researchers conclude that
the minerals should be iron-rich instead
and that's not all there is.

"... spectra of Bennu also exhibit
two features at 555 and 340 cm^{-1}
that are probably attributable,
at least in part, to magnetite."

In my opinion, this is
a potential indication
that this asteroid was once part
of a larger planet such as Mars,
although I wouldn't discount Venus
and Earth or Moon and Mercury, too.
In previous decades, there has been some
debate regarding possible formation
of nano crystals of magnetite
in Martian meteorites
due to the influence of
hypothetical bacterial life,
though the shapes of crystals don't seem to
match the ones produced by bacteria on Earth.

I think it would be very funny if the
samples collected at Ryugu and Bennu
would show these biogenic
crystals of magnetite instead,

proving that these rocks

originate from Earth.

But that is only one of

many possibilities, of course.

Most likely the minerals

would be transformed too much

during their excavation

process anyway.

Last thing I wish to mention with

regards to the spectrum of these objects

is that it demonstrates

reddening at large phase angles,

that is when the detector is

placed far away from the line

connecting the Sun

and the asteroid.

At the moment, scientists cannot

explain this peculiar property,

but perhaps it is caused by a much higher degree

of ordering of the material on the surface,

which would be consistent with

the scenario of their excavation

under the influence of

extremely strong electric fields

but probably pretty hard to explain

from a rubble pile standpoint.

Speaking of the electric comet ideas,
a recent press release by NASA
states that some unexpected dust particles
were observed near the asteroid Bennu.

Now, I would envision
two scenarios here.

First of all, those might be some
sort of electrostatic dust fountains
that are produced due to the potential
difference across the surface of the asteroid.

It is well known and acknowledged
that the dayside of such objects
should be charged positively
with respect to the nightside.

There are two primary
causes of that effect.

Firstly, the photo ionization of the surface on
the dayside makes it more positively charged
and secondly, the solar wind is
blocked by the asteroid itself,
so that it's night side is experiencing
a plasma shadowing, so to speak,
and the solar wind protons cannot expand into
this shadowed region as quickly as electrons,
so together this might cause potential
differences of the order of a few hundred volts

between the day side

and the night side.

But of course, so more localized potential

differences on the surface are also possible

due to some topographic features, different elemental

composition and albedo across the surface,

its potential local

magnetization, and so on.

It's interesting that the

researchers themselves

note some peculiar reflectance differences

across the surface of both asteroids

and they also note that it might be produced

through some process of dust transfer,

the nature of which

"remains unclear".

However, to be completely fair, the

gravity on these asteroids it's so weak

that according to the

researchers, at least on Bennu,

"...material can achieve orbit

through downslope migration."

So dust particles might just be

rolling downhill and end up in space.

That is if we assume that no other

forces are acting upon this dust,

which is obviously not the case.

But anyway, the second

scenario I would envision

is, that these are not dust

particles in the first place.

Unfortunately I don't know all

the details of this detection,

as the only information we have on it is

basically one paragraph from NASA press release.

So perhaps the option I'd like

to propose might be ruled out,

but from the publicly available data

it still seems to be a viable option.

So I'd propose that these bright dots

that we see on the NavCam images

might actually be just charged particles

emanating from the vicinity of Bennu,

and picked up by the camera.

What exactly these

particles are,

ions or electrons, or maybe

even photons, is not clear yet

but any of these, as far as I understand,

could trigger the camera matrix pixels.

And it is clear, I think, that in

this case, whatever they are,

their production should be caused
by some electromagnetic interaction
of the solar wind plasma, or maybe
the cosmic rays with the asteroid.

Continuing this topic, it's quite a
shame that both Hayabusa2 and Osiris-Rex
are very poorly equipped to study the really
important properties of Ryugu and Bennu,
that is their interaction
with space plasma.

It might sound ridiculous, but none of
these spacecraft have Langmuir probes,
plasma wave suits of instruments, or any
detectors of charged particles whatsoever.
The only thing we have in this department,
is the magnetometer on Mascot lander
that spent some 17 hours on
Ryugu in early October of 2018
and then died when
its batteries ran out.

Well, hopefully we'll see some data from
it eventually, as so far I've seen none.

I suspect that the instrument might show
some remnant magnetization of Ryugu,
as if it represents a
piece of planetary crust

it should bear some imprint

of its magnetic field.

But also, if it was excavated electrically,
the currents running through and around it
would also generate some fields that
might be retained in the asteroidal rock.

Perhaps this magnetometer might
register some other interesting effects,
for example the changing magnetic fields
during the progression of day and night cycle,
as the surface of the asteroid charges
and recharges positively and negatively,
or the variation of
the magnetic field
due to the interaction of the
asteroid with the solar wind plasma.

There is a slight hope that Rex's X-ray
spectrometer on board of Osiris-Rex
at some point might detect soft X-rays resulting
from Bennu's interaction with the solar wind.

The hope is only slight, because the
lowest value of energy it might detect
is 700 electron volts which
might be a bit too high,
as for example Rosetta
mission has shown

that the negative electric potential of Comet 67P nucleus with respect to the ambient solar wind is only about 200 to 400 volts, and only about 200 volts of potential difference were detected by Cassini spacecraft at the Saturnian moon Hyperion, and Pluto emits X-rays charge exchange with the solar wind at only 300 to 600 volts of potential difference.

Summing it all up, I would say that the data that has been released so far does not contradict the scenario under which the asteroids Bennu and Ryugu represent a relatively homogeneous, internally strong but highly porous rocks that have been electrically excavated from the surface of one of the bodies in the inner solar system during a relatively recent planetary catastrophe.

Their complex surfaces indicate that most likely this material

does not originate

from the asteroid belt.

However, as I've noted

in the very beginning,

the so-called

rubble pile scenario

also does not directly contradict

the Electric Universe paradigm.

But, my personal opinion

is that these bodies

are most likely internally

homogeneous and strong.

As the instrumentation onboard of both

Hayabusa2 and Osiris-Rex spacecraft

is very limited in terms of studying the

plasma environments of Ryugu and Bennu,

we're left with only observations of secondary

evidence for their electrical activity,

like these dust particles

or whatever they are,

that were spotted in

the vicinity of Bennu.

But hopefully, we'll be able to draw at

least some conclusions from these missions.

It would be especially interesting

to see the results of the analysis

of collected samples when
they would return to Earth,
but that is still
quite a long time away.

EU 2017 Future Science

Phoenix 17-20 August

What Can Matter Be?

Peter Modell

Good morning to all!

This is really a special

opportunity and a privilege

to be able to learn and share learnings

here at EU 2017, and I'm coming in deep

gratitude to all those at Thunderbolts

who made this possible.

My lifelong passion

for astronomy found its

reward a few years ago when I

discovered the Electric Universe and

The Thunderbolts Project and I

count myself very very lucky.

This talk's aim is to answer

the question 'what can matter be'

but not too quickly.

In the speeded up times of ours,

we are quick to give

solutions, questions, trigger responses,

usually from what we know already.

And quite often our blogs turn into pillow

fight where we're tossing opinions back and forth.

In contrast to this, resting
with unknowns without immediately
reaching for solutions has a
completely different effect.

It tends to bring out
hidden lines of reasoning that have
their source in intuition.

Contradictory facts can be resting
places where we take our bearings
before moving forward, and
that's important in what follows.

A familiar example to us, of contradictions
of course, is the dinosaurs.

On one hand, it's obvious that
they existed on the Earth.

On the other hand, biology and physics shows
that it couldn't have been like we imagined.

The, for instance, their frail bone structure
couldn't have held such a massive body.

And do we take the empiricist's
stand and say well, they
existed, and go on and
make dinosaur movies?

Or do we hold to the
contradiction and allow for a solution
to emerge in its time, as it has in

the case of the Electric Universe.

You know the story well.

With reduced gravity on the Earth, life forms
grew to different proportions than today.

Reduced gravity means reduced
mass and mass is a variable that depends
on (the) electric environment.

So it was possible that the mass
of the Earth was much lower,
while the matter remained the same.

Now, the hard problem is
understanding what is mass, and we have
an elegant response to that, as
described by Wal Thornhill.

The easy problem, what is matter,
is left for us to ponder on.

But is it easy?

What are the characteristics of matter?

It seems so evident it shouldn't be a problem.

By matter, we refer to objects we
encounter with our physical bodies
that is, our physical senses.

On the scale of the macro world,
matter is what we bump into.

And why the bump -- because material objects occupy
certain space at a certain time and this

implies that matter subsumes space and time.

Another fact we associate with
matter is unequivocal, present.

It's either there or it's not
there, there's no in-between.

If you want the piano to
go in the corner, well, the pot
with the ficus tree
has to go elsewhere.

This model of reality works well in our
macro world and it works too
for cells under the microscope.

But shift down to the scale of the atom
within the subatomic, and the model doesn't apply.

For one on this scale, objects
apparently don't touch.

They, or the particles, have an electric field and
this is equivalent to having a distended
body which is less present at the
distance from the center.

It's not necessary for me to describe this world,
you know it well, but to accommodate the
subatomic world, do we need to construct
a separate different model of reality?

Probably not, and why not?

The incongruence between the two worlds

results from not taking into
account the description of perception.
Our first step should be to grasp how
perception gives rise to the world we know.

To make my point, here's an anecdote.
Once a group of specialists came before
God and said, you're not needed anymore,
we know how to make matter,
how to create life now.

And God, ever accommodating said,
certainly, you just show me that you
can make life and I'll graciously leave.
Well, the experts bent down, took up a
handful of dirt and started, and
proceeded to make life.

Wait a minute, said God, that's mine!
You take your own dirt!

Our search for matter begins not with a
description of the already present
objective world, but prior to this,
at the pre-conceptual state.

And to go there seems all but impossible,
but we can give it a try.

Here's an experience for you to
test right now in your mind.

Imagine you get a whiff of a

magnificent, strange, beautiful

scent and this fragrance, you don't

know what it is and where it's from, just

stay with the experience.

Fully absorbed by the experience,

it's possible to lose

the sense of self and other and just be the

mysterious feeling that arises with the fragrance.

That suspended state then

gets broken, the moment the conscious

mind enters and forms concepts.

At that moment, Nirvana's lost and

you say hmm, I smell something special.

The encounter between our

body senses and whatever is, does not

create the world.

There's no perceived object and no

perceiving subject until the mind steps

in and formulates the

experience in this way.

So we can define the

process of perception in three stages.

One stage is the precognitive of which

we can say nothing, then comes the

out-of-conscious moment, where

there's an integration of multiple

elements which lead to the third stage, the
object of perception and awakening of consciousness.

To understand the middle set,
the moment of integration, is
crucial and was the subject of The
Thundebolts video that introduced this talk.

I give two further
examples now.

Looking at a mountainside, diverse
features catch our attention.

Rocks, cliffs, glaciers, streams...

However, all these individual items exit from a
conscious mind for the split-second that
the global understanding 'mountain' arises.

A hidden act of integration brings
together features that fuse to produce
the recognition -- mountain.

And in addition to this, there
are personal features,
attitudes, experiences, knowledges and
feelings, that also enter that moment of
integration and influence the impact and
meaning that the sense 'Mountain' has to us.

And there's more than this in that,
in the moment of integration.

For example, light intensity is variable.

The brightness we observe
of any one area in the field
depends on the surrounding areas.

In order for the image we see to form,
a scale of intensities of luminosity has
to be established for the whole scene.

Various processes such as this take place
in that split-second before the image forms.

It's amazing, isn't it?

The second example, I'd like to take a set of
depth vision, something that's commonly
explained as a, when you take the
parallax difference between the views of
the two eyes, you can calculate the
distance of an object.

But this is not at all the
experience of depth vision,
which is a way of being in the
world and a way of connecting with
our surroundings.

You know well, when an image passes from
two dimensions to three dimensional, it
can give a kind of a jolt and quite
often there's a kind, it is an experience
of elation that comes with that change.

Calculation with an algorithm

is a sequenced process
and will not explain the
simultaneity of presence.

By holding steadfast to the
contradiction that arises
between the two views when they are
superimposed, each element in the field
vies for its place in a coherent single
unified view, and resolution comes with
the third dimension or with depth vision.

And without this, would we imagine
a three-dimensional world and without
the sense of volume, could we imagine
physical objects? We couldn't.

Now we've got a conundrum.

On one hand, we personally enact the
process of integration that generates
the objects we perceive.

On the other hand, if we're
not there, then what?

Shouldn't things disappear?

Here's the response of a
baffled philosophy student.

There once was a man who said, God must
think it exceedingly odd if he finds
that the tree continues to be when

there's no one about in the quad.

Dear sir, your astonishment's odd.

I'm always about in the quad and that's why
the tree will continue to be observed by,
yours faithfully, God.

Yes yes, we're caught in a contradiction!

Do we take the empiricist's position and
say well, the world obviously exists,
ignore the contradiction and go on,
or do we ignore the physical side of the
contradiction and come up with
a glibly claim that all is
non-material spirit?

An answer will come in its time,
we just need the steadfast
determination to hold the contradiction
without jumping to conclusions as this
limerick rhyme did.

Let's linger a little bit with that
moment of integration.

I choose to emphasize just three points.

Firstly, an empty center.

Objects we perceive have no central
something that makes them what they are.

They are not built lego-like
from component parts.

Instead, they arise out of
the communion between multiple
features that, in a
timeless moment, integrate.

That's the empty center.

Second point, timelessness.

The integration is achieved through
a simultaneous interchange
between all that gives meaning and
form to the perceived object.

It is the simultaneous interrelationship
of many, that forms unity.

The third point, non-conscious.

The integration happens in an
out-of-consciousness moment.

It's achieved through the activity of the non-
conscious mind, what I call the expanded mind.

Alright, here we can arrive at the
first conclusion about materiality.

This integration forms
everything we perceive.

It requires an act of
mind to form an object.

Realizing this fact bursts
the mind-matter duality and signifies
the counterintuitive conclusion that matter,

as we know it, is a product of mind.

How strange this may seem at first.

Matter is born in the mind, can it be so?

If physical objects are merely concepts

formed in the mind, this raises a very

serious question.

Would you trust the chair you're

sitting on to all your weight, huh?

Despite the fact that you are sitting

on the chair, it is a mind object.

Contradiction? No, not if

we unravel it carefully.

Physical experience, as we noted,

is the unthinkable exchange between

body and all that is.

We had the example of fragrance

and now the example of

material objects, there's no difference.

The pre-conceptual ongoing experience

that's neither subjective nor objective,

is inaccessible to the conscious mind.

Then in steps the mind, breaks the

hallowed state and codifies it into

chair, body, sitting.

The conscious mind knows only that

which becomes codified in two objects.

Sitting on a chair is the mind's
formulation of a physical encounter.

We have absolutely no knowledge of
what that encounter consisted of.

We only know what it is
after applying the codification system
we habitually use, that matches our
present understanding.

Now let's go to the question
'what can matter be'.

Is the question 'what is matter made of' or is it
'how do we recognize matter, what is it'?

We'll look at these two
questions separately.

Firstly, 'what is it made of'.

The moment we ask of some object 'what is it made of',
we've abandoned that object and we're looking
for the matter that fills it
and not what it is itself.

The matter of a mountain is being a mountain.

To look for matter on the
inside, regresses to the
ever more minute till soon we're asking
what's the matter of subatomic particles.

Here, below the threshold of
the periodic table of elements, what kind

of matter do we expect? Some cosmic dust?

And then we finally realize we've gone astray.

Because we're actually looking for

something to fill the object that's

a concept we created in the mind.

The question we meant to ask then is,

what makes matter what it is?

Or simply, how do we recognize matter?

But this detour through the

wrong question bears its fruit,

if I'm not mistaken there's a

restatement here of Goedel's

incompleteness theorem, though

in a different form.

Can we really build an integral whole

from within by assembling component parts?

It's impossible.

The complement of this, of course, is how through

integration we build a whole from without.

So back to the question how do

we recognize matter, whether matter in

general or the subset of matter

we know as physical matter.

Let's keep in mind

what was already shown.

Matter is what the mind creates when it

breaks off a piece of the continuing
experience, the continuing flux of
experience, and allows it to form a
self-contained unit.

It then has otherness or what
we know as objectivity.

To be called matter, an
item has to have an identity.

It's recognized as some thing.

For example, oh dear what
can the matter be, Johnny's
so long at the fair.

The matter is the whole problem that the distressed
young Irish lass has formed in her mind.

And she's surely right,

Dublin's Donnybrook Fair was infamous.

But for us, 'matter' is the fact that
something takes form as a separate
entity and becomes an object of attention.

Physical matter is when the
object related to our experience,
the experience of our physical senses,
is recognized as present in the
three-dimensional world.

Physical matter can be auditory,
visual, tactile or strange fragrance.

Matter is not a particular substance.

It's a particular, yes,
a particular anything.

A particular particle, for
example, or a mountain.

Now, this came rather subtlety
and among you
there may be those who want to say,
but nothing has been answered!

Not so, there is an answer.

Matter is anything that
has an identity.

Thoughts and concepts are mind matter
attributed to the mind only.

Material objects are attributed to the
physical world we experience through our bodies.

So far it's in
perfect accord with our intuitive
understanding, the only difference and
this makes all the difference,
is that the material object we recognize
is empty inside because it's formed from
without through a process of integration.

Here we could come back to the idea of a,
the model of reality on the macro scale
and on the subatomic scale

using the same model.

I just touched very quickly
on a couple, on three points.

One is the empty center of
all objects, as we noted.

Maybe the same is true of on the
subatomic scale and an electric field
generates the impression
of a central object.

The Boscovic atom was an
early proposition in this direction.

Second point, the timeless moment of
integration, in which everything
interrelates simultaneously.

Could the same immediate connection be true in
phenomena we observe in the universe on all scales?

Gravity's connection tends to
be immediate and is probably just one
example of such immediate connection.

The third point goes a little further.

It's the tendency of the mind to
produce independent units, concepts,
objects, and this is something that is
not just the mind but we observe
throughout nature, both animate and
inanimate, in the formation of cells,

crystals and more,

and of course the plasma.

Is the mind responding to a universal

tendency that is present in nature?

This thought then gives answers

to diverse questions.

For instance, if the subatomic

particles are substanceless,

then what holds charge

to a position in space?

Well, fields on their own tend to

form separate units.

Or another question, how does the

tree continue to be in

the quad when there's no

intelligent observer?

The answer -- both mind matter and physical

matter participate in the same proactive

movement that creates

independent intelligent units.

And with this realization,

dualism vanishes.

In less than a minute, I'll give a

recapitulation of the main theme.

So what is matter -- it's anything

that's gone through the process

of integration to become

a particular thing.

Sense organs don't know an object

is present, for that we need the

intervention of mind.

A good example is warmth.

You feel warm but you have no concept

of any thing and no sense of it being other.

Warmth can just be an

experience until, in our mind, we

form the concept, warmth, then we can talk

about it and then it becomes the matter

of our discussion.

There's no more substance to matter,

or should I say,

there's no more substance to the matter

of a mountain than to warmth.

All objects are equally real:

matter, love, warmth, beauty...

Of course, we differentiate what

we encounter with our body senses

as physical matter but 'the matter'

part is not substance,

but the fact that it formed

a self-contained unit.

It could be our cultural

heritage, with its emphasis on
objectivity, makes telling
this tale more difficult.

And finally, all these
observations come to broaden the
dialogue between scientist and
philosopher, the one in search of facts,
the other in search of meaning.

Do they contradict?

Probably, the two aspirations
arrive mostly in
the same person, the philosophical
scientist or the scientific philosopher.

In holding with steadfast determination
to the contrasting views, we allow for a
deeper understanding to emerge.

Maybe we did that a little here, I hope so.

Thank you for your participation!

Well, what is that strange extraterrestrial-looking figure, rising above the horizon of Easter Island?

It's actually an electric discharge formation. It was pointed out to me by

Tony Peratt, about 12 to 13 years ago, when he was one of the most distinguished plasma scientists on the

planet. And when people come to The

Thunderbolts channel on YouTube, sometimes they're looking for information on aliens and UFOs and so on.

And they hit upon "Symbols of an Alien Sky" and they get something much different.

All right. So, to pose the question, "Has our sky changed completely in the last few thousand years?"

We're addicted to projecting our sky on the past, but the truth of the matter is that the sky has changed dramatically, and these changes had a huge impact on

the early cultures. And this is a testable claim. The formation seen in the ancient sky can actually be reconstructed by a systematic use of a protocol. A

protocol for extracting reliable conclusions from global witnesses, despite the fact that the witnesses, individually and locally, are not reliable.

This has to do with the convergence of global testimony on highly unique details, where the convergence would not be possible in the absence of an extraordinary globally witnessed provocation. So, I hope everyone can kind of

come to grips with the inherent logic of a historical detective
adventure, where patterns lead you into an
entirely new world of ancient experience.

It happened just a few thousand years ago,
when we lived in the presence of the gods.

Planetary powers ruled the celestial
theater in the lost age of gods and wonders.

[Music]

Planets gathered in close congregation as
if alive, engaging each other electrically.

[Music]

But then the gods grew violent and they went to war, driving
human witnesses to take shelter in caves and rocky enclosures.

[Music]

Humans left to remember. To remember the powers of the
gods. Formations and cosmic events not to be forgotten.

Well, I have to take you back to the inspiration for a
life's work that came to me from Immanuel Velikovsky and
his book "Worlds In Collision" published in 1950.

In 1972, I began publishing a series on Velikovsky.

It culminated in ten issues that achieved a great deal
of scientific interest around the world. And it was the
number one best seller on more than one college
campus. And this series on "Immanuel Velikovsky
Reconsidered" led directly to a confrontation
between Velikovsky and Carl Sagan in 1974,

in February, in San Francisco. And this taught me a lot about the power of institutions to frame narratives. "The question that science forgot to ask" was never addressed. And that question is, "Have planets always moved on their present courses?"

Now, Velikovsky has the centerpiece of his presentation in "Worlds and collision." He said, the planet Venus appeared in the ancient sky to people around the world, as an earth-threatening comet. What a preposterous idea. But he didn't pull that out of thin air.

He based that on global testimony that identified Venus as a comet, wearing all of the symbols and hieroglyphs and all of the stories that were attached to comets in the different cultures. You cannot ignore the power of that kind of convergence.

Well, here's the toughest question, and that's the meaning of myth. Is there a meaning to myth that is completely obscure, completely forgotten in our time?

And the answer is, absolutely so. The myths were born out of a myth-making epoch. Human imagination responding to extraordinary natural events. And that's where archetypes come in. Because it's the global patterns that actually point you in the direction of an ancient experience around the world. And we have these different archetypal themes - the fall from heaven of a celestial power.

That's a global idea. It has no roots in any experience

that we can identify today, and the idea of a cosmic catastrophe, a deluge, a rain-of-fire. The doomsday event giving rise to universal doomsday anxiety. And why is it that a little wisp of gas comes into view as a comet, we begin thinking of the end of the world? That's the power of the archetypal theme on human imagination. And the story, occurring around the world, of a dying god; and the story of an ensuing cloud of chaos that overwhelmed the world. Clouds of chaos, armies of darkness in the sky, throwing the world into confusion. And then there is this incredible archetypal theme of the mother goddess. And why would it be of five visible planets that goddess is universally identified as Venus. There are patterns that must have an explanation. And the greatest surprise will come when we see that these patterns are inseparably connected to each other. And this includes the dark aspect, the terrifying aspect of the mother goddess herself, her terrible aspect. Now here's a theme that you'll find around the world and it probably involves the most active archetypal figure in all of world mythology - the cosmic warrior. And why did it happen that astronomers in different lands, when

they looked out at the planets, consistently identified the planet Mars as a great warrior in an ancestral time? And of course the warrior is intimately connected with other themes. And that includes the defeat of a dragon, a ludicrous monster said to have attacked the world, and threatened to destroy the entire world. And then we have, very closely connected with the dragon of chaos, we have a serpent figure that is so completely preposterous, there's no conceivable basis for the inspiration of the same features around the world.

That's a huge mystery. Feathered serpent, long-haired serpent, fiery serpent, fire-spitting serpent, these are all ludicrous ideas. And yet, there is one theme that I don't believe anyone has noticed in the conventional study of cultural themes globally. And that is the association of that serpent or dragon with a 'Stairway to Heaven'.

And this actually is an incredibly inspiring theme and the details can be pieced together through the points of agreement from the ancient cultures. And what you will find is a direct convergence with the story that plasma science can give - highest energy plasma discharge producing the very forms that connect a serpentine upward spiraling form to a stack of toruses. A stack of toruses being exactly what was anciently identified as the stairway

of heaven. So, why a dragon figure? Why a serpent figure, globally associated with a ladder or steps to the sky?

Now this is where Tony Peratt's work (which many of you are familiar with) comes directly in to verify the sequence of events that is involved in this. In terms of the common human memories, perhaps the most common is the 'tower of heaven', the scaling heaven - that was the 'tower of Babel' I suspect most people here know that. And then the theme that just caught my imagination, and caused me to live off of adrenaline for two or three years. Until I realized that it is possible to reconstruct a completely different story - Saturn as the founder of a primeval paradise, for example. And Saturn, enigmatically as the primeval Sun. Now many people here may not even know this that that the name 'Helios', the Greek 'Helios', was archaically a name for Saturn. The Latin 'sol' was archaically a name for Saturn. Well, these acknowledged connections have one thing in common, and that is that they are all preposterous. Not one finds an explanation in anything in our natural world, anything occurring in our time. And that includes this power, Saturn - founder of the golden age - becoming the devourer of its own children.

Now, I just want to acknowledge that my

interest in Saturn began with an outline I received of a hypothesis that Immanuel Velikovsky had developed - unpublished - relating to a prior age of the planet Saturn. A very unusual idea and one that he wanted to develop more completely. But I grabbed ahold of that and two or three years later, I got a contract with Doubleday when it was the largest publisher in the world, for my book "The Saturn Myth". There are people here today who were very much inspired by "The Saturn Myth". That reconstruction was just a narrow snapshot of a particular configuration, and then my explanation for the configuration changed as well and this is the centerpiece that I will draw upon, to establish a reference point - to go backwards and to go forward in time. Because this is a complex dynamic configuration in the sky, involving planets very close to the earth, and putting this configuration in three-dimensional space, is the key to testing the implications of the model. The sizes of the different planets, their colors, their relative motions to each other, and most significantly, the appearance of a bright crescent on the great sphere of Saturn. This is a polar configuration. Standing at the pole, means that the axis of the earth was aligned - in effect ran right through - the hearts of those bodies. Now,

you cannot entertain that configuration without including the rotation of that crescent with the cycle of day and night. And that is a very profound implication, or prediction of the model. Because the daily cycle - particularly in early cultures, and most particularly in Egyptian cultures - was the heart of their sacred rites, celebrating a daily cycle which is supposedly of the Sun. And here is a model that is saying that that crescent revolved with the cycle of day and night; there must have been a huge echo of that into Egypt with its daily cycle celebrations.

"The Great Conjunction of Primeval Times"

takes you to the ancient imagery of the sun wheels.

'The Great Conjunction', I've used that phrase a lot, but that principle of conjunction - a line running right through the hearts of the planets - that actually is part of the remembered tradition. Again, a ludicrous idea and what, in the motions of planets today that never stand in perfect line, what would have provoked that idea of a perfect conjunction? And we have these engravings on stone that only accentuate the improbability of all of this.

Cultures around the world presenting the same, unrecognizable form? The only response has been to call these drawings of the Sun. But if you actually examine these images, globally, you find they have nothing in common with the Sun.

And more than that, as I intend to make clear here at

this conference, these images involve cultures,
naming the particular planets producing the images.
Now, follow the 'Sun wheel' and you'll
get to certain stylized images. These
stylized images - if you're going back through cultural
history, you'd still be after the rock art carvings -
there's a stylization that occurs in which concepts
begin to influence, because the apparition itself is no
longer present. But this stylized image of the Great
Wheel of Shamash, the "Sun God", is very telling.
We have to ask ourselves, does the Sun and our sky look
like this? And this is actually requiring, I think, a
brutal honesty and that honesty can be helped along
by explicit statements of the astronomical texts -
"Shamash is the planet Saturn". The story of
mythology is in fact the story of what happened to
these bodies. And there's too much specificity
in this, to think that you could just
toy with different ideas and make something up that
would work. Make something up and it would be refuted in
five minutes. The players in this configuration are
named. Saturn as primeval Unity, creator, central
sun, when heaven was close to the earth. Venus as star of
glory, mother goddess and in the removal, the unraveling of
that configuration becoming the great comet. And Mars,
the universally celebrated warrior-hero, warrior-king, and

the essential identity of the cosmic thunderbolt.

What I want to draw attention to

always, is specificity and utter uniqueness. There is

not an archetypal theme on the planet, to the best of my

knowledge, that would ever be expected by anything we ever

experienced. How does it happen that the world presents to us

hundreds of archetypes, and they are connected

inseparably to each other? Each archetype being

illuminated by the network of archetypes and each

helping to illuminate the others. We're using then a

a body of evidence that reaches beyond the historical

testimony, into perspective from earth. Three-dimensional

perspective is incredibly demanding. Physical analogies

in the laboratory where exotic configurations are proposed

in plasma events between planets. And then we discover

that those are exotic, highly specific, forms that are in fact

available in the laboratory. And yes,

consistency. Contradiction is the

signature of a mistake. If there's a

mistake, it will show up in the inconsistency

between those levels of evidence. Now, I want to talk

about a convergence of myth and science which has already

been acknowledged by David Novak. And this

occurred primarily when in the mid-1990s, I

had the privilege of meeting Wal Thornhill

and he stated to me how electric phenomena

would create the forms that I had reconstructed. That led, just a few years later, to a convergence in 2000 with Tony Peratt, again a leading plasma scientist in his time, and this meeting with Tony Peratt was an astounding juncture for us. He had identified "the Christmas tree".

[interruption]

[interruption]

What he called the Christmas tree, I identified as the chain of arrows, and that set in motion one of the most memorable conversations in my life. He asked me how that configuration evolved and I described the filament up the polar axis that divided into a stack of toruses.

First, conic embedded cones form, and then flat toruses that were seen as the "tower or ladder of the sky". When Tony returned to Los Alamos, he asked me to send him the rock art. Instead of sending him hundreds of rock art images, I just sent him this one.

Now, the reason I sent him just one was that I was certain that that eye-mask form (that's what we call it - it's a global image), I was certain that it was a plasma form and the "ladder of Heaven" I had identified as toruses and he had said that's the evolution of the Peratt instability in the laboratory, an intimate connection with the chain of arrows or the Christmas tree form.

So, I was confident that when he saw that, he would recognize it as a plasma form, and he even identified the parts there. And then he sent me this very unique plasma form and that is the eye-mask form that I just referred to. The eye-mask will be found on virtually every continent. It has no meaning, no explanation in any conventional terms. And yet, it is the explanation for the owl-eyed form of the mother goddess, and for the owl-eyed or eye-mask form carved on stone around the world, and enigmatically connected to the 'stairway to the sky'. That eye-mask beneath those toroidal forms of the Kayenta pictograph is just a variation on this. And incidentally, there's no up and down in this configuration.

This is actually a phase of wandering. It's not a polar configuration. That eye- mask form was seen in Easter Island.

It had a lot of aquatic elements attached to it because it just rolls right up out of the surrounding sea.

So, thank you all very much.

[Music]

[Music]

Where exactly is cosmology headed?

Can it change without actually changing?

Can you save a house with a crumbling
foundation by adding a new roof, or might
it be time to look for a new home?

The Standard Model of cosmology is in a
state of crisis and inevitably heading
towards revolution. Let's delve deeper
into Thomas Kuhn's criteria for
revolution and explore if there are
currently any cosmological models that meet
his criteria. When a scientific model is in crisis,
i.e. plagued by mounting anomalies and
contradictions that the model cannot resolve,
then it can no longer be considered a
reliable guide to problem solving and
will eventually be replaced by a different
model. This is the model revolution stage of
the paradigm shift cycle. it begins with the
emergence of a new model, or models, that speak a
fundamentally different language, making the old
and new models irreconcilable and incompatible.
Which means that they cannot co-exist. Simply
put, the main criteria for model revolution
is a new model that speaks a

fundamentally different language and is incompatible with the existing model.

For the purpose of this analysis,

I use the word 'language' to refer to 'paradigmatic language' by which I mean how a paradigm talks about and describes the things it observes in nature.

A change in paradigm is ultimately a change of world view. So, are there presently any cosmological models that speak a fundamentally different paradigmatic language with a different worldview?

In order to explore this question, we must first establish the lexicon of the Standard Model. To put a complex subject in admittedly reduced terms, I have distilled from the Standard Model lexicon the following three foundational concepts and assumptions in order of significance.

Gravity, as the principal cosmological force; General Relativity, as defining and/or in relation to gravity; and the Big Bang, meaning an expanding Universe , birthed by a Big Bang.

These concepts are complementary and interdependent, while also engendering the majority of other concepts and hypotheses contained within the Standard Model.

So, are there presently any models that deviate from one or more of these foundational concepts and assumptions?

Let's look at what the mainstream has to say about alternative cosmologies.

In mainstream science, alternatives are sometimes described as physics beyond the Standard Model or BSM, which quote, "...refers to the theoretical developments needed to explain the deficiencies of the Standard Model" - end quote. According to mainstream scientists, theories that lie beyond the Standard Model include various extensions of the Standard Model, as well as what they describe as 'entirely novel explanations' such as string theory, M theory, and extra dimensions.

Examples of extensions include 'eternal inflation' theory and the 'oscillating' model of the Universe. I will leave it to cosmologists and astrophysicists to explain and explore the details of these hypotheses.

For the purpose of my analysis, what matters is that both of these theories rely on the Standard Model's foundational assumption and lexicon about a Big Bang and are therefore not sufficiently different.

Even early Big Bang rivals, such as

Steady State theory, rely on foundational assumptions and concepts such as gravity, is the driving force of the Universe as well as expansion. Another mainstream alternative is Modified Newtonian Dynamics or MOND. MOND quote, "...proposes a modification of Newton's law of universal gravitation to account for observed properties of galaxies....It is an alternative to the hypothesis of Dark Matter in terms of explaining why galaxies do not appear to obey the currently understood laws of physics." end quote. In other words, MOND and its variants, are an attempt to address one of the many anomalies and crises of the Standard Model. While it is touted as an alternative that can eliminate the problems created by the hypothesis of Dark Matter, MOND is still gravity-centric and actually increases the galactic effects of gravity. It also relies on many of the main assumptions and concepts of the Standard Model with the obvious exception of Dark Matter. Thus, as is the case with the other extensions, MOND is also not a viable alternative in the Kuhnian sense.

Overall, an extension to the Standard Model by its very definition could never be seen as containing a fundamentally different paradigmatic language.

While these extensions arose to address problems and deficiencies in the Standard Model by further contributing to the complexity of the model, they ultimately exacerbate the crisis in contemporary cosmology.

Let us recall that increasing complexity is an indication of crisis.

Moving on to the so-called entirely novel explanations such as string theory M theory and extra dimensions, the main thing worth noting for our purposes is that these still treat gravity as the main driving force in the Universe.

They too cannot be seen as speaking a fundamentally different paradigmatic language and do not qualify as serious theoretical considerations for a new model.

These are but a few examples of the mainstream alternatives that exist. Again, I leave it to those more versed in the hard sciences, to sift through or evaluate all of the possible add-ons and

extensions to the Standard Model. As a critical discourse analyst, working within the Kuhnian framework, I am interested in identifying alternative models that meet the criteria for model revolution. Ones that self-consciously and directly espouse a fundamentally different language with a different view of the cosmos. One model that I'm familiar with and that also stands out for speaking a radically different paradigmatic language is the Electric Universe model of cosmology, or EU model for short. Proponents of this model subconsciously espouse a completely different language and world view. Let's look at some examples in the words of its advocates. In an introduction to an essay in *The Secular Heretic* by EU physicist and pioneer Wal Thornhill, the magazine's editors describe the EU model as the science of the 21st century, telling its readers quote, "Set aside everything you think you know about all things great and small because the ideas presented in the Electric Universe overturn it all." End quote. Referring to the EU model's take on the suppositions

of standard cosmology, they note the following.

Quote, "Was there a Big Bang? Not likely.

Einstein's Relativity? Doesn't hold up.

Is the Sun a thermonuclear fusion reactor which will eventually run out of fuel and burn out? Nope.

Are there black holes? No such thing.

What about dark matter and dark energy?

Forget about that nonsense and start learning about the science of the 21st century." End quote.

Implied in this statement is the idea

that the EU calls into question most

of the foundational concepts and assumptions

of standard cosmology. So what about gravity?

This is arguably the most important point of departure. For the EU model the Universe's nature cannot be explained by gravity alone.

Moreover, according to Thornhill quote,

"Unlike the Standard Model, the EU model

has a physical model for gravity as a

manifestation of the electric dipole

force." End quote. In the Standard Model,

gravity is the fundamental organizing force in

the cosmos. On the macro scale the Universe is

dominated by gravity, but in the Electric Universe

model the electric force is the fundamental

organizing force at all scales.

According to EU advocates,
quote, "...the gravitational theorem does
not single-handedly provide all the answers
required by physical science, particularly in
deep space.... gravitational theory struggles to
explain many anomalies in observation....

Today's most vexing scientific anomalies
point to an unexpected - at times dominating
- role of the electric force." End quote.

The EU model does not deny the role of gravity in
the Universe. On the contrary, as the model explains,
quote, "The Electric Universe concept
emerged from the principles of empirical
physical science as expressed by such
pioneers as Galileo, Kepler and Newton...

However, there's an important corollary
to the gravitational theorem and that is
the electrical force." End quote.

Due to the hierarchical structure of the
gravity - relativity - Big Bang lexicon that
I identified at the beginning, if the first
foundational concept, i.e. gravity is the
organizing force in the Universe, is
compromised, then it stands to reason
that the other two would also be called
into question. if the Standard Model's

views on gravity as organizing force are wrong, then General Relativity would be rendered irrelevant, and the Big Bang improbable. For instance, based on what the EU model has to say about gravity, the question of a Big Bang becomes moot.

According to Wal Thornhill, quote, "There was no Big Bang and we do not know the origin of the Universe." End quote.

What about theories such as dark matter, dark energy, black holes, gravitational waves, etc.? While they are presented as declarative truths or foregone conclusions by mainstream science, EU advocates would caution that these concepts are physically undefined and remain ad hoc hypotheses. This is because paradigmatic lexicons can trap scientists in a discursive prison that limits the way they can talk about, or even think about, what is observed.

In a paradigm shift, the new paradigm typically understands the language of the old or existing model, but does not agree with it. The old paradigm, however, is restricted in its ability to understand, or even consider the language of the new model. For

example, because the Standard Model does not allow for cohesive electrical effects in space, they are limited to describing much of the interstellar medium as gas, whereas the EU model describes it as plasma. Not least because over 99% of the known Universe is made up of electrically charged plasma. Standard Model scientists know what plasma is, but given their paradigmatic assumptions, they default to language and therefore, the physical properties of gas. In exploring some of the most important differences between the two models, I do not claim to assert whether or not the EU model is poised to replace the Standard Model. As Mel Acheson has noted, the EU model is still evolving and remains a work in progress. However, looking at the paradigm shift framework, one could not ask for a better example of a model that meets all of the requirements of the model revolution stage, embodying what it means for a model to speak a fundamentally different language, and be incompatible with the dominant, or existing model. Moreover, as I have discussed elsewhere,

the EU model is also arguably less complex, thereby satisfying part of Kuhn's requirement for paradigm change.

In this respect the Electric Universe model cannot be seen as an add-on or extension to the Standard Model.

It is by the aforementioned measures a fundamentally different cosmological paradigm.

[Music]

Welcome the Space News from the Electric
Universe, brought to you by The
Thunderbolts Project

at Thunderbolts.info. The Electric
Universe community consists of individuals
who seem to share a common trait.

That is the tendency to question ideas
and beliefs that academia
and society at large accept as true. It's
easy to recognize the obstinacy
or close mindedness in others but do we
recognize these tendencies in ourselves?

Today, thunderbolts colleague Chris Reeve
discusses the lifelong challenge the
human beings face,

both individually and collectively, to
develop the necessary skills and means
to determine what is true. Although we
don't normally experience it,

people deal with fear and anxiety at
every moment of our

our lives. Fear that the Earth might
become uninhabitable,

fear of war, fears about our family and
fear that we might lose our jobs. However
we don't feel these

fears a lot of times because we've
created
effective, partially subconscious, anxiety
management systems.

These subconscious systems provide us much
comfort
and room for more complex thought, insofar
as they
tirelessly work towards keeping us
alive and out of harm's way.

But they can also form a hidden barrier to
the desire to adaptively change for our
surroundings.

The development of a more complex mental
framework,
a self transforming mindset, can help the
individual to recognize the filtering
effect
and limitations of his or her round frame
of reference.

The late philosopher Stephen Toulmin once
said: "A man demonstrates his rationality,
not by a commitment to fixed ideas,
stereotyped procedures or immutable
concepts,
but by the manner in which, and the

occasions on which, he changes
those ideas, procedures and concepts."

Quoting Kierkegaard he added:

"Concepts, like individuals, have their
histories,
and are just as incapable of
withstanding the ravages of
time as are individuals." I wanna talk in
this video

about the psychology of change and my
intention is to show that
changes to society's scientific worldview
reflect in some key ways the process of
change that occurs at the level of the
individual.

Both possess its inherent resistance
to change which some psychologists have
likened to an immune system.

Understanding how this immunity to new
ideas works,
at both the individual and societal
levels,

is a necessary prerequisite for any
intent to deeply understand
how people engage scientific
controversies. Most

people who follow this business of change in the sciences will tend to point to the work of Thomas Kuhn whose ideas are just as relevant today as they were when he said them in the sixties.

I wanna talk about his work but I wanna first diverge from the traditional treatment of this subject by also mixing in the more recent work of two Harvard psychologists, Robert Kegan and Lisa Lahey.

Authors of the book, Immunity to Change, how to overcome it and unlock potential in yourself and your organization. Although Kegan and Lahey wrote Immunity to Change to help individuals and businesses, the framework is also an unintentional commentary on the role of worldviews in scientific discourse. There are some important fundamental takeaways from Kegan and Leahy which we can put to use towards improving scientific discourse.

I want to run through some quotes from their book to demonstrate them.

Quote: "Many if not most, of the change challenges you face today and will face tomorrow require something more than incorporating new technical skills into your current mindset.

These are the 'adaptive challenges' and they can only be met by transforming your mindset, by advancing to a more sophisticated stage of mental development...

Heifertz said the biggest error leaders make is when they apply technical means to solve adaptive challenges." The mere existence of an immune system, which protects us but also precludes change, suggests that our tendency in the face of some challenge will be to seek out technical solutions which abide by our pre-existing worldview. In certain circumstances this system of immunity can actually block our ability to implement changes

which we actually desperately desire.

Note that

interesting similarity in approach to

ad hoc modeling,

this increasingly common modeling

technique which seeks to

fit scientific theory to observations

through

tweaks to the prior underperforming model.

As I read these quotes about our

personal immune systems,

think about it how they might apply also

to the larger scientific community as

well.

Change does not fail to occur because of

insincerity,

the heart patient is not insincere about

his wish to keep living,

even as he reaches for another cigarette.

Change fails to occur because we mean

both things,

it fails to occur because we are a living

contradiction. When we make a new year's

resolution

we look at the behaviors we seek to

extinguish as bad,

we look at the behaviours we want to
amplify as good but until we understand
the commitments
that make the obstructive behaviors at
the same time brilliantly
effective, we haven't correctly formulated
the problem.

We have learned something that may be
very hard for successful capable
people to believe. More than we
understand,
most people deal constantly with fear.

I'm not afraid!

You know you are saying to yourself right
now, "I feel fine".

And you're right, you do not feel your fear. The
reason you do not is because
you are dealing with it. Though you're
not aware of it, you have created a very
effective
anxiety management system and that system is
what we call, "the immunity to change".

But we run these systems, even highly
successful anxiety management systems,
at a cost. Inevitably they create blind
spots,

prevent new learning and constantly
constrain action in some aspects of our
living.

These costs show up when we are unable
to deliver on some genuinely desired
change.

The realization of which will bring
us to a new higher level of functioning
in ways we truly want to attain.

Most self improvement efforts take place
in too constricted a psychological space,
blind to this bigger dynamics at play.

However hard they work,
however sincerely they seek to
extinguish their obstructive behaviors,
everything will go on within the
existing mind set.

No new learning can occur. When I read
this book I was just stunned by the
applicability of these ideas to the world
of scientific research,
science education and scientific
discourse. Kegan and Lahey are not just
describing the challenge of change
within a personal context,
which is their intended focus. Their

analysis also applies just as well to the challenge of change in scientific theory.

If they are right that leaders will

tend to mistake

adaptive change challenges for technical challenges

then this mistake should be written all over our worst performing scientific theories.

In scientists' attempts to solve a stubborn problem,

we should expect to see our most

brilliant leaders applying the most

sophisticated tools available to them

but restricted to the context of the

accepted scientific framework.

Re framing to an alternative framework

will predictably reduce

the available tool set but it should

not be surprising if it also offers far

simpler solutions.

These less technical solutions should not be judged inferior,

simply because they are less technical.

Listen to Kegan and Lahey explaining immune

system metaphor: "We use the medical

metaphor of immunity

quite mindfully to signify that, first
of all,
this phenomenon is not in itself a bad
thing.

On the contrary, an immune system is, most
of the time, a beautiful thing, an
extraordinarily intelligent force that
elegantly acts to protect us, to save our
lives.

However, in some instances an immune
system can threaten our continued good
health.

When it rejects the material, internal or
external to the body,
that the body needs to heal itself or
to thrive, the immune system can put us in
danger.

In these instances the immune system is no
less focused on protecting us.

It is just making a mistake. It does
not understand that it must alter
its code. It does not understand that,
ironically, in working to protect us,
it is actually putting us at serious
risk." And this brings us to the
second significant implication of Kegan and

Lahey's work. Kegan and Lahey's solution to the problem;

The way to achieve change transcends all contexts.

It is to seek to transform our subject object relationships.

Where we are currently subject to a mindset,

we must learn to look at that mindset as an

object. If that sounds confusing, you just follow along and it will become clear.

If necessary pause the video and study the diagram on the screen.

Kegan and Lahey state;

"The root of any way of knowing (what philosophers call an

epistemology) is an abstract-sounding thing called the 'subject-object relationship'.

Any way of knowing can be described with respect to that which it can look at (object) and that which it looks through (the filter or lens to which it is subject).

Young children, for example, are still

subject to

their perceptions, so when something looks

small to them

(like cars and people viewed from the top of a tall

building),

they think it actually is small. 3- 4-

and 5-year-olds will look down say;

Look at the tiny people! Children of 8,9 and

10

can look at their perceptions. They will

say;

Look how tiny the people look! A way of

knowing becomes more complex

when it is able to look at what before

it could only look

through. In other words, our way of

knowing becomes

more complex when we create a bigger

system

that incorporates and expands on our

previous system.

This means that if we want to increase

mental complexity,

we need to move aspects of our meaning-

making from subject to object,

to alter our mindset so that a

way of knowing or making meaning
becomes a kind of 'tool' that we
have (and can control or use) rather than
something that
has us (and therefore controls and uses
us)"

Now, within that context let's talk
about

Thomas Kuhn. Kuhn was famous for
claiming that science
is characterized more by the
paradigms employed by scientists
than by their methods of inquiry. What he
seems to be arguing is that the
scientific community is subject
to certain fundamental ideas. Kuhn
characterized the history of science as
exhibiting two fundamentally distinct
scientific activities;
one whhat he calls "puzzle-solving" or
"normal science"
describes the majority of scientific
work; conducting experiments, making
observations, applying mathematical
models..

The second, much less common, scientific

activity

is that of revolutionary science. This is the creation of new scientific paradigms.

Many people are already familiar with

Kuhn's basic claims

but perhaps fewer are aware of philosopher

Toulmin's

interesting addition. He rebutted that

paradigm change can occur during "normal science" too,

through many minor conceptual shifts.

Quote: "In the evolution of concepts

as in biological evolution, Toulmin

argues, changes occur in populations.

Novel concepts come and go, but they

influence thinking in a given discipline

only when conditions are favorable; only

when the new concepts have 'advantages'

can they displace others." Joseph Novak

is an

education theorist and the creator of the

concept map, "approach to science

education".

He points to Toulmin's claim that new ideas

must find a niche

in order to survive. What I would add to

this is a warning to avoid constraining
this notion of paradigm change to just
conceptual bridges. I've, over the years,
witnessed this conversation about,
what a paradigm shift towards electrical
cosmology might look like.

What I've observed is that these
conversations almost
always ignore the role of our system of
communication
in facilitating such changes. Yet these
communication systems were never
intended to service this goal of
empowering and elaborating the most
deserving novel scientific ideas.

If that is what we want our online discourse
systems to do,
then that is what we must design then to
do.

In the same way that we had to build the
Internet to facilitate the nearly
instantaneous transmission of imagery
and videos across the globe,
we must like way, likewise squarely
address this issue of how to identify
the best ideas

at the fringes of mainstream science
if our goal is to facilitate
paradigm changes in scientific theory.
Academia has thus far refused to address
this problem,
probably because they are subject to it.
But maverick thinkers who can observe the
academic approach from
outside of the university system
have an advantage
in that they can witness the problems
of academic research as an
object. What I'm saying is that "outside
our matrix" can play a critical role in
the creation of discourse
systems which facilitate a more rapid
rate of innovation within the sciences.
And if such systems can be created, then
it is inevitable that they will in due
time be adopted by the academic
community.
There are several points I'd like
to conclude with. First,
the importance of qualitative research.
There's
movement in academia to question a

legitimacy of oftentimes

qualitative research in disciplines

like

Psychology and Sociology. Simultaneously,

the business community relies heavily

upon this

exact kind of research to make critical

decisions about

what products to create and sell. What I

wanna warn

against is approaching this problem of

improving the way we talk about science

in some sort of anti qualitative manner.

As any employee of any modern software

company will tell you,

psychology and sociology are absolutely

necessary to the design of

modern software systems. Second:

an importance of world view in

scientific discourse.

Modern science journalism has for

the most part attempted to mirror

academia's decision to largely ignore

many ongoing scientific

controversies. But what will

predictably happen with this approach

is this logical fallacy of assuming that all other explanations had been ruled out. A vital aspect of forming expertise on scientific controversies is running claims back and forth. We need a scientific social network which is designed to focus upon this clash of worldviews in science.

Kegan and Leahy state the problem as follows:

"If one is not to be forever captive of one's own theory, system, script, framework, or ideology, one needs to develop an even more complex way of knowing that permits one to look at, rather than choicelessly through, one's own framework. In such a case, that framework becomes more preliminary than ultimate, more in process than magnum opus.

This breaks through to a bigger emotional and mental space that can seek out the framework's current limitations rather than merely defend the current draft

as a finished product and regard all suggestions to the contrary as a blow to the self.

These three qualitatively different levels of complexity -- the socialized mind, the self-authoring mind, and the self-transforming mind -- thus represent three distinct epistemologies.

Each way of knowing maintains an equilibrium between what is subject and what is object.

Growth in our way of knowing -- adapting -- involves disturbing this balance, and learning to look at what we were before looking through.

These are not just words to live by, it's also a philosophy which we should design the next generation of social networks with.

For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

A new NASA report describes the
potential dangers that the electrical
environments of asteroids could pose to
astronauts and future space missions.

NASA scientists are now attempting
to create computer models
that will successfully predict
dangerous electrical interactions
between an approaching
spacecraft and an asteroid.

The report begins with a brief,
surprising description of space,
rarely seen in official
NASA press releases,

"Space may appear empty — a soundless
vacuum, but it's not an absolute void.

It flows with electric activity
that is not visible to our eyes."

The Electric Universe theory,
as developed by Wal Thornhill,
has always stated that comets and

asteroids are charged bodies
that sometimes discharge as they interact
with the Sun's weak electric field.

However, while NASA's new investigation may
seem like a concession of these points,
a closer examination reveals that little
has changed in their theoretical approach.

It could be forgiven for
thinking, after reading
a report from NASA on
June the 25th titled,
'New NASA model gives glimpse into the
invisible world of electric asteroids'.
that somehow or another, NASA was beginning
to take heed of the Electric Universe.

But when you read the article, you realize
nothing could be further from the truth.

The article begins with some
promise. It says and I quote,
"Space may appear empty — a soundless
vacuum, but it's not an absolute void.
It flows with electric activity
that is not visible to our eyes.

NASA is developing plans to
send humans to an asteroid,
and wants to know more about the electrical

environment explorers will encounter there."

It seems that this concern really sprang
from unexpected electrostatic effects
when the astronauts
first visited the Moon.

It was found that the dust from
the surface clung to everything
and there were obvious electrical
effects in the dust's behavior.

This particular article goes on
and talks about the solar wind
"...which is blown from the surface of
the Sun at about a million miles per hour
and flows around all
solar system objects,
forming swirling eddies
and vortices in its wake.

Magnetic fields carried by the
solar wind warp, twist, and snap
as they slam into the magnetic fields
around other objects in our solar system,
blasting particles to
millions of miles per hour
and sending electric currents surging in
magnetic storms that, around the Earth,
can damage sensitive technology

like satellites and power grids."

So this electricity is
really dangerous stuff,
but here we see the
usual false ideas.

A solar wind blown from
the surface of the Sun?

It is not blown from
the surface of the Sun,
it accelerates away from the Sun.

And what's more, the high speed winds
come from the coolest parts of the Sun
known as coronal holes.

So it's not the heat of the Sun
that accelerates these particles
throughout the solar system.

It is an electric field.

And then this article goes on to talk about
magnetic fields which do all the work,
they twist and snap.

Well, there is no way you
can snap a magnetic field.

The magnetic field line is a concept
like a line of longitude or latitude
which cannot snap. It
is merely a concept.

So, if the magnetic fields are not
causing these energetic events, what is?

Well, the Electric Universe
turns it all around
and says the very things
that you're observing,
these electric currents surging in
magnetic storms, are that main drivers,
they are the things that actually create
the magnetic fields in the solar wind.

So when you treat the Sun and the other
objects in the solar system as charged bodies,
and that the solar wind
is actually a plasma
which can transfer current
from one object to another,
you begin to see things in
an entirely different light.

Occasional cometary
displays by asteroids
is a long-standing puzzle
for mainstream science.

The puzzle became more
complicated in late 2013
when astronomers observed an asteroid
with an astonishing six comet-like tails.

The asteroid has since been officially
recategorized as a main belt comet.
While NASA is now investigating the
electrical environments of asteroids,
the limited surface effects that
mainstream theory describes,
will never explain the
observed phenomena.

The article says,
"On airless objects like
moons and asteroids,
sunlight rejects negatively
charged electrons from matter,
giving sunlit areas a strong
positive electric charge."

Now, this is taking a very simplistic
view, rather like we see with comets,
what happens on the surface of the
moon or on an asteroid or on comets
is all due to solar radiation
and surface effects,
photoelectric effects,
that kind of thing.

The Electric Universe says that an asteroid
is a charged object, rather like a comet,
and that the charge on its

surface will be greater
than anything imagined
by scientists at NASA.

It's merely common sense when
sending astronauts to an asteroid,
that you should make sure that they are
earthed to the spacecraft or to the asteroid.

It's the same kind of problem
that electronics engineers face
when messing around with
transistorized circuits.

They must also be earthed
so that they don't discharge to the
electronic circuits and blow the transistors.

The last thing the astronauts
want is for their electronics
to fail on touchdown
on an asteroid.

In 2005, Wal Thornhill and
The Thunderbolts Project
published a series of
successful predictions
before NASA's Deep Impact
mission to comet Tempel 1.

Among these, Thornhill suggested that the
copper projectile fired at the comet,

would produce not one
but two bright flashes
including an advanced electrical flash
before impact to the comet's surface.

The Electric Universe makes
a more significant warning.

Based on the electrical model
of comets and asteroids,

I made the prediction before
the Deep Impact mission

that, when the probe
approached the comet

there would be a spark
before it touched the comet.

And this is what we're seeing.

It's been explained a way, in various ways
which are hardly sensible or feasible.

But having predicted it,
it was something that should have
been investigated as a possibility.

But it hasn't been.

And this is one of the things
which will dog the astronauts
who try and land on an asteroid.

That the charge on the asteroid
may be greater than expected.

But there is one saving
grace with plasma.
And that is that, if the
approach is slow enough,
the plasma itself will
act as a conductor
between the spacecraft and the
asteroid and will equalize the charge.
So that all that is
required in my opinion,
as the astronauts in their
spacecraft approach the asteroid,
is that some kind of lightning
conductor is aimed at the asteroid
from the spacecraft before
the closest approach.

The Electric Universe theory proposes
that neither comets nor asteroids
are primordial leftovers from the
formation of the solar system.

But rather, they are the products
of recent planetary catastrophes.

An opportunity to test this
theory arrived in 2004,
with NASA's Stardust mission
to the comet Wild 2.

A chemical analysis of a sample
from the comet's dust tail
astonish scientists around the world revealing
a mineral composition vastly different
from the expected aggregation of ices
and primordial interstellar dust.

Despite these findings,
scientists continue to assume
that both comets and
asteroids are Rosetta stones
providing insight into
the early solar system.

Like many of the space probes by NASA, the
reason given for the actual experiments are
that we are visiting asteroids because
they are 'relatively pristine remnants
from the formation of the solar
system' quoting from the article.

So, they give clues as to how the
planets formed and life originated.

Now, this is one of the areas
where NASA is completely wrong
because the story of the solar
system and how it was formed,
has never been shown to
work. It is merely a story.

The Electric Universe,
on the other hand,
has looked at the recent
history of the solar system
as recorded by our ancient
forebears in various ways
and it seems that the solar system
has had a recent chaotic spasm
during which material has been ripped
from the surface of Mars, in particular,
but also other bodies,
and hurled into space.

And asteroids and comets, in that scenario,
are the remnants of planetary surfaces.

Now, it's always been acknowledged that
asteroids show some kind of processing.

The minerals and so on from the asteroids, show
that they have been on a planetary surface.

But this is assumed to have
been the result of collisions,
early on in the formation
of the solar system.

We're saying these
things are quite recent
and that there is no real difference
between comets and asteroids.

And this particular claim has been borne out by almost every experiment done to determine the composition of comets.

So it's important that we do try and find out more about asteroids because this will tell us about the recent history of the solar system and may actually give us the clues we need to be absolutely certain that the story of the chaotic history of the solar system and the destruction of the Martian surface is correct.

It should be made clear that the magnetic field contained by the solar wind, is not explained.

The magnetic fields on the Sun are not well explained either.

The so-called convection zone beneath the surface of the Sun, that is supposed to generate the magnetic fields, has not been found!

So, NASA keeps falling into this trap of using magnetism mysteriously generated,

or magically generated, to explain everything
that goes on in the solar system.

And that even applies to the electric
currents, which they acknowledge,
between Jupiter and Saturn
and their respective moons.

Until we can see that the electric
currents are primary causes
and not merely effects, NASA
will find more anomalies.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

This week I received the news like
many of you of Wal Thornhill's passing.
I wish to pay tribute with this article.
Wal was a mentor to us all in the most
important field of all - the true nature of our
universe. Wal's many theories and predictions
succeeded because he sought the truth.
Not for credentials, funding, accolades, or
power; he sought the truth for the sake
of knowing - as we all should. It's the
true intent of science. It's a true source of joy.
I began this article weeks ago, to discuss the truth.
It was never intended to be about Wal. It was, and
still is, about truth seekers in the Electric Universe.
The title "Shine on, you crazy diamond" is
an ode to garage experimenters, theorists,
scientists, and deep-thinkers everywhere who are
grounded and harmonized with natural frequencies.
But Wal was the epitome of such people.
No BS got passed Wal - believe me, I tested him.
So, the title now takes added meaning -
as things always do in a fractal universe.
How do you know the truth when you see
it? It's because you recognize a pattern.
You trust yourself to know what you're
seeing, hearing or feeling. You know

because it resonates within you. A pattern from memory, like a mother's face, is a pattern that harmonizes heart and soul, and you know. There is no doubt the instant you recognize Mom's face, or whoever is your closest, "every bone in your body" knows it. It's something everyone does. But it isn't the work of a conscious mind. It's the work of an observant state of being. It involves every sense, conscious and unconscious, mind and body; the whole antenna resonates. Like riding a bicycle, your mind doesn't tell your body how to keep balance. It just does - as long as you stop thinking and just pay attention. When I first stumbled into the Thunderbolts project, I didn't have a clue what I was going to write about. I just knew I found the right place. In the first weeks I binged on Thunderbolts videos, especially Michael Steinbacher. I watched all of his. As an engineer with a smattering of geology experience, it made sense to look for electrical evidence on the Earth. After all, it's accessible, more so than telescopes,

particle beams and buzzy, high voltage labs.

Michael's videos led me to an addiction:

Google Earth. I've always had a thing for maps. There are patterns, always patterns, whether looking at highways cities, airline routes, or topography - there is a wealth of information in the patterns. Earth's Topography is patterned.

I couldn't put a finger to how, or why, but I could see patterns that stretched for thousands of miles that had no 'reasonable' explanation. There were repeating patterns, geometric patterns. Some patterns were similar to other planets, yet others were unique.

There had to be a reason. I had already dismissed conventional thinking at this point, of course, and reasoned these features must be electric. We see, plainly, electric scarring on planets and moons, and the electric atmospheres of the gas giants. So it must be on Earth - but why does Earth look so complex? I stumbled again, always stumbling, into evidence of shockwaves on hillsides. It came about because I searched "craters" and found a blog by a guy who was a demolitions expert. He was writing about

shockwave features on hillsides near his home and proposing they were crater rims. He recognized harmonic tetrahedral patterning caused by sonic shock because he'd spent a career in the military analyzing the blast zones of heavy ordnance. He was a man who knew shockwaves when he saw them.

As a mechanical engineer, I have a good amount of experience with such things myself. Shock waves – yes, but more importantly, I'd learned to listen to technicians like this guy. The operators, the mechanics, the people who are hands-on.

If you want to know the process don't ask the people who manage it, ask the people who operate it. Beyond already knowing something about “shock diamonds”, I innately trusted this guy knew his patterns, even though he had no academic credentials. I began searching for these patterns. Lo and behold, they are everywhere. Not only did I find harmonic tetrahedrons, created by compression zones called “separation bubbles”, formed where a supersonic wave

impinges on the surface. I found multiple features of fine detail distinct to shock waves embedded in rocks, mountains and entire mountain chains. Scalable, harmonic, self-similarity plastered across the globe landscape everywhere I looked could only be from one cause: sustained plasma storms.

I finally had evidence, from personal investigation - from a position of knowing - what caused patterns, at least many that I saw on Earth and that we indeed live in an Electric Universe.

Only a charged environment could develop supersonic winds that could freeze rock in-situ in the precise form of a shock wave. Coulomb force and recombination is the only process that makes physical sense.

A dusty plasma environment would accelerate winds to supersonic speeds, rippling the landscape wherever shock waves reflected and segregating winds by step voltage and ionic density.

To produce what I witness on Earth's crust, Earth's atmosphere had to be a rainbow-banded chemical soup, like Jupiter's atmosphere. There had to be several global storms to produce the layers of geology and episodic fossil

evidence of extinctions - a recurring nightmare.

And since I've written several articles
showing the shock features in detail,
showing self-similarity between
Jupiter's storms and landforms on Earth,
and exploring many other geologic
examples of electrical formation and
scarring, I know what I'm showing you is
the truth. The patterns speak for themselves.

My explanations may suck. I may not
describe the electric circuit properly,
or organize my streams of conscience
well, but the geology is there, Jupiter is
there, winds, storms, rocks - it's all out
there to go look at for yourself. The
data I use is open source, available to
anyone with an internet connection. One
can research shockwave patterns, standing
waves, separation bubbles and anything else
I write about with a few clicks of a mouse.

You can see the patterns for yourself.

It's the only thing that will invoke
faith, because that is what knowing the
truth comes down to: faith. This brings me
to the point. Faith is how you know the truth.

Faith in yourself. Do you believe your lying eyes?

I'm not speaking about faith in God,
although that is the ultimate faith. I'm
using a small "f" faith to mean conviction
in any particular realm, such as the
faith one has they can unerringly find
their mother's face in a crowd, or ride a
bike. It's a reliance on all your senses,
conscious and unconscious. You recognize
the pattern and your gut, heart and soul
resonate. It feels right. It's common
sense. When you know, you know.
How else can one know they are objective
unless they know and trust themselves?
It's an internal thing, to be confident
in oneself, and the only way to satisfy
that is to see, hear and feel for yourself.
Relying on someone else's word makes one a
parrot. Now this brings to question how can I
have faith I know what I'm seeing when pretty much
the entire world of academia 'knows' I'm wrong
and that tectonic forces like subduction,
expansion and uplift created mountains,
plus billions and billions of years, blah,
blah, blah. Because they don't show you
anything but drawings and models. They
can't explain or even try the fractal forms;

the harmonic repetitions; the phase-
angled vectors of frequency interference.
Their explanations don't explain; they
describe processes that no one has ever
seen. The one thing they never talk
about is electricity in circuits, which is like
explaining life without mentioning breathing.
And if you dig down to their fundamental
assumptions that underlie the whole
house of cards, you'll find it's based on
unfalsifiable billions and billions of
years, dark energy-type dreamed up
concepts force-fed by whatever humpty- dumps
were in charge. In other words, to believe them is to
trust them rather than yourself. And, they're
idiots. I also know, because I worked in the
energy industry, that much of science is
political, not truthful. It's marketing -
it's meant to persuade you, not inform you.
This corruption is pervasive throughout quakademia.
If you seek the truth without fear,
or bias, you'll know when you find it
because you'll find confirmation. It will
present itself - you just need to be aware.
A week ago I camped on flat "alluvial" plane
covered in gravel near the Colorado River.

I knew the plane to be a windblown feature
created in the arc-blast of a discharge event.
It had nothing to do with an ancient riverbed
as consensus theory would have you believe.
So, I began examining the gravel. It was
predominantly typical river rock, rounded
by water erosion as consensus theory goes.
But as I picked up rock after rock, a specific
pattern became evident. Many, if not
most of the rocks I looked at had a flat side.
One side was rounded and polished as if
washed by sand and water, but the other
side was flat. Which entirely confirmed
my expectation, because I suspected such
gravel to be the result of rock rain.
These "river rocks" fell like rain after
being blasted into the sky as molten
glass and reconstituted as drops and
hailstones. The ones that were still
hot and molten inside but had a cooled
crust, landed like pudding drops, making
the flat bottom. And the top, exposed to
winds, still screaming, made elongated and
rounded streamlined tops to the drops.
You know these rocks. They're the
best ones to skip across the lake.

The flat bottom is the tell. Water erosion does not explain that. The rock rain was a pleasant surprise. I wasn't looking for it - it was just there where I camped. This happens almost continuously from things as mundane as gravel, because the entire planet is evidence. One will also find along the way people like the demolitions expert whose blog and identity is somewhere in the way-back machine. I'd like to thank and credit him. I just lost his identity. Obscure blogs and videos arrive in my streams weekly that either Inspire new insight, or confirm a prior postulation. Seek and you will find, because that's part of the pattern. I watch YouTube channels with less than 500 subscribers who know better than professors; people with no academic background but with curious minds who examine magnetism and electricity with products from eBay. I listen to people with spiritual connections whose faith comes from experiences scoffed at by consensus science. I read random articles in the news... find rocks here and there. I live a continuous stream of synchronicities. Information specific to my questions arrives at my doorstep, as if

asking the right question is all the invitation
Nature needs. The universe wants to show itself to
those who want the truth. The evidence is everywhere.
Personal observations led us to know that the
Universe is electric. We all recognize the obvious:
plasma nebula, swirling galaxies and everywhere
the blaze of electro-magnetic balls of discharge
called stars. We can see what a crater really is, and
therefore lose no sleep wondering why so many are
hexagonal. We know, thanks to Halton Arp, that
redshift isn't a measuring stick and his
evidence alone makes the whole Big Bang
thing nonsense. We know weather
and climate is the Earth's circuitry in
action, and therefore aren't shamed by our carbon
footprint. What binds us all is truly electric. The
ether flows through us, as the light and
warmth that generates the hologram, so
there must be a common carrier wave at its frequency
we all receive. Wouldn't any creature evolve the ability
to 'hear' it, given its all-encompassing preeminence?
Notwithstanding the uniquely human inability to listen,
it seems a natural thing for life to feel that energy.
Think of the mysterious animal behaviors,
like foreknowledge of severe weather and earth-
quakes. A pet knowing when a master is on the

way home. Telepathic signals are real in
my humble opinion and they have a physics.
But one must acknowledge an ether
and look inward to find how to tune in.
In this regard, we are all scientists, by my
definition. We each took a look and said that's
electric, because it so obviously is.
Recognizing the obvious is critical
thinking. Manipulating math to invent
invisible forces, energies and matter is,
of course the ultimate woo. One
can make math simulate anything if
you're the one making the rules. Truth
comes about due to intent. Truth is
accessible to anyone with the
unflinching intent to find it and speak
it because it's out there waiting for you.
As more people become tired of the BS,
they will look for new answers. I expect many will
find us. I expressed this expectation to Wal late
last year in a few brief email exchanges.
He agreed the future will be amazing.
He also said keep finding the patterns.
Why I think this is a fitting testimony
for Wal, is because he and Dave created
this environment to explore truth.

And that is Wal's Legacy. Cheers to anyone
who follows it. Shine on, you crazy diamond!

[Music]

here is a remarkable dilemma has occurred in all prior visits to comets no appreciable water ice was seen on the surface of the active comet Tempel 1 from the first disclosures of dry cometary surfaces theorists speculated that such surfaces simply hid the icy watery content beneath the surface they surmised that in response to solar warming pressurized pockets of subsurface water vapor formed exploding through the dry crust to create the observed jets of active comets of course the envisioned rupture of the surface would expose the presumed ice below but has occurred in all visits to comets no detection of temple1 subsurface ice was ever reported nevertheless mission scientists tell us that infrared readings did detect substantial water ice in the ejecta cloud the Enigma deserves investigation what happened at the surface and below the surface at the moment of impact most NASA scientists interpreted the fast-moving cloud as vaporized silicates

the cloud was self-luminous at an estimated 1,000 to 2,000 degrees Kelvin and the low angle of the impact and blast propelled the ejecta downrange the infrared readings of the ejecta occurred about three seconds after impact as the cloud came into the view of the infrared camera

these readings show what NASA scientists described as a narrow beam of water this water column was easily distinguished from the rapidly moving dust cloud and was very close to vertical directly over the impact site that's a bizarre contrast to the trajectory of the dust cloud

how did a vertical column of water get instantaneously separated from an explosion of dust heated to over 1,000 degrees and propelled downrange the electric comet model offers an answer the heated silicate cloud would be ionized a plasma a conductive pathway for an explosive electric discharge the evidence indicates the discharge occurred between a negatively charged

nucleus and a surrounding region of positive charge an abundance of hydrogen ions gathered at or close to the surface of the nucleus would provide the necessary conditions for two things first an instantaneous electrical breakdown or discharge on impact and second and equally instantaneous electrochemical response to the discharge consider what is already known from laboratory experiments in a condition of electrical breakdown hydrogen ions from the solar wind combining with the oxygen and silicates can produce an abundance of hydroxyl and/or water this very process has been proposed to explain the enigmatic water on the planet Mercury the electric comet model suggests that the detected column of water directly over the impact site occurred along the path of an electric discharge and that always means roughly perpendicular to the surface water created explosively electrochemically in the ejecta even if no water lay beneath the dry surface of

comet Tempel 1 this intriguing answer takes us deeper into the infrared readings the conventional model predicted that comet water ice would contain substantial quantities of dust this dust content would be expected to show up as refractory particles in the ice of the collimated ejecta plume but amazingly the ice particles themselves were free of dust

it seems the instruments measured virgin water water freshly formed as one would expect from the instantaneous electrochemistry of water production from hydrated silicates this very point is emphasized in a recent analysis by dr. franklin anariba a specialist in electrochemistry at the singapore university of technology and design allow this possibility into discussions of Comet science in particular the unsolved mysteries of missing water and water creation by comets and the picture changes dramatically

when we follow this possibility the missing water on the surface of temple 1

becomes an affirmation of the electric
comet model

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at [Thunderbolts.info](https://thunderbolts.info)

A new scientific study attempts to rewrite the conventional story of how planets formed. A team of scientists, using images from the Alma and VLA telescopes, are proposing that planetary formation is a process that happens exponentially faster than astronomers have ever thought possible. Space scientists have been puzzled by what appears to be an intractable shortage of planet-forming dust in the so-called "mature disks" of stars in the Milky Way galaxy. As we reported in 2018, astronomers using Alma attempted to determine how much material is present in the disks around stars that are thought to be only one to three million years old. When they compared their estimates to the masses of star systems that have fully formed planets, they realized that the so-called "young star" systems, did not have enough matter in their discs to eventually form planets. According to the new paper, scheduled for

publication in Astronomy and Astrophysics, the answer to this puzzle is that planet formation is a much more rapid process than astronomers have ever believed. The scientists propose that a sufficient amount of dust to form planets around a parent star, arises surprisingly early in a star's life. As the lead author of the paper stated, "...we need to look earlier instead of looking for missing mass." The team concludes that around stars thought to be as young as 100,000 years old, planet formation has already begun. The co-author of the paper states, "The implication of this discovery is profound. For decades, we've thought that planet formation should happen during the proto-planetary disk phase, but by pushing the beginning stage of planet formation back, we have to rethink what the birthplace of planets actually look like." In recent years, scientific discovery has forced a similar crisis on the question of how stars form. Consider these images of the stellar nursery in the aptly named Snake nebula, where a number

of stars are forming along the filament and the stars themselves break up along the cylinder. This is in stark contrast to gravitational theory which predicts that a center of mass exists toward which all of the surrounding material in a nebular cloud tends to move, and to congregate to eventually form a star.

What's more, scientists studying the Snake nebula, found that the material needed to be drawn in to form massive stars, is far less than gravitational models predict. In 2014, the Harvard-Smithsonian Center for Astrophysics issued a press release which stated,

"Previous theories proposed that high-mass stars form within very massive isolated 'cores' weighing at least 100 times the mass of the Sun. These new results show that that is not the case.

The data also demonstrate that massive stars aren't born alone but in groups..."

"The team also was surprised to find that these two nebular patches had fragmented into individual star seeds so early in

the star formation process. They detected bipolar outflows and other signs of active, ongoing star formation.” The Economist Milton Friedman once said, “The only relevant test of the validity of a hypothesis is comparison of prediction with experience.” The prediction of the standard solar nebular hypothesis is that gravitational collapse and accretion are the processes that lead to the creation of stars and planets. And these formative processes occur over countless eons of time. In contrast, the Electric Universe and plasma cosmology propose that the electromagnetic phenomenon called the Z-pinch, also known as the Bennett pinch, is a dominant organizational phenomenon in the cosmos. It was the father of plasma cosmology, Hannes Alfvén, who made the outrageous prediction that stars would form by cosmic Z-pinches along vast networks of filaments, with an electromagnetic scavenging effect in molecular clouds in each current filament. Alfvén wrote of the Bennett or

Z-pinch in 1986, "That parallel currents attract each other was known already at the times of Ampere. It's easy to understand that in a plasma, currents should have a tendency to collect to filaments. In 1934, it was explicitly stated by Bennett that this should lead to the formation of a pinch." Alfvén continues, "The problem which led him to the discovery was that the magnetic storm producing medium (the solar wind with present terminology) was not flowing out uniformly from the Sun. Hence, it was a problem in cosmic physics which led to the introduction of the pinch effect...."

"However, to most astrophysicists it is an unknown phenomenon. Indeed, important fields of research, for example, the treatment of the state in interstellar regions, including the formation of stars are still based on a neglect of Bennett's discovery more than half a century ago... present-day students in astrophysics hear nothing about it." More than a decade ago, Alfvén's prediction was confirmed when the ESA's Herschel Space

Observatory imaged an “incredible network of filamentary structures seen in the constellation of the Southern Cross.” A 2009 ESA report stated, “That a dark, cool area such as this, would be bustling with activity was unexpected. But the images reveal a surprising amount of turmoil: the interstellar material is condensing into continuous and interconnected filaments glowing from the light emitted by new-born stars at various stages of development.” The conventional explanation for these filaments was the dissipation of some “large-scale turbulence”, involving exploding stars and sonic booms. However, such explosions, which are not evident, would be expected to impose some radial curvature on the filaments, which we simply do not see and the claim that the filaments are quote “glowing” from the light emitted by new-born stars, cannot be tenable because the filaments glow steadily along their length, demonstrating that the light is

intrinsic to the filaments, as one expects if the light output is provided by electric current. Moreover in 2011, even finer images from Herschel provided the conclusive evidence that cosmic scale electric currents flow along the filaments. An ESA report at the time states, "The filaments are huge, stretching for tens of light-years through space and Herschel has shown that newly born stars are often found in the densest parts of them... Such filaments in interstellar clouds have been glimpsed before by other infrared satellites, but they have never been seen clearly enough to have their widths measured. Now, Herschel has shown that, regardless of the length or density of a filament, the width is always roughly the same." The lead author of the paper on the discovery stated, "This is a very big surprise.." The ESA report concludes, "This consistency of the widths demands an explanation." Any attempt to explain the filaments constant width by explosions, is also untenable. Explosions would cause

the filaments to vary markedly in brightness and width, depending on the density of the interstellar dust and the perspective from which they are viewed.

However, physicist and Thunderbolts chief science adviser Wal Thornhill wrote of this discovery, "The constant width over vast distances is due to the current flowing along the Birkeland filaments, each filament constituting a part of a larger electric circuit. And in a circuit the current must be the same in the whole filament, although the current density can vary in the filament due to the electromagnetic pinch effect."

The absence of the expected amount of dust material to form both stars and planets gravitationally, is not surprising at all, if such objects are formed by the electromagnetic Z-pinch.

As Alfvén noted, the electromagnetic force is exponentially greater than gravity and is scalable up to the cosmic magnitude. Wal Thornhill has proposed that planets also form electro-magnetically, often along the same

current filaments on which stars form. And the weird zoo of exoplanetary systems discovered in recent decades, including the astonishing abundance of so called “hot Jupiters,” or gas giants, orbiting impossibly closely to their parent stars, has only affirmed the astounding failure of gravitational accretion theory to explain science discovery. Another important aspect of both star and planet formation, is the evidence for both such objects forming in pairs, the result of the electrical “doubling effect” of twin current filaments. As Thornhill explained in an earlier Space News, Birkeland currents are formed by two parallel current filaments which attract each other according to Ampere’s law. As they draw closer, the magnetic attraction between them is overcome by electrostatic repulsion caused by charge separation within those filaments. As a result, those filaments circle about each other to form a twisted pair, a configuration well known to electrical engineers. And it is

this pairing that tends to concentrate matter in toroids and closely orbiting bodies. In this sense, plasma science explains a mystery that remains unresolved in standard cosmology. As Phys.org noted in a 2018 report, "The origin of binary stars has long been one of the central problems of astronomy." The report noted that protostars and young stars have been found to be more likely to form in binary pairs as they are strung at intervals along the filament inside a molecular cloud. The report states of this scientific discovery, "About half of the binaries are in elongated core structures, and they conclude that the initial cores were also elongated structures...One of their most significant major conclusions is that each dusty core of material is likely to be the birthplace of two stars, not the single star usually modeled." And we now have evidence that a similar pairing can occur in the formation of planets. In 2018, the Keck Observatory published a report titled, "Planets around

other stars are like peas in a pod." It states, "...the team found that exoplanets tend to be the same sizes as their neighbors.

If one planet is small, the next planet around that same star is very likely to be small as well, and if one planet is big, the next is likely to be big. They also found the planets orbiting the same star tend to have a regular orbital spacing."

We also note that in 2004, Thornhill and Dr. C.J. Ransom conducted independent plasma experiments on the rapid electrical formation of stone spherules. As seen in these remarkable images, Ransom and Thornhill successfully reproduced the unique forms of virtually every type of rocky body we see today. From the solid spheres we're familiar with representing a typical planet, to bodies with complex geological layering, to spherules with equatorial bands and equatorial bulges, to dramatic hemispheric dichotomies. And of course, we see the fused pair in the spherules, which

is a common bi-lobate form we see among comets and asteroids. So, if prediction is the only meaningful test of the validity of a hypothesis, the question must be asked, why are space scientists today still not even entertaining the concepts of the Electric Universe and plasma cosmology? Consider institutionalized science's response to the work of Hannes Alfvén which is described by history of science scholar Stephen G. Brush as follows. "...the continuing resistance to Alfvén's work is based on a widely held opinion that his predictions are not derived from a plausible physical theory, that is a theory that conforms to the dominant paradigm. If a theory is not acceptable, it does not gain credit by making successful predictions. This would imply that the role of prediction as a means of evaluating scientific theories, has been exaggerated." But one of the primary missions of this video series has been to document for posterity the actual predictive records of the Electric

Universe and plasma cosmology. The only position we have taken is that the astounding successes of these predictions makes them worthy of sober scientific investigation at the level of institutionalized science.

Well into the 21st century, this invitation for scientific progress remains unanswered.

[Music]

the sun is an enigma for 70 years we
have believed its core to be a
thermonuclear furnace yet all our
attempts to reproduce the hypothesized
fusion have failed with new technology
we now see the Sun in spectacular detail
and what we are seeing is not what we
expected
charged particles defy gravity exploding
from the sun's surface at millions of
miles per hour and then continuing to
accelerate out past the inner planets
the sun's temperature increases by
millions of degrees as we move away from
its surface polar jets erupt along
magnetic field lines this activity above
the sun's surface requires something
beyond a thermonuclear core
but it is exactly what is to be expected
from an external electric field acting
on the Sun what will happen to the space
sciences if we are able to reproduce the
features of the Sun electrically in a
laboratory the Thunderbolts project
extends you an invitation to find it
you

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info in the last two space news episodes while Thornhill has reported on recent discoveries that provide stunning foundational affirmation of the electric universe theory we now turn our attention to the latest science reports from the ESA s Rosetta mission to comet 67p the comparative predictive success of the electric comet theory versus that the standard dirty snowball Theory cannot be more striking the electric universe states that comets are not icy fluff balls that formed billions of years ago in the solar system's infancy as conventional theory has proposed for several decades rather comets as well as asteroids and meteorites were electrically excavated from planets and moons this seemingly outrageous prediction accurately foretold the astonishing planetary features of 67p including its towering cliffs its rock and boulders strewn terrain it's

extraordinary topographical variety and
of course it's utterly desiccated and
barren surface to smooth icy terrain
long ago predicted by standard theory
could not be more emphatically refuted
today we see some indications of the
beginnings of the inevitable paradigm
shift in comet science a space.com
report on June 2nd 2015 describes the
comet as a quote space rock with a quote
rocky surface most impressively nowhere
in the short article did the author
attempt to force fit the word ice into
descriptions of the Comets desert like
terrain a further hint can be found in
the abstract of the recent paper the
solar wind interaction with comet
churyumov-gerasimenko discussing data on
solar wind interaction with the comet
the author's state as the comet moves
closer to the Sun these effects should
increase along with possibly other new
an unexpected plasma and field phenomena
the electric universe predicts that
cometary activity is fundamentally
electrical activity the comet acquires a

negative charge with respect to its and
in the outer reaches of the solar system
as it approaches the inner limits of its
orbit moving through the sun's weak
electric field it will begin to
discharge to the plasma surrounding it
producing the comet's coma in tailed
comet Jets our electrical discharge
phenomena they are not the result of
solar warming heating invisible
theoretical subsurface ices this
interpretation of comet Jets is
supported by the images of Comet 67p to
fill a mentor ejects which are often
curved and occasionally divert in
opposing directions behave nothing like
gas and dust dispersed in a vacuum
furthermore the Jets haven't seen
emitting even when not exposed to
sunlight
harkening back to the completely
unexpected discovery of jets at comet
ville - which exploded from the dark
unheated side of the comet spectroscopic
readings had scientists interpret as
evidence for invisible sublimating ices

are the result of electrochemical processes these extremely controversial predictions have received stunning support from the Rosetta mission in late 2014 greatly enhanced electron fluxes and densities were found surprisingly close to the comet nucleus and today scientists are reporting that these electrons play a significant role in the breakup of molecules in the comet's coma

a June 4th Universe Today article on this data states a NASA science instrument flying aboard the European Space Agency's Rosetta spacecraft has made a very surprising discovery namely that the molecular breakup mechanism of quote water and carbon dioxide molecule spewing from the Comets surface into the atmosphere of Comet 67p churyumov-gerasimenko is caused by quote electrons close to the surface the article also states that the combat discovery is quote causing scientists to completely rethink what we know about the wandering bodies principal investigator Alan Stern states the

discovery we're reporting is quite unexpected however as wal Thornhill explains scientists interpretation of this data is based on the continued assumption of a quote ice Comet the third report comes from the Rosetta team comet 67p churyumov-gerasimenko quote has revealed an unexpected process at work causing the rapid breakup of water and carbon dioxide molecules spewing from the comet's surface end of quote note that it is simply assumed that water and carbon dioxide molecules are issuing from the comet the appearance of energized atoms is unexpected because scientists are wedded to the idea that comets are icy leftovers from the formation of the solar system and that neutral complete molecules of those ices are released in jets by solar heating as the comet swings nearer the Sun ultraviolet radiation from the Sun is then believed to be responsible for breaking those molecules apart at large distances from the comet but the Rosetta

team was surprised to find oxygen and carbon atoms within tens to a hundred metres of the Comets surface much too close for solar UV to have been responsible what's more these atoms show evidence of having been dislodged from parent molecules by energetic electrons the only recourse given the conventional beliefs about comets is to suggest that the electrons come from UV dissociation of water molecules in November last year greatly enhanced electron fluxes and densities were found about the comet by another rosetta instrument which appeared to be associated with cometary ions created near the nucleus the problem is that solar ultraviolet radiation was thought to break down neutral molecules into charged atoms and ions over distances of hundreds or thousands of kilometres from the comet nucleus and not smack bang up against the nucleus in contrast the electric universe model predicted long ago the presence of energetic electrons and excited atoms right down to the Comets

surface it is a cold cathode type
discharge sputtering atoms from rock
minerals on the Comets surface to form
collimated cathode Jets of ultrafine
dust excited atoms and electrons
sublimating ices are not necessary
clearly Comet 67p looks like rock with
no sign of Isis recent reports have
begun calling it a rock or rocky
meanwhile the journal Nature on April 20
expressed surprise when the dark side of
the comet suddenly sprouted a jet this
too was predicted long ago by the
electric universe model energetic
electrons and excited atoms should be
found in such dark jets in the absence
of solar UV on the dark side of the
comet these three recent reports signal
that a paradigm shift must happen it
will seem obvious in retrospect all
matter in the universe is electrical in
nature to have a cosmology that ignores
electricity and relies on the force of
gravity which is 39 orders of magnitude
weaker than the electric force that's as
close to zero as you can practically get

will seem incredible in future the
electric universe conference later this
month is unique in its broad
interdisciplinary scope which is another
pointer to its future success be there
it's a chance to see history in the
making for continuous updates on space
news from the electric universe stay
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Info. In previous episodes, we have introduced the strange and special role of our planet's parent star in ancient world traditions. In global myth, folklore, religion and rock art, the celestial body identified as the Sun, bears no resemblance at all to the Sun as it appears in our sky today. The recurring anomalous representations include an orb or star within a crescent and the many traditions which depict the Sun as a spectacular celestial wheel, sometimes with a warrior hero appearing as the axle of the wheel with no modern natural referent. Why do such depictions recur in ancient tradition, art and storytelling across the world? For over 40 years comparative mythologist Ev Cochran, along with colleague David Talbot, have exhaustively explored this question. Through decades of cross-cultural investigation, they have worked to reconstruct the historical phenomena

recorded in the ancient record in prehistory. Today Ev continues in more detail on the linguistic aspects of his investigation, beginning with a provocative suggestion that the ancient Sun God and Thunder God may be one and the same celestial entity. That is indeed our position based upon the collective findings of day Talbot, Wal Thornhill and myself. As we have long noted, prehistoric paintings and petroglyphs depicting the Sun, bear zero resemblance to the current solar orb. So-called Sun petroglyphs commonly depicted for 8-spoke wheel-like structure. Other images depict a thunderbolt-like form set upon the face of the Sun. Properly understood, the second image is simply a variation on the first and represents an evolutionary phase in the history of the polar configuration, in which the rays of the primeval Sun become bent or twisted due to z-pinch forces. The logical conclusion to be drawn from such universal imagery is 1) that the prototypical Sun is not to be confused

with the present solar orb; 2) the prototypical Sun was the focus of intense electrical activity, marked by the discharge of heaven-spanning thunderbolts; and 3) the prototypical Sun had a dynamic history and presented a wide variety of different forms, all intimately related to each other.

Consider the image depicted in figure 3:

it depicts a swastika-like form in the center of the Sun disk. The resemblance between this form and that depicted in Figure 2 is evident at once. Is it any wonder then to find that the ancient Norse conceptualized Thor's Thunderbolt as a swastika? Elsewhere however, the Norse sky watchers represented the god's thunderbolt as a fiery wheel. it's notable that in various ancient languages terms "the Sun" and "thunderstorm" are identical and/or cognate in nature.

the Sumerian term "Ud" for example, denotes both Sun and Storm. So too the Semitic term "Umu" denotes Sun as well as storm. Analogous linguistic structures are also evident in the Mayan languages of

the new world. Yet, why should this be the case, given the current order of the solar system, where the Sun is never the source of lightning or storms.

Striking contrast the current reality, ancient reports of the sunrise typically mention lightning and thunder among the effects accompanying the appearance of the Sun.

Consider the following Sumerian hymn: “The Lord [the Sun-God Utu] thunders over the mountains like a storm.” Equally important is the fact that ancient words for solar radiance often mean “lightning” or “thunderbolt,” much as would be expected if the energetic discharges of the prototypical Sun and Thunder God were one and the same.

The German word “strahlen,” rays or radiance of the Sun for example, is elsewhere employed to describe a flash and lightning: “blitzstrahl.” The inherent relation between solar rays and lightning is shown by the fact that the cognate term “strala” denotes the lightning-like arrows shot by the

Slavic Thunder God, Perun. The Latin word "radius" is also of interest here. In addition to: ray, beam, sunbeam, radius also denotes "spoke," much as we would expect if the original source of the reference was a wheel-like Sun whose radiating sunbeams presented the appearance of the spoke. Yet the same word elsewhere appears in words for lightning, witness the Spanish word "rayo" which means: ray, beam, Sun beam, but also thunderbolt. Consider also the Homeric word "asterope," denoting "lightning," is reference to a celestial body in as much as Greek "aster" denotes "star." This etymology alone supports the conclusion that the Greek concept of lightning was quite literally a star-based phenomenon. The archaic phrase preserved in a Orphic hymn: "asterobletos keraunon" (star-flung thunderbolt) points to the same conclusion, needless to say. In light of this linguistic evidence, it is relevant to note the ancient depictions of the Semitic Thunder God Hadad, depict him holding the tri-formed thunderbolt

while a star hovers over his head, as if to signal that the Thunder God was a star himself. Note further the specific structure of the Thunder God's weapon forms a close match to the thunderbolt depicted in Figure 2 above, where it is set upon the faces of the Sun. In short, the evidence of prehistoric rock art, early literary traditions and early languages, is consistent in describing an ancient Sun God that was dramatically different in appearance and behavior than the present Sun, much as Dave Talbot and I have been arguing for 40-plus years now.

[Music]

[Music]

Awareness of plasma behavior changes everything.

I've outlined in the previous episodes of this story arc how it expands explanatory opportunities into domains of greater size and power and intricacy than is possible with ideas of gas and gravity.

More and bigger events can happen faster and with discontinuous changes and emergent properties not present in individual elements.

It changes how we think along with what we think.

The change in thinking will affect not only the underlying metaphysical assumptions of the physical sciences, but also those of other areas of thought such as history. It affects not only past thinking, but also modern thinking. In this episode we'll be playing with the recent centuries' thinking.

One implication of faster is a shortening of history.

Ancient history, which is stories we tell in the present, is based largely on our present interpretations of texts, which were written by and for the rulers.

It's no secret that their purpose was not to produce an objective and dispassionate account of events, but to justify and to glorify the king. It's more accurate to call them propaganda than records. It's not surprising that they contain many paradoxes.

Those paradoxes may be partly resolved

with stratigraphy-based and cataclysm benchmark revisions. For example, the history - I should say histories, because there are several conflicting ones - of the roman empire seems to describe three episodes that are largely repeats of each other. Emperors with similar names, but in different locations, and assigned to different times, engaged in similar activities and succeeded each other in similar sequences. The stratigraphy of the ruins has always been confusing; it's as if strata also repeated themselves after an unknown dark age, the historian's equivalent of the astronomer's dark matter. And the end of each episode was marked by catastrophic destruction and tales of comets, bloody auroras, plagues and earthquakes. Each episode was located in a different region.

The Early Empire in the East collapsed in the 3rd century CE. The Middle Empire in Europe collapsed in the 6th century CE, and the Late Empire, around Italy, collapsed in the 10th century CE.

One revision, to be found at Q-mag.org, proposes that the three episodes occurred simultaneously in the three regions and were recorded with the regional characteristics and customs.

Afterward, historians stitched them together diachronically in a sequence.

The benchmarks are collapses, which were a single, regional if not global, cataclysm. Suggestively, tree ring and other physical anomalies have been associated with those dates, indicating that the collapse was environmental, as well as civilizational. The revisionist proposal is that the first millennium of the common era actually had a duration of only three to four centuries. Other revisionists contend that something similar happened with the first three centuries of the second millennium. If all these revisions hold up, the duration of the common era would be cut in half. Furthermore, other stratigraphic investigations with similar catastrophic benchmarks in mind, suggest the necessity of revising BCE history. There are many instances of similar events, and similar names, in different regions and assigned to different times. Many civilizations collapsed suddenly in all-consuming devastations of fire and earthquake and they left similar strata. Again, if all revisions hold up, the three millennia or so of that era would collapse into something on the order of one millennium. In total, the conventional five millennia of western history actually would have lasted only

two millennia. Again, my point is not to argue for these shockingly extreme revisions, but to suggest the more extensive possibilities of the wider sensibilities implied by plasma behavior and a larger and faster world-view. If the energy distribution of space plasma phenomena follows a power law, lower-energy events would be more common than higher-energy ones, and the catastrophic episodes would be interspersed with more moderate disruptive events. For example, the Carrington event of 1859 has been attributed to a solar flare. The flare caused a magnetic storm that, among other effects, induced anomalous currents in the recently erected telegraph network. Sparks flew between the wires and supports; operators were shocked and some were able to send messages after disconnecting from the power sources. In 2012 a flare of similar magnitude missed the earth by nine days. If it had hit with the same intensity as the Carrington event, it would have knocked out power grids and distribution stations and perhaps have damaged many electronics. That would have been disruptive, but not

empire-ending catastrophic. The Great Chicago Fire of 1871, if neglected reports are anywhere close to accurate, occurred at the same time to the hour as the Peshtigo Fire, farther to the north. Stories of widespread prairie fires at about the same time trickled back from trappers and homesteaders on the plains. Altogether, the reports suggest the occurrence of a conflagration that covered the northern plains from Wisconsin to the Rockies. A few reports of strange fires came from San Francisco. Some eyewitnesses claimed that tornadoes of fire descended from the sky, and that wood and stone buildings alike were consumed. Some victims fell dead in unburned fields. And some bodies were unmarked, but had coins in their pockets that were melted. How much of this might be fire-induced fantasy, and how much might be the previously unrecognized effects of a region-wide plasma discharge from space? Setting willful belief and disbelief aside, how might these stories be tested? In 1871 such reports were entertainment, except in Chicago. Today, when much of the country has become Chicago, such an event would be catastrophic.

A global catastrophic event would cause everyone to respond with typical trauma-induced behavior such as denial, amnesia and compulsive repetition or acting out. The psychological knot of fixation from the trauma would be unconscious and long-lasting. It would produce similar images and folklore around the globe, transmitted by traditions and culture. Perhaps also by some genetic mechanism. Carl Jung, among many psychologists, discovered that some of his patients reproduced images from antiquity or myth that they would not likely have seen in their daily lives. The neurotic behavioral emergence of repressed global trauma from the age of myth would be masked by amnesia and denial, as well as by the absence of contrasting behavior. Everybody does it. But it would result in imitating the old gripping stories about a war of the gods. One should ask, why do they grip? Much of humanity's present behavior that strikes us as crazy - wars, much of politics, much of religion, even much of science - may be the neurotic consequences of traumatic global catastrophes in a not so distant past. One example may be the ubiquity of a

mythic theme of centralization and hierarchy. The heavenly city of the gods, with power radiating from the center. The mythic compulsion is, 'as above, so below'. We must imitate the gods. So people build centrally arranged cities with city centers dominated by towers and ringed with suburbs. They organize societies into centrally commanded states with a ruler - king, president, or even bureaucracy - at the top. They regiment themselves into military chains-of-command. Their family structures follow the pattern of patriarchy, father rule. The compulsion is contained in the suffix archy, rule, exerting power over others as the gods did over our ancestors, as distinguished from intrinsic development or mutual cooperation or symbiosis. People say that's just natural; that other animal species do those things too. But that would be the meaning of global trauma. All species would be traumatized. Outside of hierarchy, strictly speaking, most organization in life is networking. Someone must be in charge, people say, but who commands the flowers to bloom? We want to attribute such events, if we even recognize them, to far-away places or to long-ago times. We want to believe that our world is stable, and that such cataclysms are impossible.

But in a plasma universe they impinge on us. The traumatic events are more recent and more likely to repeat.

Our PTSD is stronger and more pervasive than we would like to admit. The terror is closer to hand.

The repressed memories leak out in anxieties of a looming doomsday. Climate change, pandemic, nuclear war, famine, civilizational collapse. At the same time, the shift from a gas- and gravity cosmology, unsettles our mistaken certainty in that understanding.

The novel and bigger understanding in the makings of a plasma and electricity cosmology, is flooded with uncertainty.

We're at the beginning, and what we think we know about plasma is surely little more than a glimpse at this time.

Our world no longer makes as much sense as it did. Having said that, that humanity may be neurotic, I must remind myself of what Thomas

Szasz, a controversial psychiatrist wrote, "To the psychiatrist the neurosis is the problem, but to the patient the neurosis is the solution."

A neurosis is a coping or adapting mechanism, however sub-optimal, that aids survival.

You have to dig a lot deeper than superficial similarities to understand what humanity's problem is.

In view of the global trauma that may have happened, we shouldn't be too hard on ourselves. We're doing pretty well. We crave answers, but at this time what we need are questions. What we need is to expand opportunity of thinking as we've expanded our observational ability. For example, the Palomar telescope, which accompanied Big Bang thinking, has been expanded into the James Webb Telescope. But its images are still being interpreted with Big Bang thinking. We crave certainty, which can only be had with an act of will, and a leap into belief, with the consequent restriction of opportunity of thinking. What we need is doubt, especially with regard to the belief-fortified dogmas of modern science. What we need is not to take any of this too seriously. We need to be playing with thinking.

[Music]

The Catastrophic Termination of the Last Ice Age (excerpt)

The Moai and you have all kinds
of incredible mysteries their
notice Moai with the
hands and the elbow.

Just as a side note, you get something
very similar to Göbekli Tepe I think
but... These are some
of the petroglyphs
notice the hands we were just
hearing about the hand shape.

And you have comparisons, these
are just some comparisons
between Easter in Petro
and Göbekli Tepe,
but what you have on Easter island which
is really very strange and mysterious
is this so-called indigenous, was
indigenous script, indigenous something,
this is a modern reconstruction, a
monument outside the governor's office
but the rongorongo script.

Have people heard about that?

It's on wooden tablets only

about two dozen, 26 or so.

People argue about the
authenticity of some of them.

Are known at this point they are
inscribed on these wooden tablets
and these have never been, to this
moment unless we write about it,
really been properly
interpreted or deciphered.

So, we're looking at these, we
come back from Easter Island
was surveyed like a little break tooth
from thinking about other things
we're looking at but I can't
get my mind off, you know...

Why do civilizations disappear,
why did the Ice Age end?

We watch 'Symbols of an Alien
Sky' and Katie says to me

Well, you know those
rongorongo characters
they certainly look like
the plasma petroglyphs.

And we starting to look
at them, and look at them
and I've gotta say I tend to be

skeptical about things that first right
thing or you know...
I didn't want to watch it again,
I mean, no no insult to you...
but I mean, I'd seen a 'Symbols of an Alien
Sky' before I found it really interesting
but she insisted all we should watch
it again, good to relax the brain.
And here we're looking at this,
and these are rongorongo glyphs.
See them there?
This is someone here, another
one here and I believe,
we believe that as you
start looking at this,
you get the same imagery, you get
the same forms very consistently
I gotta say that, you know,
it's just been crazy
the diverse interpretations did very very
despair trying to interpret rongorongo
if you look at the literature
about it, which I've read,
of the literature I try to get my hands
on I'm not find an inc in even convincing
but it does make sense to me that

these glyphs record or were inspired
by these plasma configurations.
And I just throw this, I well, not
throw it in this, and I think
it has been suggested by Tony
Peratt and his group that Nazca
the Nasca Lines may record,
well, he didn't really
get into the glyphs,
the huge glyphs on the
surface that you have there,
but you start looking at these,
you were looking at rongorongo
there's a petroglyph of the
Easter arm with the hand symbol
and I while you have that
Nazca too, wondering,
does this all start to tie together
again as a unifying thing.
You look at other
aspects of this...
And I realize what time it is,
I'm paying attention on time.
...but you look at other
aspects to this for instance,
some of the legends and I come to

this great detail but Easter Island.

There's a legend I want read this, "In the days of Rokokoro He Tau the sky fell",

whether they referring to

by the sky falling that,

"Fell from above onto the earth.

The people cried out,

'The sky has fallen in the

days of King Rokokoro He Tau.'

He took hold: he

waited a given time.

The sky returned; it went

away and it stayed up there".

Again so, who could

this be referring to?

Plasma changes in the sky.

So, we suggest Katie and I, that

maybe the rongorongo tablets

are reporting some kind of, if

it's solar plasma outbursts

or maybe in the context here, other

types of plasma configurations,

cataclysm, geomagnetic storms,

could it be recording this.

In fact, when you look at the

glyphs they seem to, in many cases,

morph from one form to another as
if they're record in like a film
different configurations
in the sky.

We suggest that maybe it's
what we call scientific text,
or you know, and this
original ones, like anything
some of this could have been lost
later, it could have been reused,
it could been tried to turn into
some type of language later,
but I'm suggesting for the
origin of these glyphs.

Could it be that they were recording
some kind of plasma events?

Whether it's a solar ejection,
something like the Carrington event
or something much more dramatic,
and could this be the end
of the last ice age?

Could a plasma event like that, be what
caused the end of the last ice age?

It would come down, it would hit, it would
incinerate the surface of the Earth,
it would leave only large stone structures,

which is what you have surviving.

It's now been documented very recently within the last couple years that so many neolithic structures from around the end of the last ice age they are associated with underground tunnels and caves, artificial caves.

Why would you did those?

Why would you dig into...

not dig, carve into rock?

Spend tremendous amount of time, time and energy to do that.

Well, if you're trying to survive a cataclysm from above, the early fire coming down.

That would create deluges, huge floods, biblical floods, evaporating water, evaporating ice, you would have to precipitate out again, you rise, you are causing, ice sheets to

melt, sea levels are rising

earthquakes, volcanic

activity increased,

you find around the world

and I just mention this

couple of example for instances,

Easter Island, this low,

thick, stone "houses", they're almost like
fallout shelters or protected shelters,
also even Easter Island, their
use of artificial caves to avoid
give you just a example, you
have things like Mesa Verde
I don't know, where they
just under cliffs for the
fun or was that, in some cases are not
say all this would go back that far
but is it a collective memory?
Is it a memory that you have to protect
yourself for what may come in the future?
Back to Göbekli Tepe, were they
seeking to protect themselves?
Was this plasma come in down,
was literally burning and incinerating
that they want to protect this structure?
I throw it out there
and could this be because
of the great rains
ultimately that eroded the Sphinx,
could it pushes all back?
The geology does not deny that it
could be that all, it's compatible.
And again Peratt and his group

have questioned the date.

Well, as I said, here I'm suggesting that maybe at least one of these major events, because there may be more than one, could have been at 9,700 BCE by conventional date, I realize not everyone accepts a conventional dating here and that this could have wiped everything out.

And I've got two more slides, because I know I'm running out of time.

Could it happen again?

This is something that people ask me.

This was published in astronomy and astrophysics similar things have been published in Nature for instance so, can this is a good conventional peer review.

In this case we're looking at a reconstruction of solar activity this is the end the last Ice Age.

You know so incredible mood swings if you would of the Sun

and are very high solar activity
and sort of decline since it was
end of last Ice Age, 7,000 or
so BC declines, we have low,
notice that we're ramping up again
in the last century or less
there's a lot of indication, things are
happening, things are going active again
so, I would say be
prepared although I'm not.
Yeah, I don't want be overly
dramatic, but who knows...
If something hits tomorrow,
you heard it here right?

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Universe, brought to you by The
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The following presentation is an
adaptation of the Mel Acheson
picture of the day article, "Really?"

The link to the article may be found in the
description box of this video. What's
reality? For science, for the past century
or more it's "what's out
there", "the given". And we
get to know it by looking at it. I say
"looking" to mean all sensation. To get to
know it better, we need only to look
closer. To that end, we invent microscopes
and telescopes to magnify it. We
substitute electronic devices for our
eyes in order to "see" reality in radio
and X-ray wavelengths. Our
technologically enhanced senses have put
us more in touch with reality than at
any other time in the history of our
species. But we've known all along
that's not how knowing works. And if
that's not how we know, what we know
probably isn't what we think it is.

Reality may not be real. Looking only produces a tingling in the nerves. Sensation, as such, is meaningless. People learn to make sense of their sensations soon after birth, and by the time they can talk, they've forgotten how they learned and even that they did learn. But when cataract surgery was first perfected, it enabled many people who had been blind from birth to see for the first time. Marius von Senden wrote about their experiences in Space and Sight. The newly sighted people experienced patches of color or brightness without meaning. They had to learn to associate the patches with concepts previously associated with other sensations. This may be the only episode in the history of our species in which individuals capable of communicating their response experienced "pure observation". Nor do nerves transmit anything. One nerve is stimulated to discharge its tiny electrical spark, and this may stimulate nearby nerves to discharge theirs. There's no variation in amplitude,

no “gray tones”. It's either on or off.

When the chain of discharges reaches the brain, the only way to distinguish one spark from another is the relationship with all other sparks. These relationships can form into groups, and the groups can become associated.

Associations of associations can stimulate each other.

Hierarchies of associations can develop, which can become “tangled” by associations among higher- and lower-level associations. In this way, a dynamic classification system arises. It creates the sensory order which is not so much a one-to-one mapping of the real world as a metaphor of it. For example, in the real world, colors are part of a linear arrangement of increasing wavelengths. Beyond red is infrared, and beyond violet is ultraviolet. But in the sensory order, red and violet join at purple to make a circle. There is no purple wavelength in the real world. So, looking can in no way be equated with knowing. We need an idea to make sense of

sensation. That's what theories do. It's also what fantasies do, and they're not what we usually consider to be knowledge. We're missing something. What turns percepts and concepts, those associations of nervous sparks, into knowledge is judgment: answering the question, "Is it true?" Either answer - yes or no - does the trick. Douglas Allchin points out in *The Epistemology of Error*, "The key epistemological distinction ... is between empirically unresolved questions, or uncertainty, and resolved questions..." between determinate and ambiguous. But judgment, unlike diamonds, is seldom forever. There can be new sensations, new data, and new ideas, new theories. Old sensations and ideas can be rearranged. The question for judgment can be recalled. The determinate can become ambiguous again. The tangled hierarchies of associations of associations of nerve sparks are continually re-energizing themselves and shifting their patterns. Sometimes they reorganize themselves en masse: There can be paradigm

shifts which shift reality.

How can reality shift if it's "what's out there," to be known by looking at it? Maybe we started our march down Epistemology Lane on the wrong foot. Notice that from the beginning, we've unconsciously assumed a dichotomy between a "real" "out there" and what must therefore be an "unreal" "in here". One of Piet Hein's Grooks is pertinent: "lines we neatly drew and later neatly stumbled over." A clue to catching our balance is to notice that, to me, your nerve sparks encompass each other and can't be dichotomies. Notice too that equating knowing with looking, also equates reality with the descriptions of that looking. This error underlies much of modern physics: Mathematical equations are symbolic representations of the descriptions of looking, so equating reality with the descriptions, reduces reality to a set of equations.

A vicious circle results: The equations allow you to deduce reality and you no longer need even to look. What began as

empiricism ends up as idealism. The objective and the subjective become confused. Cause and effect become meaningless. The arrow of time becomes an illusion, as in relativity, and existence depends on measurement, as in quantum mechanics. Our unconscious assumptions in the beginning, have come back around to bite us on the ankle. And in light of the nerve sparks and sensory metaphors and mutable judgments, an even more basic unconscious and untenable assumption comes to light: that reality is something we start with. For science, for the cognitive understanding of our experiences, reality is really what we end up with.

[Music]

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Universe, brought to you by
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In recent days, NASA's New Horizons team
has released what is the best closest up
image to date of the Kuiper Belt object
known as Ultima Thule. This was the
subject of a recent Space News and Wal
kind of introduced some of the
differences between the mainstream
interpretations and predictions for an
object like Ultima Thule versus those of
the Electric Universe. Now in this latest
picture the first thing that stands out
when looking at this picture is the
number of features that look basically
identical to features that we see on a
lot of objects in the inner solar system
such as asteroids and moons. And that is
the number of highly circular craters
and what one might call what appear to
be chains of craters although it's not
entirely evident because portions of the
object are in shadow. And, on the smaller
of the two lobes that compose Ultima

Thule, we see one crater that is absolutely enormous. Now there's a reason why the New Horizons team is hesitant to talk about possible crater chains and an improbably huge crater on this Kuiper Belt object. Instead thus far, they are favoring terms like depressions and collapse pits and the reason for that is, you do not expect the kind of high-velocity explosions that Impact Theory would probably require to produce these features. And of course, the explanation that the New Horizons team has offered for Ultima Thule's double-lobed form is a low-speed collision between two objects in the so-called early solar system which this traditional story tells us was four and a half billion years ago. So I'm now going to bring up Wal Thornhill. Wal and I have been discussing this new image over the last couple of days and so Wal, I think it would be good if we could lay a little bit of groundwork just in case there are any newcomers who have come to this video. Why don't you begin by explaining what

some of your thoughts were about Ultima Thule even before the New Horizons spacecraft arrived at the object and why don't you share what your initial thoughts have been as the images of Ultima Thule have gotten better and better? Okay, when the New Horizons newest and best yet view of Ultima Thule appeared on the web, I was struck by just how much it looks like comet nuclei in the inner solar system. Also, it has this neck joining two objects which is somewhat different from either of the adjoining lobes as they call them. It's brighter and if we remember Comet 67P, you saw a sand or some kind of material on that neck region between the two lobes. And it even had what appeared to be sand dunes. Well, the connection between the lobes appears to be something that happens after the lobes have generally been formed but during the same process. Now you know, in an earlier Space News or 'Seeing Double' it was called, I pointed out that, in the plasma cosmology view, stars are formed by

interstellar Birkeland current filaments inside molecular clouds. In other words, it's a dusty plasma. And we know from research that's been done and published by Don Scott and others, that the dust is accumulated much more powerfully into central objects on that filament by the long-range electromagnetic forces involved with electric currents in, what you might call, lightning bolts inside molecular clouds.

I went further a little later and pointed out that all solid objects, all solid bodies are formed in that same process. There is no need to call upon gravitational accretion which has never been shown to work.

One of the big problems is, even if you have a circulating disk of dust and gas, you have the problem of getting rid of the angular momentum of that disk.

There's no reason for the material at the outer edges to fall in towards the center once it achieves a certain velocity of rotation about that center.

So I expected, on the basis of also the

recent history of the solar system, that the bodies in the outer solar system would show all of the same features as those seen in the inner solar system. Because, to put it simply, the solar system is a blended family of objects that have been captured by the Sun after the formation of the Sun. It had nothing to do with leftovers from the Sun and this explains all of the mysteries about isotopic compositions and the differences between the planets because our solar system, if you look at it dispassionately without the gravitational theory as a lens, a distorting lens, it's a fruit salad of objects. They're all different. They have different axial tilts and their rotation rates are hard to explain, the angular momentum of the whole system is hard to explain in the gravitational theory and they exhibit behavior, magnetic fields, and weather patterns, which are still unexplained. Given all of these facts, and when you realize that you're looking through every space shot that's been

sent up to tell us how the solar system was formed, is viewed through this distorting lens of gravitational accretion. So, Ultima Thule was a big test really, because I had already predicted that this would be the case that objects even in the outer solar system would tend to be formed in pairs, sometimes joined during the process of formation. It's interesting to look at the language of the reports of the closest up image yet of this object because the language has changed. It's an indication of cognitive dissonance. In other words, what they're seeing doesn't match what they expected. When I saw it, the first thing that struck me was the circular crater on the smaller lobe which is facing towards us. And one of the key aspects of electrical scarring is circular cratering. With no debris in the crater, it's looked as though, it's been machined and also there is a propensity for the discharge as it fades to switch to other high points near the central

crater and of course the nearest high point on our crater is the rim and you'll notice there are at least three that I can see, smaller circular craters perched on the rim of that larger crater. Now, I'm calling it a crater but the language in the report says, 'the large circular feature about four miles or seven kilometers across on the smaller of the two lobes appears to be a deep depression'. Of course, the reason why they use the words 'deep depression' is that for a crater to have occurred it means that the collision must have been at high speed and as we've said the whole idea behind the standard model of trying to explain this object is low-speed collisions. You know, five kilometers an hour or less, the sort of bump in a parking lot. That just doesn't work with a crater that size. Right. Four miles across. 7 kilometers across. That requires an impact which should have shattered the object. Because remember, these are supposed to be ices and dust that have been accreted from a very

thinly dispersed cloud of dust and gas.

You do not expect an object to form that is solid enough to receive an impact like that and survive. And what's more, at that distance from the Sun the orbital speed is very low and any other objects that are following the same orbit will only have minor differences in speed and this is why they talk about a bump in a parking lot. Right. Because the analogy is fairly accurate based on the gravitational model. But what we see has nothing to do with low-speed collisions.

And what's more, impact craters themselves are an assumption because in the gravitational theory the only way to form craters like that is with impacts.

You're very limited in what you can actually explain with impacts. No one has actually observed the before-and-after of a celestial impact of sufficient size to create a crater that size. So this is all mere speculation or maybe just a story, a cover story, to hide our fundamental

ignorance. Right. Well, we should mention that this crater, what we're calling a crater that we see on the smaller lobe of Ultima Thule. This is not the first instance when we've seen an object in our solar system with a crater that is so huge that it would have destroyed the body if it was caused by a kinetic impact. If you look at some of the moons of Saturn - Mimas and Tethys are the most dramatic examples. If you look at the Martian moon Phobos and Stickney crater, and if you look at the asteroid Vesta, in all of these instances you see craters which astronomers themselves admit should have shattered the body if they were caused by mechanical collisions and high-velocity explosions. That's correct. The other evidence for electrical scarring are the small regular circular pits on the larger lobe. At the top of the image that I'm looking at that was published, you can see there are three small circular pits in a row and in fact there's a couple of smaller ones heading up towards the top of the lobe. But then,

in, almost in the shadowed regions at the top you see another chain of craters.

There's at least four there and they may actually continue across the shadow to to meet up with another one on the far side. Now, crater chains are electrical formations. There's no other explanation for them. In the inner solar system, the story went that any incoming bolide fractured, more or less, in space before it hit. Under the gravitational influence of the body that it was impacting. And they, sort of, splattered across the face of that object, But this is not, that doesn't explain the circularity, the fact that one crater doesn't disturb the other. And there's no fill from one crater that happened after another. So, the electrical theory is, I submit, the only theory which can explain these features. And in fact, it's one explanation for all of the observations, not special dispensations for different bodies simply because they don't fit the pattern. Right.

All of the strange features

including the craters on the Moon and the ray-craters and all of that was explained by Ralph Juergens back in the 1970's in a brilliant series of articles on the electrical scarring of the Moon and Mars.

You could then extend his work without making any other ad-hoc assumptions to all of the bodies we've seen since then.

Well, I think this actually might be a good point to just take a moment and examine some of the recent discoveries that we've reported here on Space News, which relate very directly to this question of our solar system's history and origins. So obviously, as one expects, the New Horizons team is holding to this traditional idea of a solar system that formed from a gravitationally collapsing nebular cloud and this happened four and a half billion years ago. And the only process they can imagine forming an object like Ultima Thule is gravitational accretion. And yet the real question I have is why any of these assumptions continue to endure since, as

we have reported, there are more problems and anomalies for the nebular hypothesis than there are successes and we report routinely on discoveries which planetary scientists admit, it's not us saying this, it's planetary scientists who say that these discoveries can't be reconciled with the solar system's conventional history and origins. So just very quickly bear with me,

I'll give just a few examples. Last year we reported on the discovery of the so called Hypatia stone which is a meteorite fragment that was discovered in a glass field in Libya and which is composed of this "weird matrix" of minerals which planetary scientists admit they can't explain. And the reason they can't explain it is the meteorite is supposed to have originated from a homogeneous primordial dust cloud. And also late last year, planetary scientists discovered that there's a group of asteroids near Neptune which actually appear to be identical to asteroids that are close to Jupiter which are so-called

sun-baked asteroids. So here's a quick excerpt from a Scientific American piece on that discovery. "...the Neptunian asteroids are so far from the Sun that their surfaces should have stayed almost pristine since birth, scarcely altered by our nearest star's warming rays... and yet they appear remarkably similar to a group of sunbaked asteroids near Jupiter. These puzzling observations... Asteroids that look nothing like their putative parents in the sedate solar hinterlands but strongly resembled their supposed relatives that have been toasted by the Sun... call into question scientists' best theories for the origin and evolution of the solar system..." Then, more recently, you did a brilliant presentation on the discovery that water in Saturn's rings and on its moons is apparently identical to water in Earth's oceans and as you reported, this was actually a confirmation of an outrageous prediction that Velikovsky made which was that Saturn was the source of our planet's water. So here's a quote from a Phys.org

report. It says the results "...mean we need to change models of the formation of the solar system because the new results are in conflict with existing models." And finally, speaking of historic space missions to supposedly primordial objects in the solar system, scientists with the Rosetta mission to 67P, recently admitted that the comet cannot be billions of years old. Now in the early published findings on the mission, Rosetta scientists proposed than, like Ultima Thule, the double-lobed nucleus of 67P was formed by a low-speed collision of two objects in the early solar system. But based on the scientists' numerical calculations, it was determined that the nucleus would have crumbled or disintegrated countless eons ago and therefore it is only millions of years old rather than billions. So among the other problems the comet scientists have faced, they have to try to explain the "geological features" we see which includes complexly layered stratified

rock which is absolutely everywhere on the comet nucleus. And further, there's the problem of how do you form a comet only millions of years ago rather than billions of years. Well, here's what they came up with. Two fully formed comet nuclei in the late solar system experienced a violent high-velocity collision and exploded. And then, after the comets exploded, as you can see in the computer animation the scientists created, even though the material would have been accelerated to tremendous velocities and in a near zero gravitational sphere of influence, we are told that rather than dispersing, a portion of the destroyed material recoalesced and kept recoalescing and kept recoalescing to form 67P as we see it today. And now I don't think I need to belabor why this particular conjecture is, and this is just my opinion, the closest thing to impossible. But here are two points to consider. Number one: we see two very different hypotheses being offered for the creation of the

respective double-lobed forms of Ultima Thule and 67P. Even though they both involve collisions, with Ultima Thule it's a low-speed collision four and a half billion years ago and with 67P it's a violent explosion only millions of years ago and again the process that is actually forming the comet is a re-coalescing of material that has been destroyed. But in the case of the Electric Universe, as Wal has already explained, we see a consistent coherent explanation for the "doubling effect at all scales throughout the entire cosmos." As you can see on screen, this is quite evident in the comparison of both 67P and Ultima Thule to a portion of hematite that was blasted with an electric arc. So the question I have to ask critics of the Electric Universe theory is, do you care that all of the discoveries I just described were either explicitly predicted by the Electric Universe or are exactly what one does expect if our solar system experienced the kind of recent upheaval the electric

universe proposes? So Wal, what are your thoughts?

Yes, it's system-wide this problem. It's rather ironic that Velikovsky was more or less a pilloried for suggesting that the solar system had changed within the memory of the earliest human beings. And now, the favored theory for a lot of these unexpected discoveries is that the planets, particularly the gas giants, must have migrated. In other words, their orbits have changed but of course it has to have happened billions of years ago. And that's one of the aspects that's never really addressed psychologically in cosmology, is that the theories appear to have to make us feel safe. In fact, the Australian philosopher David Stove wrote that Newton's theory was designed to make sure that nothing untoward happened in the solar system. This idea of a clockwork solar system that was wound up four-and-a-half billion years ago, and has functioned fairly undisturbed apart from a few showers of objects that are used to

explain ad-hoc the fact that we have a moon and there are craters on objects.

But all of this happened way in the distant past so we don't have to worry about that. Right. And of course, this continues today. So, there is a kind of almost a religious grip on the gravitational accretion over huge spans of time theory. Velikovsky really threw down a gauntlet which none of them, no astronomer has been willing to pick up. And that was of course the origin, really, of the Electric Universe because scholars could see that there was a case to be answered. And some remarkable people came forward and began picking up that challenge and piecing it together and I was very pleased to actually have joined them a little later in the process, as it turns out, but nevertheless I think it's been effective because the groundwork is very solid. And there's been no ad-hockery required to explain all of these weird discoveries in space. In fact, we've been able to predict a lot

of them.

Good afternoon everyone. Current scientific theories of the atom are hypothesizing that the nucleus is made up of a chaotic blob of protons and neutrons. There is no known structure for the nucleus. Quantum mechanics states that it is impossible to show a true shape for the nucleus, but instead relies on mathematics to express the atom and its non-deterministic nature. Is it possible that there is a structure to the nucleus of the atom? In this presentation, I will make precisely that attempt and show you how this structure, with its particular rules and mechanics, are responsible for the periodicity and the grouping of the Periodic Table of the Elements. My goal today is to take you from this two-dimensional solar system model of the atom with no structuring whatsoever (as we can see on this side) and I want to take you to a logical three-dimensional structure of the atom. The proton-electron model that was adhered to until the acceptance of the neutrons in about 1933 has been taken as a base for that. Now, before I continue, I would like to draw everybody's attention to the disclaimer of this presentation: "We are all agreed that your theory is crazy. The question which divides us, is whether it's crazy enough to have a chance of being correct." Niels Bohr. The presentation is made up of the following: 1 - Current understanding of the model. We'll take you through a

short history lesson there, and then we will go into 2. Proposal for the Structured Atom model. The third part will be to touch upon 3. implications of this model, and [finally] 4. we will state our conclusions. Our journey begins in the early 1800s when John Dalton was doing his research. Dalton used relative atomic weights and published a table of relative atomic weights. So, we have the first rudimentary form of a Periodic Table of the Elements. For example, Dalton found that 12 g of carbon could react with 16 g of oxygen to form the compound that we now call carbon monoxide. Or with 32 g of oxygen to form carbon dioxide. The ratio of oxygen masses - 32 to 16 - simplifies to 2:1. At some point, it was discovered that certain elements have common properties and that there was a periodicity to the elements. In 1864 John Newland described a law of octaves. He observed periodicity according to the relative atomic weight and identified some new elements such as germanium. His concept however was not recognized by the Society of Chemists until 1887. After becoming a teacher in 1867, Mendeleev wrote a definitive text book of his time, "Principles of Chemistry" in two volumes, 1868 to 1870. It was written as he was preparing a textbook for his course. This is when he made his most important

discovery. As he attempted to classify the elements according to their chemical properties, he noticed patterns that led him to postulate his periodic table. Mendeleev claims to have envisioned the complete arrangement of the elements in a dream, quote, "I saw in a dream a table where all the elements fell into place as required.

Awakening, I immediately wrote it down on a piece of paper. Only in one place did a correction later appear necessary." I would like to point out here in his periodic table the purple elements like helium, neon, argon krypton etc. which were totally unknown. And here we see for example the germanium. By looking at these empty spots, we were able to pinpoint where the next element should be and that's how we found them. J.J. Thomson performed his cathode ray experiments in 1897. If a gas sample is introduced into the region between two charged plates, which we can see on the bottom here, a current flow can be observed, suggesting that the atoms have been broken down into charged constituents. The source of these charged particles is a heated cathode which causes the atoms of the sample to ionize. These were known as cathode rays at the time. In 1897 Thomson set out to prove the cathode rays produced from the cathode were a stream of negative negatively charged particles called electrons. From Maxwell's theory he knew that charged

particles could be deflected in a magnetic field which is shown just about here. So, depending on the polarity, the electrons went up or down. Because of the bending of the path of the emitted electron in the cathode tube experiment, it became clear that it had to be a charged particle, negative in nature because it was pushed by the north south magnetic field that has been put into the electron beam path. Through his work science was introduced to a whole new discovery namely the electron. Through his work the result was a model for the atom that acknowledged electrons and the fact that they can be taken away from the atom, leaving a positively charged atom. The discovery of these subatomic corpuscles overturned the notion that atoms are indivisible. The best description at the time was that it would resemble a plum pudding, where the electrons resemble the distributed plum throughout the pudding which is depicted here. He was honored with the Nobel Prize in physics in 1906.

When Chadwick famously discovered the neutron, it caused a debate that was finally more or less settled at the 7th Solvay Conference in Brussels, Belgium in 1933. The only alternative to neutrons was the existence of nuclear electrons which would counteract some of the proton charges of the nucleus. Since by then it was known that

the nuclei had about twice the mass than could be accounted for if they were simply assembled from hydrogen nuclei, meaning protons. But how these nuclear electrons could be trapped in the nucleus was still a mystery. This is when and where it was decided, at the Solvay Conference, that a neutron is not a combination of a proton and electron, but rather a fundamental particle without an electrostatic charge, meaning it is neutral. Hence the name neutron. After the acceptance of the neutron, which was very much influenced by the need to make quantum mechanics work, we basically end up with our current understanding, in essence at least, of the atom. An atom has several key attributes that are observed: a positively charged nucleus (the nucleus is depicted here) - the nucleus is made up of positive protons and neutral neutrons - the red and the green if you will, red - green. The electrons do however not fall into the nucleus which is still a little bit of a mystery. And the ratio of the neutrons, protons, and the outer electrons, on average is one on one on one. Note that current nuclear physics explains the nucleus in quantum-mechanical terms. In a nucleus occupying a certain energetic state, each nucleon is set to occupy a range of locations. To refresh everybody's mind, here is what the current Periodic Table of the Elements looks like. We see there is a periodicity, in groupings, in the

list of elements. The periodicity goes from the left to the right, and the groupings go from top to bottom. The term 'element' is used for atoms with a given number of protons regardless of whether or not they are ionized or chemically bonded. For example hydrogen in water. In short, the number of protons and the outer electrons determine the element. When all this is taken into account, the current understanding of the atoms and the elements is very poor, to say the least. If this is all that is offered after a century of research and untold amounts of resources having been poured into technological projects based on this, then I would feel disappointed in fact. This is what drove me to study the atom and the elements. The disappointment of in truth a highly disputable model that asks us to believe certain things in order to make it work, could simply not satisfy my need to know. Throughout the years, my personal lesson was that the whole basics was wrong. This started for me around 2006 and ever since the model has been slowly growing and maturing. The strong force, which is seen at the first bullet point, is a postulated force. It simply was needed in order to explain how the protons would stick together in the nucleus. So, any good model should be based on observations and logic. Only after that comes the understanding of the whole, or the narrative if you will. The Structured

Atom Model has the following key features. It shows a logical construction of the atom in accordance with observations. It explains why the atom has a positive nucleus with negative electrons around it. It explains why the electrons do not fall into the positive nucleus. It explains in a logical manner how chemistry arises. It explains the periodicity of the Periodic Table of the Elements and, still an open question, why do electrons and protons not annihilate each other? Still unanswered.

SAM is a new model. No, yes, take your pick. Let's see. This model is still very much in development and despite some efforts to the question as to why the proton and electron do not annihilate each other is still unanswered, the only thing I would like to add is that the observation would indicate that perhaps the proton and the electron are made up of smaller organizations. The model right now does not rule this out nor deny it. In fact, I think this is a beautiful example of how we can cooperate [coming] from different disciplines to find the answer to this question. For the model itself, it is not essential to have this question answered because it goes beyond the scope of the organization of the nucleus. The observation is still there regardless of the answer to the question. There has to be an organization to the nucleus of the atom. There's simply too many hints and leads that cannot be ignored that

point to this to be true. When we try to find an answer to how the nucleus of the atom is organized, we can find no real answers at all. Only that the nucleus is made up of neutrons and protons. How these fit together is officially still a mystery. This presentation will offer evidence that the nucleus is structured, and we'll point out how this is the case, with its regularities and rules, and what principles are in effect. At about 2008, I found a correlation of the geometry of the spheres; it's called spherical geometry. You'll be surprised how little can be found on that. When we reach the number seven, we reach lithium. It's called a pentagonal bipyramid with a fancy word, and in 2010 I understood that carbon corresponded with the icosahedron, or rather 12 spheres. In 2012, I found basically an entire structure of the nucleus and how it functions. Ever since I have been a student myself of this model and I can find correlation after correlation. Some of these I hope to share with you here. The model in short comes down to this. We have a duality, which is depicted here on this slide that we call a proton-electron pair that has the electrostatic force acting between them and this force is the causal factor for the principle of the densest packing that creates geometric shapes. These geometric shapes are integrated in a specific order and number, and they

create all the elements. During the next slides I will try to show you how that is the case. So, when we go into the structure of the atom model, I would like to point out these postulations/observations that the model is based upon. There's only one fundamental force: the electrostatic force. The atom must have a definitive organization which is responsible for all the attributes of a particular element.

The neutron is not a fundamental particle, it's a composite of a proton- electron, but is redefined as a connection between a nuclear electron and its surrounding protons. A stable element must have a stable nucleus. There can be no movement without any cause in the structure of the nucleus. A sphere, or a proton, must always be part of one of the three identified geometrical structures, namely the tetrahedron, the pentagonal bipyramid or the icosahedron. The depictions will come in a little bit. The inner structure of the atomic nucleus dictates the outer electron structure, or rather the orbitals. So, here we reach the "New" neutron. This is a schematic view of it. In the center we can see how the neutron is redefined. Instead of being a fundamental particle, we have an electron in the center, with two neighboring protons. This is a stable structure. The charge of the electron in the center is divided over the protons. This binds the protons into a rigid connection, if you will. It resembles the

nucleus and is a stable configuration. The second electron, to make the whole neutral again, is simply booted out. It's placed in orbit which is about 100,000 times the radius of the nucleus. On the left we can see schematically how the free neutron decay occurs. At the bottom we can see an intimately connected proton and electron, meaning there is no more energy in that system. It does decay however, into the top depiction of basically a hydrogen atom - a proton and electron at a distance. On the bottom right, we can see what happens when we go into a triangular configuration which is depicted by helium-3. There's simply no room for more than one nuclear electron - they're too close to each other. The other two which are depicted in the green here are simply booted out again. But to balance the whole, being three protons and three electrons, above that we see how we end up with a helium-3 with only one nuclear electron taking its resting position in the center of the three protons, or at least it is seeking out that point. So, in classical terms we are left with only one neutron, two protons, and two outer electrons. I would like to point out a paper done by Carl Johnson (actually more than one paper) and it's called "Statistical Analysis of Isotope Masses." This analysis of the precise NIST data seems to indicate that there is no energy which exists within any atomic nuclei to account for the existence of any Pi mesons or the

necessary binding energy of any neutrons, or of any ultra powerful strong force, or any neutrinos for that matter. This research has resulted in a far simpler and more logical description of atomic nuclei. It also entirely complies with the known laws of science. No unseen strong nuclear force - which allegedly works at an inverse fifth power of distance, except then it also reverses in effect at really short dimensions - is either necessary or represented by any energy source. I would like to invite everybody who is very interested in this topic to try and seek out those papers - quite profound. Here we see the building blocks of the model. From left to right we can identify them. First, we see the Platonic solids.

On the bottom we see the spherical geometry. Spherical geometry is not like the so-called hard (?) geometry which uses points and lines in a two-dimensional depiction. Here we can see how the Platonic shapes are actually created by using spheres. In this case the protons, and as Plato already said, the atoms must be made up of geometrical shapes. This picture here was taken last year, sitting at a curb at the Grand Canyon, and I would like to point out this gentleman with the red hat, James Sorensen. Ever since we met, James has been participating in this model by creating software code that led to a threedimensional Atom Builder. We can actually recreate on the computer the several elements. The pictures you see

during this presentation are taken from that particular Atom Builder. The model has already proven to be crucial for further continuation. On the left we see the basic building blocks. The first one would be hydrogen, the second one would be deuterium, the third one would be helium-3, the fourth is helium-4. This one is the so-called pentagonal bipyramid which equates to lithium, the first true element that we have in the periodic table. Even the name implies this, because lith, lithium, meaning stone, stone-like and the last one represents carbon. Here we see some essential tools that we used to develop the model. Nothing fancy, nothing expensive. The magnets that we can see on the bottom here are used as a valuable tool because they mimic the central attraction force that is also there in the atomic nucleus. This beautifully mimics densest packing, or rather the electrostatic force.

Treated properly, they will show you the correct structure of the elements. Everybody can do this. Here we see the platonic solids again, created using spheres for the so-called spherical geometry. Take note that the cube and the dodecahedron are not stable. They can easily be distorted, in contrast to the other three. So, the cube is not stable; the tetrahedron is stable; the icosahedron is stable; the dodecahedron is not stable; and the octahedron is stable. The proton geometrical structure cannot exist on its own, nor can an electron structure

be on its own. They need each other. They need each other in order to be in equilibrium. Only one on its own cannot be, the other one on its own cannot be, together they can be. They are in equilibrium. All the protons that we have in this model must belong to [one of] three geometrical structures, as I said, the tetrahedron here, the pentagonal bipyramid represented by lithium, and the icosahedron represented by carbon. On the left we have the electron structures which is an octahedron and a dodecahedron.

On the bottom here I show how they exactly fit together.

The icosahedron is the most complete of the platonic solids, meaning there is no bigger geometrical shape that can fit into a sphere, i.e. there is no bigger geometrical structure. The combination of protons and electrons pull towards their shared common center of that icosahedron. This is the primary argument for the applicability of the densest packing principle.

Carbon embodies the icosahedron with its 20 triangular facets. (Let me see if this is right, right). Carbon embodies this icosahedron with its 20 triangular facets. The 20 triangles correspond to the number of electrons necessary to reach the noble gaseous state. With carbon, as is depicted here, not all the triangular facets of the nucleus are occupied, meaning there are positive spots left on the nucleus that can still react. In the green, we can see where an electron would be, and where there is no green yet, like here, or here,

there's still positive charge left. So, on the left we see a carbon with only six inner electrons. On the right we have a carbon with the six inner electrons and the six outer electrons. However, take note not all the spots are green, meaning there's still chemical reactivity left.

This is basically the fundamental principle as to why chemistry is happening. When we take a look at the noble gas configuration, we have the same nucleus, however, there are (like shown on the right) extra protons. These extra protons also imply there are extra electrons, and in the case of neon, we get the first complete nucleus whereby all the spots are occupied. Hence, we reached the noble gaseous state. It's important to notice that this

icosahedron of the carbon - which is still depicted here - has 20 triangular surfaces. So we get 10 inner electrons, and 10 outer electrons. Together they will occupy no more positive charge, no more negative charge, no more reactivity and again [we have] the noble gaseous state. The main structure of the atom, or the backbone of the nucleus, is made up of the icosahedron or, as determined in this model, a carbon nuclet, whereby nuclet

refers to the identified geometrical shape of the protons. Each geometrical shape or nuclet has a center of attraction that is created and shared by the protons that are part of that nuclet. The geometrical structures are connected to each other by sharing no proton as

shown on the first image. Here the main structure of the atom is therefore a collection of the connected carbon nuclets that adhere to a doubling mechanism.

We tried to depict this in the rest of the pictures here. We go from one carbon nuclelet, to two carbon nuclets, to four carbon nuclets, to eight carbon nuclets.

This triangle, as you can see, is everywhere on the nucleus of the atom. This is most important: all the proton structures will always have only triangular surface areas.

This is when it is stable. So, this triangular area is where an electron would find its resting spot or at least balance out and try to find that position.

Here we see how the periodicity of the periodic table is a result of these geometrical shapes. What we see here highlighted is the carbon group in the periodic table.

The carbon belongs there, silicon belongs there, germanium belongs there. When we go to shapes, we get this picture. On the left

we see carbon made up of 12 nucleons or protons. In the center we see silicon which is 28 in total. However, on the left we see the same recurring carbon nuclelet which is where all the reactivity or the chemistry is. On the right we see the green. Every time we see green, it resembles a neutralized spot, meaning that part of the atom or the nucleus does not participate anymore. When we reach germanium, which is made up of 70 nucleons or protons, we can see that

basically the whole atom is neutralized. And again the same recurring carbon nucleon. The numbers still add up. So, when we see in this model these numbers here they correspond exactly to the element. Another example is the alkali metal group, lithium, sodium and potassium. When we try and take a look at those shapes, we get the following picture. On the left we see lithium with seven particles in the pentagonal bipyramid. In the center we get sodium - 23 particles. Again, the only active part of the atom is the red part here and to the left the neutralized part. On the right is potassium- 39.

The whole atom is neutralized except for that lithium nucleon.

A final example would be the noble gases. So, we've taken neon, argon, krypton. When we take a look at the shapes, we get the following picture. Everything is completely green - only neutral endings as I call them - and we see neon with 22 in this case. Neon has 20, 21, 22 as stable isotopes, chosen 22 here. Argon with 38 here, and krypton with 80 here. And this keeps on recurring, this keeps repeating.

The cycle of eight. Here we see how the periodicity of the periodic table of the elements is the result of these geometrical shapes. So the valence factor, or rather how many connections we can make with a certain element, we can see that the carbon is usually taught to us as being a plus 4 or a minus 4. The nitrogen being a minus 3, the oxygen minus 2, the fluorine minus 1. We can

see the number of green increasing. Meaning every time a pair is added, that part of the atom is neutralized. And the valence factor is dropping by one. When we continue, we reach neon, completely neutral. Sodium however, is plus 1 represented by the lithium nucleon again, as we saw in the previous example. Magnesium simply has two of those. Aluminum is a little bit more complex, it has a lithium nucleon or geometrical shape and on the right side we see the yellow, which represents a beryllium nucleon, just a little bit heavier than the lithium. After that comes silicon. Silicon again is +4 or -4 and +2. But we see, just as above, the carbon nucleon. And here the active carbon nucleon, on the right side the atom again is neutralized. This keeps repeating and repeating and repeating - the periodicity of the Periodic Table of the Elements.

Carbon 14. Most commonly known example I would say, carbon 14 is radioactive for approximately 5,000 years or something to that effect, and actually we see the densest packing at work. In the center is a general depiction found on Wikipedia for example, how an electron is booted out, or in this case over here, we see how a neutron decays into a proton and an electron. They also talk about neutrinos and anti-neutrinos, but we leave them out for the moment.

On the right side here, according to the new model, we can see carbon-14. In the center we have the same carbon nucleon that was blue just a moment ago. We have on the top one extra

neutron and at the bottom one extra neutron, meaning it's a proton plus an electron to bind them together. When they come close, they decay. Meaning the two are together now and there's only one electron needed, or rather actually there's only room for one electron. So this second electron is booted out, as we can see here. It takes its place in the orbit, therefore we reach the next element. So, you could say in classical terms, that the numbers are six protons, six electrons and eight neutrons becoming seven protons, seven electrons, and seven neutrons. That's the decay. If we talk the new model, we actually have over here 14 protons with eight inner electrons (the six of the carbon plus the two of the loose neutrons) and the six outer electrons that have always been there and it decays to the bottom to again 14 protons, seven inner electrons and seven outer electrons. This is the so-called beta minus decay.

Now, our current research still focuses very much on these structures and we're trying to create a corresponding periodic table of the elements. Not so much that the current one is wrong, but there are some improvements to be made. Half the elements still have to be created in the Atom Builder that was mentioned before. We're not there yet, it's quite complex because of the number of possibilities that arise due to the doubling factor. So, we are currently for example looking

at the possibility of the existence of elements halfway
the periodic table of the elements that have not yet been
discovered. I'm not talking about the real heavy elements
I'm talking about elements halfway the periodic table, close
to iron, close to copper, close to silver, gold etc. Nature
tends to skip these steps not so much because it cannot
be done, but because the combination of two to make the fusion
happen usually we get a helium nucleus or an alpha particle
which combine. An alpha particle consists of four of these
protons, but to create that missing element in between,
we need a deuterium to act on that. Just on chance-based
and the abundance of certain elements makes it almost
impossible. Besides that, we are not even aware that there
might be something missing. It is my belief that ultimately
these elements will be either discovered or created and I
hope, I think, might actually validate this model in the
future. We can see here how it basically resembles a tree-like
structure and where this doubling effect is coming on.
So, this is like a stem, two branches which go into
another two branches and another two branches, or rather
four. Interesting to note over here there's a collision.
The two branches basically touch each other and that
happens just about where the stable elements lead and bismuth,
which are the most stable last elements in the periodic
table, from that point on all the elements are radioactive. I
believe that due to that coming together of the branches is where

it breaks. The bottom basically breaks up and the atom is split in two. I think we all know what that leads to. This theory is still far from complete - it provides actually opportunities for everybody to participate in this advancement. There are limitations to specific fields of science due to limited understanding of the atom I believe - in general and the elements specifically. The atoms affect just about everything. In fact, I would like to challenge the scientific community to either point out these flaws and provide the next answer, or a clue or an error, or validate a proposed model. This is something I think we should all agree on. All that is presented here today has been done without any professional support and represents a few creative minds working together. I can only imagine what we could achieve as a collective. We see here a screenshot basically of the Atom Builder that has been created. Again, James Sorensen has been most important in this. He has been able to convert the model that I have in this rudimentary form into this Atom Builder and we can see some of that here. Anybody who is interested in this and learning more about this, I would like to invite to the breakout room. We have a beautiful setup and we have lots of examples. We have magnets you can use and create and play with. I would like to summarize the new atomic model as follows. We have a duality that we call a proton-electron pair with the

electrostatic force acting between them. This force is the causal mechanism for the principle of densest packing that creates geometrical shapes. These geometrical shapes in a specific order sequence and number create all the elements. The model shows to observe nature and properties of the atom and explains the reason why the nucleus of the atom is positively charged, why the outer electrons stay at range and do not fall into the nucleus and addresses a causal factor for chemistry.

In fact, physics and chemistry are kind of separated, exactly where the atom is. In this case the physical model goes straight into chemistry and there are many, many more implications and consequences - too many to mention today. There are some potential implications and I named some here.

We have plasma physics, astrophysics, cosmology. I think we can reach a far better understanding of the nuclear structure. Better understanding of chemistry, nuclear fusion and fission. Maybe even smaller nanotechnology.

Radiometric dating - which is, to say the least, quite controversial - and transmutations and perhaps, as I mentioned, new elements. To conclude with the thanks. Many people to thank, but a few persons in particular: Susan Schirott, Mark Span, Jean Hafner for your EU support - unwavering I

would say. James Sorensen – special. He made the Atom Builder and a website and that will become in the end I hope a tool that we can use for educational purposes. Jan Emming for the text editing and his unwavering support as well. Karen Elkins with graphical representations and feedback. And I would like to conclude there. Unfortunately, I cannot show you an animation, but again I would like to invite you to the breakout room where we have some lovely animations going and I would like to thank you for your attention.

[Applause]

[Music]

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you there's a reason for this,

our world was once

a vastly different place.

To experience this won't hurt you

and there is nothing to fear.

Twin Worlds-

-Above and Below

Egypt: The god Atum, remembered

as the creator and primeval sun

In our previous episode we considered

the Egyptian stories of creation,

an original unity named as the god Atum

gave way to a separation,

a division into regions

above and below,

but lacking any

concrete referent

most translators render the two

regions vaguely as heaven and earth

or Heaven resting on an ambiguous

horizon or twin peaked mountain.

A global archetype:

"The separation of heaven and earth"

Global variations on the ancient
theme repeat this remarkable idea
and in-numerable
interpretations of the theme
have been published in both
popular and academic media.

Under the common interpretation the ancient
language itself is left permanently obscure
whereas in the most ancient
sources highly concrete forms
and a spectacular shift in the cosmic
environment are consistently emphasized.

In this series of Discourses we follow
a different line of interpretation,
we can act ancient myths and global symbols
to extraordinary formations in the sky.

The so-called creation has
long been misunderstood;
creation was a remembered event when
visible powers revered as gods,
appeared to construct a vast
habitation in the Heavens.

In the language of the myths
an emergence occurred,
a differentiation and clarification of
form where no form previously existed.

The language for the original
condition typically emphasizes chaos
- not in the usual meaning
of that term today
but in the sense of dimness, fog or clouds,
celestial waters, a pre-dawn glow.

No implication of turbulence, no
hint of conflict or wars of the gods
all of which came later; the first
meaning of the word chaos was formless.

In the Egyptian stories,
the creator Atum
was immersed in the boundless
waters of the deep
- originally inactive and
lacking any distinctive form.

Then in the acts of creation
he acquired external limbs
through the explosive ejection of
visible outflow called words of power;
the text say the God gave birth to himself
through this acquisition of external form.

Words of Atum: "I am alone in the night. I created
my own creation, gave birth to my own beginning."

More specifically, as we've noted in
our reconstruction of these events,

this form was provided by
the God's lower limbs,
his resting place, his
perch - the cosmic pillar.

The pillar is in fact a center
piece of antique creation stories
and it connects us to the
archetypal sub-structure,
a foundational human experience from
which all of the ancient cultures arose.

It's here that we encounter the so
called separation of Heaven and Earth,
the words are all too familiar but
nothing close to an explanation
or even an accurate use of words has ever
appeared in scholarly studies of this theme.

We've offered a testable explanation
in our historical reconstruction
- based on the earliest
astronomical traditions.

It begins with an ancient gathering
of planets close to the Earth.

We've called this planetary
assembly the Polar Configuration
and our claim is that the early
cultures recorded its distinctive forms

with every tool

available to them -

long before a language of stable
planetary motions was even possible.

Given the specificity of

our visual reconstruction

it can be readily tested against

a vast cross-cultural consensus.

The cosmic mountain or pillar consistently
meant the resting place of a visible power
remembered the world over as the Creator,
the figure named also as a primeval Sun
and identified in the early astronomical
traditions as the planet Saturn.

But in the prior historic context the
monumental cultures knew these powers
simply as the ruling Gods.

So as we've seen, the Egyptian
priests could declare -

"The Great God Lives Fixed in the
middle of the sky Upon his support."

and this central power Atum could
announce with perfect consistency -

"I am raised aloft on my perch
above yonder places of the Abyss".

In the original mythic context the

Abyss meant the cosmic waters,
the primeval ocean of Nu, the very
waters penetrated by the cosmic pillar
to give Atum both his resting
place and his external form.

In our reconstruction it is the
crescent arms of the pillar God,
standing out in a critical phase
of the Polar Configuration,
that visually divided the great sphere
of Saturn into upper and lower regions.

By following that surprising conclusion the
ancient sources will never disappoint us.

And so we find in this archaic symbolism
the origins of the Atlas theme;
a theme coming down to
us in many variations
but here too conventional treatments of the
subject lack any content and actual experience,
that's why the ground we've covered in
earlier Discourses is so essential.

In the daily revolution of this crescent we
see the original form of the cosmic twins.

Just as the twins to the
left and right signified
contrasting positions of the

crescent in the daily cycle,
so did the symbolism of above and below in
the same cycle of an archaic day and night.

Archetypal crescent of the Polar

Configuration in its "midnight" position,
the supreme moment in the archaic "day"

Here we discovered the archetypal
meaning of the Egyptian words Neter Ta
- the divine land, God's land - designated
as two lands, more accurately -
the twin lands, since as we should expect,
this symbolism is inseparable from that
of the cosmic twins -
we've also discussed.

In this case the emphasis is on
the revolving crescent positions
above and below in
the daily cycle.

In Egypt the meaning of these
opposing crescent positions
was localized in the symbolism
of Upper and Lower Egypt;
the original inspiration lay
not in terrestrial context
but in sacred cosmography symbolically
projected onto geography,

the cosmic map of the holy land
in the sky was the prototype
reflected in sacred temple
cities and kingdoms on Earth
- always directing our attention
back to the twin powers of Heaven.

The celestial model was by
no means limited to Egypt,
all mythic archetypes
traced to a unified source;
sometimes complex but always
leaving an imprint, a signature,
a fundamental and lasting
contribution to human thought
and religious practices
the world over.

Central star, axial pillar and revolving
crescent in the Polar Configuration
For the Sumerians and Babylonians the agent
of the cosmic separation was the giant Enlil,
in a fashion he was really similar
to that of the Egyptian Shu,
Enlil divided a primeval unity into
two regions--one above, one below.

The word for that unity was AnKi, a combination
of the very words for above and below,

An; The Above and Ki; The Below.

As in the story of

the pillar God Shu

the Sumerian priest declared

that it was the pillar God Enlil

that separated An and Ki.

This curious theme is

well worth following;

how did it happen that in so many

creation accounts the world over,

a fabulous pillar arises to separate an

original unity into upper and lower divisions.

Such memories coming down to us from

every corner of the ancient world

can only reinforce

our conclusion

that the mythic archetypes

originated in an unfamiliar world,

virtually no connection whatsoever to the

celestial environment we experience today.

In all of this a key consideration

must be driven home;

the ancient star worshippers did not just see

a giant sphere in the Heavens above them,

they did not just see a Heaven reaching

column appearing to hold that sphere aloft;

the polar configuration had a
central definition
including the vertical column's
universal link to a revolving crescent.

Follow today's common
assumptions and the entire idea
of such a concrete global
theme is preposterous
and yet as we explore the ancient context
letting words mean what they say,
the implications become
ever more clear.

Always look for the
underlying form!

[Music]

Ears ring, windows rattle, the dog hides
under the bed. You've heard it before.

Thunder from an arc of electric discharge,
or from a passing supersonic jet.

One doesn't hear jets much anymore, but
in the good old days, I used to, when
F-100 afterburners lit over the desert.

Booms from 20 miles away.

When you rub feet on the carpet and touch a
doorknob, you get a spark and hear a snap.

That's the same thing on a tiny scale.

Think about the power it takes to make a
boom that travels miles with
the energy to rattle windows.

If you're really close, in the mountains
on some high windswept ridge,

lightning is terrifying. Lightning's
shockwave will blow trees and

rocks apart like dynamite. On

rocky peaks, especially granite

boulders, you can find the scars. If you know

what you're looking for they're easy to spot,

but if not, a magnetometer betrays their

signature. Where I live, I find rocks the size of

buildings split apart, chunks

the size of houses tossed away.

It's quite obvious past lightning was more powerful than we see today.

It's the explosive blast - the Arc Blast - a sonic wave that blasts outwards in all directions at the speed of sound like a wall of heavy air.

It does not move the air with it but rolls through it just the way an ocean swell rolls through the ocean. It compresses and decompresses the air it moves through, instantly raising its temperature and pressure, then dropping it in the next instant. There's another effect in the shock wave, called ionization.

It's the inevitable result of higher temperature and pressure, because, to put it in conventional terms, it means more atoms colliding, knocking electrons free.

But it's really more than that. A shock wave generates current. The condensate in a cloud is an electric conductor. The dipolar molecule of water aligns with electric fields. Dipoles attract and drops form. Charge moves when this happens, meaning current. Current in a cloud is called "bound" current.

If you don't believe me, question this:
why do governments use electricity to modify
weather? And how could they unless there is
something in the cloud to carry current?

Watch this Fox 13 show from Tampa Bay
which discusses how Dubai uses electricity to make
rain. In other words, a shock wave is a plasma.

It may be a weak plasma, like the sonic
wave produced by a fighter jet that
condenses water vapor, or it may be a
sheet of electric current that spits
lightning of its own, like the shock wave of a
hydrogen bomb. If you are fortunate enough to see a
rocket launch or a re-entry, you may
witness shockwaves that are sufficiently
ionized to glow in the upper atmosphere.

For perspective, realize there are no
shining ions traveling with the shock wave
bubble. The bubble is moving through the air,
ionizing and exciting atoms as it goes,
generating a current in the shock wave.

Shock waves are electric. The sight of glowing
shock waves in the black of space is surreal.

It gives you an idea of what
the ancients saw in the sky.

Meteors also generate shockwaves. The

Chelyabinsk event produced a shockwave that injured many people. The Tunguska blast reportedly knocked people off their feet several miles away. Now imagine a world in chaos, where winds shrieked at supersonic speeds. One need not ascribe to Velikovsky to imagine such a thing, because every mainstream theory of impact and accretion or whatever is in favor today, would necessitate periods of chaotic atmosphere. Supersonic winds would have happened at times regardless of what science-based creation theory you ascribe to. Any big meteor impact would do it. Even the creationist's seven days must have entailed some wind. Besides that, we have planets in our solar system with supersonic winds right now: Jupiter is one.

To assume supersonic winds and shockwaves occurred, and should therefore have left their mark on Earth, is perfectly sound logic in any cosmology.

Yet you don't hear shock waves mentioned much by geologists. They make theories and wave their hands about tectonic forces

without finding what does the pushing,
but they don't say much about sonic shock
waves. They use sonic waves as a tool,
and they recognize micro-fractures in quartz,
and shock cones in rocks due to meteor impacts,
but virtually nothing about the winds that
would result, or the effect of the sonic waves.

Previous articles have shown that shock
waves produced by supersonic winds left
tetrahedral-shaped mountains with
flat triangular-faced mountain flanks.

The evidence shows that Earth was
embroiled at times in a maelstrom of
winds that actually shaped the surface of the
planet. The primary mechanism for triangles you
see so ubiquitously in mountains is a
region of the shock wave called the
"separation bubble". When a
supersonic wind shears across a
surface and meets an obstruction, it
lifts to ride over the obstruction like
a wing, because a high pressure zone
forms in front of the obstruction.

This high pressure zone is called the
separation bubble, because it separates
the supersonic flow from the ground,

forcing it to change direction. Wind flow

in the following diagrams is left to

right unless it's shown otherwise.

It's called a bubble because in

ideal conditions it forms an actual

tetrahedron-shaped bubble of high

pressure, low-velocity air surrounded by

low pressure, high-velocity air. The

bubble wall or "membrane" is made of

shearing and reflected shock waves. They

are a predictable, inevitable, measurable

boundary layer effect caused by the drag

of supersonic wind over a surface.

If you've read my past articles on

this subject, you'll note I call the

separation bubble a low-pressure low-velocity

zone. That was a mistake. So, this is meant to

correct the record and give some more

detail on them because they are the most

tangible, accessible, reproducible, and

compelling evidence for Velikovsky's

theories in existence. I don't

say that lightly, but it's true.

Shock wave tetrahedrons are more abundant

than rock art that can be compared to

plasma instabilities. Comparisons

of petroglyphs to simulated instabilities are simply shrugged off as pareidolia, anyway. They also don't depend on interpretation of tiny points of light from a zillion miles away or guessing about the nuclear process inside stars, or atoms. They don't depend on reinterpreting mythology, equations, or the validity of anyone's physics.

Shock waves are well known by classical physics and applied science. Shock wave tetrahedrons cover our planet.

In fact, some aspects of plasma instabilities and astronomical "Z-pinch" nebula are due to shock waves. Some petroglyphs depict atmospheric shock waves too.

Sonic shock is essential science in the Electric Universe and I'm confident Hannes Alfvén would agree. In a plasma, shock waves and currents are coherent. Shock waves generated during past cosmic upheaval on Earth interacted with solid ground in whatever matter they touched.

They echoed from solid surfaces and shear zones. They vibrated and wobbled and crawled across the earth, making piles of debris we call mountains. They

interacted in patterns of constructive
and destructive interference and
resonated in harmonic frequencies.

They left those patterns in
the mountains for us to see.

Shock waves are, after all, plasma sound
waves. They are tangible, falsifiable, and
accessible. They can be reproduced.

I've been noodling how to make a solid
tetrahedron in a wind tunnel.

The problem is getting adherence.

If dry powders or sands are used, they
won't stick. If wet anything is used it'll make a
mess. Nature doesn't care about messes
and splatters stuff everywhere. But a wind
tunnel is an expensive piece of
equipment that doesn't stand well to
supersonic sandblasting. Magnetic dust
and magnet won't work to adhere a
tetrahedron, because the dust
would take the shape of the magnet.

I can't get an ionized supersonic wind
generator without a Chinese electric
turbine and so far the Chinese aren't
answering my calls. Neither is NASA.

Funny, it's the same phone number. I think

maybe a big drop of glue or epoxy could be used as the obstruction in a wind tunnel if it were performed while tacky.

It should mold to the shock wave separation bubble without flying away.

Anyway, it's not an easy problem. But wait, nature provides proof. We don't need a wind tunnel, the atmosphere itself is our laboratory.

Iron meteors enter Earth's atmosphere at supersonic speeds. Friction with the atmosphere melts and ablates the iron.

Ablation patterns provide the proof of shock wave tetrahedrons. Look at figure 10 and the several other images to follow which show molded iron shock tetrahedrons at the tips of flow patterns made by separation bubbles.

This is tangible proof made in conditions similar to theory. This piece of data is a start to prove science as we know it is mostly wrong.

Well, okay, hugely wrong. Massively wrong. These meteorites should be prima facie evidence of Electric Earth Theory.

This is a meteor of iron with an ablated face caused by its supersonic

entry into the atmosphere.

Heat, pressure, and supersonic shock waves molded this face. The supersonic wind, impacting the meteor head-on, segregated into bubble-like pressure regimes. Low-pressure zones where wind velocity was greatest created scoops and divots.

High-pressure zones segregated these air flows, leaving sharp dividing ridges and triangular separation bubbles where the airflow separated from the meteor.

The smooth divots are impressions of flow streams, and the triangles appear at their tips. The change in direction as airflow separated from the object, created separation bubbles which molded

the fluid iron. Molten iron was pushed from the divot like pudding, and held in the high-pressure separation bubble, molding it to form, in the form of the bubble. Look closely and you'll find where some tips broke off. The entire divot is, in effect, the separation bubble.

It is literally bubbles formed with skin effect from shock waves that hold tension like a bubble's film. It creates

Y-shaped structures around a
"triple point" where shock waves and bubbles
meet, sometimes called the "Lambda Structure."

In the case of mountain building, winds
laden with dust passed into the bubble,
and were heated, compressed and slowed
to a stop passing through the shock wave.

The ground was statically charged and
adhered the dust, mud, sand, stuff falling
from outer space or whatever the wind carried.

Hence the dust piled in the shape of a
bubble - a tetrahedron. Take
a look at the similarity in these
tetrahedrons formed by a hot
blast of air in South America
to the ones along the
edge of the meteorites.

Really, it can't be more obvious. It's
visually apparent how a non-rotating,
down-burst wind layered the dust in
a consistent pattern of tetrahedrons
formed by separation bubbles where the
wind impacted and deflected from the land.

This was made by a blow-torch aimed
at the ground - the hot exhaust of a
mesocyclone that churned in a plasma

storm of Jovian proportions. The side of the tetrahedron facing the wind will be a perfect isosceles triangle if the wind strikes normal to the object.

If the wind hits obliquely, is interfered with by adjacent shockwaves, is subsonic, or transient in its velocity or if the dust load deposited doesn't fill the entire separation bubble, it will deform the tetrahedron.

You are not suffering from pareidolia. A triangle is a triangle, and that is what you're seeing.

We could be scientific and take measurements to prove these are triangles, but I think we can use common sense. Here are more examples of tetrahedrons formed on iron meteorites. The size of the separation bubble depends on the size of the object because that determines the area of wind moving past the object and therefore the size of the shock wave.

So, the bigger the meteor, the bigger the tetrahedrons. The constituency of the rock also affects the roughness of the surface, whether it's chunky or smooth, as they say. Regardless of many variables,

the triangular face of separation
bubbles are distinct and appear exactly where
they should if one traces the wind patterns
Jeez, somebody out there
must have noticed this before.

I'll bet there's some obscure,
mustachioed PhD at the Upper-Siberian
Institute of Aerodynamic Widgets who
knows all about this. Please call me.

In a completely different circumstance,
lightning-generated shockwaves also
produce tetrahedrons. The next
four figures are photos of an
iron-bearing rock that has been struck
by lightning, partly melted and vitrified,
with raised triangular layers where fluid
metal was trapped by separation bubbles.

The lightning left a yellowed, chemically
altered trail where it surface-
conducted to a shoe-shaped pool where
the rock melted. The arc likely met some
discontinuity, or crack in the rock where
it burrowed in, creating a hot spot.

Cutting beneath the skin of the rock
created an arc flash that trapped
triangular sheets of molten rock in the

separation bubbles, pointing outward from the center of the blast, shown in the following images. The final image shows a track of very small triangles marching out of the molten puddle.

The amplitude of the triangle is related to the cross-section of the wind that created it. What this little trail of arrowheads means is that a very narrow supersonic jet stream blasted from the lightning bolt and made this channel in the rock, and you can see exactly the path it took.

Can you find any other tetrahedrons surrounding the track outlined?

They are aimed perpendicular to the narrow track and larger amplitude. I counted six good-sized ones, but there are a bunch of small ones, too.

The arc channeled a narrow, focused jet, while at the same time, shock waves blasted outwards in a diffuse wave that produced larger amplitudes. There is also a second lightning track from the bottom right corner. There are shock patterns that correlate with a blast from each lightning track. For global-scale winds, separation bubbles become quite large. Figure 17

gives you some idea of scale.

The separation bubble that creates a mountain is just the very foot of a shock wave structure much more complex than a simple tetrahedron.

There are flow paths in, around, and behind the separation bubble that all leave their mark on the ground. If the wind keeps blowing dust at supersonic speed, the tetrahedron formed in the separation bubble blocks the air, forming a new obstruction to the wind, and a new separation bubble forms in front of it, trapping more dust that layers in the triangular shape of its windward face.

This blankets the tetrahedron face with layer after layer of deposit with each pulse of the wind. Each pulse of the wind may carry different constituents of dust and charge, so each layer deposited has its own characteristic chemistry.

It is exactly the same way wind makes sand dunes, except supersonic shock waves are rigid and straight and make sharp angles instead of soft curves.

Sand dunes are formed in the high pressure

low-speed zones beneath an undulating wind,
and the troughs are low pressure high-speed zones. The high-speed winds carry the sand to the low-speed zones, and that's why they appear in waves. Static electricity plays a role in sand dunes, too, lofting and adhering the sand, and so it does with shock waves. Each layer's chemistry reacted with adjacent layers. The matter laid down still swam with free charge. Migrations and recombinations focused at the layer interfaces, still hissing and vibrating with shock wave echoes, where dissimilar matter made reactions, drawing ions from the surroundings. Charge built an electric field across these interfaces in the way a capacitor makes an electric field. Seams became hardened and mineralized, and sometimes evacuated by gases evolved from reactions that channeled caverns as they expanded. The electric field, transverse to the seam, is why most quartz veins grow transverse across rock seams. They are the electrical expressions left by shock waves and electric fields.

The consensus theory of hydrolyzed silica migrating into rock seams by hydrothermal action isn't entirely wrong, but it misses the role of electricity and how it would accelerate the pace of crystal formation. It also misses the role electricity plays in the migration of conductive metals into quartz veins and a number of other things. Shock waves took different polarities. They generated lightning. They connected ground to cloud in a sheet of plasma current. They ionized air, water vapor, and dust. They melted metals. They vibrated and electrified the ground. They segregated airborne matter with electrostatic filtration. They compressed matter in geometric shapes and charged it with current to fuse it together. They formed plasma networks of active circuitry. They patterned the wind in diamonds that glowed, with sparks shooting through. They turn biological beings to jelly. Shock waves are a pathway for discharge, a current generator, and a capacitor across the walls of shock "membranes." They are a big piece of Earth's circuitry

and a principal action of nature.

They are the most obvious, prolific,
and easily defined proof that Earth was
formed, and still performs as an electrical body.

And they are one of the most beautiful.

After all they produce these mountains.

I want to give special thanks to

Stefan Ahmala, who took the photos of
the rocks in Finland.

Stefan discovered Thunderbolts recently,
and like most of us, arrived here because
he knew the rest of the world is crazy.

Stefan is very enthusiastic, and
immediately recognized these rocks
for what they are and contacted us.

Wouldn't you know I was writing an article
on tetrahedrons when his photos arrived?

Well, that is how things resonate in the

Electric Universe, isn't it? We are all

the same ether. It is what is. We

can either resonate in harmony, or

make destructive interference.

That's our free will.

[Music]

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you, there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you,

and there is nothing to fear.

The Archetypes

Reconsidering the origins of world mythology

It was perhaps 15 years ago that we

first used the phrase of "meeting of myth

and science" to describe

The Thunderbolts Project.

But now, as

we're continuing to

attract a crowd of newcomers, it seems

that a little background could be useful.

My original inspiration for this work

came from the controversial theorist

Immanuel Velikovsky and his 1950

bestseller 'Worlds In Collision.'

It was that inspiration that provoked my own

lifelong investigation, which is focused

on the origins of ancient myths and

symbols bringing to light hundreds of

mythic archetypes and
connecting these patterns to
extraordinary planetary
events in ancient times.

In 1972, my brother Stephen
and I had published a
special issue of the student journal *Pensee*
titled *Immanuel Velikovsky Reconsidered*.

To our surprise, the
issue became a best-seller
at local campus bookstores
encouraging us to advertise
the publication internationally and
commit to a full series on Velikovsky.

In the course of this series, in 1974, the
American Association for the Advancement
of Science, the AAAS,
held a symposium on
Velikovsky at its annual
meeting in San Francisco.

Shortly thereafter, I
submitted a proposal to
Doubleday, the world's largest
publisher at the time, for
a book growing out of my own research,
the book to be called *The Saturn Myth*.

My proposal included an article I'd written, titled 'Saturn the Polar Night Sun' and I included an outline of a comprehensive interpretation of ancient myths and symbols.

Starting with the Velikovskian perspective, the article claimed that in ancient times Earth and Saturn were joined in a unique planetary system unlike anything known today; and it suggested that the vast world of ancient myths and symbols had its direct inspiration in this human experience.

To prepare for the task, I had learned French and German enabling me to translate key sources not available in English.

I also acquired a ground-floor knowledge of the Egyptian hieroglyphic system without which no satisfactory interpretation of Egyptian mythic and symbolic content would be possible, since my work would challenge virtually all common understanding on this subject.

Happily, the communication with Doubleday led the company to offer me the largest advance they had ever given to a previously unknown author.

As for the rest of the story, completing the book proved to be an endurance test beyond anything originally anticipated, and yet, when Doubleday published *The Saturn Myth* in late spring of 1980, I'd really only opened the door to the four decades of study that followed.

The Saturn Myth set forth a radical idea.

It claimed that every ancient culture memorialized an extraordinary phase of human history called 'the age of the gods.'

Though the words could have a familiar ring today, the historic meaning was lost many centuries ago and that meaning is precisely what we've claimed to recover.

For many years now, I've used the image seen here as a ground floor referent in an uncompromising analysis of global patterns, and I've claimed that every

mythic theme since the emergence of the
great civilizations can be explained by
what happened to these bodies.

To which I've added, just
as surely, the observation
that no archetype ever named
has the slightest connection to any
natural experience today.

The archetypes closest to the heart of the
reconstruction would include: memories of
a primeval Sun before the
present Sun, remembered also as
the father of creation, the
ancient celebration of this
power as the celestial prototype of
kings, the enigmatic location of the
primeval Sun at the celestial pole, the
center of the sky around which the
heavens visually turned, the
unexplained identity of this
primeval Sun as the planet
Saturn in the early astronomies,
identity of this supreme god as
a fallen or displaced power.

In fact, no description
of that earlier condition

is more to the point
than that given by the
Babylonian astronomer priest
Berosus, in the 3rd century BC.
Berosus observed
that in an earlier time the planets were,
quoting here, "so arranged in one row
that a straight line may
pass through their spheres."

What a remarkable and
preposterous idea, a perfect and
sustained planetary conjunction,
something never seen in our time.
And yet a stunningly accurate description of
the ancient polar configuration, to which we've
devoted priority attention
for more than 40 years.

In the months
ahead, we intend
to show that there was indeed a
myth-making phase of human history
from which the full spectrum of
ancient ideas including hundreds
of mythic and symbolic archetypes
arose, no coincidence involved.

Our goal will be to expose the

unified substructure to show that one
ancient experience recorded through a
diversity of mythic interpretations reached
across every domain of commemorative activity.

There's a reason why we state our
conclusions with such confidence.

Simply grant the reconstructed
events, and all well
documented archetypes
become predictable.

As strange as this
may seem, after the
myth-making epoch no new archetypes
arose, not a single one.

Now, that is
a critical fact.

One that can force an
investigator to ask what set the
myth-making epoch apart
from the era that followed?

But now of course the
implications should be clear, the
archetypes arose in response
to extraordinary celestial provocations,
and nothing in today's natural world
would lead one to expect a single

archetype that has been named.

For us, no prior cause

other than the dynamic and

evolving polar configuration

will ever meet that test.

In retrospect, it's not

surprising that, month by month, new

information has continually

expanded the picture.

I say not surprising because

every ancient culture

on Earth memorialized a

prior rule of towering gods.

So as the underlying cross-cultural

agreement stands out, the radical

contrast to today's natural experience

becomes progressively more obvious and

persuasive, including:

the ancient identification of the Mother

Goddess as the planet Venus, the

corresponding identity of the Venus

goddess as the luminous eye, heart and soul

of the sovereign power, the hub of the Cosmic Wheel

and the animating outflow or radiance itself.

Worldwide myths of a legendary

Warrior and Hero born from the

Mother Goddess to vanquish chaos
monsters, global myths and symbols of the
ancient conjunction or marriage of the
Mother Goddess and Warrior Hero, meaning
of course Mars and Venus,
and finally the ancient memory that
unifies the planetary traditions, the
memory so powerfully expressed by
Berosus, of planets previously gathered
along a single axis.

For several decades, I've described a system
episodically punctuated by planetary
instability and world altering
disruptions, all occurring
in an environment unlike anything
we experience today.

It's that contrast that
led me to encourage
investigation by others, under
the obvious acid tests.

For an independent researcher,
the tangible and concrete
nature of the reconstruction will
leave no ambiguity as to implications.

If the claimed events occurred,
what would you expect to find?

And most critically, does the
reconstruction leave any recognized
archetypes of world myth
and symbol unexplained?

No other test than
this should be needed.

Welcome to Space News from the Electric
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In Part 1 of this two-part
presentation, Dr. Raymond Gallucci began
his independent mathematical analysis of
cosmological alternatives to the
standard interpretations of cosmic
redshift. For many decades, astronomers
have believed that cosmological redshift
indicates “stretching” of light in an
expanding universe. The higher an
object’s redshift, the farther away it is
from our perspective on Earth. However, as
we've reported exhaustively on this
series, an imposing body of scientific
research contradicts that perspective.

Today, Dr. Gallucci concludes his
analysis on the mathematical
plausibility of the respective
alternative redshift explanations by
scientists Halton ARP and C-C Su. Now, let me
switch over to the quantization concept
and I'll now read from quotations from
Halton ARP’s talk given to the Kronia
group at the conference in Portland in

Oregon 2000. He was talking about his theory on intrinsic redshift. "in the early 1950s, they saw thin connections between galaxies and radio lobes, going from the central galaxy out to the radio lobes on either side. This material is actually being ejected; that's about the only way you could get this configuration. if the galaxy is going to eject something, it's going to eject along the path of least resistance, which is out the poles of the galaxy. You have this nice relationship that, as the quasars proceed out as time goes past, they age and drop, in preferred quantized redshifts. What I, Halton Arp, have interpreted this to mean, is that these quasars move out, evolving to low redshift." And if you look at the various videos or some of the websites, or even the books that Halton Arp has published, he has some very nice pictures that show galaxies, apparent galaxies with a series of smaller galaxies at various distances from the galaxy, with these

quantized redshifts. So, if we look at the regression fits that I had back in slide 10, again there were five regression fits of which three I selected as being possible contenders for calculation for quantization. What I have here, I have the five observed redshift peaks, their time increments. Again, the redshift drops as the time, or the distance, increases. So, you'll see that the time increments go from 5 down to 1, while the Z-peaks go from 0.3 up to 1.96. I then took the three best regression fits; the first was a function of the square root of the mass ratio again, the mass of the quasar or QSO, to the mass of the Sun. The second fit was based on the natural log of the ratio; and the third was based on the ratio to the two-thirds power. And I calculated the mass ratios that would come from these formulas. And their average is shown in the rightmost column. So, those are the QSO mass ratios for the various Z-peaks and the text there reads, "From the

three best regression fits, estimate the QSO mass at each of the main five redshift peaks. If there is a quantization phenomenon as the QSO is ejected and travels outward, with redshift decreasing in specific increments (these are increments of time or distance), we expect some relationship between redshift, and therefore mass, of the QSO with time and/or distance. With time or distance increment 1 being associated with the newly ejected QSO (that's shown as time increment 1), it has a redshift of 1.96, a scaled mass, mass ratio of about $2E+9$ It's the largest redshift and it's also the largest mass, and increment 5 associated with the oldest QSO; that's shown in the first row, that's the redshift of 0.3, the scaled mass of $1.65E+8$, about a factor of 10 lower.

So again, Arp's theory is that as the QSOs are ejected, they travel outward from the parent galaxy and their redshifts drop with time, which is the

same as with distance, as their mass decreases. Now again, going back to the previous slide, I'm going to do another regression, using the average mass ratio in the rightmost column, at the various time increments 5-4-3-2-1, which are analogous to distance increments.

You can see the results there, on the graph we have the mass as it's scaled to the mass of the Sun, versus time or distance increment. And again, I had five regression fits; the exponential in purple fits the data best, passing through all the quantized values. The natural log in blue is nearly as good; the inverse time shown in green is slightly weaker, but it's still acceptable. If you look at these you'll see that all three of these, the ones highlighted in yellow, stay above zero through the fifth increment. The other two that are still decent fits, hit down to zero around 5, so I didn't work with those any further. The question asked is, do any of these in yellow highlights, suggest the

quantization mechanism? Again let's return to Halton Arp's talk at the Kronia conference group in Portland, and I'll quote from him again.

Here he's now talking about particle mass being variable with time, and to quote Halton, "Einstein's solution in 1922, made an approximation which I, Halton Arp, think was wrong. The particle masses were constant everywhere in the universe - that was the approximation by Einstein. With this approximation, they got the Big Bang solution and they predict expanding coordinates, singularities at time equals zero, and this demands that all the redshifts are velocities of recession. Jack Narlikar and Fred Hoyle did not assume that particle masses were constant in time, and they got a very simple solution that the masses varied with the time squared. That is, as time went on, they communicated with more and more of the universe, and their mass grew. This is a Machian theory: if the electron mass- when it makes its transition in the atom

and emits the photon- is small, the photon is weak and it's red shifted. As the electron grows in mass, the photon which is emitted, is stronger and it drops in redshift. So, this is a perfect explanation for what we've been seeing, that younger objects are highly redshifted and the sacred Hubble constant is just the inverse age of our galaxy. Continuing with the Halton Arp's talk at that conference, if you start in the galaxy nucleus, you get a high density in the center of this active nucleus, this mysterious engine where the stuff is created. The new particles are in that environment and they're gaining mass from their environment very rapidly. When they step out of the nucleus, they go into a different, much lower density, environment into the bulge of the galaxy, and then, if they come out in the plane of the galaxy or along the axis, they drop here into the local group. These are enormous drops in density and finally when they drop out of the local group of galaxies, they take another step down

into the local supercluster of galaxies,
and out the local supercluster they take
yet another step down. These particles
will be gaining mass very rapidly and
the redshift will be dropping very
rapidly and then it finally levels off.
And there goes another step in the drop,
and there are just about six drops and
there are six major quantization levels,
and he quotes the values of 1.96, 1.41,
0.96, 0.6, 0.3 and the one that was postulated at
a very low 0.061. And the
following slide, this is taken again from
Halton Arp's talk at the Kronia group.
He presented a series
of slides that show these drops in
density and I made a composite schematic
from his presentation; and there's
incremental increases in particle mass
and corresponding quantized drops in
redshift. If we start from zero, which is
at the top, that shows the galactic
nucleus and the leftmost axis there
shows drops in density, while the left
axis, the vertical axis and the y-axis,
the x-axis is time/distance as the

QSO moves outward. So, we start from zero which is the galactic nucleus, then proceed to the first step, which is the drop to the galactic bulge, which is step 1. Following that, we go to the galactic plane or axial ejection which is shown as step 2. That then proceeds to the local galactic group, which is step 3. Next goes to the galactic super cluster, which is step 4 and finally then there's a step 5, which is postulating, he does not specify what that is, but again, the key here is that Halton Arp sees the stepwise incremental increases in particle mass corresponding to the quantized drops in redshift. So this is his explanation for the quantization of redshift. Now I'd like to talk a little bit about the theory of C-C Su, from whom I use the redshift data. This is from an article taken from the arXiv website in physics in 2006. According to Su is the following. According to the ejection model, quasars are formed from the gas of atoms, plasma and dust ejected from the parent active

galaxy. Suppose that the material of the gas cloud together forms a local ether. The gravitational potential on the surface of the quasar is extraordinarily strong. The wide variation in redshift can be ascribed to a variation in density and size of the gas cloud, which can be due to the strength of the initial ejection from the parent galaxy. The speed at which the cloud moves away, to the gas expansion, to the fragmentation of glass clouds, and to star formation. So, he has multiple explanations for the wide variation in redshift. Due to the non-uniformity in particle velocity and density, or to some internal disturbance, the quasar may break into pieces of identical or similar sizes. Suppose the fragments are also spherical and the density remains unchanged. Thereby their radius is shorter than the previous one by a factor of $2^{-1/3}$ power; and the gravitational potential on the surface of either fragment will decrease by a factor of $2^{-2/3}$ power.

And after the n th splitting in half, the
 gravitationally induced intrinsic redshift
 is given by the formula shown there,
 $1+z_n$ equals the square root
 of those terms there. Continuing with
 gravity induced quantization from C-C Su,
 what are the terms inside the square
 root on the previous formula? The $1 + z_0^2$
 minus 1, denotes 2 times the
 normalized gravitational potential,
 corresponding to the 0th redshift,
 z_0 . For the cases of very high
 redshift, this can be approximated as $1 + z_0^2$
 plus Z to the n equal to 1.26
 to the minus n times $1 + z_0^2$. By
 adopting the preferred redshift value
 of 1.956 as the 0th redshift once
 again, this formula leads to the
 prediction that the preferred
 intrinsic redshifts are a series
 starting at z equal to 6.08,
 and shown there are the series
 down to 0.06, with n
 ranging from -4 to +9 by integers.
 And the ones highlighted in red,
 are the ones that have been observed.

You notice that the 0.06 isn't shown there. But what see C-C Su observes is that a redshift distribution around 0.6 may actually be a merger of two close distributions around 0.71 and 0.49 which are two that he predicts, and that just happens to be the average of the two, 0.6. So, he does get the 6 key redshift peaks from his formula. Low redshift peaks are expected to be smeared, since other affecting factors of uneven splitting, gas expansion and star formation, will accumulate with time.

Now, my observation is that unlike Arp's theory, Su's does not postulate the series of quantized redshifts represents QSO evolution with time and/or distance, although he does agree that QSOs are formed by injection from a parent galaxy. His quantizations are static for each QSO and dependent upon various initial conditions and interactions until the QSO "stabilizes" and exhibits one of the characteristic, preferred redshift values.

So, whereas Arp believes that QSOs are ejected and they evolve with time, as they move outward from the parent galaxies and the redshifts drop in quantized amounts with variable particle mass, Su's belief is that they're all ejected at the given redshifts that are already quantized due to other factors. It's not a case of each QSO going through an evolution and a change in its quantization of redshift. Now I'm going to offer some speculation on my part. From Halton Arp's theories, the QSO quantized redshift values with QSO distance, or time from the parent galaxy, which could be either or both a time or distance phenomenon. QSOs are ejected with high redshift, which seems to correlate well with high mass, therefore high density, provided the "emitting nucleus" remains relatively constant in size. Arp bases the observed quantization on variable particle mass, which increases with time and correspondingly with distance, as the particles evolve and travel outward from higher to lower

density regions, in a piecewise, not continuous manner. If you accept Arp's variable mass postulate, this appears reasonable. For C-C Su, the quantized QSO redshift and mass results from initial conditions and subsequent interactions. Presumably, the spatial distribution around the parent galaxy, whereby the higher redshifted QSOs are closest and the lower one's farthest, is the result of the initial energy of the QSO's ejection, its initial size and various interactions with surrounding material. The more energetic ones travel outward farther and interact more with material, thereby losing more mass and showing lower redshift with distance. Regarding Su's theory, although he predicts at least some of the quantized values, he does not offer a definitive reason for the quantization as Arp does, which is variable particle mass. Therefore, in my opinion, his theory appears less plausible than Halton Arp's. Continuing with my speculation, I'm going to offer another possible mathematical

observation for quantization that could have a yet to be identified physical basis. My simplest equations that reproduce well the quantized decreasing QSO redshifts as a function of uniformly increasing time or distance intervals, suggest an exponential decay, or roughly a decay as a function of inverse time, or distance. I'll just go back a bit to that earlier slide for familiarity. I'm referring to the slide here where I show the mass, the scaled mass relative to the Sun's mass, as a function of equal time or distance increments. And the one in purple was the one that showed an exponential dependence: e to the minus 0.6. So, what I said is the exponential decay is a fairly common physical phenomenon. For example it's typical of radioactive decay, but the discrete aspect appears to be unique to QSO redshifts. It's not a continuous decay; it is again in a stepwise fashion; at least from what's been observed. An inverse distance

dependence, which was also shown on the earlier slide, the inverse distance one is the one in green, where we have distance or time to the -1.2 which is basically inverse time or inverse distance dependence. An inverse distance dependence is characteristic of a magnetic or electric field around an infinitely long string of charges, or current-carrying wire, and this suggests Electric Universe theory, where we have intergalactic Birkeland currents pervading the universe. Galaxies form where these currents flow and could exhibit surrounding magnetic or electric fields with the inverse distance dependence. What is more difficult to ascertain is the quantization aspect.

I do make the following mathematical observation, that the quantization of both QSO mass and redshift can be represented very well by a sine curve with decreasing amplitude of the same decaying exponential form as my previous equation. And that's shown on this next slide here. This is my own

speculation; what I've plotted here is the scaled mass which is the scaled mass, or the quantized redshift because they're related, as a function of the time or distance increment. The formula at the bottom M/M_0 equals..... The equation on the right is actually an absolute value, and that's shown by the bars, and that indicates absolute value.

I have a scaling factor of $2.73E+9$, it's a scaling factor which is corresponding to the quantized masses.

I have a shift factor for the sinusoidal variation, -0.55 and that enables me to set the peaks at the integer values.

Therefore the peaks for each of the sine curves come out at integer values of 1 through 5. You'll notice that the peaks occur at scaled masses of $2.05E+9$ etc., for increments 1 through 5, and what I reproduced there is the table earlier, where I showed the average scaled mass ratios as a function of the Z peaks, the redshift peaks and the increments. And the arrows there show how well the sinusoidal curve, the peaks

correspond to those values. They all align very well with them. In fact, the comparison with the observed value shows agreement to within ten percent. Now I don't know what phenomenon might exhibit a sinusoidal behavior with exponentially decaying amplitude. Could it be some form of harmonic dependence? I'm only offering this as food for thought. I just thought it was rather..., I know if it's pure coincidence or what, that I was able to come up with a sinusoidal function that matched the Z peaks, or the mass ratios that result from the Z peaks. The Z peaks are shown in red, decreasing trend, the mass ratios are shown in the dotted curves here, and the predicted values as shown, the five here at the tops of the peaks, align very well with the ratios that were derived from the regression analysis using the much earlier data from C-C Su. So, finally in summary, my approach to the topic of quantization of intrinsic QSO redshifts, especially based on the lifetime work of Halton Arp, was purely

mathematical - developing a theory for
intrinsic quantized QSO redshift is
beyond my experience. I postulated a
geometric explanation of intrinsic
redshift possibly dependent on mass to
the two-thirds power, related to possible
attenuation of light energy (and
therefore frequency) within the emitting
nucleus of a QSO, compounded by a further
dilution (and therefore energy and
frequency) decrease due to spread over
the surface area. To do the quantization
aspect justice, I summarized two theories
by other experts and examined their
plausibility within my realm of
knowledge. Finally, I offered at least a
mathematical representation of the
quantization aspect as food for thought.
That concludes this presentation.

00:21:05,100 --> 00:00:00,000

[Music]

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at Thunderbolts. info

What do astronomers see when they gaze at the cosmos?

Thanks to incredible technological leaps the universe is now "visible" to a greater extent and in finer clarity than ever before.

However, the detection and measurement of the remotest celestial phenomena is not as straightforward as it might seem.

Like all scientific investigations, space exploration is a subjective human endeavor and it stands to reason that the more remote the phenomena, the more open it is to interpretation.

The evidence for the theoretical mechanisms that are thought to cause the largest scale cosmological phenomena, including unfathomable emissions of electromagnetic energy, are gleaned through inference by necessity and what scientists infer is governed by what they believe.

The fundamental belief behind more than a century of space science, is that the predominant force in the cosmos is gravity. And even well into the space age, astronomers continued to model a

universe in which plasma and both electric and magnetic fields played no significant role. In more recent years, astronomers have acknowledged that magnetic fields exist in space and may even play an organizational role at all scales in the cosmos. However, this revelation of the so-called "Magnetic Universe" has presented both intractable problems and paradoxically, opportunities for scientists to try to preserve ad hoc the traditional Big Bang gravity-centric cosmology.

A demonstration of these efforts can be seen in the recent Quanta Magazine piece titled, The Hidden Magnetic Universe Begins To come Into View.

The article describes scientists' attempt to date cosmic magnetic fields back to the primordial era after the hypothetical Big Bang, an effort which they hope, might resolve the so-called Hubble tension, or the apparent accelerating expansion rate of the universe. The article states, "Anytime astronomers figure out a new way of looking for magnetic fields in ever more remote

regions of the cosmos, inexplicably

they find them...The question is:

Where did these enormous

magnetic fields come from?"

Astrophysicist Franco Vazza states the

problem, "It clearly cannot be related to the

activity of single galaxies or

single explosions or, I don't know,

winds from supernovae. This goes

much beyond that." Of course, as

we've explained many times, the real

reason cosmic magnetism is considered so

"inexplicable" is because of most space

scientists ongoing, a priori dismissal

of electric currents in the cosmos.

This posture is described in

the Quanta piece as follows,

"...magnetism is the only force apart from

gravity, that can shape the large-scale

structure of the cosmos, because

only magnetism and gravity can

reach out to you across vast

distances. Electricity, by contrast,

is local and short-lived, since the

positive and negative charge in any

region will neutralize overall. But

you can't cancel out magnetic fields; they tend to add up and survive." And here, we see emphasized institutionalized sciences' refusal to explore the well-developed concepts of plasma cosmology. For many decades, astronomers have assumed that plasma is a superconductor, which leads to a further assumption of so-called "frozen-in magnetic fields" in space.

However, plasma physicists have known for many decades that when "clouds of plasma" move relative to each other, they generate electric currents in each other, as shown experimentally in plasma laboratories. Electric currents in plasma take the form of twisted filament pairs, and these follow the direction of the ambient magnetic field. The filamentary current is electrically insulated from its surroundings. Experimental plasma physics has shown that charged bodies, embedded

in plasma, produce around themselves a double layer, or what is also known as a Langmuir plasma sheath. This protective cocoon of plasma contains most of the voltage difference between a charged body and its surrounding plasma. As Nobel prize winner Hannes Alfvén wrote in his 1987 paper, *Cosmology in the Plasma Universe*, “Space is filled with a network of currents, which transfer energy and momentum over large or very large distances. The currents often pinch to filamentary or surface currents.

The latter are likely to give space, also interstellar and intergalactic space, a cellular structure.” Of course, both the vast networks of interstellar and intergalactic filaments, as well as the lifelike cellular structures seen in celestial objects such as nebulae, are seen in greater detail with each passing year. And

as we outlined in a recent episode, Alfvén also emphasized the extraordinary cosmic significance of the well-known electromagnetic mechanism, called the Bennett pinch, or the Z-pinch, the process by which stars form, rather than gravitational collapse and accretion. Alfvén's outrageous prediction that stars form like "beads on a string" along vast networks of filaments, is one of many such predictions confirmed by space discovery.

The evidence for cosmic electric currents on an even much vaster scale has grown increasingly undeniable. As we reported last year, in 2019 a team of scientists published their analysis of a vast radio emitting filament of plasma which stretches across 10 million light years, connecting two clusters of galaxies called Abell 399 and Abell 401.

The filament which the scientists discovered using a low frequency radio telescope called LOFAR, also marked the first time scientists

have found a magnetic field connecting two galactic clusters. The radio emission from the filament is called synchrotron radiation which is produced by the tremendous acceleration of electrons along the filament at relativistic velocities. As stated by astronomer Matteo Murgia, "We typically observe this emission mechanism in action in individual galaxies and even in galaxy clusters, but never before has a radio emission been observed connecting two of these systems."

A sciencealert.com report on the discovery states, "...the electrons are covering way more distance than is expected - which means there has to be another element at play."

In the aforementioned Quanta Magazine piece the description of the radio-emitting magnetic filament inadvertently confirms the electrical interpretation. The article states that the scientists "... inferred the presence of a

magnetic field in the filament between galaxy clusters Abell 399 and Abell 401 from the way the field redirects high-speed electrons and other charged particles passing through it. As their paths twist in the field, these charged particles release faint synchrotron radiation.” However, the scientists seem not to recognize what this must mean. The release of “faint synchrotron radiation”, means the charged particles are losing energy and thus they cannot continue to radiate over cosmic distances, unless they are continually receiving electrical energy, which constitutes an electric current. We note that as far back as 1992, Dr. Anthony Peratt of Los Alamos laboratories, himself a student of Hannes Alfvén, discussed the evidence for “supercluster scale” electric currents in his textbook, *Physics of the Plasma Universe*. In the chapter titled, “Currents in the Intergalactic Medium” Perratt writes, “One of the most

compelling pieces of evidence for the existence of supercluster-sized currents comes from the discovery of faint supercluster-scale radio emissions at 326 MHz between the Coma cluster of galaxies and the Abell 1367 cluster." In Peratt's view, these intergalactic currents are spiraling Birkeland currents which will accelerate charged particles in circles, which is to say orthogonal to the current's direction, which must then generate synchrotron radiation.

Unfortunately, the scientists cited in the Quanta Magazine piece are exclusively seeking answers in the so-called "primordial universe" after the hypothetical Big Bang. The hope for believers in Big Bang cosmology is that these answers could resolve the problem of the apparent accelerating expansion rate of the universe.

The scientists cited in the Quanta article examined computer simulations which attempt to demonstrate the effects of hypothetical primordial magnetic

fields if they were present before an epoch called Cosmic Recombination, a hypothetical period a few hundreds of thousands of years after the Big Bang in which charged electrons and protons first became bound to form electrically neutral hydrogen atoms.

Their efforts to resolve the so-called Hubble tension are described as follows, "Cosmologists calculate how fast space should be expanding today by observing ancient light emitted during recombination.

The light shows a young universe studded with blobs that formed from sound waves sloshing around in the primordial plasma."

"If recombination happened earlier than supposed due to the clumping effect of magnetic fields, then sound waves couldn't have propagated as far beforehand, and the resulting blobs would be smaller..."

"The upshot is that smaller blobs mean a higher inferred cosmic expansion rate - bringing the inferred rate much closer to

measurements of how fast supernovas
and other astronomical objects
actually seem to be flying apart." The
question we began this Space News with,
what do scientists actually see
when they gaze into the cosmos?
is especially pertinent here. Of course,
the first assumption the scientists make
is that the Big Bang actually happened.
As we've discussed since the inception
of this series, it was decades ago that
the renowned astronomer Halton Arp
showed that faint, highly
redshifted objects like quasars,
are intrinsically faint because of
their youth and not their distance.
Arp and others such as Jeffrey and
Margaret Burbidge categorized
numerous so-called anomalous
objects of very different redshifts
in impossibly close association with
one another. Redshift is an intrinsic
property of distinct galaxies and quasars
and is not due to some modification of
the light on its journey to Earth. In
other words, cosmic redshift is not a

reliable indicator of an object's distance and velocity of movement away from an observer on Earth. This view is compatible with the Electric Universe antidote to the so-called "accelerating expanding universe," which does not rely on the invention of dark energy. As Thunderbolt's chief science advisor Wal Thornhill explains in his analysis of type 1a supernovae, "...the 'discovery' of the acceleration of the expanding universe, is an interpretation based on total ignorance of the real nature of stars and the 'standard candle,' the supernova type 1a.

A supernova type 1a is supposed to be due to a hypothetical series of incredible events involving a white dwarf star. But as I have shown, a supernova is simply an electrical explosion of a star that draws its energy from a galactic circuit....The 'standard candle' effect and the light curve is simply due to the circuit parameters of galactic transmission lines

which power all stars.” In plasma cosmology in the Electric Universe, the universe is of unknown extent and origin and the electrical nature of both stars and galaxies along networks of Birkeland current filaments does resolve so-called inexplicable cosmic magnetism. It was many decades ago that plasma scientists began reproducing the evolution and form of galaxies through simple experiments with electrical discharge.

The aforementioned Anthony Peratt recreated barred spiral galaxies in simulations with interacting twin current filaments as seen on your screen. Unfortunately, long ago the belief in the Big Bang solidified into a quasi-religious dogma and today institutionalized science continues to devote massive resources to promoting and affirming Big Bang cosmology, while ignoring the well-developed and experimentally verified concepts of plasma cosmology whose

predictive success only grows
with each year. It is ironic
that proponents of the Big Bang look
to mysterious magnetism to save the
untenable hypothesis,
since it is magnetism that is the
clearest indication of the electrical
circuitry pervading the cosmos.
Electric currents generate magnetic
fields and it is only electric currents
that can create the impossibly
well-ordered cosmic-scale
magnetic fields that
astrophysicists detect with
increasing regularity, a
phenomenon never predicted by
proponents of gravity-centric cosmology.
However, we do see some glimmer of hope
among scientists studying the local
picture in our own solar system
who are willing to infer the electric
currents required for the magnetic
fields in the environment near Earth.
The electric current systems near
our planet are the
subject of the 2018 book,

Electric Currents in Geospace and Beyond.

The American Geophysical Union's Earth
and Space Science News

published a summary of the book

titled Electric Currents in

Outer Space Run the Show.

The summary states bluntly "It is

now understood that outer space is

fundamentally electrical in

nature." On the challenging

task of measuring electric currents in

space, the authors write, "Since electric

currents are comprised of moving charged

particles, such as ions and electrons,

the most direct way to measure currents

is by probing and counting the

individual particles. Highly

tuned instruments that fly on

board satellites do exactly that."

"While particle counting is quite

challenging, as one might expect,

one can also make use of the fact that

electric currents generate a

magnetic field around them,

which in turn can be measured, more easily,

by instruments called magnetometers.

From these magnetic fields one can
then infer using Maxwell's equations
the underlying currents." And yet
scientists cannot infer what they are
not prepared to look for. As the early 20th
century evangelist Oswald Chambers stated,
"Seeing is never believing;
we interpret what we see
in the light of what we believe." But no
belief is required to recognize the electrical
nature of the cosmos, but
rather only a willingness to follow
the line of discovery,
wherever it may lead.

[Music]

[Music]

[Music]

Gravity versus Electricity, in the terms of how a star works. What's great about being here for a conference that's focusing on energy and energy production, the Sun, every star is a perfect example of something that puts out an enormous amount of energy. And so, we can learn from that; we can study how a Sun does it and then maybe there's aspects of that that we can learn from. Since the time of Newton, we have talked about forces as what changes the world. This is a very simple, elegant formulation which has fueled a lot of mechanistic science for hundreds of years. It's a very useful way to look at the world if you're a scientist; forces cause change. It would be a much longer lecture to tell the story of how this chart came to be. Those are the forces that are considered in modern astrophysics: the first, gravity is considered the king; gravity is considered to cause everything else to come about. We then take into account the

effect of magnetic fields, nuclear forces,
the weak force - why is the electric
force then left out? I won't go into the
why, but it has been: electric fields,
electric currents - not allowed. If you
imagine the gravity model. I'll talk us
through now the causation, through the
gravity model. We imagine space with dust,
debris and a lot of emptiness.

But gravity is considered to be acting;
it pulls together matter. That pulling
together, creates great pressure, great
temperature and eventually, boom! You get a
star - a star is created. Some key aspects
of this to highlight. One is the star is
all alone in the gravity model. it is
separate from the rest of the universe;
it's on its own, burning its own fuel. It
only came about because of some accident,
that there just happened to be enough
matter, that just happened to
come together. That's it.

The star in this model gets all of its
energy from itself. Another drawback of
this model though, is that it has never
been observed, to actually happen in

nature, and has never been replicated in the laboratory. Another aspect of the problem here is that it violates the laws of thermodynamics, this model. So those are some pretty big strikes against it. What then would happen if we included the idea of electricity, electric fields, electric currents into the picture? It definitely changes the story. What do you call it when you include electricity? You can call it plasma cosmology. Some people refer to it as an Electric Universe - I don't know what term is better or not.

It is important to know that the SAFIRE team were not associated with the Electric Universe group. We're a separate organization, which is fine. They do a lot of really good work; we do a lot of really good work. Let's talk through then what the story would be if we include electricity. What story could we tell about the origin of stars? Again, we have space but now it's no longer empty. There is no such thing as empty space. Matter is permeated by electric fields and

electric currents. Plasma is perfect at conducting electricity; it's the best conductor that we have. It naturally forms into rivers of current. It also naturally supports strong electric fields. These electric fields and currents naturally organize themselves, and the matter that they go through, and there is no violation of any laws of thermodynamics. The matter condensed into a variety of localized structures, some of which we know about in the laboratory, such as plasmoids. Others we are learning about by studying the interstellar medium and the picture is that then stars live along these currents, electric currents. The Stars then receive their energy from the space around them, or better to say, from their relationship with the space around them. We still envision a center core which is made up of variety of elements, depending upon the star, the history of the star, or what the star's purpose is in the galaxy. In the model that's a positive pole - think of an anode - and that's in an

environment that is relatively negative,
compared to the positive. As was said
yesterday, we often run into
discussion problems when people fight
over the word 'positive' and 'negative'.
Maybe they're not the best choice of
words; maybe we don't understand
electricity, but we can do some good
physics by talking about it this way. So
the surrounding medium is the cathode in
this model. The star lives, again, inside
of a larger electrical structure. The
plasma will seek equilibrium: there's
that separation between the plus and the
minus, that creates a lot of motion, a lot
of activity. Things try to come to
equilibrium, but they don't; they can't.
Just like you and me, living here,
you could argue, we're trying
to come to equilibrium,
but we never do - right until we die and
then we're in equilibrium. That striving
to come to some equilibrium...the
byproduct of that is this immense amount
of energy and light that comes from that
struggle. To highlight again what I said

before. In this model, the star is not creating its own energy; the star is, better to say, transforming energy. And that energy comes about through the star's relationship to the space around it; its relationship to other stars; its relationship to the galactic medium, is the source of the energy. Planets get their energy from the Sun; the Sun gets its energy from its larger world. We live in a hierarchical universe. There's some blueprint that's being manifested over and over and over, that has to do with energy transformation. How do you transform energy from a star to a planet. Stellar energy is way too intense for a planet; direct stellar energy would fry a planet - it would be gone. So how do you step it down; how do you bring that energy, its solar energy, down to a level that a planet can use. Same is true with you and me: if you put us up into the magnetosphere, we would die. Too intense. How do you step that energy then down to a level that you and I can live in; so we can have things like broccoli and

hamburger, and we can eat and we can get
on. Help me I'm going off-script.

That's fine – you're doing fine. it's
wonderfully entertaining. Yes, it was the
broccoli part. Can you take over?

Sure. Okay, there you go.

This is how it works in the lab. Well
I've got a pointer. Thank you, Michael.

[Music]

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

In the previous episode, physicist Eugene
Bagashov began his four-part presentation
on the latest discoveries from NASA's New
Horizons mission to the dwarf planet Pluto.

The mission is one of many recent
opportunities to test the predictions
of the standard story of our solar
system's history and origins.

In this story, called
the Nebular Hypothesis,
the solar system formed through gravitational
collapse in a cloud of gas and dust.

Proponents of this theory
proposed that water ice
was a primary building block
for Pluto and its moons.

But countless discoveries in recent
years have proved highly problematic
for the standard theory of our solar
system's formation and history.

Today, Eugene Bagashov explores the

question of Pluto's composition and origins
and contrast the predictions
of the standard theory
versus those of the
Electric Universe.

Eugene Bagashov: It
is interesting that,
while describing the Pluto and
Charon geological features,
the New Horizons' mission scientists have
often referred to the "water-ice bedrock."
Indeed, it seems they consider the
water ice is a primary building block
for both of those bodies and probably
the smaller satellites, too,
which to me seemed
quite unusual.

As far as I understood, the only
reason for such an assumption
is the Nebular Hypothesis
of planetary formation,
plus maybe a few other
popular theories,
which in their interpretation doesn't
allow anything else to be present
in those faraway regions

of the solar system.

It is then supposed that water-ice might be as strong as rock in these harsh conditions and is capable of maintaining form long enough to allow for the existence of these high mountains and deep valleys that we see on Pluto and Charon.

Well that might be the case, who knows.

But why wouldn't we just suppose that it is just made of regular rock?

I'd like to reiterate the thought from previous video that if Pluto was formed in some other conditions, for example being a moon of a giant planet or simply being closer to the Sun or maybe some other star, then it might have different properties and represent something different than what is expected.

One of the possible points in favor of big water-ice abundance on Pluto and Charon

is their density,
which is around 1.8 g/cm^3 or roughly
twice the water-ice's density.
This is two to three times smaller than
the density of terrestrial planets
and comparable to the density of the
other well studied dwarf planet Ceres.
It is supposed to mean
there's less rock
and heavier things like
metals and more ice inside.
But we know that in our system there
are other bodies made of rock
that also exhibit quite a low
bulk density, comets for example.
Philae lander data has shown that
it's the internal structure,
namely the porosity of the material
that makes the Comet 67P so light,
not the high ice content.
Basically, it's
something like pumice,
and it completely agrees with the
results of previous missions to comets,
such as Stardust, that have shown that
the comet nuclei exhibit materials

that are formed in high
temperature conditions.

Same thing might be
applicable to Pluto.

In fact, the surface of Pluto shows only local
patches of water-ice spectral signature
but the surface of Charon has shown
signs of it almost everywhere.

I think this ice that we see on Charon
might actually be only a thin veneer
that was created under the
influence of solar wind
when its protons have joined
with the oxygen atoms
taken from the surface
rocks, or maybe regolith,
as it's supposed in the Electric Comet
Hypothesis popular in the EU community.

On Pluto such process
might be somewhat damped
because of the presence of its atmosphere
and also other contaminants so to speak,
by which I mean
nitrogen, CO, CH₄ ices
and also more complex organic
molecules, the so-called tholins.

All of those substances might
mask the water-ice layer
on the surface of
Pluto, if there is any.

Now that I've mentioned tholins,
let's look at what that is.

They are the complex hydrocarbons
that are supposed to be produced
in the atmosphere of Pluto under
the influence of solar radiation
from more simple molecules,
such as methane and nitrogen.

Tholins have quite a
distinct brownish red color
that is readily recognized
on the surface of Pluto.

Basically all the surface of
the planet is slightly red
and supposed to bare
some tholin layering.

But aside of that, we might see a
very distinct dark equatorial band
which supposedly has a very
rich tholin abundance.

It might be that the equatorial
position makes it easier

for those materials to be formed under
the more pronounced insolation,
and I'd like to mention the very specific
contrast of this equatorial band
with bright Tombaugh Regio,
also situated on the equator.

As I've mentioned in the
previous part of this review,
such a prominent anomaly probably
should have a very special origins.

What also caught my eye, concerning this
equatorial band and the map of Pluto in general,
is its striking similarity with
the map of Saturn's moon Titan.

It is interesting that not only does this
body have the similar nitrogen atmosphere
but it also exhibits the
rich tholin abundance
and other hydrocarbons
right in this dark band.

Maybe there're organic
molecules on Pluto and Titan
and, who knows, maybe even
Earth shares similar origins.

We also have a nitrogen atmosphere
of all of other things.

And from the Electric Universe perspective,
it is important to notice that scientists,
who were trying to recreate Titan
like tholins in the laboratory,
have actually succeeded in this
endeavor by using electric discharges.

Could it be that the atmosphere
of Pluto as well as Titan
is filled with electrical activity
today, giving rise to those substances?

Or maybe it is a sign of such
an activity in the past?

Let us look again at the encounter
hemispheres of Pluto and Charon.

Those are available in
fairly good resolution
and allow us to see a significant
amount of very sharp valleys or rills,
especially in the left
side of Pluto image
and almost throughout the
whole visible part of Charon.

In fact, earlier images
of Charon's other side
have shown that these channels
almost encircle the whole body.

Of course, we know this

line of reasoning.

When people see dendritic channel

figures on Mars for example,

they might say that they were

created by flowing water,

though the current atmosphere

cannot support it.

Maybe the atmosphere was

a bit thicker before,

and so water could exist in large

amounts in liquid state etc etc.

But what did they say when they see

dendritic channels on Pluto and Charon?

What are the reasonable

alternatives

for electric excavation and

deposition we have here?

It seems that, at this point,

the only plausible explanation

that New Horizons Team have come

up with is plate tectonics.

So, as far as I understand, it

is thought that those valleys

might represent some sort of cracks

in the outer shells of those bodies.

I'm not a specialist in EDM so I

probably cannot comment on this much.

But I just hope that one day we're

going to get images of those regions

with better resolution and that would start a

discussion on their possible electric origin.

Stay tuned for Part 3

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

Welcome to the Electricity of Life,
brought to you by The Thunderbolts
Project™ at Thunderbolts.info

In part 1 of this presentation, Dr.
Jerry Tennant introduced us to his
extraordinary research into the complex
electrical circuitry of the human body.

Since his own remarkable battle
with debilitating illness,
Dr. Tennant has worked to develop a kind
of map of this circuitry, illuminating
its essential connection
to physical well-being.

In the previous episode, Dr. Tennant discussed the
particular significance of the circuitry connecting
teeth to other regions of the body.

The concept of illness arising from
electrical imbalances is, of course,
unconventional in modern
Western medicine.

However, the application of electromagnetic
therapies in healing is not new.

In this conclusion, we asked Dr. Tennant
to begin by discussing some of the
earliest examples of the use of
electromagnetism as a physical remedy.

Well, interesting question.

If you go back in time, in the 1800's and early 1900's, electromagnetic therapies of a variety of forms were commonplace.

But that changed in about 1910 when Andrew Carnegie and John D. Rockefeller decided to become the major investors in the pharmaceutical industry.

And so they had a report written called the 'Flexner Report' which they then took to Congress.

At that time there were, I think, 13 homeopathic medical schools in this country and again, most physicians were using some sort of electromagnetic therapies.

Well, the Flexner Report got Congress to forbid the use of any federal money for anyone who said there was energy in the body, so that that closed the thirteen homeopathic medical schools and then, any physician who was using an electronic device to treat patients got put in jail.

Well, that set up pretty much of a chilling effect and that's how our country stopped looking at energy in the body and that was the case

until Nixon went to China, saw some of the people in his entourage undergo surgery with acupuncture and came back and told the NIH he wanted acupuncture to be part of traditional medicine.

But even though that was what the NIH was instructed to do, the people who control medicine in this country basically continued to ignore it.

So, for example, many states including my state of Texas forbids the use of anything that's not standard of care medicine.

So what is standard of care medicine?

Well, a group of physicians and insurance people and so forth sat around a table and said okay, if you make this diagnosis you must treat it this way.

And originally they said, these are going to be suggestions in order to improve the quality of care.

But of course, that wasn't the plan.

The plan was to make those the law and so it has de facto become that so if you go to a

physician and the physician says you
have this diagnosis and this diagnosis
code then the physician must treat you
according to those guidelines.

If he doesn't, he loses his license and he's
considered guilty of malpractice de facto.

So even if a physician knows that
that's not going to harm you,
there's nothing to do about it.

Even if the physician knows there's
a better way to treat you
there's nothing to do about it.

Even if 10 universities and medical
schools have proven there's a better
treatment, the physicians can't
use that until that committee says
that it's become standard of care.

Most people don't know that
but what that does then
is, it puts the control of how
medical care is delivered in this
country in the hands of the small group
of people who make up the rules of
standard of care and those are all slanted toward
pharmaceutical surgical medicine, you see.

So that's why people like me have to say

well, everything that I say is using my
Arizona MDH license and
not my Texas license.

Because I'm not allowed in the
state of Texas to tell you what I'm
telling you, I have to use my
Arizona license to do so.

You know, medicine in this
country is the most controlled, most
supervised, most controlled business if
you please, of anything in the country.

No other industry is more controlled
than the practice of medicine.

The effort to push it into things that work
is constantly being suppressed even to the
place of physicians losing their
livelihood in order to prevent that.

Now, even though medical schools, most medical
schools now have a division of
Integrative Medicine where they teach
this, it puts the physician in a very
difficult position because the physician
comes out of medical school knowing that
that's a useful thing to do but the
state medical boards won't allow it.

It's a very difficult thing so what I have to do

is, I practice as a private expressive association.

So the Supreme Court has had

72 different opinions given that

says that legislators make laws to

protect the public but the people in a

private group like a church group, a

sports group and so forth are not the public.

And that any private group may do

anything they want to do as long as what

they do is not a clear and present

danger that rises to the level

of a substantive evil.

You may not have ever

wondered why don't the police arrest

boxers because it's against the law to

go around slugging each other?

Well, it's because boxing clubs are private

expressive associations as defined by the

US Supreme Court and so even though

boxing is a clear and present danger,

it does not rise to the level of a

substantive evil and so they don't get arrested.

However, if religious people sexually

assault their parishioners, that does

rise to the level of a

substantive evil, and therefore the

police can go and arrest a priest, a rabbi or whatever for sexual abuse, you see. So for example that's the way I practice. I don't practice, my practice isn't open to the public in the sense that if you want to come see me you must join my private expressive association to become a member of my group and then I can tell you what's in the medical literature rather than have to treat you with the standard care.

If the health of living cells is governed by voltage then an obvious concern in modern society is the rapidly growing pervasiveness of wireless technologies.

We asked Dr. Tennant to identify some of the greatest obstacles we should be aware of today.

Well, there's no doubt that we have all sorts of things that affect us.

You know, for example, if I had you hold your arm straight out and check the push down on it, you would be strong, and then if I had you take a wristwatch with a battery in it and hold it right up against your chest and I pushed on your arm, you would go weak.

So again, when we put electromagnetic energy within our personal magnetic field, it weakens us, our particular frequencies weaken us.

And so we're being bombarded with that sort of thing all the time.

Here's the bottom line of the whole thing.

We are constantly wearing ourselves out, so you get new cells in the macula of your eye every 48 hours, the lining of your guts replaced every three days, the skin you're sitting in today is six weeks old, your liver is eight weeks old, and your nervous system eight months old, so as cells wear out you have to make new ones.

Or if the cells get damaged some way, you have to make new ones so chronic disease only occurs when you lose the ability to make new cells that work.

Let me say that one more time, chronic disease only occurs when you lose the ability to make new cells that work, which leads one to the

question of, well, what's it take

to make new cells that work?

Well, first of all, where cells

run at minus 25 millivolts

of energy it takes minus 50 millivolts

to make a new cell, so you have to have

the voltage, then you have to have

all the parts it takes to make a cell.

You know, if tornado blows your house

down, you can't build a house back

with door knobs and bathroom tiles.

You have to have everything it takes to make

a house and that's one of the big

mistakes people make when they say,

I'm trying to get well, and you say well,

take this stuff!

They come back later and you say well,

are you still taking all this stuff?

No, I just wanted to know what

thing, what one thing works so I've just

been taking one thing at a time.

Well nothing works, you see what I'm

saying, again, that concept of I want

to know what works, won't work because

you have to have everything it takes to

make a cell and that's the nutrition

piece of course. So we have to have 50 millivolts of energy, we have to have all the parts it takes to make a cell, and we have to get rid of any toxins that damage cells as fast as you make them. So if you don't do all three of those things, you won't get well. One then goes in and looks at each of those so for example, the voltage piece; we're able to measure the voltages in the circuits using something similar to Nakatani et al. methodology, but one of the important things to understand is that it's well known in battery technology that if you take a rechargeable battery and you drain it all the way to zero, it'll flip itself upside down, it flips the polarity. So if you take a battery upside down put it in a battery charger, it won't take a charge of course. So what we do is we go through and we can measure the polarity of every circuit in your body and figure out which ones are upside-down and those are the ones where you're going to be sick.

Because you don't have juice and they are low circuits that are trying to borrow voltage from the next-door neighbors.

But I like to say, the neighbors will give you a cup of sugar now and then but they won't give you three meals a day.

There are two kinds of energy in the universe that I'm aware of, electromagnetic and then scalar, and of course scalar has the ability to reverse the polarity back to normal.

So we have a device that will do that, called a bio transducer, and we simply can put it on one of the acupuncture spots in the body and all your batteries get turned back up.

Of course, they're still discharged.

Then we take the bio modulator which puts out a specific waveform and recharge your batteries back up.

Now your battery has power again and then the body never forgets how to repair itself, just that it has to have the power to do it, has to have the materials to do it.

So no matter what's wrong with you,
again, you asked me
about neurology, nephrology, cardiology,
any of the -ologies.

You treat them all the same way,
because they're all sick
for the same reason, they lost the
ability to make new cells that work
and/or they lost the power to run.

You can't have a heart that works if it's trying to
run on five millivolts instead of 25 millivolts, right?

You can't have a macula
in your eye that works.

All macular degeneration is because you've lost
power in the stomach circuit which is
the power, the stomach circuit, acupuncture
circuit, is the power supply to the macula.

So anytime somebody has
macular degeneration and you
measure it, you always find
there's inadequate power and it's
reversed the polarity in the stomach circuit
whereas glaucoma, the optic
nerves are on a different circuit, it's on
the liver circuit and so every
time you see a glaucoma patient and

measure it, the liver circuit will have flipped its polarity.

So how do you treat it, you flip the polarity back, charge the battery back up and then you figure out why did the battery lose its charge in the first place.

Well, there are five basic reasons.

One is that you have to look at the thyroid hormone, because thyroid controls the voltage of every cell membrane in the body, T3 controls the voltage of the cell membranes and the number of mitochondria, T2 controls the function of the mitochondria.

So you always, let's say you don't have a thyroid hormone, your battery discharges to here.

Now, if you put a scar across one of your circuits and it touches the fascia, it shorts it out like any other electronic short, so wherever you have scars, that's gonna short out that circuit.

So many women have a C-section scar which goes right across the stomach circuit.

The spleen stomach circuit is

the entire reproductive system, the entire endocrine system, the thinking part of the brain, the macula of the eye.

OK, so thyroid takes us down to here, scars take us down to here.

Dental infections; since every circuit goes through specific teeth if you have an infection in a tooth that acts like a resistor and drops the voltage.

All right, dental infections takes you down to here.

Emotions are stored in the body's magnetic fields as I discussed in my lecture to the Electric Universe and all of us have emotions, but if you have a wire and you put a magnetic field around, it blocks the full voltage, that's how emotions drop our voltage and make us sick.

Thyroid, scars, dental infections, emotions, and finally toxins and now your batteries drain to zero and flip upside down and there you go, you're sick.

One of the problems with American medicine is that the scientists say, we have to isolate everything else and look at just this one

thing to see if it's the cause of the disease.

It almost never is.

Almost all diseases are multifactorial.

That's why we're having such a hard time in

American medicine, finding the cause

because it's almost always several

causes that flip the voltage.

Then, when you don't have

voltage, as voltage drops,

oxygen drops because the amount of

oxygen that will dissolve in a liquid

is dictated by the voltage of the liquid.

When you lose voltage, you lose oxygen.

When you lose oxygen, your metabolism

becomes inefficient, infections show up,

and when you get to plus 30 millivolts

you have cancer, as simple as that.

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info

Of all the planets in the inner
solar system, the planet Mars may pose
the most tantalizing mysteries.

In the early 1970s when the Mariner 9
spacecraft captured the most detailed
images of the planet to that time,
scientists' ideas about Mars have needed
constant revision.

A planet that was thought to be
long geologically dead was
engulfed in massive dust storms and its
surface revealed dramatic and unexpected
scarring which remains
mysterious to this day.

For decades, the chief
principals of The Thunderbolts Project
have proposed that extraordinary events
shaped the Martian surface.

Events which they contend were
recorded in the myths
and legends of ancient man.

In part one of this two-part presentation, physicist Eugene Bagashov reopens the Martian mysteries.

In the following material, I'd like to discuss some of the papers about Mars that has been released in recent years in order to see if their results might be reinterpreted in the light of the electric universe paradigm.

So the first paper that I want to mention discusses the peculiar structure in the Martian equatorial region, called the Medusae Fossae Formation or MFF.

The purpose of the paper essentially is to report on the density measurements of this structure.

To measure it, the team of researchers utilizes the altimetry data from Mars Orbiter Laser Altimeter experiment, or MOLA, on board of the Mars Global Surveyor spacecraft and also some of the most recent models of the Martian gravitational field used by NASA Jet Propulsion Laboratory.

The results that they get in

the end are pretty interesting.

In particular, they report

that the density of MFF region should be

quite low, only about 1,700

kilograms per cubic meter.

It is possible, they state, that

such an unusually low density is

the result of mixing

of the rock with

large amounts of ice,

more than 1/2 in volume.

However, the problem with that assumption

is that the previous radar scanning of

the area, performed by MARSIS experiment

on board of the European Mars Express

orbiter, rules out any significant

concentration of ice in the area.

And it would also be hard

to expect much ice in

the equatorial region which on average

receives the most heating from the Sun.

So the conclusion that the authors

arrived at is that the low density of

Medusae Fossae Formation should be

the consequence of it being made of a

highly porous rock.

When compared to some of the minerals on Earth, it seems that the porosity of rock in MFF might range from about 18 to about 51 percent and it is not entirely clear how such a peculiar formation might have appeared in the first place.

The authors suggest that "the MFF was deposited by pyroclastic eruptions."

But at the same time they are baffled by its huge extent and total mass, noting that it is two orders of magnitude greater than the largest pyroclastic deposits on earth which would make it the largest in the whole solar system.

I should add here that this area doesn't seem to have any indications of volcanic activity even in the past in the first place.

It's quite removed from the hypothetical volcanically active Tharsis region and even the hypothetical volcano Olympus Mons.

But of course, in the Electric Universe not only volcanism might affect

the geological processes but also the external electromagnetic influences.

So perhaps the very appearance of the MFF and its low density and high porosity is somehow related to the possible planetary wide catastrophes in the Martian past.

For now, let's remember that thought and take a look at some other recent papers.

In particular, let's examine the paper released in February of 2019 in the journal Science.

Here the authors report the results of quite a clever application of Curiosity rover telemetry data to measure the surface gravity in the Gale Crater where the rover is situated.

Curiosity is equipped with accelerometers and gyroscopes that are normally used for navigation and attitude determination

but the researchers have been able to use the data from these instruments for the extraction of the gravitational acceleration.

More than 700 data samples were used, corrected for the possible interference from planetary rotation, altitude and pressure and such. What they got in the end was the gravitational gradient, that is the change of acceleration with height, that was smaller than expected and they've been able to infer from that data the most probable density of rock that Curiosity was traveling on top of.

Now the most interesting part is that the density of this rock was almost exactly the same as the one reported for the MFF in previous paper, namely 1,680 kilograms per cubic meter.

And in the very same way they conclude that the reason for such a low density should be very high porosity of the rock in Gale Crater, most likely around 40%.

Even more so, they hypothesized that the initial porosity might have been higher at the time of the formation of Gale Crater and could

have been as high as 55 to 70 percent.

Now here I wish to mention that the Gale Crater is supposed to be an impact feature but what if it has a different origin?

Electric Universe paradigm brings into light the possibility that such formations might occur during extremely powerful plasma discharges to the surfaces of planets during hypothetical cataclysmic events such as extreme solar flares and CMEs and/or close planetary encounters.

So in my opinion, it might be the case that both Medusae Fossae formation and Gale Crater appeared on the surface of Mars because of some sort of electric erosion processes.

The fact that the density of rock in both of these formations is almost exactly the same, indicates on possible similarity of their origin. Yet the MFF is thought to be a result of some volcanic activity where the stuff essentially emerges from down below and Gale Crater is thought to

be the result of an impact event where the stuff should have fallen down from above and it should be evident that the result wouldn't look the same.

Plus we have the 5.5 kilometer tall Mount Sharp

sitting right in the center of Gale Crater, the origins of which are still the subject of debate.

Both the MFF and Gale Crater are located near the equator which is quite peculiar as this seems to be a special area on most occasions and might be significant in any type of plasma discharging events.

In this regard, I keep thinking of similar equatorial anomalies on other bodies such as the Earth's equatorial plasma fountain, Jupiter's equatorial ionic ribbon, dark equatorial regions on Titan and Pluto, Iapetus' equatorial ridge and others.

On Mars, this area is doubly interesting as it separates the low and flat northern hemisphere from the high and bumpy southern.

And here I should mention the

other paper that has been

released in July of 2018.

Here the authors compared data from various

spacecraft and Rovers to study the

chemistry of Martian dust with respect

to the chemistry of the underlying soil.

What they found was that the elemental

composition of Martian dust is somewhat

different from the composition of the

soil, at least on average.

In particular, the dust seems

to have a significantly

higher content of chlorine and sulfur

and not only that but their relative

ratio on the dust all over the planet

is also relatively constant.

In terms of molar content,

the ratio of sulfur to

chlorine seems to be

around 3.7 globally.

What's more important is that the

researchers identified an area on Mars

where the soil itself has the same

sulfur and chlorine content and that

area is--Medusa Fossae Formation.

So their conclusion is that it is the

erosion of this formation that has filled the Martian atmosphere with most of its dust and eventually covered most of the planet with it.

Given what I've noted above on the potential importance of equatorial area during any kind of plasma discharging, in my opinion it is not impossible that this erosion might have occurred electrically.

I should note here that Valles Marineris structure is also located in the equatorial region right to the east of Medusae Fossae Formation.

Although I also have a suspicion that the erosion of Medusae Fossae formation might continue to this day in the form of much weaker discharge but so far I have no evidence to present in support of this idea.

I believe, now it's a good time to remember another item from the electric universe pool of ideas, namely the statement that asteroids and comets might be the fragments of planets

torn away by electrical activity
during catastrophic events in the past
of the solar system.

It has been known for some time
that pieces of Mars might
even land on Earth.

At the moment, there are at least
227 meteorites identified
as originating from Mars.

It is supposed that these
rocks received their initial
velocity from another impactor that
lands on Mars and throws them into
interplanetary space, but what if the
process of initial removal of the
material is electric?

In fact, some of the asteroids themselves
in the solar system
have recently been identified as
originating from Mars, well in line with
the scenarios proposed by
the EU catastrophism.

There is even strong evidence
in favor of the hypothesis that
Martian moons Phobos and Deimos
originate from Mars itself.

Remembering the discussion above about the low density of Gale Crater and Medusae Fossae rocks, I cannot miss the opportunity to speak about the densities of small bodies in the solar system.

It is generally assumed that the average density of asteroids should be about 2,000 kilograms per cubic meter which is noticeably lower than the density of both Earth's and Mars' crust and closer to the density of MFF and Gale Crater.

The density of comets however, is even couple of times lower than that, about 800 kilograms per cubic meter.

What is interesting however, is that the Rosetta mission with its brave Philae lander have been able to determine that the dust-to-ice ratio in the comet 67P nucleus, is much higher than was expected and the low density is the consequence of very high porosity.

This, kind of, reminds of something else, right?

My hypothesis with regards to that would be that perhaps comets are the result of more violent types of discharges so that

the rock starts to partly boil or being transformed in some other way and becomes more porous in the end.

And such more energetic events would also result in a more irregular orbits with higher semi-major axis distance, whereas asteroids might be the result of milder type of discharges and therefore don't demonstrate such a high deviation from the planetary crust in terms of density and also don't move in such eccentric orbits as comets do.

So, taking into account the considerations given above, I would suggest to any experimenters trying to reproduce geological formations in the plasma lab to pay more attention to the density of the acquired structures and formations.

Perhaps it might be possible to reproduce some of the more porous formations such as rock of the Medusae Fossae formation, or even the more highly porous cometary rock.

At the same time, I think that the results of the ongoing sample return missions from

asteroids such as Hayabusa2 and OSIRIS-REX, would show more evidence that the asteroidal rock bears a striking resemblance to the typical planetary crust composition.

an electronic circuit on the other end usually incorporates some device that is enables the circuit to amplify that is to say a very small change in one variable over here creates a very large change in a variable over there and one of the typical things that we add to an electric circuit in order to make it into an electronic circuit is a transistor I maintain the surface of the Sun exhibits the properties of a transistor is it a transistor no of course not but this presentation of mine that I'd like to show you this morning it came to me when I saw an analogy at least I think I saw an analogy between two things and I firmly believe that important discoveries breakthroughs in science are made by somebody who can look at an area over here and an area over there and recognize recognize similarities between those two disparate areas of science and if you can recognize a similarity between a problem that's been solved over here and one that hasn't been solved will be there

maybe you can use those techniques over here and get some progress I hope I know that for example Hannes Alfven did that he was a Swedish engineer and they were having all sorts of problems on the on the high voltage DC transmission lines in Sweden and this is an example of one of those disasters one pole to switch over here one pole of the switch over there the switch is wide open but the current says I ain't stopping and so you got this arc and it's a sort of self-sustaining arc eventually it'll blow itself out and when it does it will probably create an explosion which in many instances killed people blew up buildings and was a major disaster Alf Ian was able to find out what the cause was the cause was energy stored in the magnetic field around the transmission line and one when the circuit refused to to open that inductive sort of like a a water hammer in a hydraulic system there was an explosion and the disaster occurred Althea said well that kind of arcing

there is sort of similar to the
prominence arcing and that we see on the
Sun and when that prominence expands
like that arc and breaks we have a
mission of stuff which is called a CME a
coronal mass ejection
as long as it's up there by the Sun we
don't worry about it too much if it
happens in Sweden near Eric village we
do so but nevertheless the the response
of the the causes of this
it was Alfie Enfield the same cause
magnetic field energy that caused the
the problems with the transmission line
well I'm trying to convince you that an
analogy exists between our Sun which is
our local star which we all know pretty
much looks like this if you look at it
through a backyard telescope you see
that that's the photosphere occasionally
you see some some sunspots if you've got
a good enough telescope you can see some
structure around the usually around the
limbs but you can't see anything else
and so you conclude well that's the
surface of the Sun well it's not the

surface of the Sun because there are other things above that layer and this is what we typically see in photos here it gives us all the light and the electromagnetic radiation we receive but it's not the top surface the Sun surface really has three main layers and there they are

this is a sketch you can see the curved surface of the Sun is the yellow the earth is in here to scale by the way it shows how small the earth is in comparison to the Sun there's the photosphere that's that layer that we that surface that we see and by the way and I'm not going to continually bug you with this but

at every step along the line of my talk here there should be a question in the back of your mind how does the standard model explain that and I'm not gonna continually poke at them but I think you should keep that in mind the standard model I'll say it once that I will do it again

has no explanation for why the

chromosphere exists the chromosphere is
this set of spicules or spikes and stick
up we can see them during a total
eclipse of the Sun and of course above
that is the vast corona
that we all know about this photosphere
has sun spots the chromosphere has
spicules and the corona has these the
shape has caps and striations and
filaments if we look at the photosphere
close up to a really good telescope we
see that it has a granularity to it the
astronomers call those granules
well my hero Ralf jürgens took a look at
that and he said that to me looks like a
plasma plasma cells and so he then
investigated what a real plasma
discharge looks like in the laboratory
and what the structure of it was he
concluded that these cells were really
what we'll talk about is anode Tufts
it's a tough thing that's seen in the
laboratory if you have a good enough
microscope and you can look at the anode
very closely if you look closely at this
picture you'll see that between the the

anode Tufts between the granules there's
our black channels that permeate and run
and separate the Tufts and within those
channels can you see the tiny little
white dots I don't know if they if you
can see it or not those are the spicules
so the question arises well what are
wire why is that stuff there what is
what are the spicules do do they how do
they contribute to the action the Tufts
come and go over periods of like a min
minutes hours perhaps a day but
more than that these toughs they are
plasma and they are in the arc mode you
know there's three modes of plasma arc
glow and dark current this is the
powerful arc mode and that's why all of
the heat and light could radiator from
this area the temperature though is
about 6,000 Kelvin which is it's pretty
hot I wouldn't want to be there but it's
as far as temperatures of plasma is
concerned and certainly temperatures of
the Sun's corona are concerned it's very
cool
there's the plasma discharge that out

that Jurgens looked at in the in the day
so in the beginning of the 20th century
even in it back in the 19th century
people were very concerned about the the
cathode and what was the structure of
the charge layers and and voltages and
forces at the cathode they did they paid
relatively little attention to the anode
the the Tufts are represented by this
anode globe which we see notice that the
thing is this structure this plasma cell
the anode blow is separated by a small
distance from the anode itself in the
electric star the ectric sky excuse me
the electric Sun model the anode itself
is the body of the Sun here are the the
Tufts and then right connected to and
emanating at a further distance from the
Sun itself is this positive column the
positive column is another cell of
plasma it's in the glow mode and has
certain properties that we'll discuss
but the typical sunspot there is a
typical sunspot you can see the the
Tufts around here in the penumbra of the
Sun sunspot the Tufts look elongated and

in the middle of the the Umbra the dark
part of the sunspot there are no Tufts
so bear that in mind a sunspot is a
place where
there are no tufts there is no tufting
so what well we'll see the chromosphere
is that a bunch of spicules here's an
example it looks like a prominence
beginning here that's about 2000 3000
5000 kilometers high the Sun of course
is like eight hundred thousand
kilometers across so it's a relatively
thin zone the chromosphere it's
generally h-alpha
if you have that's H alpha is a spectral
line right in the middle of the visual
it's a in the red red the deep red color
there's the spicule is about that that
high it's usually full of entry you can
see the streaks it's not just a uniform
glowing as fingers and there's a reason
for that and it's well known plasma a
property of global plasma that they
usually filament seen only during
eclipses again I ask the question why is
it there it changes shape depending on

the weather it's a time of active Sun or
or quiet Sun this is what it looks like
during the quiet Sun this is what it
looks like during the active Sun the
active Sun is a time when there are a
lot of sunspots the quiet Sun there are
much fewer sunspots
you can see here one thing not really
germane to what I'm saying but you can
see the magnetic fields that are are
also filamentous what you're not looking
at the magnetic fields by the way
astronomers say that all the time that's
not true magnetic fields are invisible
what you see like here is plasma which
is surrounding currents in in that
follow the magnetic field so it's the
magnetic fields they're a current
follows the magnetic field and lights up
the plasma so we can see it here's the
big one of the biggest problems facing
modernist solar astronomy
and that's this Sun temperature profile
this the if the Sun is a just a furnace
that burns hydrogen it turns it into
helium much like a wood furnace turns

wood and carbon and oxygen you know as
you get farther away from that furnace
you should get less radiation you should
so the temperature should go down and as
you begin to go away
right here that's exactly what does
happen but all of a sudden there's an
anomaly and the farther you get away
from this stove the hotter it gets
temperature goes up until finally when
you get out here at the top of the
spicules the temperature shoots up to
like a million Kelvin now that is not
how how can you get a high temperature
like that I would I was here when the
the temperature of the photosphere is
only about six or seven thousand Kelvin
good question and I will endeavour to
say why