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Observers of the spectacular northern  
lights are offering new testimony  
on the amazing sounds produced  
from electromagnetic phenomena  
in Earth's upper atmosphere.

Witnesses in Sweden reported hearing  
sounds similar to so-called  
'laser blasts' from  
the Star Wars films.

A photographer and tour guide named Oliver  
Wright was able to capture audio of the sound  
which seemed to grow louder as witnesses  
approached nearby power lines.

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

This is hardly the first instance  
that witnesses have reported  
peculiar sounds associated  
with intense auroral displays.

In fact dating back centuries,  
long before the existence of

earthly transmission lines,  
witnesses from the Arctic reported hearing  
hissing, crackling or clapping sounds.

Recently, the scientific  
mainstream has begun to recognize  
that the audible phenomenon  
is actually real.

In 2012 a team of scientists in Finland  
discovered a pattern of audible clapping sounds  
that appeared at times of  
high auroral activity.

The lead investigator of the study  
suggests that the phenomenon is:

"likely caused by the same  
energetic particles from the Sun  
that create the Northern  
Lights far away in the sky.

These particles, or the geomagnetic  
disturbance produced by them,  
seem to create sound much  
closer to the ground."

A space dot com report  
on the study states:

"Scientists still aren't sure exactly  
how the auroral sounds are created.

They can be quite variable,

ranging from claps and crackles to  
muffled bangs and sputtering sounds.  
Because of this sonic diversity, several  
different mechanisms might be at work..."

The sounds produced by auroral activities  
seem similar to the sounds reported  
over many centuries, associated  
with spectacular meteors.

Consider the case of the meteor explosion  
over Peekskill, New York in 1992.

Witnesses reported electro static  
crackling sounds for several seconds,  
both before and after the  
meteor's fragmentation.

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crackling sounds for several seconds,  
both before and after the  
meteor's fragmentation.

In the Thunderbolts Picture Of the  
Day article "The Peekskill Meteor",  
author Michael Armstrong  
asks the question:

"Since the fragmentation took place at  
an altitude of about 41.7 km in a vacuum  
where there is not enough  
atmosphere to carry sound,

how did this electrophonic noise  
propagate for over 25 miles?"

In 1992, the scientific paper "Electrophonic  
sounds from large meteor fireballs"  
attempts to explain  
the phenomenon.

The abstract of the paper reads:

"Anomalous sounds from  
large meteor fireballs,  
anomalous because they are audible  
simultaneously with the sighting,  
have been a matter for debate  
for over two centuries.

Only a minority of  
observers perceive them.

Ten years ago a viable physical  
explanation was developed,  
which accounts for the phenomenon  
in terms of ELF/VLF radiation  
from the fireball plasma being  
transduced into acoustic waves  
whenever appropriate objects happen  
to be in the vicinity of an observer.

This explanation has now been verified  
observationally and supported by other evidence  
including the study of meteor

fireball light curves reported here."

Although mainstream science is now recognizing the unusual sounds associated with terrestrial Auroras and meteoritic phenomena respectively, many mysteries remain that demand new theoretical perspectives.

In the early 20th century, the Norwegian experimentalist and electrical pioneer Kristian Birkeland proposed that charged particles from the Sun were the cause of auroras on Earth.

For decades the scientific mainstream, including the renowned mathematician Sydney Chapman, largely rejected Birkeland's hypothesis favoring 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 hypothesis irrefutably validated.

But even today the scientific mainstream  
resist the implications of the discovery.

Institutional science tells us that  
charged particles from the Sun  
accelerate along  
magnetic field lines  
and collide with oxygen and nitrogen  
gas particles in our upper atmosphere.

The gas particles become  
excited and release light.

But in recent years science discoveries  
confirmed that the auroras  
are the product of the electrical circuitry  
between the Sun, Earth and all planets.

In 2007, NASA scientists  
reported the discovery of  
"giant magnetic ropes" that connect  
Earth's upper atmosphere to the Sun,  
and explosions in the outskirts  
of Earth's magnetic field.

The rope-like structures, NASA  
describes, are Birkeland currents  
which are electrical current flowing  
through the conductive medium of plasma.

Recently, professor Donald

Scott has published

his mathematical modeling  
of Birkeland currents  
and identified the tell-tale structures  
of the currents in the upper atmospheres  
at the poles of some planets,  
including the Earth.

Visual proof of the Birkeland currents'  
influence is counter-rotating bands  
such as those seen on the screen  
at the North Pole of Saturn.

Similar counter-rotation may be  
seen in this particular video  
of the Aurora Borealis on Earth.

Electromagnetic energy in  
Earth's upper atmosphere  
is also the cause of some of the sounds  
associated with meteor explosions.

Standard theory tells us that friction  
ablation causes meteors to glow,  
flare and fragment as they pass  
through the Earth's atmosphere.

But, as noted in the aforementioned  
Thunderbolts article, The Peekskill Meteor;  
"At about 50 km above  
the Earth's surface,  
is there enough material in space to

begin a friction ablation process

for an object

traveling 14.7 km/s?

If not, one is

justified to conclude

that electrical interaction took place

to initiate the glow and flareups."

In the Electric Universe view, any object

that comes far away from the Earth

is differently charged than

the Earth's plasma sheath

and the object will begin

to electrically discharge

as the difference between it and lower

layers of the sheath increases.

Again quoting the

Peekskill meteor article:

"...meteors and spacecraft 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."

We also note the European Space Agency surprising discovery in 2014 of a so-called "mysterious song" emitted by the Comet 67P.

The song was detected in the form of oscillations in the cometary magnetic field at a level of 40 to 50 millihertz.

To make it audible to human hearing, scientists increased the frequencies by a factor of about 10,000.

As one scientist said of the discovery:

"This is exciting because it is completely new to us.

We did not expect this and we are still working to understand the physics of what is happening."

A space.com report attempts to explain the finding as follows:

"The physical process is somewhat difficult to understand without a deeper understanding

of plasma physics,  
but we can use a simple analogy to  
have a better idea of what's going on.

Consider your garden hose.

If you start the water flow,  
there's a chance that the hose starts  
to oscillate, generating waves.

This is about what  
happens in the plasma.

Of course, the flow we have in the  
cometary situation is not like water,  
but it's a flow of  
charged particles..."

But somehow the  
analogy is suitable.

The discovery of electromagnetically  
produced sounds from comets, meteors,  
and the Earthly auroras remain a  
surprise to conventional science,  
but they offer further proof of the  
electrical connectedness between the Sun,  
the Earth, and all bodies  
in our Electric Universe.

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The Greek writer Nikos  
Kazantzakis once said,  
"since we cannot change reality let us  
change the eyes which see reality."

Today countless  
thousands of inquirers  
are looking at the world and the  
universe beyond with changed eyes.

When one gazes at our  
celestial neighborhood  
the planets, moons, comets  
and asteroids we see  
defy the speculative history  
we learned in school.

These bodies testify to events not  
included in any geology textbook.

The evidence seems undeniable.

High-energy electromagnetic  
events have indelibly scarred  
and in some cases devastated the  
rocky bodies in our solar system.

Today this seemingly outrageous theory is being put to the test experimentally.

One of the most remarkable of these experimentalists is Billy Yelverton who has successfully replicated countless planetary features through experiments with electrical discharges and electric fields.

Here we provide a brief overview and introduction of Billy's research.

We begin with a discussion of an especially fascinating experiment to produce features resembling cellular structures, which are also seen on some planetary surfaces.

It started with the two copper conductors or two metal conductors, the bottom plate was generally an iron plate we use in our tests and the upper plate happened to be a copper sheet.

First time that we noticed them and it is during the time when we do the lifting effect which raises these

columns of sand or clay  
and if you look under the plate  
after the discharge is over  
we found is that there tends to be  
some sort of condensation of moisture  
that must be from the atmosphere or,  
you know, the humidity in the air.  
However, it tends to, you know, condense  
in the sand and the clay there.  
It causes it to harden up and it also causes  
it to cake up on the bottom of the electrodes  
in these same patterns that we see, you  
know, cellular shape, fairy circle.  
So it was pretty  
incredible to see that.  
To be honest my jaw fell open, really,  
I really didn't know what to think.  
I called Ben up he and I looked at the  
pictures and what not and discussed it  
and put it in the morning  
news, the next morning.  
Really, I mean, the first thing  
that came to mind was cellular,  
you know, some sort of, I mean, this is  
a, I know we can't say it's biological  
because it's not at all biological, but

nonetheless it had a biological appearance to it.

Central Africa has quite a bit

of those fairy circle features

and the Giant's Causeway in Northern

Ireland is where these columns,

hexagonal columns, appear to

be solidified in the rock.

If you imagine look

at them from above.

These hexagonal shapes

all bunched together.

That's what they look like, you

know, a cellular type feature

and we find them in soft

sediment and in a, you know,

as we just explained

hard sediment too.

Devil's Tower in Wyoming

is another example.

Dating back decades various

experimentalists have replicated

through electrical discharges

different types of craters

from those indistinguishable

from impact craters

to anomalous craters that continue

to puzzle planetary scientists.

In some instances an electrical discharge may be the only process capable of producing all of the features of certain craters.

The first types of craters were done with the dark mode discharge with a single overhead anode, or cathode actually it doesn't really matter and those were done again with dark mode and then we've also created several crater chains and singular craters through layered material with the lightning bolt with the arc mode.

We get all a lot of the same features, the rays that tend to scatter out quite a distance from the center of the crater.

We created that quite a few times too and the raised rim.

We literally can't tell the difference between that and an impact.

In the Thunderbolts Project's documentary



film "The Lightning Scarred Planet Mars"

it is proposed that the towering  
so-called shield volcano Olympus Mons  
is in effect a lightning blister from  
an enormous electrical discharge.

Has Billy achieved similar  
features in his experiments?

We did a couple of tries there with  
arc mode discharge on some clay  
that I mixed up with  
water beforehand  
and almost like a mud peanut-butter texture  
to it and those two produce, you know,  
of course it's a gaseous effect, you  
know, we're heating the liquid of,  
turning it in back in the gas again  
and it kind of creates like a blister  
and then these do  
resemble Olympus Mons.

They take on a concentric  
type ridge pattern  
as they like step up higher and  
higher, as the center rises up  
but again that could be, you  
know, as a process of heat  
and, you know, steam and pressure creates

what's similar to a volcano actually.

I mean in my opinion if you

look at this whole thing

overall volcanoes are

electric discharge.

This is the induction mechanism here, this is

what is causing the rock returned to lava,

the volcanoes all tend to

be this lifted mechanism

similar to the, you know, a blister or something

like that, you know, a raised feature.

It can be done with or without,

you know, the arc mode.

We've shown that too but

the long mountain ranges

I found that so far the best

reproduction that I've done on the table

is with the vibration which in,

you know, if we, you know,

if we look at this type of cataclysmic

event that may have actually happened

we'd have to associate some rather large

earthquakes with some of these events anyway

and what I found is that that most

earthquakes take place today between,

well, less than 1 Hertz up to

about 20 Hertz in frequency  
and I played around with that a little  
bit on the table with a vibrator,  
you know, just an  
offset counterweight  
and I determined the frequency  
by calculating the RPM  
and at about 25 to 30 Hertz we begin to do  
the exact same process as we see all over.  
We get a little raised dendritic features,  
raised mountain ranges with the featherback,  
you know, formations and so that's  
another road I want to travel down here  
shortly is to integrate this earthquake  
feature into our electric discharge  
because, well, we know that the electricity  
carries these type frequencies with them.  
A lot of work that Ben Davidson  
has done is, you know,  
all but prove that electric discharge  
is what creates earthquakes.  
So, we'd have to assume sooner or later  
that they are integrated together.  
Given the proven ability  
of electrical discharges  
and electric fields to produce

familiar geological features

then much traditional

geology must be reassessed.

One intriguing example is the

production of sand dunes by ionic wind.

This opens the door to a new interpretation

of mysterious sand dunes found on Mars,

on the Saturnian moon Titan

and most stunningly

even on the comet 67/P.

Those are quite common actually

and if you watch this happen on a sheet of

acrylic or any type of a dielectric sheet,

yeah, I mean it's right they'd unfold

right before your eyes literally

and you can see

that's an ionic wind

that's created by the discharge,

that's doing this on the table,

and to see it perform almost the

same way we do in nature makes

you want a second, you know, opinion on

what actually causes the wind to blow

because the features are

identical, you know,

what we consider to be weather driven

wind forces by heat and pressure

if we can recreate the same duning effects

with nothing but electric discharge.

It is incredible and to find these

type features on the 67/P recently

that really speaks volumes, when you

know there's no atmosphere there.

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in part two of this extended interview  
we continue our discussion with  
thunderbolts Picture of the Day managing  
editor Stephen Smith on the electrical  
scarring of planets and moons we now  
turn our attention to Mars as we explore  
the evidence that electrical discharges  
dramatically carved the Martian surface  
we begin by asking the question did  
excavated material from the surface of  
Mars arrive on earth as Martian  
meteorites Martian meteorites as their  
name implies are supposedly pieces of  
the planet Mars that have reached our  
planet  
they're usually identified by their  
mineral and isotope content because  
various Mars Landers have analyzed the  
soils there and those analyses are used  
for comparison so comparing the  
analysis from say the Spirit and  
Opportunity Rovers with the analysis of  
meteorites found sometimes in Antarctica  
they've concluded that they are actually  
pieces of Mars so to discuss Martian  
meteorites we have to talk first about

how they might have migrated from Mars  
to earth in the last interview I  
mentioned Valles Marineris  
it's a Canyon on Mars that's four times  
deeper than the Grand Canyon and it runs  
for almost five thousand kilometres when  
the Mariner space probes sent back  
pictures of it the first thoughts were  
that it was formed by some sort of  
catastrophic flooding but a major  
difficulty with that theory is that  
there's no Delta or headwater region in  
the canyon and there's no debris field  
that might be left over from water  
erosion also there's no indication of  
surface accumulation of water anywhere  
nearby in lakes or ponds that might have  
formed because of the catastrophic out  
the canyon also the so-called  
tributaries in Valles Marineris  
terminate in clean cuts and there's no  
sign of water flowing down into the  
them and they don't look any  
you in any way like a typical drainage  
formation the Mars Reconnaissance  
Orbiter also saw evidence of olivine

inside an area called Ganges casma which  
is one of the deepest parts of Valles  
Marineris  
and because olivine reacts with water  
its presence seems to definitely exclude  
water erosion as the cause of the canyon  
so we have to ask ourselves what force  
is it that can excavate over 2 million  
cubic kilometers of rock and regolith  
from the Martian crust and modern  
geologists speculate that Valles  
Marineris was formed by what they call  
mass wasting meaning landslides or slow  
movement of material down a steep slope  
usually in the presence of water and  
since Mars is thought by many planetary  
scientists to once have been warm and  
wet millions of years ago though that  
influence still pervades their thinking  
as I said in the last segment  
investigators were stunned by the images  
of Mars from space probes that showed it  
to be more like the moon with its  
craters rills and its sharp Peaks their  
theories suggested that Mars should be  
inactive with a surface that was



relatively stable for millions of years  
nothing like the scale of Valles  
Marineris was even imagined so bad then  
back to the question of what did carve  
up Mars like a pumpkin in the 70s Ralf  
Jürgens  
a civil engineer and a participant with  
Dave and Steve Talbot in the magazine  
response thought that electric arcs between  
planetary bodies created the features we  
see on Mars as well as the moon and by  
extension most likely earth so here's a  
quote from Jürgens he said this entire  
region resembles nothing so much as an  
area zapped by a powerful electric arc  
advancing unsteadily across the surface  
occasionally splitting into and now and  
then weakening so that it's traces  
narrow and even degrade into lines of  
disconnected craters and indeed in many  
areas of Valles Marineris there are long  
lines of crater chains the electric  
universe physicist wal thornhill also  
wrote Valles Marineris was created  
within minutes by a giant electric arc  
sweeping across the surface of mars rock

and soil were lifted into space and some  
fell back to create the great strewn  
fields of boulders first seen by the  
Viking and Pathfinder Landers and walls  
analysis suggests that the discharges  
resembled the shape of a barred spiral  
galaxy in Valles Marineris and the  
listeners can read about walls theory in  
more detail on his Hollow science comm  
website and in particular they should  
read his article called spiral galaxies  
and Grand Canyon's  
so like an arc welder shoots Sparks and  
flux into the air when it fuses metals  
material from the electric arcs that hit  
Mars shot gigatons a regolith out into  
space and this exceeded the planets  
escape velocity this means that whatever  
electric force excised Valles Marineris  
probably threw huge chunks into space  
some of them undoubtedly fell back to  
the surface as wal mentioned but some of  
them love the larger pieces most likely  
entered orbit and one of my latest  
picture of the day articles discusses  
the moon Phobos and it's obvious

electrical scarring one of the major objections to the idea of explosions of that magnitude is that they would have melted or disintegrated large pieces of rock however electrical acceleration doesn't do that just like electro magnetic linear induction motors can cause rapid acceleration the upward pull of electric arcs does the same thing and many people might be familiar with the linear induction motors in the amusement park ride called Superman that accelerates the cars to 100 miles an hour in 3 seconds and without heat and the characteristic of electricity that I mentioned that it can cause rapid acceleration helps to explain the features on Phobos as I mentioned I recently wrote that Stickney crater on Phobos is ten kilometers wide which is nearly the same size as Phobos itself I've also written many previous articles that talk about rocky bodies with craters almost as large as they are and

I mentioned Saturn's moon test time as an example as I pointed out the so-called impact craters should have blasted the objects apart but there's really no indication visible other than the large craters in the case of Phobos Phobos is like 28 by 20 kilometers in size so Stickney crater is nearly half as large as the moon itself some astronomers say or they claim that the fracture lines around Stickney crater show that there was a great shock to the moon and that it was distorted by whatever forms Stickney crater but when you look closer you can see that the striations that they're mentioning are really chains of small craters and there aren't any fracture lines as they call them there aren't any cracks from a huge shock wave passing through the moon surrounding Stickney crater it's smooth and rounded and there's no large blast debris and it should be mentioned though that Phobos itself is covered with about a meter thick carpet of ultrafine dust and I know I mentioned last time comet

Hartley being electrically machined and the surface of the comet being surrounded by a cloud of ultrafine dust there's probably something similar to do with Phobos during whatever electrical event created it

since Phobos is about the same size as some asteroids know like Mathilde or eros or Ida and it has gigantic craters just like they do we have to ask ourselves what common event creates similar structures without blowing them apart and the only answer that I can come up with is electricity planetary scientists theorized that volcanoes and flowing lava are responsible for having shaped many of Mars most dramatic features but does this explanation match what is actually seen on the Martian surface

another thing about Mars is that there are long canyons and rills that seem to start and stop suddenly even though Valles Marineris has been attributed to mass wasting or flooding by conventional geologists the other

abrupt incisions on the surface are even more puzzling to them and the only explanation that they've been able to come up with is that their lava tubes from volcanic eruptions and lava tubes form when volcanoes send rivers of molten magma down their slopes and as the lava hardens it's supposed it supposedly forms a shell around the flowing stream and indeed that is because you can see that there are lava channels around many volcanoes with roofs over them and holes through the roofs show that molten rock is indeed flowing through this shell since the shell creates a roof over the lava it insulates it and it allows it to travel for many kilometres and lava tubes are found in Hawaii and other places around the world like New Zealand or wherever volcanic eruptions have been frequent over the centuries we can see the evidence for collapsed lava tubes in Hawaii and they superficially do resemble the structures on Mars however one important objection that I can point

out is there's no sign of any volcanoes associated with most of these big trenches that are supposedly collapsed lava tubes and another objection is the evidence of collapse that we can see on earth when the roof of a lava tube collapses they're often several meters thick of solid rock so the roof has really nowhere else to go except into the bottom of the lava tube so there's big piles of fractured rock and stone covering the floors of these tubes but when you look at the Martian formations the bottoms of these trenches are clean and there's really maybe just a dusting of sandy ripples in there so you have to ask well where's the roof of this collapsed lava tube since the long trenches and I could name a couple of them like tractus Catina or koh protease Catina have steep clean sides and they have scalloped edges like I mentioned the last time Victoria crater has these scalloped edges so to the sides of some of these trenches they often have dendritic ridges going at their sides

too so I'd suggest based on the evidence that I presented last time and some of the things that Dave Talbot has done about dendritic ridges that these trenches marked areas where electric discharges touched down and then traveled along for some distance before they were suddenly quenched so CJ Rams ransom who I mentioned in the last interview has created similar features in his laboratory of these trenches with clean bottoms and steep sides and he's done it by exposing these various materials he's formed two electric arcs and he's either moved the discharge electrode across the sample or he's moved the sample under the arc and that shows me that the lightning bolts that H the deep furrows on Mars were either moving through space above the planet or the planet was rotating under the discharge that was emitted by whatever electrically charged object was above its surface it's true that many Martian trenches are near what are conventionally called volcanoes but I



have serious reservations about that description as well one of the most familiar formations on Mars is probably Olympus Mons in the northern region and it's often called the largest volcano in the solar system unquote because it rises more than 27 kilometers that's three times taller than Mount Everest it's also almost 600 kilometers wide across its base in comparison the volcano on Hawaii Mauna Kea when you measure it from the ocean floor to its summit is a little over 10 kilometers high so here you have a volcano so-called on Mars that's two and a half times higher than Mauna Kea but like I said there are serious issues with the description of Olympus Mons as a volcano and particularly in the sense that it's a place in the crust of Mars where supposedly molten magma erupted from beneath the surface building up a conical structure although I should mention in passing that volcanoes on earth might not behave in the same way as everyone assumes so using volcanoes

on earth to describe Olympus Mars might be more of a hindrance than a help in the case of Olympus Mons though the structure is definitely anomalous first of all

when electric arcs strike a surface they often will stick to one spot and that causes the surface to melt sometimes creating bubbles or blisters and those blisters are known as Fulgham i'ts or lightning blisters and that terminology

I first learned from wal thornhill many years ago when he released his cd-rom called the electric universe

unfortunately that particular

presentation is now out of production

but walls various talks in a number of different venues discussed nearly

everything that was found there many of

his talks are available through the

Thunderbolts website by the way but

getting back to olympus mons foga mites

are sometimes seen on lightning rods

after they've been struck their bill

shaped blisters with nearly circular

craters on top of the blister they have

steep sides and they're surrounded by  
depressions or moats as I briefly  
touched on in the last interview they  
also rise up sharply from vertical  
sidewalls and of course anyone who's  
looked closely at images of Olympus Mons  
can see those same distinguishing  
characteristics these vertical sidewalls  
surround Olympus Mons then there's a  
steep upward rise in a bell shape and  
multiple circular craters on top of the  
of the volcano I keep referring it to  
evoke as a volcano but let's call it a  
Fulghum it-- which it most likely is  
then again close by Olympus Mons you've  
got three other gigantic so-called  
volcanoes that share the same features  
as Olympus Mons does the other three are  
found in a straight line just to the  
southeast of Olympus Mons and to me this  
means that the volcanoes on Mars are  
really gigantic lightning blisters and  
in my last interview I stressed that  
using earth geological theories to model  
the rest of the solar system is  
backwards thinking rather we ought to

use what we see in the solar system to  
model earth geology in the case of the  
huge volcanic mites on Mars  
perhaps many or maybe even all volcanic  
formations on earth can be traced to the  
activity of electric arcs at some time  
in the recent past and in that light  
there's a structure in Namibia called  
the Brandenburger Massif that ought to be  
analyzed in terms of its morphology because the Brandenburger Massif is  
a circular dome shaped structure it  
rises more than 2500 meters and it's an  
area bigger than 650 square kilometers  
it's described by geologists as being  
over 120 million years old and it's they  
think it's a granitic intrusion that's  
so supposedly punched through Earth's  
crust long ago of course under 20  
million years and but you know when you  
look at Brandenburger Massif near it our  
parallel grooves and ridges that extend  
outward from it for hundreds of miles  
and there are Lichtenberg figures  
covering an enormous area multiple  
craters with strange shapes and dunes

that seem to be frozen in place but when you look closer you can see that the so-called dunes are really solid rock waves that march across the desert they're covered by only a thin layer of sand and parallel grooves like this are everywhere in the solar system on Venus which is the hottest spot in the solar system on Enceladus which is profoundly cold near the temperature of absolute zero and if these patterns are found in such different environments then we have to search for a common explanation for them

that has to take all that variability into account and I mentioned Lichtenberg figures a moment ago they're named for George Christoph Lichtenberg and they form when lightning bolts strike some material on earth it can be soil or sometimes even human tissue I've seen images on the web of human beings that have been struck by lightning and these branching dict Lichtenberg figures are burned into their flesh and Lichtenberg figures have also been

generated artificially in blocks of acrylic plastic by a man named Burt Hickman who sells what he calls captured lightning sculptures on his website also many Lichtenberg figures have been discovered in the south polar region of Mars and we've referred to them in some pictures of the day as Martian spiders but we're not going to get into the Martian spiders too much here today so if the topography surrounding the bran burg Massif and the bran burg Massif itself exhibits details that are found on other planets and moons then conventional theories are going to fall really short of the observations by describing the birth of the bran burg Massif as an event that emerged gradually in the distant past basically planetary scientists are neglecting observational evidence and that evidence is that the formation is in reality a foga might of huge proportions that might have been formed suddenly again I know that this idea sounds far-fetched since earth geology

has been well thought out and explained for the last hundred years or more but I will say though that one well-known geologist that I know has been heavily influenced by these concepts so much so that he's changed his opinion about some earth-based structures and now says he's examining his opinions about how they formed in light of new knowledge that he's gained about electrical events so this shows you that once the mind opens to new ideas and a new way of seeing the world is allowed to take hold things that once seemed so settled and stable suddenly take on a whole new aspect a new way of seeing the world evolves this change in thought processes is sometimes described as a catastrophic shift in perception by psychologists that shift in perception was described in the title of the last Thunderbolts conference it's called a tipping point when you push on a tall object it slowly moves off-center until it reaches the point of no return and tips over without further energy input because gravity takes hold and

that same psychological impetus occurs  
in the mind slowly new ideas begin to  
build on one another until the old  
mindset topples and a perfect  
illustration of that it would be the  
fall of the Soviet Union if you're  
talking about it from the psychological  
standpoint I remember hearing about  
Hungary taking down their walled borders  
with the West one day and then it seems  
like only a couple weeks later that  
lacroix lenses started the Solidarity  
movement and then a couple weeks after  
that we saw the East German wall come  
down I realize it took longer than that  
of course but it seems like once the  
ball starts rolling changes become  
inevitable



[Music]

Ideally a scientific theory of mythology should be able to explain the genesis and specific content of ancient myth.

Modern schools of myth, alas, have long since abandoned any pretense of addressing such questions. Much less of offering comprehensive theories purporting to explain more than a handful of isolated mythological motifs from one particular culture. Stith Thompson's opinion is representative of the skepticism that currently prevails in the field, quote "The ultimate origin of nearly all folk tales and myths must remain a mystery." The theory advanced by Dave Talbott and myself, in contrast, claims to offer a unifying explanation of nearly every globally attested mythological structure and thematic pattern. Our theory is distinguished from all other modern schools of myth moreover, by the fact that it explains the individual themes at a level of detail rarely imagined by other scholars.

The archetypal myth of the Warrior

Goddess offers a case study in this regard.

Among the earliest mythological traditions of Mesopotamia are those describing the planet Venus as the warrior goddess Inanna. Indeed, a third millennium kenning describes war itself as the dance of Inanna. In the following hymn Inanna is described as raining fire and flood from the sky, quote "Loud- thundering storm.

Hierodule, who makes heavens tremble, who makes the earth quake, who can soothe your heart? You who pour down firebrands over the earthly orb, who flash like lightning over the highland... Whose cry reaches heaven and earth, whose roar is all-destructive... Your angry heart is a terrifying flood- wave."

Now I ask, would anyone viewing Venus in the present sky ever be inspired to describe it as a loud-thundering storm, flashing, lightning and hurling firebrands? Yet this very language is employed again and again in the Sumerian text to describe Inanna Venus. Quote "Like a dragon you have deposited venom on the foreign lands... Raining blazing fire down upon the land... You

charge forward like a charging storm.

You roar with the roaring storm... Your rage cannot be cooled!" A recurring theme places Inanna Venus at the center of a destructive heaven-spanning storm, described alternately as a tornado or a whirlwind.

In a hymn to Inanna for example, Inanna is described as clothed in a furious storm, a whirlwind. The word described as whirlwind here is dal-amun denoting a tornado or dust cloud. Evident in these archaic traditions is an image of a planet gone amok.

Its whirling tornado-like behavior instantiating its terrible rage.

It is telling that analogous behavior is reported of other great goddesses such as the Akkadian Ishtar, the Canaanite Astarte, the Egyptian Hathor Ugaritic Anat, and the Indian Kali.

Each of these warrior goddesses, several of whom are explicitly identified with the planet Venus, is associated with a destructive rampage at the dawn of time that brought the world to the very brink of destruction. If Inanna was conceptualized as a whirling storm, Ishtar was

represented as a whirling dancer.

Quote “Oh valiant Ishtar, shining torch of heaven  
and earth... Furious and irresistible onslaught...

Fiery glow that blazes against the enemy, who wreaks  
destruction on the fierce Dancing One, Ishtar.”

The epithet translated Dancing One here as  
Gushea, literally, “the Whirling One.” Religious  
rituals celebrating Ishtar Venus

featured frenzied dances in

which its celebrants whirled wildly. Benjamin

Foster in his commentary on these archaic rituals

observed, quote “The whirling dance or

mock combat the people perform is a

memorial to Ishtar, here etymologized

by the poet as the ‘whirling dancer.’”

From the standpoint of modern astronomy needless

to say, there is no conceivable reason why the

planet Venus should be conceptualized as an agent

of storm, much less as a whirling tornado. Nor for

that matter, is there any obvious

reason why that planet should be

described as a whirling dancer or fire-

spewing warrior. Hence the profound puzzle

presented by these widespread myths and

rituals. How then is it possible to explain the

myth of the warrior goddess? In the historical

reconstruction offered by Talbott and myself,  
the myth in question encodes  
catastrophic natural events during which  
Venus's atmosphere became hyper-charged and  
disturbed, flaring dramatically in the northern  
circumpolar heaven. The basic image  
was that of a whirling comet-like  
object, or hair star. Indeed, ancient  
artworks from Mesopotamia, Old Europe and  
the New World depict Venus as a whirling  
star. Such imagery is especially conspicuous  
in the indigenous traditions  
associated with the Hindu goddess Kali.  
According to the various accounts, the goddess's  
frenzy dancing threatened to destroy the world.  
Quote "The dread mother dances naked in the  
battlefield, her lowling tongue burns like a red  
flame of fire, her dark tresses  
fly in the sky, sweeping away  
sun and stars, red streams of blood  
run from her cloud-black limbs, and the  
entire world trembles and cracks under  
her tread." A recurring theme in the  
Hindu accounts of Kali's rampage is  
the goddess's wildly disheveled hair,  
reputedly capable of raising a terrible

storm that blocks out the light of the Sun.

The goddess's hair, as noted by David Kinsley,

is a sign of her destructive nature, quote

"Kali's unbound hair may also have a broader, indeed cosmic, significance, suggesting dissolution itself.

Considering Kali's identification with

the cremation ground and death,

her loose hair may suggest the end of the world.

Her hair has come apart and flies about

every which way; order has come to

an end; all has returned to chaos."

As we would understand this imagery,

Venus's swirling hair not only presented

the appearance of a giant comet or tornado

circling about the polar axis, it was

laden with lightning and fire and quite

literally constituted a storm that

blocked out the light of the primal Sun.

Hence the global myth of the giant comet

or dragon that swallowed the Sun and

threatening to destroy the world.

A Sumerian hymn from the second

millennium BC captures this idea perfectly.

Quote "My hair will quarrel around in heaven

for you like a hurricane." Students of myth will

remember that Kali's dance was not a solo

performance. She was joined by Shiva whose dervish-like dancing added to the apocalyptic destruction.

Shiva is Mars, as I have documented in various works. Analysis reveals that Mars features prominently in nearly every aspect of the myth of the warrior goddess.

It was a tornado-like storm associated with Venus in fact which vacuumed up many miles of surface material from Mars, leaving the red planet with a severely flattened northern hemisphere.

Doubtlessly, immense dust clouds of recently catastrophically excavated material contributed much to Venus's archetypal status as an agent of destruction and whirling dust devil, not to mention her intimate association with a vast horde of demonic beings. Despite her many repulsive attributes, Kali remains India's most beloved goddess to this very day.

Artworks depicting the raging goddess are ubiquitous, most emphasizing her disheveled hair and grotesquely protruding tongue.

It is the goddess's tongue that remains the most iconic and lurid of all her ghastly features.

Quote "Kali's tongue is a problem... It hangs.

It lolls. One cannot help noticing it.

In the famous temple of Kali in southern Calcutta, the image of the goddess appears to be nothing but a tongue... The history of Kali's tongue, like the history of the goddess itself, is a story rich in detail but poor in plot."

"We know a great deal about what the tongue symbolized in specific texts at different periods, but we know very little about how why, or when the different meanings of the tongue developed." How then would we explain kali's gigantic tongue? The fact that warrior goddesses from the New World, likewise display a protruding tongue, attest the archetypal nature of the imagery in question.

As does the fact that cultures on both sides of the Atlantic explicitly compare the goddess's tongue to a dagger or knife. Here too it is our opinion that the imagery encodes the unique relationship prevailing between Mars and Venus during a specific phase in the history of the polar configuration in which Mars appeared to move below Venus towards Earth, presenting the appearance of a dagger-like tongue.

The fact that the red planet was



described as the knife star or sword

by sky watchers from Early Mesopotamia or

Egypt, is certainly germane to our hypothesis

[Music]

[Host, Michael] Welcome to the

Thunderbolts.info Podcast for February 12, 2016.

If you're one of the many

people around the world

who's begun exploring the

Electric Universe Theory,

then you've probably become aware

of some very different ideas

about how the universe

actually works.

This is a universe where nothing really

lives in isolation from anything else.

There is a conductive medium, called plasma,

that pervades the physical universe

and electric currents flowing through

plasma connect and influence

separate bodies over

vast cosmic distances.

And in our own solar system we

see this principle demonstrated

in the electromagnetic relationship

between the Earth and the Sun.

And scientists have actually known

for many decades that the Sun

is the cause of

auroras on Earth.

This was a confirmation of the hypothesis of the experimentalist Kristian Birkeland and in recent years the evidence for the Earth-Sun electrical connection has grown more and more powerful.

So the question is if the Earth and the Sun are electromagnetically connected and if the Sun's influence on the Earth is not merely limited to radiation and thermal heating and kinetic collisions of particles.

And maybe, if the Earth itself is a charged body that can be thought of as a kind of capacitor, then it seems inevitable that our basic understanding of the Earth's climate and weather needs to be dramatically reassessed.

Do we really understand what it is that creates and drives weather phenomena?

Now, under Thunderbolts YouTube channel we've occasionally addressed the issue of global warming or so-called climate change and in fact we've even explored

the recent discoveries  
of mysterious climate change on  
other planets as well as our own.  
Well, today we're gonna be exploring  
this question from a very unique angle.  
Our guest is a gentleman by  
the name of Richard Moore  
and Richard was a  
featured speaker  
at the Thunderbolts conference  
EU 2015, in June of last year.  
I was recently able to watch  
the video of Richard's talk  
which was called "The Pulsating  
Universe and Planet Earth"  
and I really felt that it was one of the  
memorable highlights of the conference.  
Richard has explored the  
electrical theory of stars  
and the electrical environment  
of our own Milky Way galaxy  
and he's applying those principles  
to a thesis that could provide  
an explanation for natural  
climate change here on Earth.  
And Richard's thesis is an example

of how there really is not one set  
or dogmatic, kind of, electric  
universe hypothesis.

There are different people  
coming into the community  
and they have their own unique insights  
and unique takes on all things electrical.  
And so Richard, whenever I'm  
interviewing someone for the first time  
who's coming into the electric universe  
community, I'm always interested in asking them  
how they first became introduced to  
the Electric Universe hypothesis  
and I'm wondering this whole  
question of climate change,  
is that an issue that you  
were exploring first  
or did you find the  
Electric Universe and see  
its applicability and relevance to  
the whole climate change debate?

[Richard] Well actually, I  
was interested in climate  
long before I heard of the  
Electric Universe model.

Like everyone else, I was aware,

of course, of all the publicity  
and concern and activism around what  
they originally called global warming  
and now they call climate change.  
But then, every once in a while,  
I would read an article  
that had a lot of a  
scientific clout behind it  
and presented what looked  
like strong evidence  
that the global warming  
hypothesis wasn't valid.  
And so I didn't, I really  
didn't know what to believe  
and I'm not somebody who likes  
to just let things go like that  
so I decided that what I was  
going to do is actually download  
look for the climate data on...  
official climate data on the web and  
download it and look at it myself.  
So it didn't take very  
long to find the NOAA, what it is,  
the National Oceanographic aeronautics,  
or whatever, administration,  
and I found the ice core data for Greenland

and for Vostok, which is in Antarctica.

So I had the Arctic ice core record  
and the Antarctic ice core record  
which seems to be the most accurate and  
reliable long-term record of climate,  
record of diverse temperatures.

And I started looking at that  
and it became  
apparent, very quickly,  
that there isn't really anything unusual  
going on with respect to climate  
so, just to give an overall picture  
of what climate variation has been;  
if you look at the record  
for the last 400,000 years,  
which is what the  
Vostok record shows,  
see that the Earth is almost always  
in what's, in what we call, an ice age.

And it's only every 100,000  
years approximately  
that there's a sudden  
spike in temperature,  
a very sudden spike and a  
very short-lived spike.

So we have about, something like 10,000 years

of what we have now, an interglacial period,  
and then the temperature falls rapidly  
again, down to the next ice age.

So it's good just to have an overall  
pattern of what, what happens on the Earth.

Then it's interesting,  
the kind of pattern,  
there's those spikes every  
100,000 years, like I said,  
but if you look at the graph, there's  
another set of smaller spikes  
that occur about  
every 10,000 years.

So basically, what the climate record  
is, is spikes on different scales  
and the spikes occur with an  
approximately regular frequency,  
so it's a fractal pattern.

All I knew is that this was  
what, these were natural things,  
this is all looking before  
there was any industrial age.

And I didn't have any idea  
what might be causing it  
but I said well, this  
is the natural pattern



and we better know about

the natural pattern

if you want to start talking

about something being unnatural.

So then I looked at, just the tail end, just

the last 10,000 years or so, of the graph,

and, lo and behold, you get

another series of spikes

only ... there about

every 1,000 years.

And then within that, there's

even smaller spikes.

So, in other words, it's spikes all the

way down. Different frequencies.

Now, the one for the

last 10,000 years,

what you can see,

and now I'm looking at the Greenland

record, the northern hemisphere.

Well, you see the spikes that

go up at the beginning

and then flatten out and

then they go down at the end.

So basically there's a

spike at about -1000,

a spike at the Year Zero,

spike at the year 1000,  
and then it goes down to about an 1800,  
about 1800 goes down to a minimum  
and, lo and behold, what they call  
global warming is one more spike  
occurring just about when you would  
expect it to occur, to year 2000.

And then I, you know, I found  
that very interesting.

I said well, yeah, there's been  
200 years of global warming  
and it follows the  
natural pattern.

And, according to that natural  
pattern, it should turn around  
and start down  
around the year 2000.

So I did some research looking  
for different articles  
and, lo and behold, there were about 5  
different kinds of ways of measuring,  
all of which showed that the global  
warming rise stopped about the year 2000.

So I found that very interesting  
but I still hadn't heard,  
but I didn't have any reason to

think I had any theory about why  
we had this spiky pattern and  
why it was now going down.  
And then, I forget how  
I heard about it,  
but I heard about the Electric Universe  
and I bought the book The Electric Sky  
and read that  
and it was just, I mean the...  
it's just so obviously  
that it had to be true  
because what you see  
in the cosmos are...  
you know, these beautiful images like  
from the Hubble Telescope and everything,  
they all look like the kind of plasma discharges  
that you can create in the laboratory.  
And we know that the  
universe is 99% plasma.  
So, if what we have is the plasma  
universe and what we see are  
what looked like plasma discharges  
then it makes a whole lot of sense  
to assume they are  
plasma discharge.

[Michael] Right, it's way to common

sense approach to tell, Richard!

So, then I looked, sorry,

then I put the two

things together.

What I noticed about all these

spikes being a record

and the fact that the universe

is filled with electric currents

and we know by looking

at graphs, as I talk

and I think you're gonna be able to

put some of those up with our podcast,

one of the graphs

shows the current,

there's a current that comes

in to the Sun at both poles.

That's what powers the

Sun, that's what makes it shine.

But most of the current, it

goes around the chromosphere,

you know, around the corona and

then goes out over the equator,

that's what's called the

equatorial current sheet.

So that current is coming out across,

over the plane of the equator of the Sun,

and so it goes to

all the planets.

So there's a current that goes

from the Sun to the Earth

and again, just as with the Sun, the current

comes in at the North and South Poles

and it goes through

the ionosphere mostly,

some of it comes down as

lightning and weather events,

just like some of the current goes

into the Sun and causes it to shine.

Some also comes into the Earth but most

of it goes around through the ionosphere

and then goes out over the

equatorial plane of the Earth

and rejoins the current that's

flowing away from the Sun.

So that current that comes into

the Earth, that's what's visible

as the aurora, the northern

and southern lights.

Now, nobody's going to get sunburned

from standing under the aurora

so it's not obvious how, the fact that an

electrical current comes in to the Earth,

how that might cause heating.

That isn't, it still isn't

obvious how that happens.

But, the fact is that what else,

besides an electric current,

can cause spikes of energy

on all different scales?

Like the standard

theory for the ice ages

is that the Earth gets closer and

farther from the Sun, you know,

but if there were an orbital

variation of any kind

it would be exactly regular,

wouldn't be approximately regular.

An electric current

can carry any charge,

I mean, can carry any

amount of current.

Like, that's why you have spike

protectors on your computer power supply

cause it could suddenly be a

spike coming over the current.

So and if, like I, one thing

I did just, kind of, for fun

is, I recorded some music and

then looked at the graph  
and what you see is something that looks  
almost exactly like the climate record,  
it's all spikes at  
all different scales.

So the point is that an electric current  
is capable of carrying a fractal pattern  
that goes over a very,  
very wide range of scales.

And electric.. you know, and  
they're usually cyclical,  
you know, they're usually  
some kind of, discharges' circuits  
tend to have cyclical  
patterns in them.

[Michael] That's an  
interesting point to raise  
because our most viewed Space News to date  
was on a, so-called, impossible neutron star.

Scientists, they observed what appeared  
to be a pulsar with the brightness of,  
I think t'was 10 million Suns,  
and so that was a big problem  
but we, I hear from apologists  
for the mainstream viewpoint  
and they say well, it's the

periodicity of a pulsar,  
it has to be created by this kind of  
mechanical spinning lighthouse effect.

It couldn't be  
something electrical  
because then you wouldn't get this  
kind of regular pulsing signal.

What are your thoughts on that?

Well, you can create discharges  
in the laboratory that pulse,  
I mean, electrical circuits  
do pulse, you know,  
it's, that's how radio works, you have a  
capacitor and a resistor and a power supply  
and depending on how they're set you can  
decide what frequency you're getting,  
that is how you tune a radio.

So that's standard  
behavior for circuits.

So, in other words, I had  
this hypothesis that  
the Earth's temperature record and the fact  
that we're connected to an electrical circuit  
could be...

so it could be an electrical  
thing that causes climate change.



But I didn't have any...

I didn't have any empirical  
verification of that at first.

Then, when I went to the Electrical

Universe conference in June,

I gave my talk,

there was another talk, but he

showed that the sunspot cycle,

which is the sunspot,

the number of sunspots basically is

measuring the electrical input to the Sun,

the more sunspots, the more electrical

energy coming into the Sun

which means the more electrical

energy that reaches the Earth.

Because, you know, it's

going to be proportional.

Double the energy into the Sun, you're

gonna double the energy into the Earth.

Well, there was a

minimum of temperature

around...

somewhere in the 1650,

1700, around in there,

if you look at the temperature

record for Greenland,

and it turns out  
there was a minimum,  
there was a very clear minimum of  
sunspots at the exact same time.  
So, what that, and then,  
since then there's,  
the sunspots have been increasing  
and temperature has been increasing.  
So there is a very  
definite, strong,  
not a slight, no one of these  
things that points 1%, but  
there's a very strong linear correlation  
between electrical input and temperature.  
Sort of, it's a strong  
verification of the hypothesis  
that it is electrical input to the Earth  
which is causing climate variations.

[Michael] Ok, now what  
might you say to a critic  
who rejects the very notion of  
an electrically powered Sun  
or even an electromagnetic connection  
between the, the Earth and the Sun,  
when for instance, the  
auroras here on Earth,

science now recognizes that the  
Sun is the cause of the auroras  
but they're still thinking  
in terms of collisions.

So, what do you believe is  
some of the best evidence  
that the Sun actually is  
an electrical phenomenon?

[Richard] Well, I  
mean, that's really,  
that's really a problem for the  
whole electric universe community,  
how do we get people  
to look at the data?

I mean if you...

The Thunderbolts.info website, I  
think, does a very, very good job.

It's not that we don't  
have the arguments,  
it's not that we don't  
present them well,  
it's not that we don't have data,  
it's that mainstream cosmologists  
and institution astronomers,  
they were just not  
tempted to look at it.

If someone told them, oh there's  
an electric model of the universe,  
they say; geez, well, there's also  
sites to talk about UFOs, right?

You know,

I mean, they just  
dismiss the idea.

If we could get them to actually look at  
what is on the Thunderbolts.info website,  
I think that works!

You know...

I don't think there's any failure  
in our presentation abilities.

[Michael] Well, on the  
climate change debate,  
and most of the so-called  
debates that I've seen,  
we don't see an alternative  
view of the Sun  
or the Earth-Sun connection  
really being presented.

A lot of the discussions  
are political  
and there's also debate  
over the question of CO<sub>2</sub>  
and a question of the cause and effect

relationship between CO<sub>2</sub> and warming.

So what are your  
thoughts on that?

Is there a correlation between CO<sub>2</sub> and  
warming or is it the other way around  
or do you think the whole issue  
is horribly overinflated?

[Richard] Well, the thing is that,  
if you look at the what the  
articles they are publishing,  
they always say things like, first year  
on records since records have been kept.

Well, the thing is they didn't start  
keeping records until into the 1800s  
and there has been 200 years  
of warming since 1800,  
there's no doubt about that.

It's just that that matches 200 years  
of warming we've had in the year -1,000,  
in the year 0 and in the year 1000  
and so now we're having a peak in 2000.

So there was an accidental in correlation between  
the beginning of the Industrial Revolution  
and a natural temperature rise  
that was going to occur anyway.

Now why the, so-called, climate scientists

aren't looking at the long-term record,  
that's, I think, a  
political question.

I think there's political reasons for that,  
which is really a different subject.

But the fact is that, if you  
look at the long-term record,  
you can see that this correlation between  
carbon dioxide of the Industrial Revolution  
and 200 years of warming has  
been a complete coincidence.

And it turns out that...

let's see, we have one graph here from John  
Christy of the Earth System Science Center  
and what it shows is,  
it shows a red line  
which is what the...  
what that CO<sub>2</sub> models say is going  
to happen with temperature  
and then they have a green and a blue line  
which would show the actual measured temperature  
from satellites  
and other sources.

Up until 1995, or so, they  
were tracking each other.

The so-called CO<sub>2</sub> models

were tracking temperature.

But beginning, you know,

just before the year 2000,

the CO<sub>2</sub> models are now going

way up into the stratosphere

and the actual real temperatures are

flattening out and beginning to decline.

So that really tells the story.

It's been an

accidental correlation

and now the correlation is

breaking down because nature is...

and the other thing is that the rate of increase

of heating was not any higher than normal.

In other words, there could have been

both CO<sub>2</sub> warming and natural warming,

that would have been possible,

but then the spike would have

gone up at a steeper rate.

But it's not,

it's going up at exactly the same rate

that it went up the previous 3 spikes.

So there's no evidence whatsoever

of any influence from CO<sub>2</sub>.

If you actually study the...

I mean, I've seen studies of

greenhouse gas effect, okay?

And so, I mean, you can study CO<sub>2</sub> as  
a greenhouse gas in a test tube  
or in a beaker or, you  
know, in the laboratory.

And what you find is that  
it's a logarithmic thing  
where, when you, if you,  
start off with no CO<sub>2</sub>  
and put some in, then you get a  
very rapid rise in temperature.

But as you begin to get  
a certain level of CO<sub>2</sub>,  
then the effect of it drops  
off to almost nothing.

So, by the time you get to  
about 265 parts per million,  
you're not getting any effect  
at all of adding more CO<sub>2</sub>.

So, in other words,  
we already had experienced the maximum  
that CO<sub>2</sub> can contribute to warming  
before the Industrial  
Age even came along.



Welcome to Space News from the Electric Universe, brought to you by the Thunderbolts Project™ at [Thunderbolts.info](http://Thunderbolts.info)

Wal, I love the topic of supernovas for the Electric Universe for a couple of big reasons. Number one, as I mentioned earlier, it was well over a decade ago, that you wrote your own scientific paper which explains supernovas as a type of electrical discharge. And this paper was peer reviewed and published in the IEEE Transactions on Plasma Science. People who call themselves skeptics of the Electric Universe have always demanded more peer-reviewed material and yet I have to wonder how many of these “skeptics” have ever bothered to read the aforementioned peer-reviewed paper. And number two, in recent years, there have been several supernova discoveries which, according to the scientists making the discoveries, are not merely surprising, but rather they “break all the rules” and they upend all conventional thought on the very nature of stars and of supernovas.

The standard story of a supernova of course is that when a star has exhausted its nuclear fuel, it will gravitationally collapse and then a rebound effect produces an explosion. Well, a little over two years ago, there was a supernova which science media dubbed the "zombie star" because it appeared to first explode well over half a century ago and then more than 50 years later, it appeared to "come back to life" and explode again. Here's what [phys.org](http://phys.org) wrote on this story a couple of years ago. "The finding, published by Nature, completely confounds existing knowledge of the star's end of life. Somehow this star exploded more than half a century ago, survived, and exploded again in 2014." And the lead author of a paper on the finding said "This supernova breaks everything we thought we knew about how they work." Now as I see it, here's the real taproot of the "crisis" in cosmology, which we've been referring to for over eight years on this series. It's not that

discovery is sometimes, or actually quite often, surprising or mystifying for astronomers. Anyone can be surprised by discovery, especially when we're talking about the incredibly complex nature of the remotest phenomena observed throughout the universe. No one, including proponents of plasma cosmology in the Electric Universe, can claim to have all of the answers. But the real essence of the "crisis" is that very simply, discovery doesn't change anything.

The aforementioned supernova quote "breaks everything astronomers thought they knew about how supernovas work."

That's not according to me, it's not according to Wal Thornhill, it's according to the scientists who made the discovery. Today, what indication exists that any new theories of supernovas and of the nature of stars are actually being considered. Science is simply moving forward as if nothing has changed.

That's right. There are a bewildering number of categories of supernovae, and new ones are being found that don't follow

the rules. The electrical model of stars on the other hand, put forward by Ralph Juergens, has been successfully tested by the SAFIRE experiment, and it shows that plasma double layers, or sheaths, are formed around all bright stars. And a feature of double layers is that they can explode suddenly under stress, and throw over the star's galactic power switch. When that happens, the electromagnetic energy stored in the local galactic circuit, is suddenly unleashed, like an arc welder on the star's surface. That's why a supernova can briefly outshine its entire galaxy. The nearest recent supernova, 1987a in the Large Magellanic Cloud, a dwarf galaxy satellite of the Milky Way, is only six times more distant from us than the center of the Milky Way and showed glowing features of a star circuit with its three coaxial rings of pearls, defining the characteristic hourglass shape of a plasma pinch. So, when this short circuit occurs at a star, the circuit itself is trying to deliver more power

suddenly to the star itself and the circuit in this case became visible, and is still visible. Supernovae type 1a are used as standard candles by astronomers and their faintness used as one measure of the distance of remote galaxies. I said earlier, Halton Arp showed quasars with high redshift are connected to nearby galaxies, which means that the redshift is not a measure of distance. He went on to show that redshift is a measure of the lower energy and youthfulness of an object, and not that it is moving away from us at high speed. In other words, the universe is not expanding; there was no Big Bang and in the case of the lower-than-expected brightness of the supernovae type 1a in these youthful objects, that is due to the lower energy of the quasar itself, having been recently born from the center of an active galactic nucleus. The Nobel prizes for this discovery were awarded, based on an assumption. That assumption is incorrect.

Very good. Well Wal, moving on to

another example of a high-energy electromagnetic phenomenon on an even larger scale: in late 2019 NASA released a new image of a feature which has been dubbed the “cosmic candy-cane,” near the center of the Milky Way galaxy. This image is extremely interesting for a number of reasons from the Electric Universe vantage point. A NASA press release says that the cosmic candy-cane “...spans 190 lightyears and is one of a set of long, thin strands of ionized gas called filaments that emit radio waves.... the GISMO instrument detected the most prominent radio filament in the galactic center, known as the Radio Arc, which forms the straight part of the cosmic candy-cane. Scientists say the filaments delineate the edges of a large bubble produced by some energetic event at the galactic center, located within the bright region known as Sagittarius A about 27,000 light years away from us. Additional red arcs in the image reveal other filaments. And a member of NASA's GISMO team says

of the image "It was a real surprise to see the Radio Arc in the GISMO data. Its emission comes from high-speed electrons spiraling in a magnetic field, a process called synchrotron emission." Of course plasma cosmology proposes that something very different from a black hole is actually at the center of the Milky Way, and in fact of all galaxies. So, what are your thoughts on what we're actually seeing in this image? The cosmic candy-cane is actually composed of parallel current filaments, which are drawn together because the electric current is flowing in the same direction along parallel conducting paths. And all of this kind of phenomena were described and explained decades ago, by plasma cosmologists. But because of the specialism that exists in science these days, the specialists in one field having developed their own story, do not like to have it disturbed by paying attention to someone else with a parallel story. Even if that parallel story explains the observations, without having to invent

dark matter, dark energy, black holes, and all of the other paraphernalia that current standard cosmology has invested so much time and money in. Filamentary structures at the center of our galaxy are part of the circuit of the galaxy itself. The electric current flows in, in the form of mostly fast electrons, into the center of the galaxy and they spiral in to form what's known to plasma cosmologists as a plasmoid, which is a tiny doughnut-shaped electromagnetic phenomenon, which occasionally, when it becomes too dense, too many particles jammed into the small space at the center of the galaxy, it will break down and emit jets along the axis of the doughnut. Now all of these things are seen and explained by plasma cosmology, but ignored by those who control the funding. Wal, speaking of big funding in the world of science, last year there was a major announcement that garnered international news headlines, when scientists announced the first-ever detection of a collision between a hypothetical neutron star and a



hypothetical black hole. But last month, the first papers were released on this alleged event, and what they're reporting is that a scan of the region of space where the hypothetical collision took place, has literally revealed nothing. Here is a snippet from a [sciencealert.com](https://www.sciencelalert.com) report on this development. It states "Last year, the LIGO and Virgo gravitational wave detectors pinged with an entirely new kind of collision: not two neutron stars, not two black holes, but a neutron star and a black hole together. Scientists were thrilled: this could be the first time we've ever witnessed such a binary system." "Now after poring over the corner of space in which the collision took place, an international team of astronomers has seen the aftermath - or rather, the lack of one. Using some of the world's most powerful astronomical instruments, the collaboration found not even a brief flash of light associated with the collision." And the report also noted that the papers were still awaiting peer

review. Now Wal, since we have challenged the very existence of neutron stars and black holes, why don't you explain why a failure to find evidence of a collision between these types of objects is a predictable outcome from the Electric Universe perspective. The standard model is having extreme difficulties because the physics they are using is missing. There is no explanation of gravity or their equations; there is no definition of mass, or energy, in physics today, which is an incredible indictment when you think of the amount of money we spend, chasing various rabbits down holes, that are invented by these standard "modelists."

The idea of a black hole, in fact, is one of these tricks that mathematicians use of reifying objects and phenomena that involve infinities. The idea that you can continually compress matter to form a black hole, is based on a total lack of understanding of gravity, and also a total lack, as I said, of a definition of the mass of an object.

In fact, even our encyclopedias and

textbooks on physics will confuse the two words 'mass' and 'matter' as if they are equivalent and, in fact, often the words are used interchangeably. But mass is a property of matter. It is not equivalent and  $E=mc^2$ , that well-known, that misunderstood equation, says that mass is related to energy. In other words, mass is an energetic variable. So, this gives you some idea that modern physics lacks any firm foundation and we can blame Einstein and those who have followed him, for this situation. Because his theory of relativity made each independent observer, no matter how they are traveling, the center of their own private universe and this of course is impossible. Physics, before it left the rails, was blessed with absolute standards of space and time, which meant that you could define things sensibly. We have not been able to do so ever since the theories of relativity were introduced. The fundamental error with black hole theory is that gravity is only an attractive force. But as some wag

said, only an idiot would design a universe with an unbalanced force. The Electric Universe says no, there is only one force in the universe; it is the electric force. Gravity, magnetism and the nuclear forces, are all manifestations of the way matter responds to the electric force. And a fundamental issue there is the idea that subatomic particles, protons and electrons, and so on, have structure themselves. Since they have electrical structure, they will deform in the presence of an electric field. And we know this, simply because particle accelerators seem to increase the mass of a subatomic particle in that accelerator. In other words, you apply a force to that particle and the energy is absorbed by that particle, in deformation. It changes shape from maybe a sphere into an ellipsoid, a football shape, and in doing so, it absorbs energy. Rather than accelerating, it is absorbing energy, and that's where  $E=mc^2$  comes from: it's very simple. So, when we talk about the effects of a black hole, we are

talking about energies which manifests as if the object had the mass of 70 Suns, but instead, we may be looking at a system which is responding to electromagnetic forces and not that of gravity. So, this is where one of the fundamental errors comes in, when people talk about black holes at the centers of galaxies with millions or billions of times the mass of our Sun. No, what we're talking about is an object, a compact object, the most compact form of electromagnetic energy storage known in the laboratory. And so, it's that energy which manifests as if it has that kind of mass. The interest in a merger between a neutron star and a black hole is obvious, because the neutron star signal can be used as accurate as an atomic clock and therefore, as the orbit decays, it spins faster and faster around the black hole. We should be able to see a Doppler shift in the signal from the neutron star. The problem with this particular report is that it assumes that the change in the signal frequency

is due to an orbital motion. But then again, the signal from a neutron star, is not well explained, since it requires an object that has never been shown to exist, that is a star made completely out of neutrons, and also, no other thought has entered the heads of those theorists as to how you might produce such a well stabilized signal: the pulse from the pulsar. But plasma physicists once again, the plasma cosmologists, decades ago, showed that not only the steady signal, but also the glitches and other fine structure in the signal, can all be explained in terms of a magnetospheric circuit of a star.

One of the most accurate signal sources known in the laboratory, is known as a trapped-ion signal, and the plasma cosmologists were able to show that a stellar magnetosphere could act as a trapped ion oscillator. So, when the astronomers, using their standard thinking about neutron stars and black holes, couldn't find the black hole, all that's showing is that the magnetospheric circuit of the pulsing

star, was changing. Not that it was orbiting a black hole. Well, Wal you've now more than laid the foundation for this last item I'd like to discuss. And I think that this piece, perhaps more than anything we've talked about today, emphasizes your points about astronomers and astrophysicists reifying things which are not physically real. So, let me read briefly from a Popular Mechanics piece entitled: "This is wild. Astrophysicists can see Stars twisting Space and Time." It states, "A team of astrophysicists from around the world has been following an unusual pair of spinning stars for almost 20 years, and now they say the binary system is persuasive evidence of frame dragging. in a new paper in Science, the researchers say the white dwarf and neutron star that spin extremely fast together, form an edge case to demonstrate relativity."

Wal, I literally have nothing to say about space and time being physically twisted by these stars, so I throw it to you. One of the aspects of these two stars

is that "one is a white dwarf, the size of the Earth but 300,000 times its density; the other is a neutron star which, while only 20 kilometers in diameter, is about 100 billion times the density of the Earth," the press release says. This is sheer nonsense.

White dwarf stars are not understood; even Eddington when he produced the standard model of stars, said they seemed to be operating on some different principle. A white dwarf is simply a star that has a corona which is dim and white.

It doesn't have a bright photosphere.

So its discharge is a different part of the gas discharge spectrum and it is not the size of the Earth; it is not

300,000 times its density; it

is a normal star. The neutron star of course, a hundred billion times the density of the Earth, is sheer nonsense.

You cannot compress matter like that; gravity doesn't behave in that way; it is merely a case of extending an equation, like that of the stretching of a spring.

After you have stretched it so far, the



spring is broken, the equation no longer works. As I mentioned earlier, the notion of mass is not explained at all in modern physics and therefore you cannot tell what the density of an object is by measuring its gravity. So, the whole model of this orbiting system, is invalid. The report goes on to say, the tiny neutron star is the pulsar, meaning it emits a steady beam of light that can be tracked as it spins. Like when the Sun's reflection off a metal object points directly in your eyes, as you walk past. This is a simplistic model that makes no sense, when you consider that the star has to spin faster than a dentist's drill in some instances. So, monitoring the frequency of these spinning pulses led scientists begin to make an overall picture of how the neutron star is orbiting; it does not. Once again, as I mentioned earlier, the pulsing signal from a star is not due to it spinning. It is due to the fact that it is a magnetospheric circuit that behaves like an atomic clock. It is a trapped-ion

oscillator, which is a very stable oscillating system. The report goes on: "All pulsars are useful for research into astrophysics because of the way their size and density makes them behave extremely." The extreme density is only a mathematical result of an invalid physical model. So, the pulsar is not locked in a tight and extremely fast orbit and therefore the so-called evolution has nothing to do with the gravitational system. The report finishes with: "All of this means that for the first time, astrophysicists have recorded evidence of the predicted phenomenon of frame dragging. If space-time is colloquially indeed a 'fabric,' it's an elastic one, where spinning objects receive that stored energy back from the fabric of space-time itself." That has nothing to do with physics. Space and time are non-physical concepts. In classical physics, space and time are absolute. So you cannot treat it as a fabric; it's not elastic; and spinning objects cannot store energy in this imaginary fabric. It

goes on to say: “ The orbit of the two stars continues to drift and change, like a spinning figure skater who accelerates by pulling in their limbs. It’s is this change in speed and orientation that let scientists observe the frame dragging....” That is an assumption of what the signals mean. “This detection is consistent with an evolutionary scenario in which the white dwarf accreted matter from the pulsar, spinning up the white dwarf to a period of less than 200 seconds.” This seems an incredible piece of work by the white dwarf accreting matter from something that is so highly compressed and held together by gravity. How is it going to accrete matter from it? I think the game is given away in the last paragraph: “Scientists have longed for evidence of frame dragging in the wild, so to speak, because the idea could explain a lot of things we don't understand yet about relativity, gravity itself and forces that affect everything from celestial objects to subatomic particles.” Of course, but you're not going

to find the answers by fiddling with non-physical ideas and no definitions of gravity, mass, energy. We stopped doing physics over a century ago.

So, the scientists may continue to long for evidence of things, but when their interpretations are so far removed from reality, the answers are always going to be a puzzle.

[Music]

The theme is "Future Science,"  
and this will be our sixth annual conference  
August 17 to 20 in Phoenix, Arizona.

Perhaps you already know that  
the Electric Universe paradigm  
is gaining greater  
traction year by year.

Who could deny today that  
the vastness of space  
is animated by a life-like sea of  
charged particles called plasma?

Well, the plasma universe  
is an electric universe,  
and that's a far cry from the electrically  
sterile cosmos of standard theory  
throughout the 20th century.

When we speak of future science,  
we mean science minus the fiction  
-- no Big Bang, no dark matter, no black  
hole singularities, no neutron stars,  
no thermalnuclear core of the Sun, no planets  
on clockwork orbits for billions of years  
and few, if any, dirty  
snowball comets.

The Electric Universe movement is a  
reconsideration of fundamentals in the sciences.

Independent research is converged

on a series of electrical findings.

The confidence driving this movement

comes from the demonstrable power

of the electric force acting on planetary,

stellar, and galactic evolution.

No subatomic domain and no corner of the

remote universe is free from this influence:

the electric force,

the long overlooked underpinning

of the natural world.

EU2017 will include a roster of experts on

naturally-occurring electrical phenomena.

Our first recommendation

to you is, don't be late!

The first highlight

will be a talk

by the internationally recognized expert

on electrified water, Dr. Gerald Pollack.

Dr. Pollack will report on the

surprising role of separated charge

in the organization of

global weather systems.

Then will come our conference

keynote speaker, Dr. James Ryder.

Before his retirement in 2011, Dr. Ryder

served as a Vice-president at Lockheed Martin  
and as head of the company's  
Advanced Technology Center.

Dr. Ryder is currently Chairman of the Board  
of the International Science Foundation  
which funds the SAFIRE project and advises  
on scientific aspects of the experiment.

Dr. Ryder's update will help to  
set the tone of the conference,  
in particular the anticipated report on  
SAFIRE by Project Director Monty Childs.

Our Chief Science Adviser, Wal Thornhill,  
will outline a vision for the future,  
science incrementally discovering  
one surprise at a time -

The Electric Universe.

And retired Professor of Electrical  
Engineering, Donald Scott,  
will review recent findings that now confirm  
the presence of Birkeland currents in space.

The environment through which the earth  
itself moves is not electrically neutral.

Add to this electrified mix the  
contribution of Ben Davidson,  
founder of the

SuspiciousObservers group.

Ben will speak on the interdisciplinary implications of the electrical paradigm, ranging across such diverse fields as space science, earthquake prediction, biomedical engineering, and new energy prospects.

Of special interest, we will also be devoting a full day to the Immanuel Velikovsky Controversy, one of the most critical scientific debates of the 20th century.

Suppression of Velikovsky's work continued for decades and the core issues raised still haunt scientific discourse today.

Contributors to this discussion will include the people closest to the controversy in recent years.

More than 15 additional experts will be contributing as speakers and panelists.

Key themes will include the electricity of life, electrical scars of planetary violence, and the impact of planetary catastrophe on the ancient civilizations.

We invite you to join us in this three and a half day exploration of the Electric Universe.



That's EU2017 in Phoenix,  
Arizona, August 17 to 20.

[Music]

New evidence from the Fermi National Accelerator Laboratory near Chicago seems to point to a subatomic particle, called a muon, behaving in a way that it should not. It is believed that every particle has what is called a magnetic moment; and this is essentially a sort of wobble. Each type of particle has a very precise value for this magnetic moment. When they ran their experiments, they discovered something rather curious. The muon seemed to be wobbling a lot more than the theory predicted. The scientists who discovered this think that the best explanation for this, is that the muon is being pushed around by types of matter and energy completely unknown to physics. The current model has remained largely unchanged in the last 50 years, and this small discovery could well shake the entire foundation that this is built on. Muons can be thought of as fat electrons as they are similar to a regular electron, but are 200 times heavier and are also radioactively

unstable, decaying in a mere millionth of a second into electrons and the elusive neutrino.

In the experiments they sent the muons into a superconducting ring and this seemed to show that it was wobbling far more than it should. The wobble, they think, is related to the spin of the particle.

The idea of spin was first discovered in the 1920's by Otto Stern and Walter Gerlach. They shot silver atoms through a varying magnetic field, and saw something that they couldn't explain. The silver atoms were neutral, so had an equal number of protons and electrons.

They had expected to find one of two possible results. Number 1: the neutrality of the atoms would nullify any interactions with the magnetic field, and they would travel in a straight line.

Number 2: if the atoms behaved like spheres that could also spin on their axes, then this angular momentum would interact with the surrounding magnetic field, producing a torque. Since each atom would have a random spin, and hence torque, it would scatter

the atoms in all directions.

What they discovered was actually none of these.

When they examined the results, what they actually saw was, that there were two very distinct trajectories from the silver atoms.

One group heading upwards and the other heading downwards.

The experiment revealed that particles that make up the atom, had previously unknown properties that were only revealed by the magnetic field.

Since the atoms sort of behave like spinning balls of electric charge, this property was dubbed spin.

From this point onwards particles would have three properties: mass, charge and spin.

Through experiments it was determined that the spin property is a fixed quantity. The problem was that Schrodinger's equations did not take account of any spin and it would be Dirac who would come up with a mathematics that would bridge the gap and allow quantum mechanics to work with special relativity. The behavior of these particles is far more complex than a simple spinning sphere. In fact, it is fair to say that there is no useful metaphor for this property at all.

In classical physics, the magnetic spin moment would be equal to a half multiplied by the ratio of its electric charge, to its mass, multiplied by its spin angular momentum. However, in quantum mechanics it all gets multiplied by a pre-factor which is called  $g$ . If the universe were purely quantum mechanical in nature  $g$  would equal 2 and this is exactly what Dirac had predicted.

As you might be able to guess,  $g$  does not equal 2. Scientists claim that this means that the universe is not just quantum mechanical. Instead, there are also fields that permeate the universe which are responsible for carrying the forces. So, these fields also interact with all the particles, meaning  $g$  cannot be equal to 2. This value has been observed for electrons for a long period of time. As they have very little mass, they predominantly interact with the electromagnetic force. This in turn means that the  $g^2$  effects are dominated by the electromagnetic force and we can calculate the magnetic moment to 13 decimal places for the electron.

The muon is a different case. It is unstable, but has over 200 times the mass of an electron.

This makes its magnetic moment much smaller than the electron, and this also means that they believe it interacts with the strong force much more compared to the electron. It is here that the scientists have found a difference with what their equations predicted, and what is actually being measured. A rival team however would like to pour cold water on their findings and are rushing to publish a paper that would in fact allow for this greater wobble to exist within the existing models, and no new models would be required. Their calculations also follow the rules of the Standard Model but they relied upon a totally different calculation with very different assumptions. This shows that the physicists cannot agree on exactly how the 17 existing standard model particles interact with muons, allowing for the different interpretations. At this stage it is important to take a little step back, and just examine the experiment, to understand what might be going on. Firstly, they generate muons by firing protons at a target. The collision is thought to release

energy which gets turned into matter.

It creates something called a pion, which almost immediately decays, forming a muon.

This muon lasts for a short period, before decaying into an electron and some neutrino particles. We cannot see or measure pions. They are a theoretical particle.

The same can be said for the neutrino.

We can only detect the neutrinos by their interaction with other particles. If

we examine the muon, it presents a rather interesting case that seems to highlight many of the problems with particle physics today. It is essentially an electron which is thought to have more mass.

This particle can only be made through collisions with other particles and more specifically, atoms. The Standard Model holds that there are protons and neutrons in the nucleus, held together by a force called the strong nuclear force.

This stops the protons from flying away from each other and binds them into the nucleus. There is no order to their nucleus, and protons and neutrons occupy random locations.

And yet, radioactive decay will

always result in the production  
of certain smaller components,  
irrespective of this randomness.

The Structured Atom Model shows  
us a different way of looking at this.

Instead, there are no neutrons,  
and there is no strong nuclear force.

Protons are held in the nucleus by electrons.

An electron and a proton pair is what we  
see as a neutron. If we add into this the idea of  
platonic solids and use a simple densest packing  
rule, we can now create complex atomic  
nuclei following a very simple set of rules.

Even more remarkable is that this structure,  
and its instabilities in certain parts,  
perfectly matches and explains  
why certain elements are unstable,  
and why they decay into specific products.

So why is this relevant to muons?

In the mainstream model electrons  
do not exist within the nucleus.

The muon is produced by colliding a particle with  
an atom. We know that a neutron decays into an  
electron and a proton and an  
antineutrino, within about 15 minutes.

Another clue comes from the fact that



they are able to create muon atoms.

Muonic hydrogen has the muon orbiting much closer to the hydrogen than a normal atom. There is also a process called muon capture.

Here a proton and a negative muon join, resulting in the production of a neutron and a neutrino and sometimes a gamma ray.

The muon can be drawn in from the atomic orbital to form a neutron inside the nucleus. This is actually being investigated for the application in radioactive waste disposal and this would allow them to transmute the radioactive element into something else. We must also consider what exactly mass is.

If we examine the famous  $E=mc^2$  equation, we understand from this that as particles travel at relativistic speeds, their mass will increase.

Wal Thornhill pointed out that this is simply an interpretation of the observations from particle accelerators. Here they accelerate protons and electrons in an electric field and notice that they become less responsive to this field. If, as Wal

suggests, these particles are made up of smaller sub particles which also orbit around a central charge, then as the particles accelerate, their orbits will become more and more elliptical as more and more force is applied.

This is used in the distortion of this orbit, rather than in the acceleration of the particle itself.

So in the case of a muon, might this still simply be an electron but in a different excited state? Meaning it does not respond to the electric field in the same way as an electron.

Did the initial collision cause one of the internal electrons inside the nucleus, to be liberated in this excited state?

This state is unstable and this energy is eventually released, and all that remains is the electron.

Again, we must come back to the concept that there is something fundamentally wrong with particle physics. This is the tip of the iceberg, and the fact that they see a discrepancy from their theoretical models with their observations, may indeed open up the avenue for them to explore an alternative to this

particle zoo that they have created.

Although, I wouldn't be surprised if they simply invent another member of this zoo to fix the problem. That being said, there is still much work to do in finding a working alternative to all the phenomena we see.

SAM is an excellent step in the right direction, but understandably their efforts are focused on the known atoms and explaining all the phenomena, before they then tackle the more exotic phenomena we see. They have already shown that in radioactive decay, there is no need for the neutrino, and a positron can be explained as an electron moving into the nucleus of the atom.

When you strip away what is actually observed in these experiments, there is room for a totally different interpretation of the data.

Which may suggest a much simpler, more logical way in which mother nature works, and would remove Feynman's classical quote where he said, "The theory of quantum Electrodynamics describes nature as absurd from the point of view of common

sense. And it fully agrees with experiment. So I  
hope you can accept nature as she is – Absurd.”

Instead, we should view mother nature  
in a logical hierarchical fashion  
where everything has a purpose,  
where less is more and in this case,  
the removal of the strong nuclear force,  
once more points to the electrical  
nature of mother nature.

[Music]

the most critical test of the electric comet 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 theorists Wallis Thornhill began anticipating the surprises in store for comet science on the evening of July 3rd 2005 the day before the encounter the Thunderbolts website published the predictions of Thornhill and his colleagues these predictions would clearly contrast the standard and the electric comet models you as the Deep Impact probe approached temple one key NASA figures gathered in the control room the comet was racing toward the probe at some twenty three thousand 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 through most of its journey the impacter signal was clear but in the final seconds the signal was indeed disrupted this apparent electrical disturbance was not all that Thornhill predicted he also anticipated an advanced flash ahead of the projectiles impact a uniquely electrical event this is exactly what occurred and the advanced flash left NASA scientists scratching their heads NASA investigators 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 they did not consider the electrical energy of the comet but Thornhill had long predicted the explosion would be greater than any NASA scientists envisioned it seems that the spectacular explosion that followed the impact was the greatest surprise every scientist viewing the live images expressed his

astonishment 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 silica dust was so thick and the explosion so sustained that it completely obscured the local terrain to the electrical theorists the exploding silica cloud was a predictable effect

fortunately the Swift satellite provided a view of the comet explosion not just in visible light but in ultraviolet wavelengths which often give the best pointers to electrical events the ultraviolet emissions required temperatures of over 3,000 degrees Fahrenheit the temperatures of the blast 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 6000 degrees Fahrenheit the saturation means the temperature could have been much higher

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 nothing approaching the expected levels of water was detected in the exploding cloud a lack or absence of volatile x' can only mean that something is fundamentally wrong in standard comet theory

according to the popular model it's the pressurized gases of volatile x' beneath the surface that explained the impressive velocities of cometary jets as a last resort in the search for water on temple one NASA scientists hope to identify the vents for its jets the vents were never found 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 redistribution occurred on the nucleus after a significant electrical



event

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

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 surface of temple 1 astonished the experts expanse of 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 temple one after the Stardust mission to comet vilt

to that probe was redirected to the object of the Deep Impact mission

Stardust was then renamed next or new exploration of temple 1 it would give additional views of the comet's surface 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 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 timescales in fact most astronomers now reject explanation by impact and that includes Michel Ahern the principal investigator of the Deep Impact mission what then was responsible for the pervasive cratering of the temple one 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

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 white out the second example came with the Stardust mission and the appearance of small saturation points on the surface of Comet 67P - but with insufficient resolution to make a definitive case for what the electrical theorists suspected the enigmatic whiteouts on the active surface of temple one where everything the electrical theorists could have asked for and the most prominent were

placed exactly where the electric model  
envisioned them he roading the cliffs of  
Mesa walls and extending the floors of  
numerous craters and depressions and yet  
these extensive blotches of whiteout  
while receiving occasional comments from  
the specialists have yet to provoke any  
deeper curiosity as to their cause  
but now with a second look at temple 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 emission  
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 appearance a  
direct indicator of surging solar  
activity  
an active Sun versus a quiet Sun for

temple 1 this means different levels of  
proton bombardment a couple of 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 temple one 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 temple 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 temple one 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 Temple won 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  
electric discharge machining  
before the Deep Impact projectile was  
fired at the comet scientists were  
confident it 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  
or discharged above the surface in an  
electrical event the target area might

look a lot different than the removed material would be silicate dust and debris but with very little penetration beneath the surface to facilitate the investigation after a subsurface explosion the Deep Impact probe targeted the space between two well identified craters so in the return to Temple one 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 to identify the crater location the scientists published a view of the region with a circle of arrows around the impact site how are we to understand the absence of a deep crater on this question the investigation appeared to move into weird and 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 its finite point of

departure and to refill the crater in an

electrically neutral environment it

seems that nothing less than a miracle

was required with a lot of material that

went up and came back down

a key to our understanding of the deep

impact events is water production in the

coma of an active comet abundant water

or hydroxyl in the coma of temple was

readily confirmed the NASA investigator

saw only trivial levels of water on the

surface

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 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 temple one then finds a coherent explanation the surface ice was produced electrically in the coma meager amounts of this water ice later drifted from the coma to the surface condensing as a few shallow patches of frost 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 sixteen thousand tons per day increased by at least two hundred and fifty percent continuing for five more days 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 comet's x-ray emissions continued to grow above the nucleus highly energetic

explicitly electrical events created a flood of x-ray emission and the water of the coma was the byproduct of that electrical exchange not the cause a reconsideration of water production in its direct link to a comet's x-ray production is now essential 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 and the implications don't end there as the dominoes fall under the vision of an electrified heliosphere the space sciences will be forever changed

so what are the advantages of this force  
of gravity  
is derived from a universal force law  
it's based on real finite sized  
particles not point particles  
doesn't involve any known approximations  
it's a contact force is expected by  
natural philosophers  
it describes  
the curling spiraling motion of  
planetary orbits  
that our  $\mathbf{r} \times \mathbf{v}$  term produces  
that spiraling type motion  
does the same thing in electrodynamics  
when you have currents flowing they also  
spiral  
it satisfies mach's principle because  
all of the  
charges in the universe can be taken  
into account as far as uh all the  
vibrating dipoles as far as uh max  
principle is concerned  
uh  
it explains more phenomena than any  
previous gravitational force theory  
it eliminates mass as a fundamental

quantity

uh oh

it explains why inertial and

gravitational masses are equal

i haven't done the force of inertia but

we'll do that next

for the force of inertia we'll take the

force between a unit charge

over here on the right and a vibrating

neutral electric dipole

we'll do the same kind of calculation

that we did for the force of gravity and

i'm not i'll just show you what it looks

like if i write it

like newton would have written it

we get the  $f$  equals  $m$  a term like newton

had but we get a second term

this term goes as  $r$  across  $r$  cross  $a$

and

i don't have time to show you all the

data that but a very famous

british

engineer named eric leithwaite the

inventor of the high-speed electric

train

he did gyroscope experiments and he

found that term  
and for finding it  
all of his contracts with the british  
government were canceled his membership  
in the rural society was revoked  
and he was declared a heretic  
but his trains still worked they're in  
they're in germany and japan and they  
should have been in great britain and uh  
and there's nothing wrong with his data  
now that we have the proper theory for  
the force of inertia we know there's a  
second term  
now there's some other things that this  
can explain  
this also agrees  
the mass the  $f$  equals  $m$   
a the  $m$  there is the same  $m$   
if you write it out in electrodynamic  
constants as for gravity it also is  
decaying producing a 2.7 degree kelvin  
causing background radiation  
it  
now tells us something about spiral  
galaxies that we didn't know  
that is

the outer arms of spiral galaxies the  
mass of the atoms is different  
than the mass at the center because the  
outer arms decay faster than the center  
so

we expect to see

that this data here

the green line here shows what newton's  
law and that's also einstein's general  
relativity theory would predict for the  
velocity of the spiral arms as a  
function of distance from the center of  
the spiraling

galaxy the

blue data

are what is actually observed and the  
green or lighter green line yellow line  
above is what you would expect from the  
decay

of the mass and conservation of energy  
for the outer arms so we don't need dark  
matter we don't need dark energy  
our formula for gravity our electric  
formula

does it all

you

Several years ago, on the planet Mars, NASA's rover Curiosity discovered something so strange it forced planetary scientists to begin rewriting Martian history, a process that continues today. The anomaly was found in Gale crater, a more than 150 kilometer wide so-called impact basin.

At the center of the crater is Aeolus Mons, also called Mount Sharp, a central peak reaching Heights of about 18,000 feet.

Among the layered minerals in this terrain the most curious of all the Rover discovered is Tridymite, an extremely rare mineral which only forms at super-hot temperatures and which is linked to volcanism on Earth.

At the time of the discovery in 2016, NASA scientist Richard Morris stated, "It was the last mineral we expected to see.

If this stands the test of time, it has a lot of implications for how Mars evolved. We may have to rethink a few things."

The reason tridymite was the last mineral NASA scientists expected to find on Mars is simple. The red planet is not believed to have the kind of dynamic



subsurface plates that have always been thought necessary to create volcanic activity. A similar dilemma was presented when Mars was recently found to have significant seismic activity; a complete surprise to planetary scientists.

Indeed both conundrums reveal the striking limitations of the standard theoretical toolkit in planetary science, including plate tectonic theory. Today, the discovery of tridymite on Mars remains problematic. A recent ScienceAlert article noted, "Although Mars shows extensive evidence of past basaltic volcanic activity in some regions, the once putatively water-filled Gale crater is not one of those regions, leading scientists to puzzle about how the mineral came to be there."

A new paper published in Earth and Planetary Science Letters attempts to resolve the puzzle. A team of investigators has proposed the ad hoc hypothesis that billions of years ago, a magmatic chamber existed underneath Gale crater at a time when the crater is believed to have contained a substantial lake. This chamber, the paper suggests,

remained dormant for an unusually long time, eventually exploding massively, releasing silica-rich ash in the form of tridymite which then fell back down into the waters of Gale crater. One basis the scientists cite for this speculation is the extremely focused location of the anomalous tridymite. Mars geologist Kirsten Siebach states, "We argue that because we only saw this mineral once, and it was highly concentrated in a single layer, the volcano probably erupted at the same time the lake was there. Although the specific sample we analyzed was not exclusively volcanic ash, it was ash that had been weathered and sorted by water." Of course the investigators have no awareness of Electric Universe theory, including the hypothesis that Mars and other rocky planets in the solar system were ravaged by high energy electrical discharge. As explained in the feature length documentary film "The Lightning-Scarred Planet Mars," this hypothesis can explain countless Martian anomalies, including its dozens of weird geologic formations. Such as frequently bizarre cratering;

it's long unexplained hemispheric dichotomy;

its weird networks of rills and trenches;

and the stupendous Valles Marineris, a

vast Canyon which stretches over 3,000

miles across the Martian surface.

The question is, can very powerful

lightning produce tridymite?

Tridymite is a crystalline form of quartz

which forms under low pressures at extremely high

temperatures. Consider the relationship between

tridymite and another high temperature

silicate called lechatelierite which is

a form of silica glass found in lightning strike

features. In fact tridymite has indeed been found

as a product of lightning. In the book "The Data of

Geochemistry" tridymite was reported as the product of

lightning on a roofing slate. No volcanism required.

The very focused and limited range of

tridymite's presence at Gale crater's

central peak should be expected if it

was produced by a stupendous lightning

bolt. It must also be mentioned that

craters with central peaks have been

commonly observed for many decades in

experiments with electrical discharge to solid

surfaces. It's also important to consider another

type of mineral on Mars known as perchlorate.

The mineral is found in such abundance on Mars that some have considered its potential as a health hazard to future astronauts.

Various perchlorates are known to form by electrochemical processes or by electrolysis, and it's been discovered that lightning strikes can produce perchlorate in the presence of chlorite.

Amazingly, perchlorates are 10,000 times more abundant on Mars than sands or soils.

Again, we're left to question the potential for meaningful progress in astronomy and all of the theoretical sciences when the major surprises fail to force any real reassessment of consensus theory. Institutionalized science does indeed rewrite history through ad hoc provisions of theory, but always in a fashion that never challenges the underlying paradigms. A beautiful parallel to the Martian tridymite mystery can be found in just one of the endless puzzles in comet science.

The Electric Universe has always stated that our solar system's comets, asteroids and meteoroids were formed in the same epoch of planetary instability that

produced the dramatic geology of the rocky planets.

Of course from this perspective, comets are not the primordial dirty snowballs of standard theory. Comet nuclei should appear exactly as they have in every instance they've been photographed: rocky, desiccated and displaying extreme planetary geology.

If these bodies were indeed electrically blasted from the surfaces of planets, then of course we expect to find minerals that form at super-hot temperatures.

This prediction was confirmed over a decade and a half ago when NASA's Stardust Mission returned dust samples from the comet Wild-2.

When scientists on Earth tested the material, what they found was so unexpected, they initially thought that the early sample may have been contaminated by the spacecraft.

Rather than the expected ancient interstellar grains, the Wild-2 dust grains were much larger than expected and contained minerals such as anorthite and diopside which require temperatures of thousands of degrees. NASA curator Michael Zolensky said of the discovery, "That's a big surprise.

People thought comets would just be cold

stuff that formed out...where things are very cold...It was kind of a shock to not just find one but several of these, which implies they are pretty common in the comet."

Like the aforementioned efforts to fit the Martian tridymite enigma into the conventional framework of our solar system's four and a half billion year history, comet scientists responded to the shocking Wild-2 discoveries with similar ad hoc speculations.

These range from the comet forming very close to the Sun, then being hurled into the outer solar system, to explosive collisions in the early solar system and ironically, even lightning in the primordial nebular cloud. Again, the alleged causative events are placed billions of years in the past and are always restricted to the unproven and very limited processes in the standard theoretical toolkit.

A recurring statement I've made over many years is that the Electric Universe community can only hope for a fair and thorough hearing in the court of scientific investigation.

One cannot claim that this hearing has occurred unless, or until,

institutionalized science actually tests the  
predictive theories of the Electric Universe.

Why this has taken so long to happen, may itself prove  
to be a mystery for future generations to ponder.

[Music]

"Although its effects can be measured with

precision, nobody knows what gravity is.

It is also the only force man cannot yet control.

Despite the law it is supposed to follow,

it often simply does not. Even here on Earth, let alone

further out in space, gravity is full of anomalies." So

said Dwardu Cardona, an old world electrical engineer,

a towering intellect, major author, and good friend.

Globular clusters are a particularly difficult

problem for a gravity-only cosmology.

According to current understanding of gravitational

dynamics, they should not be where we see them, and their

spheroidal configuration defies the expectations of

Standard Theory. Not to mention that they sometimes form

a ring-like crown around the axis on each side of a

galactic plane. Quote, "A globular cluster is a spheroidal

conglomeration of stars. Globular clusters are bound

together by gravity, with a higher concentration of

stars toward their centers. They can contain anywhere

from tens of thousands to many millions of member stars.

The origin of globular clusters and their role

in galactic evolution are unclear." End quote.

Today cosmologists continue to wrestle with

problems posed by exotic structures in space.

These appear to mock Newton's elementary laws. In their

attempt to account for unexpected galactic motions,



astrophysicists have invoked invisible entities and agencies: black holes, dark matter, and dark energy, which are imagined to be far more powerful than anything actually observed. In stepping out on this lily pad, they have even speculated that as much as 99 percent of the matter in the universe is dark, and can be measured only by apparent gravitational effects. Because dark matter and dark energy can't be detected, they are a reusable blank check. A blank check that conventional theorists can use to postpone the bankruptcy of a thoroughly falsified paradigm.

It was this resort to unknown matter that caused the notable astronomer Halton Arp to observe in his book "Seeing Red" that quote, "... past 90 percent it begins to make observations irrelevant." End quote.

You think? I would posit that, past 50 percent or less, would be a more realistic intellectual barrier.

Arp: "Please don't tell me the emperor is naked."

In stark plain language, astronomers and astrophysicists that believe this, should stop taking money from public institutions and get a real job making some valid contribution to society. Flipping burgers would be a major upgrade in terms of service to mankind. With our own galaxy, the Milky Way, globular clusters or spheroidal

configurations of stars such as M15, are included as a part of the difficulty. By what mechanical magic does gravity hold millions of stars together as a sphere, rather than the familiar disk of more feasible gravitational orbits and models? Gravitational spherical configurations of stars simply 'hanging in space' are absurd.

Orbits around a center of mass just don't work either for a globular cluster.

There would be orbital chaos. Think about it.

The problem is heightened by the fact that M15 is one of about 150 known globular clusters associated with the Milky Way.

Strictly speaking, they are not a part of our galaxy, as traditionally defined.

Rather they appear close to the core of the galaxy as a kind of halo above and below the center plane of galactic rotation. Yet, astrophysicists rarely acknowledge the dynamical problems this creates.

Theory states that clusters above the plane must move on orbital paths around the center of the dynamic system as a whole.

And, in completing an orbit, each will intersect the galactic plane twice. Such orbits for a three-dimensional structure would have orbits crisscrossing and even in reverse. There would be numerous flyby

interactions that would induce tidal distortions and disrupt the cluster. Of course, another concern is that the structure of the halo could neither be formed nor maintained. The problem was noted by physicist C. Johnson of the University of Chicago.

Quote, "It is almost like physicists have been assuming globular clusters just hover there like a swarm of bees. But that wouldn't happen. They could NOT just follow elliptical orbits above or below the galactic plane. Basic gravitational theory insists that their elliptical paths pass through the Galactic Plane, because the two halves of any path must be on opposite sides of that Plane." End quote.

Johnson suggests that something is missing and not a small piece of the puzzle.

Quote, "It would appear that either our understanding of the laws of physics is sadly lacking, or our understanding of the geometry of the situation is greatly in error. The commonly accepted view of a Halo of ancient, stable Globular Clusters hovering around the core of the Galaxy, like a swarm of bees, is just not something compatible with our current understanding of the laws of physics.

Clearly, further research is necessary." End quote.

And thereby Johnson illustrates the real problem.

It is not more research that is needed,  
but an open-minded paradigm shift  
to Electric Universe construction.

But heaven save us from that. Anything  
but that. Apparently the favorite prayer of  
astrophysicists would be quote "Dear God.  
Please don't bring a paradigm shift during my tenure."

The solution of course is that galaxies  
are electrical structures whereby the  
various components revolve around the  
minor axis, never crossing the central  
plane. The same quandary applies to the  
relative motions of stars within each  
cluster. And while Johnson accurately  
describes the gravitational dynamic, the  
rule he applies is a formula for chaos.

As any gravitational simulation will  
clearly demonstrate, it would quickly  
lead to some stars being accelerated out  
of the system, while others would lose  
energy and fall to an orbit closer in.

Over time, the globular clusters would largely just  
evaporate, shrink and condense down to ... what?

But, from the Electric Universe vantage  
point, it is not unthinkable that the

stars of globular clusters are just hanging there with respect to the cluster's own center of gravity and any cluster plane that may be derived or defined.

In the Electric Universe model of stellar composition and energy, stars are concentrations of highly positively charged material. For globular clusters, such a collection of stars with no other external distorting forces in play, might indeed become a stable 'ball-of-stars' formation.

In fact, the new view of the universe provides many examples of star-sized masses, even galactic clusters in symmetrical arrangements that gravitational theorists never dreamt of, including polar alignments. And as for the spheroidal form of globular clusters, the cosmic electricians in the Electric Universe paradigm suggest that the best analogy may come from something as unfamiliar to astronomers as ball lightning, whatever enigmatic material that is composed of. But that is a different anomaly subject. I offer another analogy: Mainstream cosmologists are playing in a children's sandbox instead of on the beach. Our ponderous university and tenure system is suffering from all but paralyzing arthritic inertia. I know, I have talked with some of them and they

say they teach what they have been taught and cannot teach what they haven't learned or don't know. I suggest, given the past track record of institutionalized science, this may border on being a cop-out and being intellectually irresponsible. There is no independent global agency that is looking at the big picture and alerting the university science departments that, given the nature and history of scientific revolutions (which are always vigorously opposed and overdue), it is time to consider a paradigm change.

Time to explore alternate thinking, and seek and invite serious challengers to present their arguments. Usually, any one professor that might raise the alarm, gets marginalized. Just like a heretic in a religious organization. Hmm...

Halton Arp certainly suffered this fate.

Of course institutional science is a religion, just organized differently from most of the others. The word 'religion' comes from 'roots', meaning to bind together with logic or reason.

Thus I call what we have now, by the term 'scientism' which is a very powerful force that, in the pertinent area of origins and unfolding of the universe, prevails over those based on sacred writings and mythology.

But this popularly supported  
dominance doesn't make it right.

The solution is, guess what,  
intellectual responsibility.

[Music]

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  
colleague Andrew Hall began exploring  
some of the best case studies of  
electrical scarring on planet Earth.

The features don't seem to fit with  
any standard geological process  
but as Hall explained, they do  
show the expected characteristics  
produced by electrical  
discharges.

Today, Hall continues his presentation  
with a focus on the stunning geology  
in the American Southwest.

In part one of  
'Lightning-Scarred Earth',  
Shiprock was presented as an example  
of a pinnacle created by lightning.  
Fulgarites are created when lightning  
strikes and current penetrates the ground,  
leaving a hollow tube of  
glassy, fused material behind.



Current from the lightning vaporizes  
and extracts material in its path,  
while its heat vitrifies the surrounding  
soil, leaving behind glassy tubes.

Based on its features, it's proposed here  
that Shiprock is a standing fulgarite,  
created by lightning so powerful  
and sustained that the material  
began to recombine in the current  
as it was pulled from the ground,  
leaving behind a pinnacle of fused  
material instead of a hollow tube.

Once material recombines, it's no longer charged  
and attracted to the lightning channel,  
so is left behind, its ionic makeup  
altered by the current and heat.

The morphology of Shiprock  
displays this very well  
with columns of fused rocks  
surrounding an inner core of minette,  
ionically altered material pulled from  
the ground by the flow of current.

Surrounding the pinnacle are minette  
dikes radiating away in a star pattern.

Minette is high in potassium  
and low in silica content.

It contains high volumes

of orthoclase and biotite.

Both are minerals with high metal content,

such as potassium, iron, and sodium.

Silica dioxide will readily

exchange oxygen with metals,

such as those found in the

orthoclase and biotite

when sufficient heat is applied.

The prevalence of potassium and

other metals crystallized in Minette

and its under-

saturation of silica

is evidence of the reduction

taking place as it was formed.

This suggests that the lightning

forming it was positive lightning,

which is the type of

powerful lightning seen striking

from the stratospheric anvil

clouds in thunderstorms.

Electrons and negative

ions in the ground

pulled out by the positively

charged lightning

left behind a concentration of

positively charged material  
which was not attracted  
and drawn away.

The dikes and inner core of the pinnacle  
show the path of the current  
being drawn to the  
lightning discharge.

Following the lightning  
strike that formed the pinnacle,  
the area was left with  
a net positive charge,  
which attracted a secondary  
ground discharge, or arc blast  
that emanated from a  
different discharge process.

This secondary discharge will  
be explored more in the future,  
but it's worth mentioning now  
because it left a magnificent  
Lichtenberg pattern across the ground,  
unique to the area immediately  
surrounding Shiprock.

The next series of images show the evolution  
in the magnitude of this type of formation.

These are all examples from the Four  
Corners region in Northern Arizona.

First, when lightning similar in magnitude  
to what we see today strikes the ground,  
it sweeps surrounding  
surface sand to it,  
drawing it to the lightning channel  
and creating a shallow crater.

Examples of this were  
shown in part one,  
where lightning created small  
craters with a pile of sand  
left behind in a small cone.

Again, these are not anthills,  
although they could easily be mistaken  
for them on cursory examination.

There are no ants, no  
opening in the mound,  
and it's dusted over the top  
with sand fused into pebbles.

The pebbles rest in a thin layer over the  
top, like sprinkles on an ice cream cone.

And beneath it is  
powder-fine sand.

The top layer was  
formed from sand  
pulled into the lightning channel  
and fused into pebbles by heat,

then dropped back on top of the mound  
when the flame extinguished.  
They bear the same character  
as the Minette material  
in Shiprock's center  
and dike formations.

All of the mound material and  
surrounding sand measures high in pH.

The following images show buttes  
at various stages of growth.

The first exhibits an  
up-welling of Minette.

The second and third images show  
the broken remains of the sheath,  
and the last image  
shows the dark Minette  
partially surrounded by  
the lighter rock sheath.

Another type of lightning-formed  
butte has a different morphology  
that appears to be created by a  
negative cloud-to-ground lightning--  
the type of lightning that emanates  
from the belly of a thunderstorm.

Because the Earth is generally  
a negatively charged body,

at least in terms  
of ground charge,  
it forms a double layer at the  
interface with the atmosphere.

When a thunderstorm forms and  
the electric field strengthens,  
positively charged ions in the  
atmospheric zone of the double layer  
collect above the ground  
beneath the storm.

Before negative cloud-to-  
ground lightning strikes,  
it pulls this material into  
positive ionic streamers  
that reach up to connect with the  
electron avalanche produced by the cloud.

When the streamer and avalanche leader  
connect, a circuit is completed  
and current discharges  
through the channel,  
electrons flowing to ground and  
positive ions flowing up to the clouds.

The magnetic field created by the current  
wraps tightly around the channel,  
compressing it to a narrow path  
in what is known as a Z-pinch.

'Z-pinch' has been demonstrated in the lab by simply passing current through an aluminum can, with the electrodes connected at the top and bottom.

The resulting pinch crushes the can into an hourglass shape.

In the huge primordial storms that we theorize occurred in Earth's past, such lightning and pinch effects resulted in huge amounts of positive ionic material being swept to the lightning channel with such extreme force it sometimes created supersonic winds.

Fulgurites formed by sustained, giant cloud-to-ground arcs display the effects of discharging current, accumulation of ionic dust, Z-pinch, and the supersonic winds and shockwaves they produced.

The images presented show the progression of such an event.

First, the strike forms a raised platform, with a shallow crater in the center where the lightning created

an electrode spot.

The rim of the crater is material swept  
inward by ionic winds and fused.

There is a road cutting through  
the crater in the first image  
to give some perspective of  
how large this feature is.

These images are from Arizona, near Pastora  
Mountain in the Four Corners region.

A more sustained strike begins to accumulate  
neutralizing material on the spot,  
forming a flat-topped  
dome, like a pancake.

As the material accumulates, the pancake  
grows to a mesa-type structure,  
held together in a round  
form by the magnetic pinch.

In the next phase of growth,  
the mesa grows taller  
and the inflow winds begin  
to reach Mach speeds,  
creating shockwaves that mold the rim  
material into triangular standing waveforms.

A detailed discussion of this shock wave  
and the triangular buttress  
formations they create



is presented more fully in

previous articles on Arc Blast.

As neutralized material builds, the

anode spot the lightning connects with

is at the top of the

mesa and rises with it.

The strength of the pitch

narrows the top forming a cone,

and new regions of windblown, fused

and shock-shaped buttresses

form rims outside the older rim.

The difference between lightning-

formed pinnacles like Shiprock

and the broad mountain

forms shown in these images

seems to be polarity

in the lightning.

This interpretation

is preliminary,

but it appears that positive

lightning burrows into the ground

to connect with negative ionic

matter beneath the surface,

whereas negative lightning attracts surface

winds and dust to it to build a mountain.

Positive lightning

raises a narrow pinnacle  
of negatively charged material  
that boils up from the ground  
with dikes which display the current  
path through the subsurface.

Not much material is drawn  
to it from the surroundings,  
except for the sheath of  
rock it forms around it.

Negative lightning connects  
with pools and streamers  
of positively charged matter at the surface  
and pulls huge amounts of airborne dust  
to create a dome with  
hardened, buttressed rims.

In both cases, mountains can form around  
them due to ambient winds and blowing dust.

Positive arc fulgamites can form  
monoclines along the dikes  
if ambient, supersonic winds strike  
them to create a standing wave,  
where dust piles into long, linear  
ranges of triangular waveforms.

The last image of above, taken at Comb  
Ridge monocline in northern Arizona,  
shows where fulgamites and dikes

are exposed in the monocline.

These protrusions

created a shock wave

in Mach speed ambient winds that

formed a linear standing wave,

against which the monocline was formed

like a dune, as blowing dust accumulated.

There are several monoclines

on the Colorado Plateau

that exhibit the same

or similar features.

Negative arc fulgamites

create their own winds,

bringing dust to pile against

them from all directions,

and if powerful enough,

form standing shockwaves

that generate buttresses in

a ring around the base.

The circular craters and mesas in

the images were formed by lightning

while the mountain was expanded by

wind-borne dust accumulating around them.

There are several examples of mountains with

these features in the Four Corners region.

Mountains are a misunderstood

feature of the planet.

Geological concepts are based on rocks forming deep in Earth's crust and being exposed by erosion and tectonic motions, entailing of course, hundreds of millions of years.

It's a very complex process that has not, and cannot, be witnessed or confirmed by experiment.

Mountain formation by wind and electric discharge, however, can be witnessed in nature.

Sand dunes are a prime example.

Mountains can also be produced in laboratories. So can rock.

It happens when slag is produced from welding, ore and metal processing, or from chemical reactions like cement.

Atomic and molecular bonding is an electrical process -- the exchange and sharing of electrons.

Electricity and wind is a far more plausible mechanism for mountain building than what is proposed by the consensus theories.

Especially since the actions  
of wind and lightning  
that formed mountains on the Earth  
can be seen in any thunderstorm.

One only needs to extrapolate the  
forces and energies involved  
to what they would have been  
when Earth was in a much larger,  
stronger electrical environment.

Amplify the electric field of a  
thunderstorm by orders of magnitude,  
and it will produce  
an ionized atmosphere,  
screaming with supersonic winds, ionized  
dust, and incredible discharges of lightning  
that dwarf what we  
experience today.

For examples, we need only to  
look at our neighboring planets.

These conditions exist on  
Jupiter, Saturn and Venus.

Why would Earth  
be any different?

Thank you.

For continuous updates on Space  
News from the Electric Universe,

stay tuned to

[Thunderbolts.info](http://Thunderbolts.info)

There are many names associated with the development of the electric and plasma universe. Some get more recognition than others. In this episode, I want to cover someone who is often cited by the late Wal Thornhill, but probably is a name that you are not familiar with. Charles Edward Rose Bruce was a quite remarkable man who saw a deep connection between sparks, discharges, lightning and the cosmos at large. Who was he and what remarkable insights did he provide? He was born the son of a tailor and graduated from the University of Edinburgh with first class honors in mathematics and natural philosophy. He then joined the Electrical Research Association in Leatherhead, England. Bruce's early years at the Electrical Research Association was spent working on the analysis of oil-based circuit breakers. He published a sequence of papers on the subject, including one that won The Institution of Electrical Engineers' Kelvin premium award. This helped keep the ERA at the leading edge of the rapidly growing circuit breaker technology.

Then in 1939, he shifted his attention to lightning. Two years later, he would publish a paper simply titled, "The Lightning Discharge" which would end up being heavily cited and once more win him the Kelvin premium award. His contributions to the subject include the significant strengthening of the electrical gradient, known to occur in lightning strikes, as well as a demonstration that the grounding of transmission lines would be counter-productive. After attending a lecture on astrophysics at the Edinburgh University in 1941, he became very interested in exploring this, together with his understanding of electricity. During this lecture, the lecturer referred to a solar prominence which reached a height of 1 million kilometers in an hour. Charles Bruce quickly deduced that its velocity of propagation was almost exactly that of a lightning leader stroke and that, since it moved like lightning it probably was lightning of some form. Soon after this, he developed a theory that solar prominences consisted of electrical discharges in plasma, rather than that of moving solar matter. He would go on to publish over a hundred papers concerning the electrical basis



of various cosmological phenomena.

In 1946 and 1947 he was elected as a fellow of The Institute of Physics and The Institute of Electrical Engineers.

Despite this, his work would be largely ignored by mainstream science. In 1944, he produced a privately published monograph titled, "A New Approach in Astrophysics and Cosmogony".

It was spurred on by a lack of success in mainstream science at the time, to explain the major phenomena in astrophysics.

He saw that gravitational masses, like stars, were centers of energy liberation and also the origin of high-speed electrically charged particles, which over time, results in the formation of huge charged atmospheres, so that masses beyond a certain size become centers of extensive and mainly radial electric fields. These naturally give rise to conduction processes tending to neutralize the currents. It is the resulting electrical discharges which determine the nature and direction of universal evolution.

He still viewed stars as being composed of material that at the heart is powered by nuclear reactions. This engine would provide the separation of charge and lead to the discharge events.

This would then be the start of a new sequence, the atmosphere condensing on a reduced scale of aggregation which in turn would become the center of an extensive radial electric field.

He saw the same mechanism happening in nebulae, stars, and planets. Now this is very different in some respects from the Electric Sun model we have today, but you will recognize many similarities.

He points out that it is no coincidence that the photosphere has the appearance, temperature, and spectrum of an electric arc. A large number of arcs occur in parallel. These quickly result in neutralization of the accumulated space charge in their neighborhood and go out. These are therefore not stable discharges, but are more like a transient spark. In his view it is the coming and going of these discharges which accounts for the observed granulation of the solar surface.

In his model, sunspots are explained because those huge discharges drain away the current from the neighboring photospheric arc channels and extinguish those arcs. He saw that there was much evidence in support of his model. This included solar flares which, at the time, had been shown to have circular magnetic fields surrounding them. He estimated that the

current of these was about 10 to the 14 amps. These give rise to a broadening of the hydrogen alpha lines due to the Zeeman effect. The variation of these line widths follows the rapid rise of the current in the flare to a maximum, followed by the slower fall, analogous to what is observed in terrestrial lightning current waves.

The Crab Nebula's filamentary structure provides striking visual evidence of the origin of this structure in electrical discharges. The light from the Crab Nebula also shows substantial polarization which has allowed them to partially map the magnetic fields in the Nebula.

The result of this mapping is that the field is such as would be observed if the filaments carried currents.

Novae show light curves that have a sudden onset followed by a slower decline. This is characteristic of an electrical discharge. The rapid increase in emission line width in the Nova spectrum is generally believed to be a Doppler broadening but is also readily explained as Zeeman broadening.

In 1958, Bruce presented one of his papers at the second USAF conference on

atmospheric electricity. In it he pointed out that there should exist galaxies which are radiating an inordinate amount of energy, which should correspond to the naked-eye phase of a Nova outburst. And this peak-current phase of a galactic discharge should last for millions of years. Four years later, the first quasar was discovered, and in due course their lifetimes were recognized to be millions to tens of millions of years. Much of this work was driven by his desire to understand lightning. Based on his extensive studies of atmospheric electrostatic field building and electrical discharge characteristics, he developed a new theory of discharge propagation for the breakdown of electrostatic fields in cosmological atmospheres, which is different from normal long spark or terrestrial lightning discharges. The main difference is categorized by the temperature in the leader stroke, which for cosmological atmospheres, would be of the order of eight million degrees. In long cosmical electric discharges, a point is reached at which a radical

change will occur in the whole propagation process. In the discharge channel, a jet of gas will be generated, which will flow along the axis of the channel towards its advancing head. As the temperature of the channel rises, so also will the velocity of the jet. At a certain point, the velocity of the hot gas will exceed that of the normal process of voltage breakdown in a hydrogen atmosphere.

From that point onwards, the propagation will depend on the jet of hot gas. And the velocity will depend on its temperature.

These velocities could exceed 4,000 kilometers per second. In this paper on the extension of atmospheric to space electricity, he points out that there are two thermometers which can be used to estimate the temperature of the electrical discharges, whether in a laboratory, atmospheric or cosmic.

The first derives from an effect which was first emphasized by Velaski in 1937.

The pressure in the actual regions of an electric discharge is increased by an amount proportional to the product of the current and the current density as a result of the movement of the conducting particles in the discharge's own magnetic field. In an electric arc the

current density increases at and towards the electrode spots. Therefore, pressure gradients are set up which give rise to the anode and cathode jets. Their velocity will be that of the sound in the gas. If it can be determined, we will have a measure of the temperature.

Applied to the lightning discharge, the theory explains the existence of metallic lines in the spectrum of the discharge up to the heights of two meters above the ground.

And applied to an arc weld, it explains the physical basis of arc welding. The second thermometer derives from an observed relationship between the level of excitation and the discharge temperature. If, for example, the level of excitation observed is nine electron-volts, then the discharge temperature will be 10,000 times more in Kelvin, so in this case 9,000 Kelvin.

Based on this, he outlined that discharges in cosmic sources should be characterized by the following: rate of propagation; the speed of breakdown is proportional to the breakdown field and the mean free path; the limiting field is proportional to the gas pressure; and the mean free path is inversely proportional to it. So, there is no resultant dependence on the rate of propagation on the pressure.

It may be possible for the discharge to

generate a plasma jet with a velocity higher than the rate of voltage breakdown. In this case, the discharge may then propagate at the plasma velocity. Magnetic fields will be associated with a flow of current in a discharge. The fields are circular around the axis of the discharge. This can be recognized by the polarization and Zeeman broadening of the radiation emitted from within them. Pinch effect. The conducting particles in an electric discharge are within the discharge's own magnetic field which exert upon them a centripetal force proportional to the current and the current density. This results in an increase of the pressure towards the axis of the discharge.

Plasma jets. If either the current or the current density varies along the channel of a discharge, there will be a corresponding gradient of the axial pressure. This creates a jet of hot gas, or plasma, which will be accelerated along the discharge. This is the origin of the anode- and cathode-jets observed in the laboratory discharges. The speed of the jet is limited to the speed of sound in the medium of which it is composed. In ionized hydrogen, the sonic speed is 12 kilometers per second at 10,000 Kelvin.

It varies as the square root of the absolute temperature. The velocities observed in the discharge plasmas may be interpreted in terms of the temperature of the discharge.

Current waveform. The current in an electrical discharge builds up rapidly to a peak value and then decays on a slower time scale. Anomalous waveforms, sometimes shown by high current lightning strokes, arise from the self-extinction by the pinch effect.

Radiation of atmospherics. A lightning flash or other discharge radiates atmospherics of a characteristic waveform. Parallel discharges will attract one another. Balls of hot plasma escape at sudden bends in the discharge. The bends constitute holes in the magnetic field of the discharge through which the gas compressed by the field, can escape. His many years of research on atmospheric astrophysics convinced him that not only was the Sun dominated by electrical discharge, but the universe was so to speak, all electric. And that the electric fields and their breakdown in electrical discharges account for the observed phenomena, and accelerate the process of universal evolution from the



universe to galaxies, from galaxies to stars, and from stars to planets. He viewed atmospheric astrophysics as merely an extension of atmospheric electricity. In his view, these would be a far better explanation for the existence of magnetic fields, relativistic electrons, gas jets, the formation of spiral arms, stellar nova, etc. He noted that many phenomena seen above the surface of stars, can be explained as analogues, but on a much larger scale, of lightning discharges observed in the atmosphere of Earth. Although Bruce felt that the charging mechanism for each process was contained locally, he thought that it was not a vital precondition of the recognition of electrical discharges as observed phenomena. As Professor Birch remarked, to deny the existence of what cannot be explained would leave very little work to do. He felt it very probable that the charging mechanism for each phenomenon was the same: a collision between solid particles. The asymmetrical interaction of particles of similar materials leads to charge segregation.

[Music]

Electric Universe

2012 Conference

THE HUMAN STORY

Seeking The Third Story

David Talbott is the founder and  
director of The Thunderbolts Project.

His roots in the catastrophic  
movement reach back to the 60's,

but it was his book 'The

Saturn Myth' from 1980

which helped inspire the work

of several others now joined

in the collaborative endeavor.

He is coauthor with Wal Thornhill of

the 'Electric Universe', the Book.

His work is the subject of a riveting

DVD series, 'Symbols of an Aliens Sky'.

Two episodes have been

published so far,

we should be seeing parts of the

episode on Mars tomorrow evening

and highly recommend

that you be present.

I think it should be apparent to all

that this conference, 'The Human Story'

could never have taken place without

his inspiration and tireless efforts  
not to mention his extraordinary  
ability to galvanize those around him  
so that to be delegated responsibility by  
David sounds like a fun and worthwhile thing.

David is a muse in chief  
for this movement.

His gentle manner and style combined  
with a steely passion for the truth  
is an inspiration to us  
all and to a new public.

Here with talk intriguingly titled 'Seeking  
the Third Story' is David Talbott.

- The Electric Universe -

#### SEEKING THE THIRD STORY

I had the interesting experience of  
mentioning to several people that  
I'm going to be talking  
on this subject  
and more often than not  
someone would respond,  
well, I wanna see that talk.

Which I find humorous because, well, I  
haven't told you anything about it yet  
and as it turns out  
they do seem to have a sense as to what this

means that there really is something wrong  
with our cultural and  
scientific environment today  
and there is a growing yearning  
for a deeper understanding,  
a deeper and more clear, and  
more coherent, and unified,  
and non contradictory, and non  
fragmented way of seeing the Universe.

Now, it happened today, it happens  
so often that the first question is,  
Who Cares?

And I can't tell you how many  
times I've heard that from folks.

Because a person with the reporter's  
eye to a story, for example,  
will always be thinking  
in those terms.

And it doesn't necessarily register,  
it may actually on the first words  
that are used to express the  
meaning of the Electric Universe,  
it can seem rather remote  
but if a person is intellectually alive  
and has any attention span, let's say,  
the Electric Universe is going to meet

that person at a level of very deep interest.

A lot of the entry with respect  
to what is going on in this group  
is related to the experience  
of meaning and inspiration,  
out of what is being  
learned here.

And that comes clearly from the sense that  
the truth is somehow shining through, true.  
Something enduring, something lasting,  
something that could affect us very deeply.

Now, I'm going to  
show you a brief clip  
from a future episode of  
'Symbols of an Aliens Sky'.

How did human history begin?

The evidence may seem too  
complex for generalization.

Yet all of history can be  
stated as just two stories.

First came the story of mythology filled  
with cosmic dramas and celestial wonders.

We lived in the  
presence of the gods.

It was the gods who determined  
the fate of the world,

demanding allegiance, even as  
they called humans to sacrifice.

The gods were unpredictable,  
when angry they went to war,  
or they destroyed  
their own creation.

Over time, however, man's quest  
for deeper meaning in the myths  
ignited sparks of  
spiritual awakening  
and it was from these sparks that  
the great religions arose.

But all the world's religions  
shared a taproot in mythology.

And not one freed itself entirely  
from the momentum of the first story.

The second story arose from doubt, as  
philosophers, poets and naturalists  
began to lose faith in the myths, and some  
stopped believing in the gods altogether.

That was because direct experience, under  
a familiar and highly predictable sky,  
gave no support to  
the archaic myths.

Skepticism inspired closer attention  
to nature, the essential requirement

for the rise of Science and Technology

that would change the world.

Thus the heroic completion

of the second story,

rational science rising to

vanquish myth and magic.

And so the full sweep of human history comes

down to just two stories in competition,

a cliché, Science vs

Myth and Religion.

Well into the 20th century it seemed

that we were forced to choose.

But if you have wondered, could the myths

harbor a truth that we have missed?

Something yet to be discovered,

a message for science,

hidden in the myths and

symbols of deepest antiquity.

The point I want to make is that seeking

a third story requires us to reconsider

two stories that dominated human imagination

across the whole sweep of human history.

Two stories.

Now, it was my role to

investigate the origins of myth,

and to pursue that subject I had to



come to grips with an unexplained mystery.

What was the mythic age of gods and  
wonders remembered around the world?

Every culture said the same thing, the  
gods ruled for a time then they went away.

This age of gods and wonders  
is punctuated by disaster,  
and in the end gods pass away or perhaps  
they're translated into remote stars or planets.

Is that just imagination  
from one culture to another  
unrelated to anything actual,  
actually experienced.

I had the benefit of having been inspired  
originally by Immanuel Velikovsky,  
and Velikovsky was an exceptionally  
controversial figure.

Probably in the history of the 20th  
century science he was up toward the top.

In the controversial  
quality of his work.

He registered a very broad  
hypothesis about human history,  
but it had certain key elements  
that are very relevant today.

The first is that the planetary system

was unstable within human memory.

He said that in dynamic

interactions between planets

electric arcs flew between these bodies

and affecting the surfaces those planets.

And he insisted that human

memories counted as evidence.

And planetary instability and human

memories counting as evidence,

both disqualified him from consideration

by the scientific community.

I happened to be publishing a

student journal called *Pensée* in 72

and I had this sense, from our

conversations with Immanuel Velikovsky,

that this was actually a historic

juncture, so as I was envisioning

how we might treat the

issue of Velikovsky,

we eventually came to the idea of putting

out a special issue of our student journal

distributed free on

Oregon campuses.

And this kind of cut across the

political divisions and so on

that we ourselves were fostering, with

the kind material that we're putting out  
and that was Emmanuel  
Velikovsky reconsidered.

And from that moment on my own  
world just changed completely.

1 issue grew into 10, and this series had  
a remarkable impact around the world,  
it provoked this whole renewal  
of interest in Velikovsky  
in the light of new space-age  
data coming back in the 70's.

I followed this questioning with an incredible  
enthusiasm, and for a few years,  
because of certain things that  
were arising from my own study  
I was actually living off of adrenaline  
for, I swear, 3 or 4 years  
realizing that an entirely different assessment  
of human history and of evidence is possible.

Research method:

based first and foremost on  
cross-cultural points of agreement.

Something that can not be ignored,  
there is a power in diverse cultures  
insisting on the same thing at  
a level of very specific detail.

Attention to the earliest

sources, in other words,

the evidence was increasing that

there was a primordial experience.

Well of course, whatever has been preserved

to the point of cross-cultural agreement

you want to refer it back to the very

first expressions of those themes.

Because there's a natural tendency

of evolution over time in the myths

to fragment and to distort

or to localize the message.

There was a point

in which I realized

that there are hundreds of mythic

archetypes of points of agreement,

and that they're all connected and

that after the myth-making epoch

there is not a single

new archetype.

That was an

incredible revelation

that secured for me the possibility

of a unified theory of myth.

There were, must have been something

unique and experienced around the world

that gave rise to this unified  
complex of mythic archetypes.

In a sense, the monumental  
construction in antiquity is a witness  
to something that is simply unknown  
in human consciousness today.

Why would they all looking back to critical  
junctures in the age of gods and wonders,  
every monument that was ever  
constructed, every temple, every city,  
always involved a recreation  
of the primordial event  
and that event did not point to anything that  
we can name in natural experience today.

Because Velikovsky had made this  
seemingly preposterous claim  
that the planet Venus appeared  
in the sky as great comet

I kept my eye out for that particular  
question all the time and I can only say,  
because we want to cover a  
lot of ground here,  
that not only I but all who have seriously  
investigated this question with  
the kind of open-mind that is displayed  
here, have concluded exactly the same thing.

Velikovsky was simply  
and undeniably correct  
in saying that the planet Venus was a  
terrifying great comet, the parent of comets,  
in other words, all of  
the ideas about comets  
when they responded with fear to a  
wispy little comet coming into view,  
everything that drove them was a  
result of that primordial experience  
of the great comet,  
the mother of comets.

You can't pursue the mythic archetypes  
without beginning to notice  
that in the naming of planets in  
relationship to these mythic powers  
there is a consistency that has  
to have an explanation  
and there will be no explanation unless  
the planets were gathered above humanity  
in a way that has no conceivable  
explanation in the sky we observe today.  
So, that was the heart of a new way of looking  
at human history and planetary history.  
What was the age of  
gods and wonders?

Where did the gods live?

The answer to that question is  
undeniably, based on the early sources,  
they lived in the sky.

And why did we stop  
believing in the gods?

For the simple reason that  
in the course of time with distance  
from that primordial experience  
there was nothing in the  
human experience of nature  
that would lend any support to the myths,  
all myths became increasingly preposterous.

To gain a sense of the coherence  
and universality of the myths  
it's good to start with some  
of the absolute fundamentals  
a myth of the primeval paradise, the Golden  
Age, an age of peace and plenty on Earth,  
harmony in the sky.

There probably is not a well-documented  
culture in an earlier time  
that failed to remember  
that tradition.

And then, there was  
this catastrophic event

that brought the age of the gods

to its violent conclusion.

And what was the power that appeared in the

sky in the intervening phase of history?

This dragon like form.

But the most significant

about this form is that

when you investigated under the rules

of cross-cultural investigation

you find that every

ancient hieroglyph,

within the cultural

traditions you're investigating,

everyone, every symbol

is a symbol of the comet.

Long flowing hair, long flowing

beard, long flowing feathers,

serpentine form, fiery

countenance, fiery breath

all symbols of the comet.

Don't believe in accidents.

That's the heart of this research method,

convergence on extraordinary detail

has to mean shared experience,

even if we have not understood it.

I can thank Velikovsky and



quite frankly a brief outline,  
I saw from Bill Mullen  
way back in 1972,  
it was like a page and a half outline of  
Velikovsky's idea about the planet Saturn,  
it was not in 'Worlds in Collision', he  
had pulled it from 'Worlds in Collision'  
in order to present a  
more complete hypothesis.

But that was so intriguing,  
this idea that Saturn had  
this extraordinary role in  
the earliest remembered time  
and so, I followed that.

And yes, Saturn was directly  
tied to the Golden Age,  
as you can see in this quote about  
life in the time of Kronos  
when he ruled in heaven, Kronos being  
Greek name of the planet Saturn.

Follow the threads and everything you  
encounter just expands the anomaly,  
expands the sense of something out  
of our familiar experience  
that was so much on the  
mind of the ancients.

Today, probably not 1 in a  
1,000 people know that Helios,  
the Greek word for the Sun, was in early  
time the name of the planet Saturn.  
Sol - was a name of the planet Saturn.  
Shamash - the Babylonian sun god, was  
explicitly identified with the planet Saturn.  
Scholars investigating this never  
dispute it, but why that would be so,  
is disputed.

There is an idea of a great  
conjunction that has nothing to do  
with what we call a conjunction  
or even a great conjunction today.  
We see the planets gathering  
within a 30 degree arc of the sky  
and they call that a  
great conjunction.

No, the principle that is inherent is that  
you see it at the heart of the ancient myths.  
It's the planets stood in one  
line, such that line  
ran right through the heart  
of those gathered bodies.  
Now, why would anyone say that was  
the condition that prevailed

in the first chapter of the  
age of gods and wonders?

And that's what we'll see, I'll discuss  
this in my presentation on Sunday.

Every culture in antiquity  
tended to have a line of kings  
and they could trace that line of  
kings back to a mythic first king.

And this is where you find the  
preeminence of the planet Saturn,  
as the first father,  
the father Kings.

What would that mean?

And why did that memory so preoccupy  
those who formulated the rights of kingship  
declaring that the blood  
of that first ancestors  
courses through the  
veins of our King?

And what was the connection to the  
myth of heaven close to the Earth?

The entire idea as a universal theme,  
as a mythic archetype, makes no sense,  
but there's an intimate connection to  
Saturn that has to be explained because  
you have a father figure and a

younger version of the same figure  
and that has to be unraveled  
but the truth is that the myth of heaven,  
when heaven was close to the earth,  
is inseparably connected to the planet  
Saturn for no apparent reason at all.  
So, I actually got Double Day, very  
excited about a book before I've written it,  
just on the basis of an article  
I have written and an outline.  
And I think that they had  
expectations for the book  
that left them sorely disappointed  
after it was published.  
The sales were simply not  
impressive, and yet there is today  
a group of people who  
were inspired by the book,  
it was effective with those  
who really paid attention.  
One incidentally is Ev Cochrane,  
whom a number of you people know  
and he is now a world-class  
expert on world mythology.  
There was this forgotten epoch  
and what was seen in the sky

bore no resemblance

to things we see now.

And humans on Earth drew

pictures of these forms.

The dynamically evolving configuration

in the sky pressing in on the Earth,

obsessively preoccupying

human beings.

Out of respect for time I'm

not gonna belabor the details

but just leave with you this sense

of some underline pattern,

and as Bill Mullen said, it is

this ability to recognize patterns,

as is being done within our group

as a whole, that means everything.

Pattern recognition

leading the way

and in all every instance you're looking

at patterns that are archetypal

and every archetype is a defiance

of nature as we experience it today.

There is a wheel-like character to this

form and it provoked this explanation,

going back many years, that they must

have been drawing pictures of the Sun

and imagine that the Sun was a  
wheel rolling across the sky.  
And yet the truth is that these  
pictographs in countless numbers  
precede the discovery of  
useful applications of the wheel  
and that is very evident in fact  
that the discovery of useful applications was  
connected to models turned on temple walls  
and in one way or another as  
a praying wheel or whatever it might be,  
this kind of an example of it  
here in the wheel of Shamash  
where the wheel is turn on the...  
on a rope.

The useful wheel emerged from the  
sacred wheel, it's not the reverse.

Notice the spokes of the wheel are  
not functional anyway, very etheric.

And "Shamash is the planet Saturn", say the  
magical texts of Assyrian and Babylonian.

So, honestly folks... Does the

Sun in our sky look like this?

Okay, here we go to a brief segment of the  
first episode of 'Symbols of Alien Sky'.

You're looking at reconstructed images

of the formation in the heavens

just a few thousand years ago.

The configuration evolved through many

phases, evoking reverence and awe,

a model for kings and kingdoms

for thousands of years.

Great temples and cities

and sacred mountains,

all pointed back to the

mythic age of gods and wonders.

Let the world's first astronomers

point the way for us.

They knew that what the myths and

hymns and prayers called Gods

were planets and

aspects of planets.

Planets appeared close to the Earth

in heaven spanning configuration.

Memories of that celestial

splendor still surround us

even if humanity later forgot

much more than it remembered.

Reconnecting with our forgotten

past will be essential,

essential for our own

cultural integrity,

essential for the study  
of human consciousness  
and essential for  
all of the sciences.

Here is the fulcrum of a  
reconstructions stylized  
but it carries the whole message that  
I want to leave with folks tonight,  
the claim that I'll swear by and yet  
it could only sound preposterous  
to someone who hasn't  
investigated this.

The story of mythology is the story  
of what happened to these bodies  
and there is no other  
story that really is true.

And anyone who follows the rules of the  
investigation will discover this for themselves.  
It's happening right now.

Maybe when we get to the panel  
discussions at the Encore event  
it will have some substantial  
discussion of the human story  
and we may talk about it  
exactly what this means.

The point here is, this configuration



that is at the center of reconstruction

is the culmination of an

evolutionary phase that preceded it

through which the participants

were progressively clarified

at clarification of the personalities

of the male and female powers.

The female power being the great star in

the center of the overarching sphere.

The smaller star, smaller

planet, darker redder sphere

was the prototype of

the warrior hero.

The star burst form was the

prototype of the mother goddess,

the great star, the great comet, before it

was removed to become the angry goddess.

So, there's just this sweeping story,

it's not gonna be told briefly

because the configuration evolve through

dynamic and at times violent phases

but the point here is,

it can be reconstructed

because people were drawing pictures,

carving pictures on stone of what was seen

and today we have this incredible benefit

that the pictures that are recorded on stone  
can actually be evaluated  
under laboratory examination  
of electric discharge in  
a plasma environment.

And I should mention, because this  
form is so unusual, I always laughed  
when I would take a step  
back and consider the symmetry  
of the configuration  
that I'd reconstructed.

I was calling this dust, gas and  
dust in the emptiness of space.

Why would it gather  
into symmetries?

And everything I was reconstructing  
involved various layers and symmetries  
that seemed utterly preposterous, and  
then Wal Thornhill arrived in my office  
in late 96, early 97, and  
he explained to me  
that in electric discharge in a  
plasma you get this kind of symmetry  
and he illustrated it for me.

Wal Thornhill, so that was the beginning  
of a collaboration that won't quit now,

we published 2 books and the theme  
is a convergence of myth and science.  
One of those books, the 'Thunderbolts  
of the Gods' takes advantage of a fact  
that the cosmic thunderbolt  
in the antic world  
provides us with a bridge  
between myth and science.

And every fact that you can bring forth  
relating to this cosmic thunderbolt  
is explicit and  
extraordinary, and anomalous,  
the warrior god's weapon was not  
inspired by any practical function  
and of course it never  
looks like lightning.

But imagine a warrior within, launching  
an arrow with the configuration seen here,  
which would make the arrow  
effectively dysfunctional.

But it is a familiar form to those who  
know electric discharge in plasma.

The Assyrian form, there are many variants  
and it's quite clear that whatever  
was being experienced it did go through  
extraordinary evolution in the sky.

Not everyone understands this,  
but the scholars who have looked  
certainly do understand that the tridents  
of early myth and symbolism were  
forms of the cosmic thunderbolt.

And now you know why we chose  
that image of this conference.

The ancient image of the  
cosmic thunderbolt,  
the Sanskrit vajra, Tibetan  
dorje, the Japanese Kongo,  
the weapon of the warrior god  
Indra and so many others  
and the identity of that  
warrior god himself  
and instance after instance,  
he is his weapon.

The bolt of Odin, this bipolar  
form is continually recurring.

Look at the heart of this figure.

The heart of heaven, the innermost heart of  
that configuration that we initially show  
was the form of the cosmic thunderbolt  
in its first phases of evolution.

And that sphere that is identified  
here as the masculine seed

is such a recurring element  
it must, it just must be a part  
of whatever dynamic sequence  
is being displayed in the ancient  
images of the thunderbolt.

A few greek examples.

And the point to follow is that all artists  
progressively elaborated the thunderbolt form,  
it became increasingly complex, there's  
an underline form that stands out  
and must be investigated in  
relation to plasma discharge  
in terms of the yet evolving ways of  
artistically representing the cosmic thunderbolt  
because it was evolving in the  
sky and extremely common practice  
was to juxtapose various phases  
in the evolution of that form.

And that's what  
you're seeing here.

Therefore, 5 or 6 different  
elements of the cosmic thunderbolt  
in its evolutionary sequence  
that are displayed here.

Fact: the prototype of the warrior  
god's sword or arrow was a thunderbolt.

Now, you have no doubt assumed  
that the great warrior gods of all  
of the folk literature and so on,  
with their magical weapons,  
they never missed their marker,  
they returned to the hand  
of the warrior himself.

That these were just based on our  
experience of warriors with weapons,  
it's quite the contrary.

The original form of the warrior's  
weapon was the cosmic thunderbolt.

Now, there was a time after I converged  
with Wal and I realized that a thunderbolt  
it had to be at the center of the  
whole story of violence in the sky.

I thought that I was the only one on  
Earth that could have possibly known,  
because it's such a  
preposterous idea,  
that all of these weapons of great warrior  
gods were actually the cosmic thunderbolt.

I mean that's a ludicrous idea.

These stories of great heroes are claimed  
to have emerged from our experience  
in an earlier time of conflict and

battles on great battlefields and so on.

But I found I was not

the first by any means.

"When the sacrificer

brandishes the wooden sword,

it is the thunderbolt that

he hurls at the enemy."

"The sword is derived from a

lightning-flash archetype,

of which it is the descendant..."

This is why you find the word for

lightning in so many of the ancient words

for different heroic swords.

"... A 'derivation' of the sword, and similarly of

the celt, from a 'root' or archetype in lightning

is universal and worldwide."

in other words, that takes it right into the realm

of the archetypes, the points of agreement.

"In the matter of prehistoric weapons...

in every country without exception

they are always 'thunderbolts' and

never anything else." René Guénon.

Now, I think most of you understand that

investigation now is bringing together

the myths and symbols and experiments

in the laboratory that show bridges

that had never entered human  
imagination previously.

Laboratory discharge

Knots, toroids and "wings"

emerge in plasma instabilities.

And this is a discharge form  
from the Princeton plasma lab.

Illustrating or emphasizing  
that instabilities produce axial  
columns and embedded cylinders,  
embedded cylinders.

This becomes extremely  
important consideration.

An illustration of laboratory high-energy  
discharge in a plasma medium.

The beginning with a knot.

Flattening into a torus.

The torus folding upwards into the  
beginnings of the kind of champagne glass,  
wine glass form, as  
another torus is forming.

Back to just illustrate, you can see  
it again in that particular image.

A more angular look  
can be acquired.

Embedded cylinders.



And pinching of the cylinders  
at the plasma pinch point,  
which is key to the evolution  
of that configuration.

The Vajra, yes artistic elaboration  
has occurred I mean this could be  
at least one or two thousand years  
after the actual experience  
and that's part of the evolution  
of myth and symbolism over time,  
but you see everything still  
in the design element  
that is inherent in the electric  
discharge in the plasma laboratory.

The form in the hand of Zeus  
is in that early phase, where it's  
beginning to send out the petals.

I like this image, the red-headed  
warrior is telling because,  
I mean, one of the first things  
that begins the register  
when you are examining warriors identified  
with the planet Mars is the red form,  
but notice his head is surmounted by the  
upper termination of the cosmic thunderbolt.  
The warrior is his weapon.

Greek images showing that  
evolution in very stylized forms  
and the kind of complexity you see  
here is actually representative  
of the complexities that will appear in  
varying conditions in electric discharge.  
But surely no one needs to emphasize that  
we've never seen lightning take this form.  
So, what is being underscored here is the  
absolute contradiction of the mythic archetypes  
to the natural experience.

Only intense electric discharge in a  
plasma can create these forms.

One step forward, more  
than 10,000 years ago  
paleolithic artist painted these images  
on the walls of Lascaux cave in France,  
they were realists with an  
exceptional eye for detail.

Why these talented artists of the  
Stone Age disappeared remains a mystery,  
but the greater mystery  
is the epoch that followed.

It seems that Neolithic artists lost the  
ability to depict nature as we know it.

Accurate representations

of nature are present  
but the dominant style produced a carnival  
of ghostly creatures and absurd forms  
never seen in our world.

How did this tendency arise?

Not in one land alone, but  
on every habitable continent.

Absurd? Yes, but what provoked  
the distinctive patterns?

A stick man with no head, just a  
duck or other bird on his shoulders.

Hundreds of variations on this theme  
occur in the American Southwest.

But the pattern  
doesn't end there.

Notice the twin dots on the two sides  
of these crudely crafted stick figures.

One instance alone  
is just a curiosity  
but widespread patterns  
must have an explanation.

And other details only  
accent the irrationality.

Recently an answer to these mysteries came  
from outside traditional archeology,  
from plasma science and laboratory

experiments with electric discharge.

Plasma scientist Anthony Peratt of Los Alamos laboratories has shown that these stick forms recorded electrical events in the sky.

Something like the Northern Lights we see today but a thousand times more energetic.

And he matches the rock art forms precisely

to the configurations taken by electric discharge in the laboratory.

The rock art images are explained as sheets of intense electric current in the evolution of a plasma discharge.

The central column you see in this stylized representation is the axis of the discharge.

Wrapped around the axis is a torus or donuts-like tubular sheet of charged particles.

The observer sees through the transparent formation: champagne glass above, squashed bell-shape below, so the plasma density is greatest at the limbs.

Drawn in two dimensions, the formation matches the stick man carved globally

on stone by the thousands.

The two dots under

the stick man's arms

are the exceedingly bright high-energy

radiation called synchrotron radiation,

emitted from the

center of the torus.

The current sheets continually warp

as the electric discharge progresses

and this form is not uncommon.

A two dimensional representation

might look like this.

Peratt's work has shown

that the stick man,

the duck headed version

of the American Southwest

and variations from Hawaii to Saudi

Arabia is a plasma discharge formation,

a subject on which he's an

acknowledged world expert.

Peratt's investigation is entirely

independent from our own.

Thousands of rock art images

have enabled a supercomputer

to identify formations as seen

from different positions on Earth.

The fit that he has documented

can not be accidental.

And yet our own investigation, which

preceded Peratt's by almost three decades,

converges with his in

extraordinary ways

as I shall clarify in the

second episode of this series.

For scholars and scientists as a whole,

rock art remains an unsolved mystery.

For 200 years experts have debated over

the vast library of images on stone.

Definitive considerations are now in

hand, calling for a new perspective.

One that follows the

compelling evidence

for high-energy electrical

events in the ancient sky.

And those who pursue this

line of investigation

must not be afraid to ask how

the movements of planets

may have contributed to an

electrified cosmic environment,

of which science knew nothing

only a few decades ago.

Now because we just introduced  
the work of Tony Peratt  
and I'm sure many of you know  
that it doesn't stop here,  
the convergence with Peratt has  
actually a very interesting history  
and I'm just gonna address that briefly  
so as to not get stopped at this point.

But Tony became a very good friend  
traveling to Portland more than once  
I traveled to Albuquerque  
and Santa Fe more than once,  
we got together for dinners and  
he was incredibly animated.

But I was essentially precluded at that time  
from mentioning any association at all.

Now with the passage of time it  
is, I think, the only appropriate  
to be pretty explicit as I've been  
over just the past 3 years or so  
about the nature of that relationship, how  
it evolved and what it actually means.

I was in 2000 working with Rick Smith of the  
Jet Propulsion Laboratory, database manager  
in conveying to Rick ideas about a more complex  
dimension of an evolving configuration

that required us to look

at it three-dimensionally.

And three-dimensional representation

was becoming increasingly important

because I was beginning to see that we were

observing configurations in a phase of,

you might call it cosmic wandering,

and in the myths it was the

phase of wandering gods.

And so, Rick produced an image

that I then translated

into an illustration of what I had

been calling the chain of arrows.

And when Wal came to Portland

in September of 2000

ahead of the symposium to which

we had invited Tony Peratt

I showed the image to Wal

of the chain of arrows form.

I asked him, Wal how did

plasma do this and Wal said;

"Look, it is so clear that it

is a plasma discharge form,

but it needs to be

investigated more completely."

And then Tony Peratt arrived at the



conference and in a private gathering  
of speakers and trusting, you can see that image  
upper left, he just drew out a form,  
and he called it  
the Christmas tree.

I said, Tony you've just  
drawn the chain of arrows.  
It's a very dominant form in  
laboratory of discharge experiments,  
it was named after Tony  
Peratt, a Peratt instability,  
his team members honored  
him with that title.

I said that to Tony and he responded,  
well how does it evolve?  
And I'm not going to  
discuss the evolution here  
but I will allude to it  
in my talk on Sunday.

But essentially it was twin filaments  
spiralling up the axis of the Earth,  
dividing into a stack of toruses that  
took the appearance of a the chain of arrows  
and then as a latter of heaven,  
the backbone of the sky.

This is such an exotic concept and yet it

can be reconstructed in very finite detail  
and it is simply inconceivable  
to me that something other than  
the actual human experience could possibly  
account for the accord which is global.

So, Tony asked me when got back  
home he said, "send me the rock art".

And for starters, though I have  
thousands of rock art images,

I sent him just one and it was  
entirely on the basis of intuition.

I had come to believe that this is one of the  
purest representations of that discharge form.

As Tony recounts it, the moment he saw  
this he knew that his life has changed.

His initial response was fear  
that somebody had somehow  
hacked into his computer and diagnosed the  
plasma discharge from the lot of this stuff  
back then, before Tony got it declassified,  
was really top secret information.

This form, just given a little bit of three  
dimensionality on the right  
so you can see it is three-dimensional  
and so you have wine glass on top  
and you have that toroidal form at the

base and you have a stack of toruses  
where the disk is folded sharply  
upward, that's what does happen  
and the stack of Toruses, Tony confirmed  
to me, is absolutely and unequivocally  
a dominant feature of the evolving  
configuration in the laboratory.

And there is something quite  
meaningful in this phase,  
it's not as popularly inscribed on  
stone for one reason in particular  
that it's highly energetic and violent  
and potentially deadly in its radiation,  
and it collapses into this form,  
which is the stick-man form.

And at the time I learned this  
from Tony I had never imagined  
that there was an explanation that I  
could understand of the stick-man form,  
and he provided it.

Bi-polar discharge  
in space

Of course we now know that the geometries  
of the electric discharge in plasma  
are abundantly  
evident in space.

And look at that core of the  
inner, the most energetic emanation,  
how beautifully symmetrical it is,  
and that is a pointer back  
to that kind of symmetries,  
bipolar symmetries, that were  
evident in the ancient sky.

Now the people are gonna get  
bored with this image very soon.

Yes, I think it is the  
third time tonight.

But is such a beautiful  
bi-polar form,  
and not all the forms exhibit  
that spectacular symmetry,  
because conditions in the sky would be  
widely varying within the Milky Way.

But this bi-polar form is so clearly  
analogical to the thunderbolt form.

Really quite spectacular, quite beautiful,  
but certainly not driven by gravity.

Now I'm just going to give an overview of  
directions for finding the third-story,  
because our minds must be willing to work  
with a reconsideration of the first story,  
and the second story, and we must

come to fully appreciate the fact  
that the 1st story will never be understood  
in the absence of the Electric Universe  
and the 2nd story must be rewritten  
in the light of the Electric Universe.  
So, this is the basis of the incredible  
sense of the unified possibility  
that is emerging now,  
within this group.

Now that we're seeing space across  
the entire electromagnetic spectrum  
it is becoming undeniable that  
things are occurring out in space,  
that exotic structures are being seen  
that were simply never anticipated,  
but are observed  
in the laboratory.

Electricity - the unifying force

And as we discussed,  
what in our cosmic neighborhood would be  
the best window to the Electric Universe?  
It seems increasingly clear because the Sun  
is the most thoroughly investigated body  
in our solar system,  
outside the Earth itself  
that if we live in an

Electric Universe,

there is a fundamental misunderstanding  
that must be corrected.

Our Electric Sun

And then down to the smallest  
level and in the quantum domain,  
surely the underpinnings  
of the natural world  
seen in terms of the role  
of the electric force,  
as Wal and many others who are gathered  
here today, have begun to explain.

That is key.

Electricity of Life

The people who are here to address that  
subject now, they are on the cutting edge.

It is both the ancient  
myths and symbols and  
the modern perception  
of planetary history  
that must come together  
in one analysis.

The goddess image in much of our  
culture today is very very popular  
but one thing I came  
to notice is that

it's popular and there is almost a kind  
of reverence for that goddess form  
but in all of the visionary art and exotic  
representations of that mythic theme  
it seemed as if there was nothing  
actually underpinning it,  
it was just floating...  
and in the final analysis it is our  
role to bring clarity to visionary art,  
because the archetypes could not be meaningless  
and we can agree with them on that  
but we can bring the roots  
beneath those archetypes,  
so that they can begin to be  
interpreted in a way that will be,  
well, simply more meaningful.

#### The Cosmic Warrior

Why is it that amongst all the  
planets around the world  
the astronomical tradition  
always identify  
the planet of the  
mother goddess as Venus  
and always when looking out of Mars, they  
unanimously agree, that was a great warrior.

Don't believe in accidents.

What we're all talking about

here is the power of convergence,

I enjoyed very much Greg

Volt's exposition on that.

- Interdisciplinary convergence

- Not artificial consensus

- Meaningful peer review;

we all want that

but not peer review that is

just a gate keeping device.

We want those who are open-minded

and fully accredited

to become the vehicle for

assessing extraordinary new ideas

and not to be dismissed or fired

because they gave their approval

to an extraordinary idea

and if anyone here doesn't believe

that there's that kind of fear

active under the present peer review

system in institutionalization of science,

well, you're dead wrong,

we see this all the time.

There are people here I happen

to know, are anonymous today

because of the power



of that force.

Pattern recognition as Dr. Mullen

was just emphasising earlier

it's a key, it's leading the way, it's

opening the doors to possibilities.

You don't start with mathematics, you get the

interdisciplinary picture by seeing patterns

and understanding what is going on

at a practical common-sense level

and you direct the mathematicians to

begin working with these patterns

which are counting us, something

is fundamentally wrong.

Don't just keep elaborating a present,

a previous idea mathematically

to make things work.

That means we need

a broader field of view,

this is what I love about the NPA,

they know what natural science is,

if you're always looking an inch wide and

a mile deep, how well are you able to see

the evidence shouting at you from

the broader horizon of your science?

It's telling you that you're,

your focus is too narrow

and you're missing the things  
that actually falsify your assumption.  
And I don't think any body in  
this room needs to be told  
that the role of the scientific  
maverick is absolutely essential today  
and we are here to support that  
role, and it is why we came into  
an alinement with the  
Natural Philosophy Alliance.

And that is the end  
of my presentation.

The Third Story

Electric Universe

2012 Conference

THE HUMAN STORY

filmed by Ben Ged Low

for the

THUNDERBOLTS PROJECT

Thunderbolts.info

Welcome to Space News from the Electric Universe, brought to you by The Thunderbolts Project™ at [Thunderbolts.info](http://Thunderbolts.info)

For more than a decade, among the individuals exploring the concepts of the Electric Universe Theory, a community has arisen which is specifically devoted to exploring the surface of our planet. The geological processes in an Electric Universe go well beyond the theoretical toolkit of standard geology. Laboratory experiments involving electrical discharge to solid surfaces, reveal familiar features seen on every rocky body in the solar system, including our own planet. For a number of years, a variety of independent investigators have participated in regular group expeditions in the American Southwest, gathering evidence and developing analyses based on their observations. One contributor to the Electric Geology Group is Robert Hawthorne Jr., who exhibited at the Thunderbolts Project's EU 2017 conference, "Future Science" in Phoenix, Arizona. In part 1 of this two-part presentation, Robert offers his

analysis on what may be one of the best candidates for an electrical scarring feature on planet Earth: Upheaval Dome in Canyonlands National Park in Utah. The link to the Electric Geology Facebook page may be found in the description box of this video.

I would like to first take this opportunity to thank the Thunderbolts staff for giving me this opportunity to speak with you on my paper entitled: "Electric Discharge - Not an Impact Caused Formation of Upheaval Dome, Canyonlands National Park, Utah." In March of this year, I was given the opportunity to present this paper at the International Multi-Conference on Complexity, Informatics and Cybernetics in Orlando, Florida, and also I going to be receiving a publication from this paper.

Upheaval Dome is a crater in Canyonlands National Park, about five and a half kilometers across the outer rim, and it's about five hundred meters deep. And currently there are two theories on a placard outside the

dome and the first one suggests that it was a meteor impact and there was actually a lot of work done by Dr. Shoemaker, who I actually visited the site with, and did some work with him on this when he was still around. The second theory is a salt dome that pushed up all the way through, like a lava lamp, because its less dense initiative surface then completely eroded away. And this theory is losing support, in fact quickly, since they found shocked quartz in the area, suggesting the impact theory.

So in 1996, a sample of what was thought to be a tektite was presented to Dr. Eugene Shoemaker and several other authorities on Upheaval Dome. The scientists were baffled as to what secondary processing could have caused this mineral known as analcime, which is a hydrated sodium aluminum silicate, to be in this form below.

So, the objectives of this episode of the Thunderbolts Project, is to explain that electrical discharges can form large

craters and eject material.

I'm going to try to show that these same temperatures and pressures that are needed to shock quartz crystals from impacts, can be generated through electrical discharge. And also, that electrical discharges can vitrify, or turn to glass material struck by these discharges. And a new form of the mineral analcime will also be shown as proof. And it's also to provide an argument that perhaps another mechanism can be applied to the formation of the planet's many craters.

So, these illustrations here show mantle gravity anomalies on the planet. So, the mantle gravity anomalies in this illustration here show that, if the currents were to come in from the Sun at the planet, they would take the path of least resistance. And since we know that current generates heat, we can see that on these fault lines here where the thermal imaging shows it it's probably the most likely place with these currents are traveling in towards the

core. And we're going to focus on the Eastern Pacific rise as our primary current here. And if you can see in this little pink circle on the mantle gravity anomaly illustration, that's where our primary focus is going to be. Now inside that circle, there is a magnetic anomaly that's been titled the Farallon Hyper Volcano by Quinn. And you can see here that it's rather large.

The peak of the anomaly, if it were to be a hyper volcano, you can see that the city of Las Vegas is almost centered right at the top and it expands all the way up past Ensenada, Mexico with the base of the volcano extending out into the Pacific Ocean. So, this is a rather large anomaly and if it were to have an incident kind of like mount St. Helens, where the volcano collapsed in on itself, it would be evident that the patterns of the river formations there, in the United States, would in fact basically be the electrical discharge and the forensic evidence of that discharge. And here, we actually see we're getting closer to

Upheaval Dome. Now these are pictures that were taken of the area of Southern Utah. You can see highway 70 at the top of the illustration and the second flag on the left-hand side, the down, is called Three Fingers Canyon and Upheaval Dome is on towards the bottom of the screen. The second to lowest flag is Upheaval Dome. You can see from Three Fingers Canyon is a canyon that opens out to the west. It extends west to east with walls, sheer walls basically, extending on the north and south sides up several hundred feet, with it opening out on the east side. So, if anybody were in this area to see like an electrical disturbance in the sky, they would easily be able to see what was happening off to the east and if it was over to the south they could easily look over their shoulder and be able to describe on to the stones what they saw in the sky happening over Upheaval Dome. And that's exactly where you find the petroglyph that's on the side here. And if you can see it, this actually



highly suggests that there was possibly a polar configuration and even possibly some twin comets that were in this area.

And now we're going to get into some electrical cratering theory. Jacob Gable on the YouTube channel Electro

Terravision, gave an interview with me on the Electric View, demonstrating electrical cratering in a low-pressure chamber with an anode and cathode and some dirt from the outside of his house.

And also you can see here that it wouldn't take a five and a half kilometer wide electrical strike, to create the crater.

As you can see from these pictures here, it's just a thin filament of electricity

that's dancing around, in a kind

of a circular motion; a bit of a

spiral action coming. But as the current

was intensified, you can just see this

focuses on one spot basically, so it's

cooking right through the crater itself.

I also wanted to find some actual

evidence of electrical cratering on the

planet prior to this event, just to prove

that the actual lightning can create

craters. And on October 30th, 2019 a lightning bolt struck outside a parking lot of a gas station in Fort Worth Texas. The fire department spokesman, Mike Drivdahl, was quoted saying: "When it's 15 by 15 feet, in concrete six inches thick, that's a pretty massive explosion." And I think that's at least pretty much right there - that's a rather massive explosion. Now on the shocked quartz subject, electric discharge machining versus impact. Shocked quartz has recently been used as a standard to discern whether the impact event has occurred. And regarding Upheaval Dome, shocked quartz samples were discovered by Shoemaker's team in 1999. However, in 2015, a geology team from the University of Pennsylvania demonstrated in simulation, where an arc of lightning struck a simulated granite substance. The calculated pressure from the strike exceeded 70,000 atmospheres, well within the range of creating shocked quartz. And this was from Reto Gieré's paper in 2015. Matthew Pasek, a geochemist from

University of South Florida, Tampa, who wasn't involved in the study was quoted saying, "The result could cast further doubt on claims of asteroid impacts in Argentina and Australia that relied on observations of shocked quartz.

The analysis should serve as a warning to geologists not to rely only on that line of evidence. This definitely shows that geologists need to consider the geological context of their samples." And now I would like to talk about some fulgurites and the "Obsession Stone."

When it comes to fulgurites, lightning is highly energetic and it's capable of delivering a billion joules of energy, and also temperatures exceeding 2,000 Kelvin. Any material that's struck usually becomes vitrified or turns into glass, or into a glassy substance.

These items are called fulgurites. Now, back in 1996 the discoverer of the Obsession Stone, James Wesley Hill of Moab, Utah and my father, Robert Hawthorne Sr. presented a strange rock to local geologists for identification. After local

scientists from BYU and University of Utah could not identify the mineral, they turned to other authorities of meteorites. We went to Dr. William Cassidy from the University of Pittsburgh, who is a recipient of the Behringer award and after he had taken it to the Smithsonian, his graduate student returned us this letter. And in this letter, it states a few things and i'm just going to quote a few parts of it.

"Preliminary observations are that it consists principally of irregular shaped, colorless grains of isotropic material, accompanied by rare rounded isotropic grains. Both the irregular and rounded isotropic grains are probably glass. They are cemented with calcite. By association with the nearby Upheaval Dome structure, it seems possible that the glass grains had an impact origin and were deposited at a site where chemical precipitation of calcium carbonate was occurring." And he also goes on to say later on, "Therefore, while

it seems possible that this material is of impact origin, one would have to suggest the likelihood that it has undergone some type of secondary processing or/and sorting, to remove associated nickel-iron inclusions before lithification. Pending further chemical analysis of the individual grains, we cannot commit ourselves further to it's possible impact origin." At the request of Dr. Cassidy, we sent our samples to NASA, to Mike Zolensky, who's the NASA curator. An X-ray diffraction was performed on two samples with the results showing that, "The samples are a combination of a analcime and calcite. I am afraid that these secondary minerals have completely replaced the original mineralogy of the samples, so there is just no telling what they originally were. The gross petrography does resemble devitrified glass, but this could have been a volcanic glass. I'm afraid I can do no more with these samples, because they have been so altered from their original mineralogy." So, after two attempts to try

to prove that this was a meteorite and both of them failed, basically we were left at a loss and for ten years I left this rock sit in our yard. And it wasn't until I saw a Thunderbolts podcast from Barry Setterfield, that I actually took a picture of one of my samples and sent it to the Thunderbolts project and within half an hour I was invited to the Electric Universe 2017 conference in Phoenix, where I met Wal Thornhill and a lot of people and that was a great experience.

[Music]

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

For many decades, the standard  
cosmological model has stated that  
the universe began many  
billions of years ago  
with a primordial explosion  
called The Big Bang.

Beginning from an  
unimaginably hot dense point,  
material rushed outward at  
nearly the speed of light  
and to this day the physical expansion  
of the universe is thought to continue.

When scientists found evidence for the apparent  
acceleration of the expansion rate of the universe,  
the hypothetical influence  
of dark energy was invented.

For a scientific hypothesis to be  
testable, it must make predictions  
and the technological data available to test  
the Big Bang hypothesis has never been finer.

For over five years,

in this series,  
we have reported on numerous  
theory-shattering discoveries  
that challenge the very  
underpinnings of the Big Bang.  
From impossibly huge structures  
that exceed the size limits  
for any object at this time  
in the Big Bang universe,  
to so-called "ancient stars" whose  
chemical composition is completely wrong  
if they formed from material  
in the early universe.

To grand-design galaxies that display a complexity  
of form that defy their theoretical age.

To evidence that the so-called expansion of the  
universe is accelerating at an impossibly fast rate,  
even accounting for dark  
energy's influence.

Many scientists have  
acknowledged the major problems  
these discoveries posed  
for Big Bang cosmology.

Nevertheless, consensus  
scientific opinion remains  
that the Big Bang is the best current



theory for the origins of our universe.

Indeed, a recent Scientific

American article aroused a

response from some of the world's

most revered cosmologists,

that demonstrates just how slow and difficult

is real change in the culture of science.

The article in question entitled "Cosmic

Inflation Theory Faces Challenges"

proposed that the universe began with a

so-called Big Bounce instead of a Big Bang.

The authors question

cosmologists' interpretations

of measurements of the so-called

Cosmic Microwave Background.

Specifically, they disagree with the

interpretation that data first published in 2013

proves that an extremely fast

inflation occurred after a Big Bang

13.7 billion years ago.

They state, "If anything, the Planck data

disfavored the simplest inflation models

and exacerbated long-standing

foundational problems with the theory,

providing new reasons to consider competing ideas

about the origin and evolution of the universe...

Yet even now the cosmology community has not taken a cold, honest look at the big bang inflationary theory or paid significant attention to critics who question whether inflation happened."

In a response letter to the controversial article, 33 scientists, including physicist Stephen Hawking, began with a statement, "There is no disputing the fact that inflation has become the dominant paradigm in cosmology." They then accused the authors of, "dismissing the research of not only all the authors of this letter but also that of a substantial contingent of the scientific community."

However, the problems for Big Bang cosmology reach far beyond anything that Hawking and his colleagues seem ready to acknowledge.

On the question of the so-called Cosmic Microwave Background, or CMB, the conclusion that the radiation is a "background at all" begins with the assumption of a Big Bang.

But, as previously  
discussed in this series,  
ample evidence exists to consider that  
the "asymmetric radiation" is, in fact,  
a locally produced foreground.  
As physicist Wal Thornhill  
has explained,  
proponents of the Electric Universe and  
Plasma Cosmology argue that  
the radiation is due  
to microwave radiation  
from the filamentary galactic electric currents  
flowing in the neighborhood of the sun.

In fact, some of the  
expected structures,  
a galaxy-wide sample of dense  
filamentary structures correlated  
with spiral arms and star formation,  
have been recently mapped.

The image on your screen is an example  
of a network of galactic filaments.

As Thornhill notes, we see a roughly  
orthogonal branching of tributaries,  
which is characteristic of  
an electrical discharge.

This principle is seen in this comparison

with experimental discharge filaments.

If the CMB is, in fact, what

physicist Eric Lerner has described

as a "radio fog of dense

plasma filaments"

its presence tells us nothing

about the age of the universe.

The local origins of the radiation

would also help explain

the seemingly baffling discovery of

apparently vast and remote cosmic voids.

The appearance of a cold spot where

the "temperature of an area of space

is interpreted as significantly

lower than the surrounding region"

suggests the presence of a void where

many galaxies should be observed.

The interpretation of the

size of the so-called "void"

is based on the assumption that the

redshift of the surrounding galaxies

provides an accurate measure of

the object size and distance.

In recent years, some scientists have

offered the incredible speculation

that such a void is actually the

imprint of a parallel universe.

In fact, the concept of parallel

universes or the multiverse

is a theory championed by the

aforementioned Stephen Hawking

as well as Brian

Greene, Michio Kaku

and the current host of the television

show Cosmos, Neil deGrasse Tyson.

Ironically, at the time that cosmologist

Carl Sagan wrote his iconic book, Cosmos,

challenges to the very foundations

of the Big Bang were still permitted.

On the question of whether the Doppler

interpretation of galactic redshift

is a reliable indicator

of an expanding universe,

Sagan wrote, "There is nevertheless a

nagging suspicion among some astronomers,

that all may not be right

with the deduction,

from the redshift of galaxies via the Doppler

effect, that the universe is expanding.

The astronomer Halton Arp has found

enigmatic and disturbing cases

where a galaxy and a quasar,

or a pair of galaxies,  
that are in apparent physical association  
have very different redshifts..."

Sagan continues, "If Arp is right,  
the exotic mechanisms proposed to explain  
the energy source of distant quasars  
-- supernova chain reactions,  
supermassive black holes and the like --  
would prove unnecessary.

Quasars need not then  
be very distant.

But some other exotic mechanism will  
be required to explain the redshift.

In either case, something very strange is  
going on in the depths of space."

At the other end of the spectrum  
from so-called "vast cosmic voids"  
are the objects that  
appear impossibly huge.

One such object, the  
quasar cluster huge LQG,  
is supposedly so enormous it would  
comprise about 5% of the visible universe.

As one astronomer said of the discovery, it  
"...upsets the foundation of everything we do."

The force of gravity is weak and

takes time to move things around.

The elapsed time, since

the conjectured Big Bang,

sets a limit on how big

any structure can be.

Structures exceeding that limit are, by the

cosmologists' own admission, impossible.

One possible solution to this

enigma is that the objects, simply,

are not as distant and huge as they

appear based on their measured redshift.

Halton Arp proposed that the redshift of

quasars depends not only on a velocity value

but also its

"intrinsic redshift."

This would be a property of matter

that is subject to change over time.

Arp found that the intrinsic redshift, of

a quasar or galaxy, took discrete values

which decreased with the distance

from a central active galaxy.

In Arp's hypothesis, many mature

galaxies of a specific type

eject newborn objects

called QSO-s or quasars

and these objects grow up to be

companion galaxies of their parents.

As they move away from the parent,  
their mass and brilliance changes,  
their velocity slows and they tend to begin  
to fall back toward the parent galaxy.

Proponents of the Electric Universe, including  
physicist and chief science advisor to

The Thunderbolts

Project, Wal Thornhill,

agree with Arp's thesis  
of quasar ejection.

However, Thornhill disagrees  
with Arp's description  
of the mass of quasars  
increasing with time.

Arp proposed that the existence of  
a new quasar becomes recognized  
by matter in the rest of the  
universe at the speed of light.

But in Thornhill's view, an initially  
positively charged quasar  
is followed by a beam of electrons  
from its parent galaxy,  
which would explain both the quantized  
redshift and increase in mass.

These electrons may come in bursts,



like the quasar ejections themselves,  
which, if true, would predict and explain  
seemingly impossibly sudden changes in quasars.

As we reported last  
year in this series,  
many recently discovered objects in space  
lend great credence to this thesis.

A team of astronomers, using  
the Sloan Digital Sky Survey,  
observed quasars behaving in a manner that  
completely up-ends conventional theory.

Using images from the  
Pan-STARRS survey,  
the scientists  
identified 1,000 objects  
that appear to vary in brightness  
over a period of just 10 years.

Among these objects were a total of  
5 galaxies that the team witnessed  
shape-shifting into quasars in a seemingly  
impossibly short period of time.

The team also recorded a  
total of a dozen quasars  
"shutting down in a period  
of hundreds of days"  
rather than the hundreds of thousands

of years required by standard theory.

As reported by Newscientist.com,

"Astronomers expect quasars to use up their

fuel and settle down into quiet galaxies

-- a process that should take

hundreds of thousands of years.

So last year, when a dozen quasars

were spotted shutting down

in just hundreds of

days, it was a shock."

In subsequent decades, as demonstrated by

the recent protests of Hawking and company,

little has changed in

the culture of science.

The seemingly endless cosmic surprises

have yet to force any real reassessment

of the cherished 13.5 billion

year "history of the universe."

Institutional science remains

unready to confront the possibility

that based on our current

limited knowledge,

we must accept the universe

of unknown age and extent.

So the surprises for

cosmologists will only continue

since nature seems to have  
no regard for human beliefs.

For continuous updates on Space  
News from the Electric Universe,  
stay tuned to  
[Thunderbolts.info](http://Thunderbolts.info)

[Music]

Congratulations to all the technologists who are responsible for the spectacular success of the development and deployment of the Webb Space Telescope. Notably it has not been matched by successful predictions from the scientists involved. The sharp images of the Webb Space Telescope's first deep-field image reminded me of the aphorism of the Scotsman, Sir Walter Scott: "Oh what a tangled Webb we weave, when first we practice to deceive!" Modern science practice or training is driven by our industrialized education systems. Simply follow the fire hose of money to universities from the military, governments, and corporations. We train specialist technologists, not broadly educated natural philosophers. And as Leonard Peikoff wrote, "It is the inductive science of philosophy that teaches the 'hard' scientists how to be scientific." Unsurprisingly, our "whatever works" technology has rapidly advanced, to the detriment of life on this planet. And some top scientists are now declaring particle physics and cosmology to be in crisis based on discoveries from their new technology. Otherwise the many successes of Electric Universe science would demand their attention. The demand by technocrats to 'follow the science' has no substance. In 2021 I devoted three episodes to the Webb Space Telescope

prior to its launch in which I discussed Webb's significance in the context of Electric Universe cosmology issues, and made several predictions of what the Webb Space Telescope would reveal. This is the first of several episodes that will report on success in relation to those predictions. In September 2021, I said the James Webb telescope, when successfully deployed, will allow us to see finer and fainter detail in the stardust 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 mystery 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 Marklund 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." End of quote. Sheets of moving plasma tend to break into parallel filaments. This can occur whether the plasma sheets are

planar, cylindrical, or spheroidal in shape.

The parallel filaments are electric currents. Such parallel electric currents generate a self-constricting magnetic field. They exhibit long-range attraction and short-range repulsion that causes pairs of filaments to come together and twist about one another helically. In short, they tend to form helically twisted filament pairs and braids. Eric Lerner has provided an accessible physical explanation for this process in his book, "The Big Bang Never Happened". Winston Bostick was one of the preeminent plasma physicists of the 20th century.

He was the first scientist to conduct a systematic investigation of the physics of the dense plasma-focused device and the extraordinary plasma structures they produce, for which he coined the term "plasmoid". Writing in 1986, Bostick stated,

"...my experimental work in plasma physics for the last 36 years has shown that under many different circumstances plasmas containing non-relativistic or relativistic electrons can spontaneously organize themselves into force-free, minimum-free-energy vortex filaments of a Beltrami morphology." Eugenio Beltrami

was an 18th century Italian mathematician who developed a partial differential equation that could be used to mathematically describe the morphology of helically twisted filament pairs, like

that in DNA; like that in Birkeland Currents.

It is a matter that has been confirmed repeatedly by plasma researchers including Hannes Alfvén and Anthony Peratt.

An example of the tendency for helically twisted filaments to form when a current passes through a low density plasma is afforded by images from the Plasma Crystal Experiment aboard the International Space Station. Mainstream plasma researchers also confirmed the tendency for electric currents flowing in low-density plasmas, like the plasmas that pervade interplanetary, interstellar and intergalactic space, to form helically twisted pairs.

For example, in 2012 UCLA's professor Walter Gekelman, who headed the team that designed and operated the 18-meter large plasma device, presented a paper with Bart Van Compernelle to the American Physical Society, reporting on experiments that created magnetic flux ropes in a low density plasma. With the abstract recording and I quote, "Magnetic flux ropes are due to helical currents and form a dense carpet of arches on the surface of the Sun. Occasionally one tears loose as a coronal mass ejection and its rope structure is detected by satellites close to the earth.

Current sheets can tear into filaments,



and these are nothing other than flux ropes.

Ropes are not static; they exert mutual electromagnetic ( $\mathbf{J} \times \mathbf{B}$ ) forces causing them to twist about each other and merge.” End of quote. In 2014, the journal Plasma Physics and Controlled Fusion published a cross-disciplinary special issue on “Self-organization in magnetic flux ropes.”

The guest editor, V. S. Lukin, then of the U.S. Naval Observatory and subsequently a program head at the National Science Foundation wrote and I quote,

“...the ingredient common to all magnetic flux ropes is that the magnetic field lines that thread nearby plasma elements at one location along the flux rope must wind around and not diverge away from each other over a sufficiently long distance to look like a piece of ordinary rope. In a way, it is similar to turbulence - you know it when you see it.” End of quote.

Lukin was there describing helically twisted filaments and braids, you know it when you see it. Precisely.

In short, if we see the morphology of helically twisted filament pairs and braids traversing images, this is unanswerable evidence that we are looking at electric currents. In September 2021, I made a specific prediction, and I quote, “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 filament pairs and braids even more clearly. We will discover helically twisted filament pairs and braids everywhere we look.” End of quote.

That prediction was spectacularly confirmed in the first Webb Space Telescope deep-field science images on July 11, 2022.

We start with the so-called ‘cosmic cliffs’ in the Carina Nebula. Here's an image of the cosmic cliffs taken by the Hubble Space Telescope.

There are tantalizing hints of helically twisted morphology at several places in that image, but the visual evidence is not compelling. Certainly, there is no clear evidence of widespread twisted filament pair and braid morphology.

Now here is part of the Webb Space Telescope image showing the same region depicted in the Hubble image. It shows that this region is dominated by helically twisted filament pairs and braids. And here is the whole Webb Space Telescope image of the cosmic cliffs.

If we pan over the whole of the image, we see helically twisted filament pairs and braids almost everywhere we look.

This image shows that the entire structure in the cosmic cliffs image is dominated by helically twisted filament pairs and braids. The whole structure is an

interconnected Webb of electric currents.

And these are electric currents on the scale of light years.

The cosmic cliffs are some seven light years in height.

Next is Stephan's Quintet. Here's a portion of a

Hubble image of Stephan's Quintet showing NGC 7319.

There's a suggestion of helically twisted filaments in

the dark dust clouds along the left-hand edge of the

main body of the galaxy. Again, the visual evidence

is debatable. Now, here's the equivalent region from

the Webb Space Telescope's MIRI and NEARCAM

composite image of Stephan's Quintet.

It shows the entire body of the galaxy NGC 7319 is

dominated by helically twisted filaments that were not

discernible as such in Hubble's images of the same

galaxy. The differences are apparent when the

images are compared side by side. The

Webb Space Telescope image of Stephan's

Quintet is proof that electric currents

flow throughout the galaxy on a scale in

the order of 50,000 light years, and with an

overall morphology that has biological overtones.

The galaxy center, threaded by an axial umbilicus.

Not only that, as we pan down in the Webb

Space Telescope image, it shows that NGC 7319 is connected

to NGC 7318 a and b by helically twisted filaments. This is

compelling evidence that these galaxies are

connected to each other by vast electric currents.

Look at the light year scale on the compass

image. These electric currents connecting the

galaxies are in the order of one hundred thousand

light years. Again, these were effectively invisible

in the Hubble image. In short, as I predicted, the Webb

Space Telescope Stephan's Quintet images, and I quote,

"... reveal the existence of the connecting network

of helically twisted filamentary pairs and braids..."

End quote. Both within, and between galaxies, in Stephan's

Quintet, that were not evident in previous images.

In September 2021, I emphasized that and I

quote, "It is hard to overstate the importance

of evidence of helically twisted filament pairs and

braids." End quote. Let me explain that a little further.

The US National Research Council's 1986 report of the Panel

on Gravitation, Cosmology, and Cosmic-Ray Physics records

the fact that, and I quote, "...the ratio

of the electrostatic to the gravitational

force between an electron and a proton is

about 10 to the 39th power." End quote.

It's uncontroversial that the electric force is 39 powers

of 10 times more powerful than the gravitational force.

That is a 1 followed by 39 zeros or 1,000 billion,

billion, billion, billion, times more powerful.

You don't need much charge separation to occur before

the electrical force will overwhelm the force of gravity.

Standard Model astrophysics and cosmology gives the electric force no organizing role at the macro scale.

In Standard Model astrophysics and cosmology, gravity is the fundamental organizing force in the universe at the macro scale. If there are electric currents flowing in space on the scale indicated in these images, then the Standard Model's gravity-dominated worldview simply cannot be correct.

A fundamental feature of the universe has been ignored. What's contended is first, that the force of gravity remains a mystery to astrophysicists and secondly, that gravity takes a backseat to electric currents, magnetic pinches, double layers and various plasma instabilities.

It is, as Hannes Alfvén put it, "Gravitational systems are the ashes of prior electrical systems."

The Electric Universe assigns a fundamental role to gravity, which manifests in the inertial and gravitational mass of all matter. Isaac Newton was right. As I have noted, electric currents flow in the low density plasma of interplanetary interstellar and intergalactic space, routinely self-organize as helically twisted pairs and braids.

As I stated in 2021 and I quote, "...there is no tool, or combination of tools in the

Standard Model toolkit 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.” End of quote.

Evidence of helically twisted filaments  
and braids of the kind provided by the  
Webb Space Telescope's images of the cosmic cliffs and  
Stephan's Quintet is proof positive of electric currents  
flowing in space at the macro scale, and thus proof  
that Standard Model astrophysics and cosmology is  
fundamentally flawed. It is yet another verification,  
and I'm confident the first of many from the Webb  
Space Telescope, of the illuminating and  
predictive power of Electric Universe cosmology

[Music]

## Reinterpreting the MAVEN Mission to Mars

What I want to do in this presentation is to tell you a story.

Scientists have that story,

of course, about Mars

and they've modeled it on

the story of the Earth.

In fact they've

already decided on

the equivalent of the geological

ages of the Earth for Mars.

They have the Amazonian period

and that kind of thing.

In other words, all they've done is to

transfer the story of the Earth to Mars.

What I want to do is to alert you to

the fact that there's a spacecraft

which is due to arrive

at Mars in September.

Which is aimed at answering

questions that the

story that the scientists

believe about Mars is correct.

And they want to try and learn about

the reason why Mars lost its water.

There is this belief that there was a

time when Mars was much like the Earth.

But they want to find

out what went wrong.

I'm here to tell you that

whatever conclusions they draw,

it will be based on wrong ideas.

So the opportunity is there

for you in this audience,

after I've told

my story of Mars,

to be able to compare

it later this year,

with the kinds of stories that

come out of NASA and ESA.

So to make it clear what this

particular spacecraft is supposed to do,

I have a video which will,

I hope, explain it.

Billions of years ago, when the planets

of our solar system were still young,

Mars was a very different world.

Liquid water flowed in long rivers that

emptied into lakes and shallow seas.

A thick atmosphere blanketed

the planet and kept it warm.

In this cozy environment, living



microbes might have found a home,  
starting Mars down the path toward  
becoming a second life-filled planet,  
next door to our own.

But that's not how  
things turned out.

Today, Mars is bitter-  
cold and desiccated.

The planet's thin, wispy  
atmosphere provides scant cover  
for a surface marked by dry  
riverbeds and empty lakes.

If Martian microbes still exist,  
they're probably eking out a meager existence  
somewhere beneath the dusty Martian soil.

What happened?

This haunting question has  
long puzzled scientists.

To find the answer, NASA is sending a  
new orbiter to Mars called MAVEN.

The goal of MAVEN  
is to figure out  
what processes were responsible for  
those changes in Martian climate,  
says Bruce Jakosky,  
principal investigator for MAVEN at the

University of Colorado at Boulder.

Scheduled for launch in November 2013

and due to arrive in September 2014,

MAVEN is bristling with instruments

to study Mars' upper atmosphere.

That's where many researchers

believe the answer lies.

The only way Mars could have been

wet and warm four billion years ago

is, if it also had a

thick atmosphere.

CO<sub>2</sub> in the Martian atmosphere

is a greenhouse gas,

just as it is in

our own atmosphere.

A thick blanket of CO<sub>2</sub> and

other greenhouse gases

would have provided the warmer temperatures

and greater atmospheric pressure required

to keep liquid water from

freezing solid or boiling away.

Somehow, Mars lost

most of that blanket.

One possibility is

the solar wind.

Unlike Earth, Mars is not protected

by a global magnetic field.

Instead, it has magnetic umbrellas

scattered around the planet

that shelter only part

of the atmosphere.

Erosion of exposed

areas by solar wind

might have slowly stripped the

atmosphere away over billions of years.

Recent measurements of isotopes

in the Martian atmosphere

by the Mars rover Curiosity,

support this idea.

Light isotopes of hydrogen and argon are

depleted compared to their heavier counterparts,

suggesting that they

have been lost to space.

Scientists have also speculated that the

planet's surface might have absorbed the CO<sub>2</sub>

and locked it up in

minerals such as carbonate.

However, while carbonates have

been found on the surface,

they aren't present in enough abundance

to account for an early thick atmosphere.

MAVEN will be the first mission to Mars

specifically designed to help scientists understand the ongoing escape of CO<sub>2</sub> and other gases into space.

The probe will orbit Mars for at least one Earth year.

At the elliptical orbit's low point, MAVEN will be 125 kilometers above the surface.

Its high point will take it more than 6,000 kilometers out into space.

MAVEN's instruments will track ions and molecules in this broad cross-section of the Martian atmosphere thoroughly documenting the flow of CO<sub>2</sub> and other molecules into space for the first time.

MAVEN's instruments also will measure the solar energetic inputs into the Martian upper atmosphere, and the atmospheric response.

This will allow us to determine the processes that are responsible for that loss to space.

Once Jakosky and his colleagues know how quickly Mars is losing CO<sub>2</sub> right now and what might be causing that loss,

they can extrapolate backward in time

to estimate the total amount lost  
during the last  
four billion years.

MAVEN will determine if loss to  
space was the most important player  
in driving Martian climate  
change, Jakosky says.

In the grand scheme  
of the solar system,

Earth orbits alongside a world that began  
with as much promise for life as our own  
yet turned out so differently.

After all these years, MAVEN  
could write the final chapter  
in a haunting planetary mystery.

What we have here? A whole string  
of wrong ideas about Mars,  
the history of the solar system,  
the history of the Earth,  
and the recent history  
of these planets.

So this 4.6 billion year old  
clockwork solar system is a myth!

Of course, by studying mostly meteorites  
and using radioactive dating techniques,  
specifically looking

at daughter isotopes,  
scientists think they have determined that  
the solar system is 4.6 billion years old.

But this requires that the solar  
system has not been disturbed  
to any great degree  
since it was formed.

It also relies on the idea that it was  
formed in the way that was advertised  
and that is via a nebula.

What I want to do in this talk is to show  
you that the story is completely different  
and it's much more interesting than  
the fairy tale we've been taught.

No theory of planet  
formation works.

But that doesn't stop us seeing  
and hearing through the media  
the familiar story about the 4.6 billion  
year old formation of the planets.

In the case of the Earth, there is  
all these unanswered questions.

Why do we have an  
atmosphere of oxygen?

Where did all the  
nitrogen come from?

And why do we have

so much water?

In fact, why is there so much

sodium chloride in the water?

None of these questions are really

answered by the standard theory.

The speculative story

of Earth's history

involving catastrophic

extensions, has been concocted

and as I said, Mars has a

fabricated history too,

with the Amazonian,

the Noachian periods.

The Electric Universe accepts

evidence that petroglyphs

are an enduring record of the

frightening collapse of a former cosmos.

And this is the starting

point of this new story.

It has taken ten

thousand years for us

to be able to see in laboratory

plasma discharge experiments,

what our forebears saw in awesome

cosmic proportions in the sky.

I would say that petroglyphs  
are the Rosetta Stones  
of the recent history  
of the solar system.

The monumental effort  
involved in carving them  
shows that what was happening  
in the celestial arena  
was of paramount concern to  
the prehistoric artists.

It was a concern that still has  
echoes in our doomsday nightmares.

Velikovsky challenged astronomers again  
at the 1974 AAA's ambush in San Francisco.

He said, "I was greatly surprised  
to find that astronomy,  
the Queen of Sciences, lives  
still in the pre-Faraday age,  
not even in the time  
of kerosene lamps,  
but candles and oil.

Nothing has changed. So powerful  
is the Newtonian ideology.

The evidential history  
is quite different.

And this story is built on the evidence



looking at, from the point of view  
of Velikovsky and those  
mytho-historians

like David Talbott, Dwwardu  
Cardona and Ev Cochrane,  
who have extended his research.

The first thing is that, to deal  
with is the idea that Saturn  
had a former state  
as a brown dwarf.

And a brown dwarf is not actually a  
dwarf star in the Electric Universe,  
it is quite huge.

The planet's, Saturn's, entourage  
of satellites and planets  
actually existed within a  
vast glowing plasmasphere.

For instance, it's been said  
that if we could witness  
Jupiter's plasmasphere from the  
Earth when it's in opposition,  
it would appear the size of the  
full Moon or the Sun in the sky.

So if you can imagine Proto-Saturn  
having that kind of size,  
all of the satellites of Saturn

and also if you would  
apply that to Jupiter,  
those inner satellites will all  
be within that plasmasphere.

Brown dwarfs flare  
and this is a surprise to astronomers  
because they're supposed to be failed stars,  
they shouldn't have the  
energy to flare. But they do!  
So they must dump matter  
on their satellites.

And this can be an answer to many conundrums  
about the formation of the planets.

Water. We know that Saturn, the  
rings of Saturn are water ice  
so here is the origin of  
the water for the Earth.

Oxygen, reddish light, low-gravity, gave rise  
to the Earth's plant and animal gigantism.

The era of megafauna  
and megaflora.

Evidence of the breakup  
of this earlier system  
given in "Symbols of an Alien Sky" and  
Dwardu Cardona's "Star" series of books,  
has been around for some years now

and is available for research  
for those who would like to test these  
ideas against what the MAVEN mission finds.  
And of course as we've seen, the hard  
evidence of the thunderbolts between planets  
which sculpted the Martian surface, came  
from high-energy plasma experiments.  
So this is a summary,  
Earth and Mars where planets orbiting  
a brown dwarf star in a previous life.  
You could say that we are the  
aliens in this solar system.  
It was the most hospitable  
environment for life.  
This is something that astronomers  
have come to recognize in recent years.  
However, they still talk  
about a Goldilocks zone.  
If a planet orbiting around a faint  
dwarf star or red dwarf star,  
is in a particular orbit,  
it can harbor life.  
What I'm saying is different.  
The Electric Universe proposes  
that the real environment for life  
is within the actual glowing huge

envelope of these red stars.

The atmosphere, water and  
minerals are deposited  
and this can explain layering  
of moons and planets.

The system broke up on encountering the  
Sun and I will describe this in detail.

And interplanetary Thunderbolts  
stripped the surface of Mars.

So let's talk with,  
actually we've presented quite a  
bit of material in this conference  
about stars and planets forming  
in cosmic Thunderbolts.

So we can expect that the  
Earth and Mars and Saturn,  
or Proto-Saturn as we call  
it in its stellar form,  
were formed in one of these cosmic  
lightning bolts in a molecular cloud  
close enough together. So that  
once the discharge abated,  
they were able to form a  
small planetary system.

Now one of the things about  
stars formed in this model,

and it refers both to Don Scott's  
presentation and also to Marklund convection.

As Don said, the heavy elements concentrate  
at the center of these discharges.

So the cores of stars are  
composed of heavy elements.

That's not hydrogen.

So there can be no hydrogen fusion at  
the center of the Sun or of any star.

They all have cool,  
heavy element cores.

In the Electric Universe model and  
I've written about this on my website,  
electricity plays a central role in both the  
capture and the stabilization of orbits.

So that capture is far more  
likely in the Electric Universe  
than in the  
gravitational universe.

In fact, this is one of the difficulties  
that astronomers have to deal with early on,  
was that a body  
passing by the Sun  
will normally just swing  
past it and then off again.

There's nothing to reduce the energy of the

incoming object so that it is captured.

But in the Electric Universe, as I  
will discuss, that is possible.

In fact, it's likely.

The other thing is that  
one of the big puzzles  
that have affected planetary  
scientists in recent years  
with the discovery of so  
many so-called exoplanets  
that is planets  
around nearby stars,  
is that they found these hot Jupiters  
orbiting the central star extremely closely.

Some of them going around in  
a matter of hours or days.

There is another aspect  
of the formation of stars  
and that is that, if an instability  
occurs during the formation of the star  
as I've discussed the other day, each celestial  
body has an internal electric field,  
positive charge towards the center,  
negative charge at the surface.

If you can imagine, if the center of  
the object is positively charged

and has a slight displacement,  
then there is an  
accelerating electric force  
which can actually cause  
the object to fission.

And this may be the explanation for why  
stars exist in a narrow range of sizes.

This is also not explained well  
by the gravitational story.

So in the Electric Universe, brown  
dwarfs are not failed stars  
too low in mass to sustain  
hydrogen fusion reactions.

As I said, there are no hydrogen fusion  
reactions, stars are powered electrically.

Red dwarfs, shining  
brightest in infrared,  
represent about 70% of the  
stars in the Milky Way.

So these are the most  
likely places to find life.

Those faint dwarf stars might be called  
the galaxy's, (pardon me), silent majority.

But red dwarfs come  
with a major drawback.

Their stellar radii are hard

to determine accurately.

And this is where the astronomers  
have missed the point  
that red dwarfs are  
not dwarf stars.

They are huge. All  
red stars are huge  
for the simple reason  
that a star that does not,  
is not capable of attracting  
sufficient electrons to satisfy  
the current demands of their  
electrical environment,  
will expand their photosphere.

In fact, the red dwarfs and so on, don't  
actually have a bright photosphere.

So the plasma sheath around them  
expands until it can attract,  
intercept sufficient electrons  
to maintain the discharge.

These pictures here of  
red stars you can see,  
some of the stars are so big, the giant ones,  
that they can be measured from the Earth.

Betelgeuse is a good example  
which, its envelope would actually



reach to the orbit of Jupiter.

So in that particular case, if

Betelgeuse does have satellites,

they are orbiting within

that red glowing sphere.

Our brown dwarf is no different.

You don't have to have different models for

different stars in the Electric Universe.

So a brown dwarf is a small star

with a very large glowing envelope.

Jupiter, the gas giants

and so on, if you like.

If Jupiter and Saturn were now

taken outside the solar system,

they would once again

become brown dwarfs.

In December 2008, NASA found that the

brightness of a nearby brown dwarf,

at 17 light years distance,

was twice that expected for a brown

dwarf with its particular temperature.

This is using the

standard model of stars.

So the solution?

Completely ad-hoc, the object must have

twice the surface area. It must be twins.

Now the Electric Universe says,

I mean, that is just an  
amazing ad-hoc solution.

The spectra of red dwarfs are crowded  
with molecular absorption features  
that are not well understood.

So it's hard to extract the physical properties  
of a given red dwarf from its spectrum.

That is also interesting.

But the fact that there are so  
many molecular absorption features,  
indicates that all of the requirements for  
life exists within that glowing envelope.

So all stars are electric.

All stars or red  
stars are gigantic.

Planets can orbit within their anode glow.

And even astronomers acknowledge that.

They have suggested that there could be  
satellites orbiting within the Betelgeuse glow.

However, with their notion that the red  
giant is formed by an ultra hot core,  
those planets would not  
be suitable for life.

In the Electric Universe  
it has a cool core.

Objects orbiting within the red  
envelope are suitable for life!

Now one of the very  
interesting things is that  
there are no seasons on any satellites  
orbiting within that red sphere.

Because the energy received  
on any body within that sphere,  
is equal over the entire  
surface of that body  
so that a planet orbiting within  
that red sphere has no seasons.

Even temperatures.

In fact, I would say the brown dwarfs are  
the cosmic wombs of life in the universe.

One of the interesting facts of course  
that would suddenly come out of this,  
is that these red spheres  
are glowing plasma  
and glowing plasma will not  
let radio waves pass through.

So the search for extraterrestrial  
intelligence using radio waves  
is in my opinion a wasted effort.

Because anyone living on a satellite  
inside one of these glowing red wombs,

would not even be aware that there  
was a greater universe out there  
full of stars. Let alone  
try and use radio  
because any radio signals  
would not pierce that,  
that plasma.

Just an interesting  
side issue here.

So this is my view  
of Proto-Saturn  
and I've just put two satellites  
there but there are obviously more.

Titan for instance, would have  
been one of the satellites...

Earth and Mars.

So there they are inside  
this glowing shell,  
and the evidence of the earliest  
recollections of mankind  
appears to be that the purple  
dawn of creation was the,  
the sky light.

That was the color of  
the sky. Purple dawn.

And that is precisely the color you

would expect in this circumstance

because you have the red

end of the spectrum

and you also have a certain

amount of the violet and

ultraviolet light due to

electrical activity in the plasma.

So this fits with the, if you like, the

earliest recollections of mankind

that that was our environment.

50% of red dwarfs have Earth-sized

planets in their habitable zone.

Remember, I said that astronomers feel this is the

place where life is most likely to be found.

Now if you look at Jupiter for instance

and consider that as a red dwarf,

and its plasma

sphere was lit up,

Io has a 1.75 day orbit,

Europa has a 3.5 day orbit,

Ganymede 7 days and

Callisto 17 days.

Any of the satellites that were

released from Jupiter's grip,

would have a rotation rate which

equaled their daily rotation rate

because they're locked always with the same face towards the central body.

It suggests that the Earth and Mars had orbits which were about a day in length.

This is the kind of information that you can get from this kind of model.

The other thing is, you'll notice in this diagram there is no Venus.

So we have huge red anode glow which was what we call Proto-Saturn.

We had a 'purple dawn' of creation and no Venus.

These are the important things to understand about Proto-Saturn.

Just recently, a map of a nearby Red Dwarf was produced using a Doppler imaging technique.

It's one of a pair of red dwarfs near Alpha Centauri with a separation of three astronomical units.

There's a bright near-polar region which can be clearly seen in the upper right panels.

And a darker mid-latitude area visible in the lower left panels

is consistent with large-scale  
cloud inhomogeneities.

However, that's an assumption that what  
we're looking at is an atmosphere.

But we're not looking at an atmosphere.

We're looking at a plasma sheath.

So that this variation, said in  
the Electric Universe model,  
would be due to objects orbiting  
within that plasma sheath,  
either inside or outside that plasma sheath  
because that would affect the discharge.

The other thing is that this  
bright spot towards the pole,  
is the same kind of thing that's found  
with Betelgeuse, the red giant,  
which indicates that that's the electrical  
connection with the Birkeland currents  
that drive these  
particular stars.

If I'm right, the patterns here should be  
more repetitive than weather patterns  
and without banding like Jupiter,  
which is undetectable so  
far by this technique  
but you never know what

they can do tomorrow.

Red Dwarfs and Giants

changing radius,

which is not the kind of thing that you  
would expect if this is a normal body.

However this change in radius  
is the star's response to changes  
in its electrical environment.

It's quite natural.

It's a plasma effect.

They also tend to  
flicker in brightness.

All of this is indicative of a star  
lacking the stabilizing effect  
of the bright photosphere  
of bright stars.

That's according to Don  
Scott's transistor model.

That is a stabilizing  
influence in all bright stars.

Red stars don't have that luxury.

Proto-Saturn's Capture

This is the interesting part of it.

This took me decades  
to try and figure out  
because the model of planets arranged



with their poles in a line is unstable.

There's no Newtonian theory to  
explain a daisy-chain of planets.

So it eventually dawned on me that  
what we had was a dynamic arrangement  
where Proto-Saturn which is  
in this diagram over here,  
that's Proto-Saturn,  
and you can just see a few little  
brighter red dots behind it.

They are the Earth and  
Mars and other satellites.

That's meant to represent  
those satellites.

The explanation came to  
me once I had realized  
that the stabilization of the planetary  
orbits as we see them today...

Why is the Newtonian  
system a clockwork system,  
or it appears to be  
a clockwork system,  
when you only have one force?

Well the answer is you cannot have  
a stable system with one force.

There has to be a

feedback mechanism.

And as I explained the other day, you can change the mass of a planet or a star by either placing charge on it or taking charge away.

And it occurred to me that a small star like Proto-Saturn entering the environment of the Sun, would suffer a drastic change in its electrical environment with a result, actually that Proto-Saturn would have become one gigantic comet. Because a body which is negatively charged with respect to its environment, is a cometary body, and a body that's positively charged with respect of its environment is an anode in the discharge and it is a star.

So this was a change, a sudden change, once Proto-Saturn approached the solar system at that time closely. At least, it would have been most drastic once it entered the heliosphere,

the boundary of the sun's environment  
with interstellar space.

So Saturn as a comet  
is removing electrons  
and the result is that  
it is losing mass,  
it's accelerating  
towards the Sun.

The bodies behind it...

Actually, sorry, I got  
that around the wrong way.

The Proto-Saturn itself is  
losing electrons as comets do.

They are being passed on  
to the, its satellites.

The satellites are gaining in  
mass, Saturn is losing in mass.

Conservation of energy says that  
Proto-Saturn accelerates towards the Sun  
and this is part of the  
electrical capture mechanism.

The Earth and Mars and the other satellites  
gaining in mass will tend to fall behind  
and line up, rather like  
comet Shoemaker-Levy 9.

The electrical discharge, the polar

discharge, in my opinion, then  
is the central column of  
Saturn's cometary discharge.

We were sitting in this cometary  
tail, right in the middle of it.

And all of the plasma  
discharge effects  
that were witnessed by the  
ancients and chiseled into rock,  
come from that period of capture.

I've said, as the cometary body Proto-Saturn  
loses electrons. It accelerates towards the Sun.

All of this could explain all of the  
plasma phenomena, discharge phenomena  
recounted by Dave Talbott  
and Dwardu Cardona.

The latest measurements by  
Pitjeva and Standish suggest  
the astronomical unit is increasing  
about 23 feet per century.

That means that the Earth is actually,  
its orbit is shifting over time.

But according to the  
beliefs of astronomers,  
the astronomical unit  
shouldn't change at all.

The mechanism I'm describing for  
the modification of gravity  
provides a mechanism  
that can be tested  
because the Earth's orbit expansion should be  
a discontinuous function with discrete jumps  
following major solar storms and  
at Venus's inferior conjunction  
when it actually, we sit in  
the cometary tail of Venus.

So there are various means  
of testing these ideas too,  
outrageous as they may seem.

This is Saturn.

In June 19, 2004, I posted on my  
website Cassini's homecoming.

Before the Cassini  
mission began to send  
all of the detailed  
information back about Saturn.

And I wrote back then,  
"a scenario follows that is so alien to any  
conventional theory of Saturn's history  
that it should be easily tested against any  
information gained from the Cassini mission.  
It shows striking connections between many

seemingly unrelated facts about certain planets."

Because if the planets that I mentioned  
were part of the same family in the past,  
we should be able to see  
family resemblances.

"That is something that conventional  
cosmogony has not been able to do."

That was the end of the quote.

For instance, the tilt of Saturn at  
27 degrees to the ecliptic plane  
is itself an enigma unless it  
formed independently from the Sun.

The axial tilts of Saturn, Earth  
and Mars are very similar.

The short-lived rings  
of water ice that...

It's been said by astronomers that they  
shouldn't last for any length of time,  
geologically speaking.

And yet here they are, brilliant.

And as I said before, it gives us a clue as  
to the origin of all of the water on Earth.

We come to Titan because Titan has  
been examined closely in recent years  
and it also had the Huygens probe  
which landed on the surface.

I was very pleased  
that that happened  
because I predicted what will  
be found beneath the clouds  
and I was proven correct.  
Before the spacecraft  
descended to the surface,  
it was thought that Titan must  
be covered in a methane ocean  
simply because methane is found  
in the atmosphere of Titan  
and it cannot have been  
there for 4 billion years  
because it's dissipated  
continuously.

But if Titan (were) lost, lost its  
place in its original birthplace,  
only a few thousand years ago,  
then it hasn't had time  
to lose this methane.

Before the Huygens Lander  
pierced the clouds  
and we could see the  
surface for the first time,  
I said that Titan would have a surface  
that looked like the Earth or Mars.

And that was proven correct. There  
wasn't an ocean of methane.

Also it has an enigmatic  
thick nitrogen atmosphere.

It has a very thick  
nitrogen atmosphere.

And when you think about it, the Earth  
has mostly nitrogen in its atmosphere.

There's no good explanation  
for why that should be so.

So we come to Titan's  
big brother, us!

Brown dwarfs are  
noted for flaring.

That is, they suddenly brighten  
and appear to eject material.

As I said, that's the only way they have  
to adjust to their electrical environment.

The flare ejects stellar material  
from the brown dwarf equatorially,  
preferentially, or axially  
if it's really serious.

So its satellites have solids, liquids  
and gases rained down on them.

The composition will vary  
depending on the depth



from which matter was  
dredged up from the star  
and the orbital encounter of the  
stream of matter with each satellite.

It usually comes out in a stream.

This helps explain the layering seen on  
solid planets, moons, asteroids and comets  
and it can explain global  
mineral strata on the Earth.

Venus is interesting.

Its rotation is anomalous, its heat is  
anomalous, its atmosphere is anomalous.

Venus' slow retrograde  
rotation and odd axial tilt  
are, in my opinion, due to  
ejection from Proto-Saturn  
as observed and recorded  
by the ancients.

"[Venus shows] a  
surprisingly young surface"  
and this is a quote from  
one of the early reports.

So the astronomers  
then had the problem.

Maybe it's been resurfaced and  
that, so that was the explanation.

Venus were underwent some drastic  
resurfacing in recent times.

But there's no need for  
that, if it's newborn.

The other thing that's  
obvious in this picture  
is this belt of scars  
around the equator.

But the ancients also witnessed  
planet-girdling filamentary scars.

Well, they didn't witness the scars  
but they saw the discharge in the sky.

And this is obvious in Dave Talbott's  
reconstructions with those radiating streams.

And remember, we were underneath  
the pole of Venus at that time.

So those streams are  
coming from the equator.

And they are typical of electrical scars  
from lightning through a thick atmosphere.

The electrical universe account  
explains many odd things about Venus.

Its hellish temperature was born  
from the cool star, Proto-Saturn.

So this gives you an idea of the kind  
of temperature of the core of a star

like a red dwarf.

It has a thick 96% carbon dioxide

and 4% nitrogen atmosphere

plus a bit of a few hydrocarbons.

It also has some water in the atmosphere

but strangely the water decreases

until it becomes extremely

dry near the surface.

And this is a puzzle.

If you think about it, you've got a

surface which is of red-hot minerals

and you've got this thick

atmosphere of nitrogen.

It was Louis Kervran, the French

scientists who in years gone by

showed that nitrogen on

a red-hot iron surface

can actually be transmuted

to carbon monoxide.

And there's a process that was used

some time in the past to produce

hydrogen for burning,

you know, home fuel,

which used heat, carbon

monoxide and water

and the water is split to form

carbon dioxide and hydrogen.

The hydrogen is lost to space and  
the carbon dioxide of the nitrogen  
which was once Venus's  
atmosphere is now carbon dioxide.

The process is still going on  
because the water disappears near the  
surface where the reaction takes place.

So the Venusian atmosphere is an  
altered version of Titan's atmosphere  
where nitrogen is being converted to  
carbon monoxide and into carbon dioxide.

Because the atmosphere is so  
much thicker than that on Earth,  
Venus's total nitrogen is actually  
four times more than the Earth's.

Let's get back to  
battle-scarred Mars  
and this will sort of, lead into the  
next presentation by Steve Smith.

The evidence of Mars' battles with Thunderbolts  
is written hugely on its scarface.

And I wrote, many years ago now,  
that the huge scar here which extends about  
a third of the way around the planet,  
is actually in the form

of the most prevalent  
and most colossal electric  
discharge in the universe --  
that of a barred spiral galaxy.

So Mars was stripped of  
rocks, atmosphere and water.

The form of a barred spiral is there, that's  
just the central part of a spiral galaxy.

And the pattern I recognized because  
this puzzled me for decades,  
is how did you actually form  
that huge gash on the planet.

And it appears that it came in the  
form of twin Birkeland currents  
which are the central  
axis of a barred spiral  
and the pattern on Mars  
is exactly the same.

Where you get, the pattern becomes  
chaotic up towards the left  
and down here. This is the chaos region.

It extends all the way down here  
Up here you get all these giant channels  
which come all the way up here.

So this is a pattern of a  
gigantic electrical discharge.

And of course, this will rip material off  
the surface and eject it into space.  
We're still receiving Mars  
rocks on Earth today.  
And there's no good explanation  
for that in terms of impacts  
because you would expect that the material  
would be vaporized rather than forming rocks.  
This poor planet was  
severely damaged  
because it was, acted like a  
an oscillating charge carrier.  
It was between Proto-Saturn,  
you had Proto-Saturn,  
Venus, Mars and Earth  
and Mars would move up  
towards Venus, get zapped,  
if you'd like to put it that way,  
and then carry the charge down to the Earth  
where it would discharge to the Earth.  
This is why it was regarded as a  
colossal threat and the God of War  
because it was the planet that did most  
of the charge transfer to the Earth.  
But in the process of charge  
transfer, it ripped the surface apart.

But if you remember  
and this is important,  
it occupied a similar place to the Earth  
in the cosmic womb of Proto-Saturn.

So it's quite likely that it had an  
environment pre- the catastrophes  
that was very much  
like the Earth.

So we have misunderstood Mars.

This is an artist's impression  
of an early wet Mars.

Late Hesperian, this is one of these  
other, so-called geological, eras on Mars,  
mythical ones.

The up-flow channels are shown.

But of course, they may be correct insofar  
as there was probably water on Mars  
because it occupied  
Proto-Saturn's environment.

The geologic history of Mars from  
oldest to youngest are: the Noachian,  
the Hesperian and the Amazonian.

They are defined by the number  
of meteorite impact craters  
and here we run into the problem of  
what kind of craters are they really.

If they're electrical craters,  
they cannot be used for dating.

But the Electric Universe says  
that hemispheric cratering...

Northern hemisphere is,  
there is kilometres of matter been  
removed from the northern hemisphere.

All of this can happen  
in a single Cataclysm.

Martian geological  
history is a myth.

The Mars Atmosphere and Volatile  
Evolution or MAVEN mission  
is to study the loss of atmosphere  
today and extrapolate backwards  
over 4 billion years to figure out what  
happened to make the Martian environment  
so different to the Earth's.

I predict the evidence will make no sense  
for the conventional evolutionary story.

But that will not be  
enough to discard it.

The comforting dogma of evolution  
in place for four billion years  
requires extraordinary disproof.

What will scientists do when lazy retro-



calculation and speculation are discredited  
by proof of sudden catastrophe and links  
to other members of its original family?

So strong is the attachment to the  
old fairy tale that I'm confident,  
ad hoc adjustments will be made and  
anomalies filed a way to be figured out  
someday or forgotten.

As the philosopher

David Stove wrote:

"Newtonian physics is a guarantee  
against the occurrence of  
just about anything  
disagreeable."

The irony for us is that

Mars was more Earth-like

within the time of

modern humans on Earth.

After all, until recently we

shared the same cozy stellar womb.

Life on Mars should have stood an equal

chance before the hapless small planet

became both a ruddy symbol and

a casualty of celestial war.

Shrapnel from those prehistoric

battles still arrive on Earth today.

The story of Mars is far more  
dramatic and catastrophic  
than anything dreamt up by theorists or  
imagined by science fiction writers.  
Our challenge will be to make sense  
of data from the MAVEN mission  
that conforms to the evidence gleaned from  
prehistoric eyewitnesses of Martian events.  
They were events beyond  
all Newtonian imagining.

Thank you.

Thunderbolts.info

The Electric Universe

is an amazing story

and it's my view that humanity, each

of us, operates according to a story

and sometimes we're so attached to those

stories that we'll go to war over it.

Now the EU story is in my view

an interdisciplinary story

which touches everyone

at some point.

In fact, the Electric Universe Conferences

have shown that we can draw people

from all disciplines and all

walks of life and inspire them

because it is an inspiring story and

it got its start from my inspiration.

The inspiration came

from Velikovsky.

That's not to say that everything

that Velikovsky wrote was correct

but he, on certain techniques, this

forensic technique of looking at

so-called unreliable witnesses, the

witnesses of the ancient past,

you can actually draw from that evidence

a picture of what was happening

and then you are faced with the  
problem of trying to explain it.

And my role in all of this has been to  
look at the evidence that was amassed  
and then try and explain it.

And that has meant dumping a  
lot of the cherished beliefs,  
the story that I was  
brought up with.

Okay.

Complexity theory says that you can  
start with a set of simple rules  
and repeat those rules,  
generation after generation,  
and within a very short time the complexity  
that arises from those simple rules  
can be quite amazing.

But the other interesting  
thing about complexity theory  
it says that you  
can't work backwards  
to deduce what those simple  
rules were in the beginning.

Unfortunately the story that we  
live by, the Big Bang cosmology,  
treats the complexity

that we find now  
by introducing new forces and  
new particles, new entities  
at every turn in an effort to  
try and match the observations.

The Electric Universe operates by trying to  
imagine what those original simple rules were  
and thus the result  
of that has been  
a synthesis which allows us to get a  
grasp on how the universe really works  
in an electrical sense.

It's very simple, you could begin to  
teach it to primary school students  
and certainly college students  
would grab it easily.

But the other part of it is that  
it's not only interdisciplinary  
but it shows how  
we're all connected  
and I think this is the  
big story for the future,  
is this connectedness instead  
of the divisions that occur.

This has been, as I've discovered,  
as you get to a certain age

you look back over your  
career and you join the dots  
and I've been  
amazed to find that  
I actually began this journey around  
the age of 5 or 6 at primary school.

The...

In fact, I think I'll  
start at that point.

Go back to my primary school.

So this is my story.

I was born in Melbourne,  
Australia in 1942,  
so in the 40's I was at primary school  
in an outer suburb of Melbourne.

The surroundings there were not  
the, not what you'd call middle class.

We didn't have much, my father  
was invalided after the war  
and so we were  
living on a pension  
but in those days that didn't seem  
to matter, everyone was more or less  
doing the best they  
could after the war.

I had a favourite uncle who

was a commando in New Guinea  
and he introduced  
me to the telescope,  
he used to show me the moon through  
the, his army field telescope.  
He was also a very creative guy  
and he made a beautiful, beautifully  
constructed crystal set, which he gave me.  
So this introduced me to radio.  
I ended up making crystal sets to order for  
all the kids at school who wanted one.  
The other thing that he introduced  
me to was reading the encyclopedia  
and so I had the habit of  
going to school memorizing,  
having memorized all these facts  
and made drawings of eclipsing  
binaries and that sort of stuff  
and boring the kids in my  
class with my discoveries.  
Somebody who made an impression on  
me too in those, later on in school  
was Sir Fred Hoyle or just  
plain Fred at that stage  
with his wide-ranging ideas and the  
fact that he didn't like the Big Bang,

I've got a little quote

there from his book,

"The big bang ideas seemed to me to be

unsatisfactory even before detailed examination

showed that it leads to

serious difficulties."

When I got to high school, it was

about halfway through high school,

my father brought home from the

military hospital a red-covered book

'Worlds in Collision'

by Immanuel Velikovsky

and he said, now you

might have interest in astronomy,

I think you'll be... you

will find this interesting.

It wasn't just interesting.

I'd never read anything

like it before!

And I think, when you consider that it was a

best-seller for many months running in 1950,

that many other people

thought the same thing.

It drew together evidence which

showed that the ancient skies

were quite different to



the ones we see now!

And that was inspiring.

It gave me another

idea to work with.

My first thought was

well, surely all my teachers can't

have been wrong for all this time

so I questioned people and

when I went to university

I went to the physics department

and this is the entrance to the

Melbourne University Physics Department

and embossed in the

limestone above the doorway

are the words — School

of Natural Philosophy.

Well my view was that at university

any question could be asked,

nothing was taboo and that you

could expect a reasonable answer

or at least a statement

that you don't know.

That's not what I got.

I found either avoidance of answering

the question or outright hostility

and that really surprised

me and disappointed me.

So any... I stopped asking

questions about Velikovsky

but I decided that as a

science undergraduate

I would also read books from the

anthropology section of the library

and in doing so I felt

even more strongly

that Velikovsky had

made a case to answer

because I was reading books

that he had not referred to

and yet the story that he had

pieced together left off the pages.

Myths from the South Sea Islanders

and middle India places like that.

So I felt that this dismissal of Velikovsky

at the university was unwarranted

and ill-advised since I felt

he'd provided good evidence

that the solar system had

changed within human memory.

So I was working on my slides the

other night and lo and behold

there was an advertisement that came

through from the National University.

I come from Canberra, that's the  
national capital in Australia.

And what it said was that  
professor Lawrence Krauss

presents the greatest  
story ever told so far.

Now I've witnessed Lawrence  
Krauss speaking to the experts,  
the astrophysicists at the National  
University's Research School of Astrophysics,  
I'm in the great position of being  
only 10 to 15 minutes drive  
from the top of Mount Stromlo, the observatory  
and where they hold these meetings.

So I've seen him in action.

That's his book 'A  
Universe From Nothing',  
the very title makes  
no sense whatsoever.

The introduction, this  
is yet to happen  
so I may actually attend  
this when I go home.

The introduction is by Nobel  
laureate professor Brian Schmidt

I have...

We actually had a set-to in the  
national newspaper a few years ago.

An amicable one and I tried to organize  
a meeting with him to have coffee.

This is before he got  
the Nobel Prize.

Also I should mention that Brian  
Schmidt is the Nobel Prize winner  
who was involved in devising  
another entity, dark energy,  
for the accelerated expansion of the universe  
or at least that's their interpretation.

I quote from the blurb that  
goes with this advertisement  
and this is ironic,

"The real story of the universe is  
much more interesting and exciting  
than the unsubstantiated and bland  
myth pervaded by the ancients."

I could hardly believe  
my luck when I saw this.

And it's this kind of dismissal  
of any kind of history.

The idea that science has reached some kind  
of pinnacle and you only have to deal with

research over the last few  
years to do good research  
is completely wrong!

It's my experience that in  
order to find the answers  
you have to go back and look at  
the historical controversies  
that were, that raged often  
for decades or more  
and look at how it was resolved.

And usually it was on the basis of who  
was the most powerful politically  
or somewhere in the power  
structure in science  
or it was just the case  
of a show of hands.

And as they say, science isn't  
a democracy or the scien...  
the science that we accept should  
not be but on the basis of a vote.

"Professor Lawrence Krauss describes  
the remarkable scientific story  
that has led to the greatest intellectual  
edifice ever created by humans,  
the Standard Model."

The strange thing is that we hear these

mantras delivered by experts on television

with no thought to the fact

that there are so many problems

that are unresolved

in the Standard Model

but these are glossed over as if

somehow we've almost got the answers.

I think the thing about this is

what I'm saying was reinforced

that this is all about stories.

We need a better story!

Big Bang cosmology, when

you look at the history,

sprang from mathematics, pure

mathematics and religious beliefs.

So the Big Bang is a myth!

Once upon a time long long

ago there was nothing,

which exploded.

So here we have nothing

doing something.

In contrast, the Electric Universe began

by analyzing global cosmic myths

and this is the inspiration

that Velikovsky

passed on to those who

were inspired at the time  
and for myself I'm just  
grateful that I had the  
doggedness to keep  
pursuing it all my life.  
And as a result of the  
interdisciplinary nature  
and the number of scholars  
from all different fields,  
it's become an astonishing story that  
shows our real place in the universe,  
so far.

This is an example of the problem you have  
when your story differs from someone else's.

Here we have Steve Crothers,  
another Australian by the way,  
who has presented at one of  
our EU conferences recently  
and I believe also at the NPA.

And he attended last month  
a meeting in Russia,  
as you can see the the kind of titles  
there, and he was an early speaker  
so what he had to say should have been  
quite relevant to everything that followed.

It was "Flaws in Black Hole

theory and General Relativity."

Now he has explained this

to a general audience

in the Electric Universe

and they all got it,

you don't need to know advanced mathematics

to be able to see the flaws in the thinking

that go into black hole

theory and general relativity.

And I recommend following

him up on the web

if you would like to get

a hold of his papers.

This is his comments

after the event,

"I spoke at a conference

in Protvino, Russia.

I made it so simple"

and this is what

he's very good at

"that all understood and

they were very displeased.

During question time,

they went on the attack

but could offer no counter arguments and

instead tried to evade the issues."



This is exactly the kind of thing  
that I discovered at university.

"Others told me" and get this  
"that I should not criticize if I did  
not offer an alternative theory."

That's just crazy, I mean  
science is about testing  
and if you get  
disconfirming evidence  
then that should be a spur to more  
inventive ideas and an advance in science.

The idea that you have to  
have an alternative theory  
to replace one that you're  
discrediting is nonsense.

"Nobody would talk  
to me afterwards."

"So what did they collectively  
decide to do in the end?

Pretend that nothing has  
changed and go on regardless."

The following couple of days were  
about black holes, the Big Bang  
and everything that he  
had just discredited.

Business as usual.

And one of the people who  
were inspired by Velikovsky,  
and in turn inspired me  
since I was looking for answers  
to how all of the things  
that Velikovsky had described  
could have happened,  
is Ralph Juergens.

And I saw him in action  
at a conference in 1974,  
that was my first  
real contact with him  
but everything he wrote I devoured because  
he was a very thorough researcher  
and his insights, I thought, were  
almost as amazing as Velikovsky's.

Since then some  
things we now know,  
In fact at the time the neutrino  
account was also a problem  
and it continued to be  
a problem for decades  
until somebody managed to find some  
kind of story to cover the problem.

The solar wind acceleration  
still remains a mystery.

The super hot corona  
is still a mystery  
although many people think  
they have a solution.

Solar activity cycles,  
still a mystery.

The solar convection has been  
found to be practically absent.

And this is supposed to drive everything  
that we see going on above the Sun.

And the Heliospheric boundary,  
the interface between the solar  
system and interstellar space  
has also defied all expectations  
and this has been good for me  
because I've been describing  
what I felt would be found out  
there and so far it matches.

This is the time that  
I met Velikovsky.

It was the first international conference  
on the recent history of the solar system.

Now according to astronomers, of course,  
there is no such thing as a recent history  
especially not within mankind's  
term on this planet.

That's a photo I took of Velikovsky  
from the front of the hall  
but you get an idea of  
the audience there.

He was able to draw quite a  
crowd from around the world.

Of course his challenge to  
the mainstream was that,  
as he said in the opening pages  
of his book 'Worlds in Collision',  
if Newton's laws are sacrosanct  
this book is a heresy  
and the response of the professional  
astronomers at the time  
was to ignore the gauntlet  
that he'd thrown down  
and just say Newton's  
laws are sacrosanct  
and just, you can  
ignore the rest.

What we now think we know is that  
our solar system appears to be weird  
when compared to planetary  
systems around nearby stars.

The Uranus and Neptune could not  
have formed where we see them.

So now you'll see papers  
appearing frequently  
talking about  
rearrangement of orbits,  
the possibility of an extra gas  
giant having been present initially  
which then somehow managed to  
push two of the other gas giants  
which became Uranus and Neptune  
further out into the solar system.

And also when we look  
out at the exoplanets,  
they appear to be impossible  
according to the standard theory  
of how our solar  
system was formed.

So there's a severe problem in  
even explaining why we're here.

Now the organizers of that  
conference appear on this page.

On the right is Steven Talbott,  
that's Dave's younger brother.

It was he who I wrote to and  
he was the main correspondent  
that got me to the conference.

He invited me to come over.

It was there also that

I met Dave Talbott.

At the time neither of us

knew what the other was up to

and in fact I'm not sure that

we knew what we were up to.

But we...

It turns out that we'd

both been inspired

by a short paper that

Velikovsky had written

about the idea, the

outrageous idea

that Saturn featured as a

Sun in early human memory

and that idea to me was

the genesis of the idea

that the solar system

has not only changed

but it's actually a

work in progress,

it had formed by the capture

of other objects.

I was an avid reader, of course,

of all the Pensée Journals,

they were extremely

well produced,  
and that was the vehicle that got me to  
the U.S. to Canada for this meeting.

Then it was 20 years later.

I had David's book

'The Saturn Myth'

and a friend of mine

said, "I'd like a copy"

and I said, well I'll see

if I can contact David.

When I rang David it was just

serendipitous that it was the year that

he had organized an international

conference in Portland, Oregon

and after I inquired

about the book,

he said, have you got anything you'd

like to present at this conference

that I'm about to put on?

And I said - Yes I have!

And so I was invited

to that conference.

And it was there that the

collaboration began.

There was another scientist who

was involved with Ralph Juergens,

towards the end of Ralph's life.

He was an associate professor at the  
University of Lethbridge in Alberta, Canada.

Dr. Earl Milton, his main  
training was in spectroscopy.

He came to Australia and  
stayed with our family.

His family and he joined us at the time  
that Halley's Comet was in the sky.

He felt that the southern skies  
were the best place to view it.

He wrote at one point,

"What goes on inside stars

is a sort of fantasy

which we all subscribe to because none of  
us have seen what happens inside stars.

All we can observe is the radiation  
that emerges from the stars' surfaces,  
and what happens to the atmosphere  
transmitting that radiation."

And being a spectroscopist, the next  
statement is of significance  
for the Electric Universe  
model of the Sun.

"The major solar spectroscopic identifications  
represent much more dense materials



than implied by the defined  
density of the Sun."

It implies that what's inside the  
Sun is not what we think it is.

He was also well aware of  
the problems that we faced.

"The conspiracy of silence  
which was imposed  
by powerful scientists in  
1950 upon Velikovsky's work  
remains essentially intact today  
in the halls of academia."

That was in 1983 when he  
and I were both in London.

Nothing's changed!

I had the privilege in 1979, that's five  
years after the conference, in Canada,  
to be in Washington, here, working for the  
Australian government for a few weeks  
and I rang Velikovsky at his  
home and mentioned the fact that  
we'd met at the conference and  
would it be okay if I visited.

He and his wife graciously took me, my wife  
and three daughters in for the afternoon  
and my main question to him was,

it centered around

this problem of

what don't we understand about

gravity and Newton's law?

Because this was critical.

His view was that there was electromagnetism

somehow involved in the process.

So (he) gave me this small monograph

which was published in 1946,

called 'Cosmos Without

Gravitation'.

Now the title is a bit misleading

because gravity exists, of course,

and I think it's useful to

maintain the distinction

between gravity and the other

forms of the electric force,

that is magnetism.

But in that book he gave a clue.

"...in the theory

presented here,

this attraction is not due to 'inherent

gravitational' properties of mass,

but instead to the well-known

electrical properties of attraction.

Two dipoles arrange themselves

so that the attraction is stronger  
than their mutual repulsion."

Now chemists know this because all  
of the visible world that we live in  
depends upon this dipole  
to dipole interaction.

And when I went back I thought,  
I'll have a look at the difference  
between the chemical textbooks and  
the physics textbooks to see  
just how close the chemists were to the  
answer rather than the physicists.

That was striking!

The physics textbook had only a cursory  
derivation of the forces between dipoles,  
the chemical one went  
into great detail.

You know, charged particle  
to induced electric dipole,  
induced electric dipole to induced  
electric dipole and so on.

It was about 6 or 7  
different versions,  
each one had a slightly different  
equation to describe it.

And it's significant, I think, that certain

well-known scientists in the past,  
Fritz London was one of them,  
suggested that gravity might be the  
same kind of intermolecular force,  
the thing that holds the solids  
and the liquids and so on  
together that gives us  
the world we exist in.

But this was the clue.

It had something to do  
with electric dipoles  
which, in neutral  
matter, still attract.

So two years later, in 1981 there was a tiny  
advertisement in the Scientific American  
for the Journal of  
Classical Physics.

The first article was  
by Ralph Sansbury.

It turns out he was the  
originator of this journal  
and its title was

Electron Structure.

And I thought well this is, if we're  
talking about electric dipoles  
and the electron has structure,

this is the first place to look.

And so I contacted Ralph and we  
actually met in London, shortly after.

Now I enjoyed Ralph's  
derivation because it is simple,  
it's a case of a  
repeated pattern,  
you take the atomic structure  
and you suggest that perhaps  
subatomic particles have  
the similar structure  
and because atoms can be distorted  
to form electric dipoles  
that means that subatomic particles can  
also be distorted to form subatomic dipoles  
and the resulting  
attraction between them,  
because of the difference  
in size which is colossal,  
gives you the reason why  
gravity is 10 to the 40 times  
less stronger than the  
naked electric force.

Anyway, he derived Ampere's  
law from this simple model,  
I thought that was

an excellent start.

Well, one of the requirements of his theory is that the electron stability requires that all of these particles communicate amongst one another near-instantly, otherwise you cannot hold the electron together, it's not coherent.

And that speed of the electric force is colossal.

This type of mechanism explains gravity simply if you involve all particles in this process.

It explains Mach's principle, this idea that all the matter in the universe is connected, only here you have all the matter in the galaxy is connected in real time.

And it discards all of these virtual particles, the wave/particle duality.

The Speed of Gravity

Tom van Flandern who attended many of our early meetings, he showed simply that the speed of gravity exceeds 20

billion times the speed of light.

Now that was a lower limit.

If that weren't so,

a torque would fling the planets out of the

solar system in a few thousand years.

It's because we would not be

orbiting where the Sun is

but where it appears to be in

the sky and the result is that

the forces coming from an angle which

tends to act like a slingshot.

So his view and his

simple observation

fits Sansbury's electrical

model of gravity

and he argued also, a

separate argument,

for the origin of comets and

asteroids from an exploding planet.

He felt they had a common

origin in some event.

The year 2000, it was

about September I think,

we had a very significant meeting

of the Electric Universe proponents

in Portland, Oregon

and at that meeting there was  
the astronomer Halton Arp,  
there was Tony Peratt, the  
leading plasma physicist,  
Tom Van Flandern was there  
and we had scholars involved  
in the mythological aspects,  
and professor Don Scott.

So we had two former Sagnac Award  
winners at that meeting,  
this is the kind of meeting it  
was, it was really outstanding.

But the most significant thing  
there was that Tony Peratt,  
who worked at the Los Alamos labs, had  
access to information that no one else did  
and that was the form  
of plasma instabilities  
when you create the most powerful electrical  
discharges that man can do on Earth.

And when you do that, you  
get the kind of forms  
like that one seen in  
purple on the right.

And because the plasma is  
semi-transparent, certain aspects of it,



the edges, become  
strongly visible.

In fact, sometimes the light from this can  
be so intense it can actually be lethal,  
it ranges up into the X-rays.

Just faintly behind that, you  
see some of the weird figures  
that have (been) carved on  
rocks around the world.

The Australian Aborigines have their  
own Lightning Man and Wandjina figure  
which they describe in ways which  
is associated with lightning  
and with power flowing  
down from heaven  
and they're very careful to choose their  
words when they say these things.

So all of this fitted  
with the Saturn model.

And of course the Saturn model  
when, on first appearances  
is so outrageous that  
it's easy to dismiss it  
but here we had hard evidence,  
very hard it was carved into rock,  
that ancient man had

witnessed about 80

or most of the 84 different

forms of this instability.

Of course Halton Arp

as the key figure,

because he has dealt with the grand

scale of the universe, the cosmology.

He provided the physical link between high-redshift

quasars and low-redshift active galaxies

which shows that redshift is

largely an intrinsic factor

in a celestial object like a

galaxy or a baby galaxy quasar.

And this gets rid of all of the problems

which are ignored by astronomers

with things having to be

ultra bright, ultra massive

and all this kind of thing if you

place them at the end of the universe.

But if you bring them

up close with their,

the things that they're

associated with,

they become normal brightness, normal

sizes and everything appears okay.

It's, I find it quite odd that

astronomers can make these leaps  
and just say well, it must be huge,  
it must be really ultra bright,  
we don't understand how you can generate  
that much energy to see it at that distance.

One of our key members in the  
early years was Amy Acheson  
and she used this little  
cartoon on the Left

'Objects in the mirror are closer than  
they appear'. And this is the case.

In other words the universe, the visible  
universe is much smaller than we think.

It also appears to be relatively static,  
according to Halton Arp's reconstruction.

This means there  
was no Big Bang.

The universe is of unknown  
age and extent.

We can say nothing about origins.

And really, it is  
very arrogant of us  
to think that in the last microsecond  
of our scientific endeavor  
that we've uncovered the  
secrets of the universe.

This is something that Halton Arp said to  
those of us that he was associating with,  
he's always had a keen regard for amateurs  
and those who are prepared to ask questions.

I hold him in the highest regard.

"The greatest part of the  
progress independent researchers  
have made in the past  
decades, in my opinion,  
is to break free of the observationally disproved  
dogma of curved space-time, dark matter,  
Big Bang, no primary reference frame  
and no faster than light information."

All of these things I agree with.

If you get his book 'Seeing Red',  
he, in the final pages of the book ticks  
all the boxes for the Electric Universe.

We arrived almost at the same place coming  
from slightly different directions.

The Electric Universe story adopts  
successful plasma cosmology  
and this is one of the other aspects  
of specialization in science today.

The IEEE recognizes plasma cosmology as  
a discipline and publishes papers on it,  
astronomers do not attend the meetings

and they don't read the papers

except for one,

Gerrit Verschuur, the

radio astronomer.

He was at one of the

meetings with Tony Peratt

and we were there as well

because I have had some papers

published in the IEEE plasma journal

and they were excited over the fact that

Gerrit Verschuur had found the radio signatures

that were expected from this

image on the left of the screen.

This is a picture of the

Birkeland current filaments

that flow between

galaxies in deep space.

They were in what's called dark mode

so that you can't actually see them

but the radio astronomers can pick

them up with their radio telescopes.

Now you will see, just down

from the top of the slide,

there's a small insert saying

"Cross-section of Galactic

'Birkeland Current' Filament Pairs".

When two of these Birkeland filaments come close together, they begin to interact.

And draw closer together and early in the interaction you will see the two filaments draw in towards one another, there's a long-range attraction and a short-range repulsion going on.

On the right is a picture of Markarian 739 and here we're looking down the barrel of two of those Birkeland current filaments coming together and beginning to form a spiral galaxy.

Simple explanation.

What does NASA say?

"Galaxy Boasts Two Monster Black Holes"

This is, just goes to show how disconnected and unpredictable and useless modern cosmology is.

The EU story explains the mass and energy focus at galactic centers very simply.

The current flowing along the spiral

arms of a galaxy in, towards the center  
must go somewhere.

And in the laboratory, when you pour  
electrical energy into a discharge  
which converges on a point,  
the result is what's  
called the plasmoid,  
a dense plasma focus.

And that's the shape that it  
takes, it's like a doughnut  
where with complicated paths that  
the electric current flows in,  
but down the central core all of  
those filaments are closest together.

So what happens is, as the energy  
is more and more concentrated,  
there comes a point when the particles  
there start colliding more and more.

And at that point, you have neutrons  
being formed, which can escape,  
and these plasma

focus plasmoids are  
the most copious source of  
neutrons known in the laboratory.

And they also then decay into  
protons and electrons, of course.

Now, the electrons tend to get trapped  
for longer than the heavier particles  
so the protons escape and the things  
that are formed along these huge jets  
are electron deficient.

They are the quasars.

Now, the fact that they're electron  
deficient means that their polarization  
will be lower than another  
galaxy or its parent  
and the result of that is that the masses  
of the subatomic particles involved lower,  
their redshift is higher and the energy  
involved is less so they're faint.

All of this fits together in a  
simple electrical explanation,  
you do not need a black hole.

The mass there is simply  
there because  $E = mc^2$ ,  
if you keep pouring more and more  
'E' in, you'll get more and more 'm'  
and these plasmoids  
are extremely small.

I would say, in the center of our galaxy  
it's less than the size of the solar system  
which is unresolvable



at that distance.

There are no black holes as  
Steven has shown theoretically.

The Electric Universe story  
explains the electrical formation  
of stars and planetary systems.

In the laboratory in  
these intense discharges,  
what happens is that the  
discharge breaks up into blobs,  
often seven I think or nine,  
and after the discharge fades  
they scatter like buckshot, it was  
the term that Tony Peratt used.

And what do we find in deep space?

When you look through the dust,  
using an infrared telescope,  
you find the stars are arranged  
in these, along these filaments,  
they're the Birkeland  
current filaments.

What's more, it's been discovered  
that these embryonic stars flicker.

And they flicker far too rapidly  
for matter just falling in  
and causing radiation

to outbursts.

So that's a problem for any theory  
of stellar formation using gravity.

But of course, electrical  
circuits often flicker.

So these stars are flickering as  
electrically as they accumulate matter.

Professor Don Scott and I are currently  
working on what is the exact circuit  
because this is  
fairly complicated.

This is the circuit connecting  
a star to the galaxy.

This one is lit up and is  
known as a planetary nebula  
and you can see the wonderful complexity  
in there but we're beginning to unravel it,  
we're also trying an  
experiment to test it.

If it's confirmed, I think  
that's worth a Nobel Prize.

Not for dark energy or the other, cosmic  
microwave background and all sort of thing.

So this is the circuit that connects the  
star and this is what we're working on now.

This is the reason why all of

the models of the, what would be found  
at the boundary of the Sun's  
electrical influence, the Heliosphere,  
has not been met.

None of the models worked.

But the one that looks at it from  
this electrical circuit point of view,  
which I've tried to do,  
still matches what's being found.

I think this is a great confirmation  
for the electrical model of stars.

Here's Don and Dave did  
a great job yesterday  
of showing some of the technical  
aspects of Don's work.

It shows the transistor,  
a style of interface between the  
Sun and what's above the Sun  
and it explains it all  
simply in electrical terms.

Simplicity is the key.

Now one of the most amazing  
parts of the story  
revolves around the Saturn myth,  
David's work, Ev Cochrane, Dwardu  
Cardona have all worked on this,

it's been a life's

work for them as well.

The big problem was how on earth do you

stack planets pole to pole in a line?

There's no known stable orbital

system that will do that.

I thought about that for decades

and finally, piece by piece, I

managed to sort out the puzzle,

I think...

What I've shown here, coming

down from the top left,

is a red dwarf which has entered

the Sun's electrical environment.

Two heliospheres have touched

and then, when that happens they

see each other electrically.

Now the Sun is treated in the Electric

Universe as an anode, a positively charged body.

A red dwarf is a much less

positively charged body,

it's glowing dimly.

So when it enters

the Sun's domain

it becomes a comet,

it switches from being

an anode to a cathode

and cometary appearance is

characteristic of a comet.

Also their electrical

forces start to apply

in the form of modification of the mass

of the objects in that brown dwarf system.

The change is such that it

tends to capture the objects.

It draws the star away

from its satellites

so they spiral down and trail

behind the main object.

It's a bit like comet Shoemaker-Levy

9 when it disintegrated.

They didn't just form a cloud of

particles; they formed a chain, a line.

So what the very high energy

discharges that we have examined

and got confirmation

from Tony Peratt,

I feel, were when we were sitting

in the tail of the comet

that was one huge

electrical discharge.

And it wasn't just

us that was in it

but the other satellites of Proto-Saturn

we call it, the brown dwarf.

And it's interesting that in recent

years astronomers themselves

have come to the conclusion that the most

likely place for life in the universe

is as a satellite

of a brown dwarf.

There's much more to that in

the Electric Universe model

than there is in the Standard Model,

which makes it even more likely.

The other thing that you

have to worry about is,

when you've captured all of these bodies

it must be total chaos in the solar system.

All of the orbits have to be

adjusted to achieve stability.

And that's when I came up with this idea

that all planets in the solar system

act as secondary electrodes

in the Sun's discharge.

They are less positive than the

Sun, they are therefore cathodes.

They emit electrons.

In the case where they're all drawn  
into the current sheet of the Sun,  
and we know that each of the planets  
has what's called a magneto-tail,  
a cometary-like tail behind it, and  
there are charged particles involved  
because of the magnetic fields.  
The charge transfer appears  
to work in such a way  
that when two bodies  
come towards one another,  
the inner one tends to  
move in towards the Sun  
and the outer one tends to  
move away from the Sun  
so they space themselves until the electrical  
interaction ceases or almost ceases.

In the case of Mars, you still have the things  
like the ionospheric blue clearing occurring  
when Mars ends up in  
opposition to the Earth.

You also get those  
global dust storms.

They're all explained  
electrically,  
and it's this electrical transfer between

the inner planet and the outer planet  
that spaces them and  
stabilizes the system.

So that's my contribution - Electrically  
Modified Newtonian Dynamics - I call it.

It's very simple, the equations are  
just involved high school physics.

It explains the electrical capture, the  
avoidance and rapid orbit stabilization.

It explains the transition of the captured  
system from a brown dwarf to a gas giant.

It's no longer a star,  
and it has to adjust to its  
electrical environment,  
and that may involve flaring,  
violent outbursts just like comets,  
they tend to disintegrate  
to some extent.

So some of the bodies in the solar  
system, one in particular, Venus,  
appears to have been a part of  
that electrical readjustment.

Of course, a recent National Geographic  
has 'Our Wild Wild Solar System'  
and here we have an object colliding  
with the Earth to form the Moon.



This kind of thing in the Electric Universe is most unlikely to happen because long before the two planets get anywhere near that kind of contact, they will separate electrically.

Dwardu Cardona is one of the key authors of the Proto-Saturnian story and has traced back the history as far as, further than anyone else, I think.

And his talk at the Electric Universe conference was 'Strangers in a Foreign Stellar System'

and his books are a mine of information.

The Electric Universe story, as Steve Smith very ably demonstrated yesterday, can explain the origin of these vast electrical scars on Mars because it was heavily involved in all of the activity.

Mars, the God of War. He actually suffered worse than anyone else.

The Electric Universe story pieces together the dramatic recent story of

the Earth and its inhabitants,  
our catastrophic past and the fact that  
we have not yet come to terms with it.

And our popular astronomy gives a  
distorted view of the universe,  
the modern vision evokes a sense  
of lonely bodies in space,  
isolated galaxies, self-immolating stars  
drifting like dust moats in the blackness  
and the clockwork  
solitude of planets.

It's a hopeless cosmology.

In challenging this idea, the Electric  
Universe emphasizes connectivity.

The electric force influences  
matter at all levels,  
from subatomic particles  
to galactic clusters,  
leaving little room for the  
disconnected fragments of modern theory.

So it's all about connectedness.

The electric force  
operates in real time,  
all matter is connected resonantly by the  
electric force to produce quantum effects.

As soon as you get rid of

the speed of light delay  
you can begin to understand  
the weirdness of,  
or the so called, weird  
aspects of quantum theory.

Nuclear forces, magnetism and gravity are  
all manifestations of a single force  
and these simple concepts are essential  
for coherence on all scales,  
from the galactic to the solar system to  
life on Earth and down to atoms themselves.

It is based on inspiration,  
interdisciplinary inspiration,  
this is really interdisciplinary.

A lot of people pay, sort  
of, lip service to it  
but this, the EU uses it  
as a basis, a foundation.

It's not consensus in a specialized  
theoretical field that ignores,  
and I quote from the earlier  
advertisement for Lawrence Krauss,  
"unsubstantiated and bland myths  
pervaded by the ancients."

The Electric Universe story was  
inspired initially by Velikovsky

and the inspiration continues.

No one assumes, in this group,  
that we have all the answers  
and we are keen for anyone else, who  
feels they can lead in some area  
because it's a huge picture that  
we're building, are welcome.

I feel...

One of my dreams is to see a  
reconstruction of the human story  
going back to the earliest times,  
the view of creation.

What were these creation  
stories really about?

Because obviously no one was around  
when the universe was created,  
these are stories about the  
creation of the world we see today  
from something that  
was different before.

If we could just have an IMAX  
movie, I think people would get it.

You wouldn't have  
to labor the point,  
the symbolism and everything  
comes down to today

and that symbolism is  
striking, it's undeniable  
and I think people even at a  
subconscious level would connect with it.  
And once we've done that,  
Velikovsky felt that the most important  
message is that unless we understand our past  
we cannot heal from the  
wounds of facing doomsday.

I can only, I can't even imagine what  
it must have been like in those days  
to feel that the world  
was just about to end.

We suppress that memory  
and until we can learn what it was that the  
ancients were desperately trying to tell us  
with their monuments,  
their strange artwork  
and their strange stories of gods  
and things going on in the sky,  
until we understand  
that, we cannot heal.

Velikovsky felt that was the most  
important message he had for mankind  
because otherwise,  
unless we can heal,

we cannot begin to behave as perfectly  
rational denizens of the universe  
and our future on this  
planet is questionable.

Thank you.

[Applause]

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

On January 24th 2016 NASA scientists  
celebrated the 12th anniversary  
of the arrival of the rover  
Opportunity on the planet Mars.  
The celebration was marked by  
scientists' continued expression  
of amazement over the Rover's  
astonishing long liveness.

In 2004 the rovers  
Spirit and Opportunity  
were each given expected  
lifespans of about 90 days  
and were projected to drive  
a total of 600 metres.

However, both Mars Exploration Rovers  
defied both expectation and explanation.

The rover Spirit  
survived until 2010  
when it became stuck in the  
rugged soil of Gusev Crater  
and today in 2016 Opportunity

is still going strong  
with mission scientists still unable to offer  
real answers for the Rover's endurance.

On February 5th 2016 the website  
planetary.org published a blog on the  
"unparalleled achievement" of the  
Mars Exploration Rover team.

The article states:

"12 years is a long time for Rovers designed  
and dispatched for 3-month tours...  
so far beyond the imagination,  
it's almost unbelievable.

The fact that Opportunity is still  
roving is beyond remarkable even,  
truth told, for those  
who built her."

One Scientist quoted

in the article states:

"While Opportunity is a bit worse for  
wear, I have to admit that once again  
our ability to understand the lifetime  
of our own designs is really poor.

With their rather constant temperature  
environment and with fewer moving parts  
it makes some sense to me that the Voyager  
spacecraft would live for decades.



It is harder for me to believe that a highly mechanical solar-powered Mars rover, that must suffer rather impressive daily and yearly temperature extremes and dust storms, will be capable of lasting more than a few years."

Unfortunately the article does nothing to eliminate the mystery of how the Rover has been able to survive around 50 times longer than its projected lifespan.

Rather, the Rover's quote "unbelievable endurance" is attributed to equally unbelievable factors namely that occasional gusts of wind cleared dust from the solar panels for some reason.

To get a sense of just how profound the enigma is let us look back all the way to 2004, when the mysteries began to accumulate.

The Rovers' original projected 90 day lifespans

were largely based on the extreme dustiness of the martian environment as well as other weather and geological factors.

Of course scientists knew at the time that Mars, whose tenuous atmosphere is less than 1% as dense as Earth's, has occasional winds and intense dust storms but since mechanical wind is obviously not a reliable means to remove dust from any vehicle it was believed that the rover solar panels would inevitably be buried in dust and eventually lose all power.

Yet in 2004, mission scientists reported the first of a series of unexplained cleanings of the Rovers.

According to a news scientists' report, the rover Opportunity, whose power had been steadily declining due to dust accumulation, experienced a dramatic increase in power after it

"stumbled into something

akin to a car wash".

Jim Erickson of NASA's Jet Propulsion

Laboratory stated at the time:

"These exciting an

unexplained cleaning events

have kept Opportunity

in really great shape."

While the Rovers' cleanings and

endurance remain unexplained by NASA

a clue to the puzzle is provided by the

Agency's own news release dated July 14 2005.

"When humans visit Mars they'll have to watch

out for towering electrified dust devils."

With these words NASA gave official

sanction to an idea that had already

been percolating from separately funded

research projects in recent years.

This research has explored the electrical

component to dust devils in the Arizona desert.

Investigators were surprised to find that

these vortices are electrically charged.

According to a news

item entitled:

"Electrics sand findings could

lead to better climate models",

one investigator has

speculated that:

"Electric fields get so large on the Red Planet they produce ground-level sparks."

In fact, in the Electric Universe, the martian wind is indeed connected to the cleaning of the Rovers' solar panels and thus its long liveness.

In previous episodes we've discussed the astonishing global dust storms composed of giant towering vortices that have sometimes enveloped the entire Red Planet.

Also mysterious are the vast fields of Martian sand dunes and other wind driven features.

However, what if the electric fields associated with the dust devils are not generated by sand particles rubbing together?

In the past we have suggested that the martian wind is analogous to an ionic wind, such as that seen here and repeatedly shown in Space News episodes, produced in laboratory experiments by Billy Yelverton.

Mars, like a comet, is a charged body moving on an elliptical orbit

through the Sun's weak electric  
field and like the planet Mars,  
the comet 67P has  
revealed sand dunes  
that could not have reasonably  
been formed by mechanical winds.

The discovery of fast moving  
electrons and electric fields  
near the nucleus of comet 67 P explain  
both the filamentary comet jets  
and the configuration of surface  
dust in dune-like features.

We suggest that it is not a coincidence  
that the largest dust storms on Mars  
tend to occur when the Sun, Earth  
and Mars are in alignment.

Indeed when the greatest global dust storm,  
ever observed on Mars, began in 2001,  
Mars had reached opposition and was the closest  
it had been to Earth in about 12 years.

This suggests that the electrical tickling  
of Mars by Earth's cometary plasma sheet  
or magneto tail may be responsible for much  
of the tornado activity on the Red Planet.

Is the occasional electrostatic removal  
of dust from the Mars rover Opportunity

responsible for its

extraordinary long liveness?

The irony is that scientists working with NASA have developed technology that may provide the answer to this question.

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 working 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..."

For how many additional years will this mystery endure

with NASA scientists continuing to acknowledge their amazement, yet failing to consider any new theoretical possibilities which all real mysteries demand.

For continuous updates on Space  
News from the Electric Universe  
stay tuned to  
[Thunderbolts.info](http://Thunderbolts.info)

Welcome to Space News from  
the Electric Universe  
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The question of the Sun's possible  
role in triggering large earthquakes  
is the subject of growing  
scientific interests.

For decades, some have noted  
a parent correlations  
between dramatic solar  
phenomena and seismic activity.

Yet definitive scientific proof of  
a connection has remained elusive.

Recently, the founder of Suspicious  
Observers Ben Davidson and colleagues  
published a landmark scientific paper  
revealing compelling statistical evidence  
of a role of solar activity in  
triggering large earthquakes.

We asked Ben to give us the latest  
developments in his research  
as well as a brief preview  
of its forthcoming talk  
at the Thunderbolts



conference Elegant Simplicity

taking place June 17th to

19th in Phoenix in Arizona.

The foundations for investigating

solar triggered earthquakes

were really a number of coincidences

that really just stood out among

what seemed like

otherwise random data

and suggested that solar phenomenon

could trigger earthquakes.

Now to just look at sunspots solar

flares or even its effects on Earth

you look at the geomagnetic index, how

many geomagnetic storms is it producing

what level, things like

that. Those are the main

things people look at when they're looking

at space weathering solar phenomena

and that's where a lot of the

odd coincidences can be found

but that's not where, you know,

that's not where you're going to find any patterns,

it seems like sometimes you can use those

things to predict earthquakes very well

and correlate a, you know, find a

relationship between the Earth and the Sun  
and then other times it  
appears not to be the case.

And so there's that question of why does there  
appear to be this on off switch, sometimes  
weeks at a time, sometimes months at a time  
on and then off or, you know, weeks on or off.

And so we started to look beyond solar  
flares and sunspots and things like that  
because we really see all of  
these things as symptoms  
really, of something  
else that's happening  
and that is a polar magnetic  
field cycle on the Sun.

This would be the solar polar fields that  
come out of the polar regions of the Sun  
and wrap around, you know,  
towards the equator  
and pretty much encompass  
the entire solar system  
coming out of the Sun's poles just like Earth's  
magnetosphere comes out of Earth's poles.

Well this solar polar field cycle,  
which is the 11 year cycle,  
when it reverses is when we

get the sunspot maximum  
and all the flares  
and things like that.  
Well not only are  
sunspots and solar flares  
and the resulting geomagnetic  
activity at Earth  
a function of this 11 year  
solar polar field cycle  
but even things like the  
placement of coronal holes,  
sector boundaries in the heliosphere,  
current sheath, basically the  
the magnetic character  
of the solar wind,  
the size and the position of the solar  
prominences, often referred to as plasma filaments,  
all of these things  
are actually driven  
by this underlying 11 year  
solar polar field cycle  
that is often ascribed to being  
11 year sun spots cycle  
but really it's it's the magnetic fields  
on the Sun that are really driving that.  
And when you look beyond the symptoms

like sunspots and solar flares  
and geomagnetic activity to the  
underlying thing that is driving  
all of those things, the  
solar polar magnetic fields,  
you come to something that has never once been  
analyzed in terms of earthquakes until now  
and when it is analyzed you  
find that this is so perfect  
of a, of a place to start this  
the sort of new field of science  
that it really can't be ignored.

Somewhere between 88 and 90% of the  
largest earthquakes in the world are  
shockingly close to these polar  
magnetic field cycle events  
and so basically what I mean  
by that is during the 11 years  
that the cycle takes place we  
get peaks in this magnetism,  
the high points in the magnetism about  
twice a year or about 6 months apart.

We get reversals, positive to negative,  
negative to positive, about every 11 years.

These things do not exactly happen all  
the time, they're spread far apart

and yet most of the major earthquakes on  
the list are within just a handful of  
days of these events that happened  
6 months to years and years apart  
and we have now completed our  
forth study on this material  
the first one was published last year that  
was between myself, Dr Kongpop U-Yen,  
who many in the EU  
community know already,  
and Dr. Chris Holloman, a statistics  
professor from The Ohio State University  
who actually, I was able to take the pattern  
that we all were pretty sure we saw,  
translated into mathematics and  
actually proved that it was real.  
Well since then we've done  
subsequent analyses on...  
on the Chile 8.3 in  
September of 2015  
we did a more longer-term analysis of  
the solar polar fields just earlier,  
earlier this spring, and just  
in the last couple of days  
the data has updated enough to show us  
that the first great earthquake of 2016

the magnitude 7.8 that struck off the coast of Indonesia on March 2nd 2016 was indeed occurring at a negative peak in solar polar field magnetism and it was a peak that actually had not been matched on the Sun for 15 years so that's another way of saying that as the Sun, you know, presents these different levels of magnetism, the Sun had not presented Earth with this level of magnetism since 2001 at least in terms of the negative polarity.

And it does appear, now that we've gotten a little bit past that mark's second event, that it was indeed a peak in the fields cause since then the the total magnetic field strength of the Sun has been weakening somewhat so that was a a long-term event and a short-term significant event as well.

And it's looking like, based on the limited data we have thus far, this big one we just had in Ecuador about a week and a half ago,

which was on the heels of that  
deadly earthquake in Japan,  
they happened just 24 hours apart,  
it's looking like we're gonna have  
another peak there as well so  
we also just had the word come  
in that that first paper,  
the foundational one with myself, Dr.  
U-Yen and the Dr. Hollomon  
got its first citation, it was cited in a  
paper that was published late in 2015  
also talking about solar system  
phenomena and earthquakes.  
So what's, it really sort of came  
out of the coincidences that  
seemed to hint, that  
Sun creates earthquakes  
but guided by all of the very  
convincing research that says, hey  
you can't use sun spots  
you can't use solar flares  
you can't use geomagnetic activity  
over long periods of time,  
here is the data. Therefore we have to conclude  
that there is no solar induced earthquakes.  
Well, when you use that as your

guide and you realize  
that all the things they're looking  
at are really just symptoms  
of the more driving,  
underlying force on the Sun,  
you begin to realize how this could have  
been missed over the last few decades  
and just how vital this  
can be when you see how,  
how well correlated the  
Sun is with these large  
oftentimes tsunami-  
inducing earthquakes.

Once you've nailed down,  
using solar phenomena,  
the times when the Earth  
should get more active,  
you then need to be wondering where  
this activity is most likely to strike,  
where's this earthquake  
gonna happen  
and the single most promising  
thing we've ever seen  
came out of the Demeter satellite.

I believe t'was a French satellite  
and it was detecting



ionosphere disruptions

that seem to occur before some  
of the largest earthquakes.

Now some scientists have written  
these off, others have been using them  
to try to create an  
earthquake forecasting system.

The problem is that for all the  
times that this Demeter data  
a couple, you know, at least a dozen  
for all the times it was used  
to publish papers on ionosphere  
disruptions before earthquakes,  
it was never once used to communicate  
such a disruption to the world  
as hey, watch out,  
an earthquake may happen here.

A lot of this stems out of what happened  
in Italy with the earthquake scientists,  
a lot of folks are worried about, you  
know, liability with things like that  
and as of now there are some promising ideas  
in terms of looking at the ionosphere  
but they're in their infancy.

What may be a better thing to do is what  
actually I'm trying to do right now.

Many folks who are listening to this will know that we successfully completed our second Kickstarter campaign earlier this year, we've raised \$120,000 to create the disaster prediction app, and that is going to do two things.

One, it's going to be using those space weather phenomena we described earlier to warn of times when Earth is going to get more active but also we're going to be tracking the data that comes in on the GPS, the magnetometer and on the EMF monitor within most of these cell phones, iPhones have all those and many Androids do as well.

And so what we're going to be able to do is, we're going to be able to see when there are multiple signals from different cell phones in a given area that are showing the same type of anomaly.

Maybe there's ten different cell phones in Los Angeles

and all of a sudden their GPS says

they're in the Pacific ocean.

What are the chances that all ten got

catapulted thousand miles west at the same time.

Or perhaps there is a

magnetic field disruption

of a certain micro-Tesla that's

read by 20 cell phones in Seattle,

what are the chances they're all standing next

to the exact same microwave with the door open.

There are things like this where you start

to say okay, we can use some of these signals

because it's more than just the

ionosphere, we've seen everything from

animal behavior going wild to positive

ion emission prior to earthquakes

but also radio frequencies emerging

and, sort of, spiking in power.

You've seen magnetic field disruptions as

well and you've seen GPS disruptions,

just about every phone has a

GPS detector in it as well.

So what we're hoping to do is not wait to

install a bunch of very expensive machines

all over the world that may have to be recalibrated

if they get hit by lightning or something,

we are going to actually have this at monitoring  
some of the electromagnetic conditions  
around the globe around  
these areas and hopefully  
there will be enough people with  
these things on their cell phones  
that will be able to get some concrete data and  
actually start to be able to predict locations.

So looking at the different  
electromagnetic signals  
and that really is the  
only way to do this,  
electricity is the great  
snitch of the universe  
she's gonna tell us pretty much  
everything that's going to happen  
we just have to learn how  
to listen the right way.

In June this year I'll be giving  
another talk, third year in a row,  
at the Electric Universe  
conference in Phoenix  
and this year it's going to be a little  
less specific and a little bit more  
macro view of a lot of the things  
that are going on in the community

and a lot of the paths forward  
that seem to be most promising.  
We have, on the horizon, a period of  
great change as some of our leaders  
will be looking to others to carry this story forward  
as we look twenty, thirty years down the line  
and so what does the future of  
the Electric Universe look like,  
and hopefully I'll be able to convince  
everyone that it is a promising future  
from a vastly interdisciplinary  
field of view,  
talking about a very broad range of  
disciplines, a very broad range of interests  
that are going to end up being advanced  
and coming around to really embrace  
some of the electric ideas that have been tossed  
around in the community the last few years.  
For continuous updates on Space  
News from the Electric Universe  
stay tuned to  
[Thunderbolts.info](http://Thunderbolts.info)

[Music]

For over a hundred years, the cosmological story has been the story of the Big Bang, gravity and relativity. But what if that story is wrong?

And what if a new cosmological story and model is emerging? What then? How might a change in cosmology and the cosmological narrative, impact today's society and contemporary culture? To explore these questions we must first look at the concept of paradigm shift.

Paradigm shift is one of these terms that we hear a lot of lately.

But what exactly is a paradigm shift? Well, to begin, a paradigm is the dominant theory in any given discipline at any given time, and a paradigm shift happens when the dominant theory is replaced by another one. The term paradigm shift was coined by the physicist and philosopher of science Thomas Kuhn in his seminal work, "The Structure of Scientific Revolutions."

In his book, Kuhn challenged the common conception of science, which was that science was a steady progression of the accumulation of new ideas.

In a series of reviews of past major scientific advances, such as those ushered

in by Galileo, Newton and Einstein,  
Kuhn was able to show that this  
viewpoint was wrong. For Kuhn,  
"...science advanced the most by occasional  
revolutionary explosions of new knowledge,  
each revolution triggered by  
introduction of new ways of thought  
that are so large and so different they must be  
called new paradigms." In other words, a paradigm  
shift is scientific change  
that is forced to happen.

For Kuhn, a paradigm shift happens over a process  
or a cycle, and it has very distinct stages. These  
stages are, Pre-science – This is a  
pre-stage, where the field or discipline  
has no workable paradigm to successfully guide its  
work. Then we have: 1. Normal Science – The normal  
step where the field has a scientifically-  
based model of understanding  
that works. Then: 2. Model Drift –  
Here the model of understanding begins  
to drift, due to the accumulation of anomalies  
and phenomena that the model simply  
cannot explain. After model  
drift, we enter: 3. Model Crisis –  
At this stage, the model drift becomes so

excessive that the model is essentially broken. It can no longer serve as a reliable guide to problem solving.

And any attempts to patch the model up and make it work, fail.

At this stage, the field is in anguish.

After model crisis comes: 4. Model Revolution –

This begins when serious candidates for a new model emerge. It's a revolution because the new model is so radically different from the old.

Finally, we arrive at 5. Paradigm Change –

Here a single new paradigm emerges and the field changes from the old to the new paradigm. When this step ends the new paradigm becomes the new Normal Science and the Kuhn cycle is complete. Overall the cycle looks something like this:

Pre-Science – Normal Science – Crisis –

Revolution – New Normal Science – New crisis –

New Revolution. And it continues.

Can you guess what stage we are currently in? Well, looking at the present discourse on cosmology and at scientists' own words, it is becoming apparent that we are in the midst of the Kuhn Paradigm Shift cycle, and appear to presently be well



within the Model Crisis stage.

Today the biggest topic in debate cosmology definitely seems to be cosmology itself.

Mainstream science magazines and non-science magazines are full of headlines suggesting that cosmology is in deep trouble.

While scientists have been aware of a crisis in cosmology since at least the 1990's, in very recent years, that awareness has increased exponentially. As Eric Lerner has shown, in 1995 there was about one reference every year to the crisis.

By the beginning of the 2000's it went up to 5 references per year, and then 12 references by the middle of the 2000's.

By the second part of the present decade it was about two dozen references per year.

But then in 2019, it shot up to 130 references per year. That is a drastic increase in just the last two years.

This upward trend can be interpreted as a strong indication that we are at Kuhn's crisis stage.

While scientists do not agree on the nature of the crisis, there is definitely a growing general awareness, both in

cosmology and the mainstream media,  
that there is a crisis. I found that  
many mainstream articles and videos  
deal with one or both of the following,  
as it relates to cosmology  
and the Big Bang model. 1. Anomaly - meaning  
something that deviates from what is  
standard, normal or expected, and/or 2.  
Contradiction - meaning new information,  
measurements, observations and/or findings,  
that undermine, contradict and/or oppose  
the major principles, assumptions, and  
expectations of the Big Bang theory  
in some way. In Kuhn's paradigm shift model,  
when there are a little bit of anomalies  
and contradictions, then the dominant  
model or normal science can be said to be  
in a state of drift. When too many  
anomalies and contradictions accumulate,  
which the model cannot adequately explain or  
fix, then the model is in a state of crisis.  
The over-abundance of mainstream  
material dealing with the ever-increasing  
anomalies and contradictions  
in contemporary cosmology,  
including from very well-

known, non-scientific sources like Forbes and Business Insider, suggests that we have definitely reached a crisis point. Drawing on Kuhn, this implies that the Big Bang model is broken and cannot be fixed. I will leave it to the natural and physical scientists to discuss and debate the nature of the cosmological crisis, but as a discourse analyst, I wish to make some observations about the articles and videos themselves.

While many of the articles and video titles mention, quote “a crisis in Big Bang cosmology”, their content and conclusions do not question or problematize the Big Bang as one might expect, though some do give lip service to the possible need for a new physics, when compared with the titles, the conclusions are disproportionate at best and apologist at worst. With a couple of sources, even concluding that contradictions in the Big Bang model are strengths, because they open the door for “new and exciting areas of research

within the Big Bang model.”

Talk about doubling down on a broken theory.

Now in critical discourse analysis,

this can be identified as a

problematic discursive strategy,

wherein the tone of the article's titles

do not match the tone of the article's

content and conclusion, thereby

misleading the reader. This is a

sneaky rhetorical device, where the reader

is led to assume one thing from the title,

only to end up with an altogether

different, and even contradictory

conclusion at the article's end. Rather

than really address the crisis of Big

Bang cosmology in a meaningful way,

many of these sources downplay it,

or even double down on it, thereby shielding it.

Some going as far as to characterize

anomalies and contradictions that

undermine the Big Bang model, as

strengths rather than flaws. Now as a side

note, even if editors are just using the phrase,

“crisis in cosmology” as click bait with

no intention of actually addressing it,

the very fact that so many people, both within

science and in the popular mainstream culture, want to know or read about a cosmological crisis, can be interpreted as more proof that the Big Bang may be losing credibility.

Another bizarre claim made by mainstream sources about cosmology, is that the universe is far more strange or weird than we originally thought, and that this is why there are so many anomalies and contradictions that the Big Bang cannot address. This type of deflection is especially interesting, because it blames the failures and inadequacies of standard cosmology on the cosmos, rather than the model or theory. An internet search brings up numerous titles dealing with the "strangeness or weirdness" of the universe. Quote "the universe is stranger than we thought", "our solar system is even stranger than we thought", "the universe turns out to be much bigger and weirder than anyone thought", "unexplained phenomena keep suggesting the universe isn't what we thought", etc. etc. etc. This rationalization, that the universe is stranger than we thought, is increasingly repeated in popular science magazines and websites.

Repetition is another device that is used in dominant discourse and texts, one that can create a false sense of authority and truthfulness, because when something is repeated often enough it takes on an air of truth that can mislead readers into agreeing with false conclusions. The repetition of a false or speculative reality, in this case that the universe just keeps getting weirder and weirder, prevents the reader from entertaining an alternative reality such as, the Big Bang is not adequately equipped to address the anomalies and contradictions of its field. The emphasis on weirdness ultimately negates the crisis in Big Bang cosmology and prevents deeper discussions of the implications of the crisis. It's interesting to point out that in the pre-Big Bang era of the enlightenment, any claim that the universe was just too weird to understand, would have been considered laughable. After all, the prime mover in the age of

reason, would never create a universe that was irrational. So why is it not only tolerated today, but exclaimed and celebrated? The universe's weirdness, or non-conformity, is accepted because of the attitudes that resulted from the cultural changes ushered in via the application of relativity to the non-scientists and broader culture in the first place. Because of these cultural changes and the acceptance and celebration of relativistic and paradoxical thinking, there appears to be an inability to consider weirdness and strangeness as critical warning signs of fundamental theoretical errors and problems. But under Kuhn's analysis, the acceptance and celebration of weirdness, or paradoxical thinking, are just further indications of a model in crisis. Within Kuhn's framework, doubling down on a broken model, or blaming the model's inadequacies on the strange and wacky universe, are all things that we could expect from a model that is dying. But no matter how they try to spin it,

given everything we discussed, there is  
no denying that standard  
cosmology is a model in crisis.

[Music]



During the Middle Ages in Italy, a popular entertainment was from troops of traveling actors presenting what they called *commedia dell'arte*, the comedy of the artists. They were satirical sketches based on broad character types and they are the predecessors of modern situation comedies. The heroes of these plays were the naive good-hearted lovers, the country bumpkins and the wily street smart trickster servants. The villains of these plays were the greedy Venetian merchants, the bravado-speaking, Spanish captain, and the bombastic "Il Dottore". They were all regional stereotypes and they were making fun of the Venetian merchants or the Spanish soldiers or the university professors. Il Dottore was from Bologna and he received his doctorate there, which the university of Bologna, famously founded in the 11th century, awarded only doctorates to its graduates, and in those plays Il Dottore would sound out long bombastic gobbledygooky explanations of

minutiae. And it was a grand form of comedy and again, a predecessor of our modern American suspicions and skepticism about intellectuals who have spent too much time in their ivory towers and lost touch with reality. So today we call such people full of baloney, and that's where that expression comes from. And I think what's a big part, for me, of the excitement of what we're exploring here with our review and with the Electric Universe is, coming out of that realm of baloney, back down to more grounded natural philosophy observation-based, experience-based natural science that has a higher regard for a little bit more of common sense. So we've heard about mythology, it seems absurd. You know, as Dave has suggested, we've seen the efforts, the Il Dottores of the modern era, right, presenting their bombastic arguments to uphold a theory that doesn't seem to be tethered to reality. So, we're going to continue

exploring how we tether some of these wild ideas to something tangible and concrete and the best way to get into that is with the man who has spent his time in engineering, electrical engineering, and the study of astrophysics, so we're going to conclude tonight with Don Scott, bring him on the stage. Good evening! As my wife Annis told you, I've been coming to these meetings for many years now and several years ago, we had at one of our meetings a professional astronomer who stood up on his hind legs and said: yes, yes, yes, we know there's electricity in the sky but it doesn't do anything!

Well, I'm here tonight to tell you that it does and I would like to explain a few ways that, I think at least, that it does do stuff, do things that are very very important and have been historically important to Earth and to just about every other object in the cosmos. So, if we can begin, this was

really the first proof, really,  
I hate to use that word  
but substantive indication  
that electricity does indeed  
flow in the sky. Kristian Birkeland was  
a Norwegian scientist-explorer.  
He went out under the Northern Lights on  
the northern slopes of Norway and tried  
to take data that would show that his  
theory, and his theory was that those  
Northern Lights, the Aurora Borealis and  
of course the Aurora Australis as well,  
are electrical in nature. And he  
maintained that there were electrical  
currents, the charged particles coming  
through the sky and going down into, this  
picture shows Earth right there, that's  
the little blue dot of Carl Sagan fame.  
And you can see there that in the  
magnetosphere there are these, what I  
call lily-shaped cusps, and Birkeland  
claimed that the charges would come  
across from the Sun and then pair down  
into the two cusps at the two poles.  
And well, he was dogged for years by  
astronomers who said that was insane. One

of them famously  
was asked one time, did Birkeland's ideas  
or his theories have any effect on your  
work? And Sidney Chapman said no, of  
course not. They were all wrong! Well, it  
turns out that after we were able to  
send rocket probes up into the  
ionosphere just after World War II, we  
found those currents and they're there.  
Nowadays, astronomers will be willing  
to call the currents that do come  
down into those cusps -- Birkeland currents,  
as they should be, and when I  
talk about it, I talk about  
that as a Birkeland current as  
well. They don't like to do  
that. They talk about flux ropes  
and other sort of airy-fairy  
descriptions, they are beginning to try  
to not talk about the  
word Birkeland. The Birkeland currents, and  
you can see there at the bottom of  
that lotus funnel, that they are squeezed  
together. They do come in sheaths, that is  
to say concentric sheaths of current and  
current goes both ways on those sheaths.

At the very bottom, of course,  
is the Aurora and the  
classic astronomy people... I put  
the word Birkeland current  
on there, but you notice on the diagram  
itself, that I got from one of the  
astronomy sites, doesn't have the word  
Birkeland at all. If you look carefully, it  
talks about Peterson currents down there.

Just earlier this year, in 2014, there  
was an announcement that galaxies  
actually are formed on strings,  
delicate strings.

Well, I maintain that those strings are  
electrical currents and these electrical  
currents have been found by radio  
telescopes, I'm consulting my notes, at  
326 megahertz between the Coma Cluster  
and the Abel 1367 cluster, these long  
strings of Birkeland currents do indeed  
exist and they have been calculated,  
because of the strength of the  
surrounding magnetic fields,  
that those currents have a magnitude of  
somewhere in the order,  
get ready for this, of  $10^{19}$  amperes.

We're talking big currents and they do indeed exist and they do connect stars within galaxies and they do connect galaxies in intergalactic space. The currents that we see and can take pictures of, sometimes they're quite jagged, sometimes they're quite, quite beautiful.

That looks like a ballerina to me but it's maybe because there've been too many glasses of wine, I don't know. But other times they're quite straight, quite regular. There's an example of a very, I think, a very regular current. I wouldn't call it a Birkeland current because many people disagree with me, one of my best friends disagrees with me. I think that a Birkeland current is different from a force-free current.

Force-free current in space is a current that is going along undisturbed, but any current anywhere will create a magnetic field. And so, that current in space will

create a magnetic field through  
which it itself has to pass.  
And if it does that, there's  
guaranteed, there's going to be a  
force called a Lorentz Force, which  
depends on the cross-product  
between the current density  
and the direction of the  
magnetic field. And if there is a force,  
it's like you know, kids in a school bus,  
you're trying to get them down  
to the party or the lake or the  
convention or whatever you are taking  
them, and they're fighting and boisterous,  
and eventually if the bus driver is good  
enough, you'll get them to shut up and  
sit down in the back and keep quiet.  
That's the way I think of one of these  
Birkeland currents. A force-  
free Birkeland current is one  
in which the internal stresses  
and strains and forces  
and pushes and pulls have been  
yielded to. In nature, you know, we  
always hear this thing about water flows  
downhill, water will seek, things will go



to a lower level if you let them. Well,  
that's what's happening, in my opinion, in  
these cosmic currents that  
are left alone. They reduce  
themselves to a force-free  
minimum energy, not zero energy,  
because obviously there is current in  
that, this is far from a force-free  
current by the way, because  
it's a very powerful Birkeland  
current really. But eventually, it  
will settle down to that force-free  
state. I should say that the force-free  
current consists of the current  
density and the magnetic field. The  
magnetic field and the current are in  
the same direction. So, if I speak of the  
current, I'm talking about the magnetic  
field and vice versa. What's happening  
here in that you can see that twisted  
helix. There is a magnetic field  
component that's axial that goes in the  
same direction as the current and one  
that wraps around. And after doing some  
studying on that, I came up with a model.  
Unfortunately, the model that I came up

with and I was very proud of, I just found out a couple of days ago, was already derived by another gentleman whose name was Stig Lundqvist. Stig Lundqvist, I think, was a friend of Hannes Alfven in Sweden, and he derived this model for the force-free current. He called it a Birkeland current. What you're seeing here, it's not, it's very complicated looking, but the red line, the big one, is the power, the force, the strength of the magnetic field that is in line with the direction of the current. The second curve, and I don't know if you can see it, it sort of peaks out here. It's a greenish one. Forget the third curve, it doesn't mean anything, but that second curve is the strength of the wraparound magnetic field. So, out of all that complex up-and-down, what do I want you to remember? What I'd like you to remember is that where the red curve, that is the strength of the magnetic field along in the direction of the current,

it goes through a zero,  
see it right there, if  
I can hold my old shaky hand steady,  
this is zero there of that  
magnetic field in the direction of the  
current. At that point, the wraparound  
field is at, or pretty close to its  
maximum. The first one isn't  
quite exactly on, but the  
rest of them are. When the red curve goes  
through zero, the green curve is at  
either a positive or negative maximum. So  
what does that mean?

Well, I got a couple of pictures here  
that try to show you what it means. The  
blue field colors, the field-colored arrows  
are the magnetic field as a function of,  
if we back off away from from the axis  
of the current, so the first  
picture there is what the magnetic field  
looks like right down on this, on  
the axis, right on this. It's almost in  
the center of the Birkeland current. It's  
straight.

There is no wraparound field. Remember in  
that picture, the red thing is way up,

the red curve is way at the top,  
but the wraparound field hasn't gotten  
started yet. Well, if you pull it back a  
little bit away, pull back a little  
farther, like to step number two there,  
you can see that the  
wraparound component has begun  
to be seen, the straight  
component is getting weaker, and  
eventually you get to a point, well,  
somewhere between shot three and shot  
four, where the only magnetic field  
you have is a wraparound. In fact, what  
happens and I won't bother with a further  
detail of that, well, unless... That's sort  
of, I don't know if that gives  
you a feeling of the wrapping  
that happens. The, as you're  
close to the axis, the  
magnetic field is in the direction  
of the current and then  
it begins to twist and it begins  
to come back this way and  
eventually will go back that way  
and in fact it will wrap in all  
directions around the current, main

current stream, much like a Roman fasci.

The old Roman fasci, the fascist symbol.

You take a bunch of reeds that are in by themselves very breakable, very, very tender, very bendable, and if you push them all together and then wrap them with leather in a spiral, and then, when you get up, wrap them

back the other way in leather and then wrap them this way in leather and then wrap them back the other way in leather, eventually if you do this enough times, you get something that's as strong as a steel beam. That, I maintain, it makes

sense to me at least, is one of the reasons why we do indeed see these cosmic currents, they're called stellar jets that are in almost an

absolute straight line and last collimated, they don't spray out like a garden hose, but

they last for well, there's the one out of M86 is five thousand light years long.

And it's just a plain stream of electrical current in space. So, that is the picture of, at these very, what

should I say, discrete radii. And those numbers there are just arbitrary. But it gives you a feeling for the fact that the first one out, the one that happens at 33, the radius of it is 33, is a clockwise spin. Then you go out to the next one, it's counterclockwise. And you go out to the next one, it's clockwise. Then counterclockwise, then clockwise. So, that wrapping, I won't bore you with the details of it, but it's, what I think, is one of the most important properties of the force-free current. There is no, in these force-free currents, there is no matter concentration, you don't get what you see in the Birkeland current there, those double sheaths as they came down into the North Pole of the Earth. That doesn't happen here and even my critical good friend and I think, we'll say the same thing, there is no matter separation, no matter concentration in a force-free current.

But, what can give you matter concentration is the so-called famous

magnetic pinch or z-pinch. There is also a different type of the z-pinches, a theta-pinch as well. And what happens, you can see there, the blue is the go-around type of magnetic field, the red is supposedly the current. If the magnetic field gets stronger, it's like tightening your belt. It squeezes. It squeezes it and squeezes it. And eventually, if it squeezes it so far, there is liable to be a reaction. And the, that is a very famous picture, if you've been here before at all. I'm sure you've probably seen me or somebody, Wal or someone put that on there. The image on the left is a real astronomical image. It's the Ant Nebula. It's well known. The middle one, I think you'll recognize, is essentially an indication that what I'm telling you is not fairytales. That this pinch effect really does happen and if you, what was done in the laboratory is to put a tremendously high current

pulse down through that  
conducting aluminum can, and  
the current going down made a wraparound  
magnetic field which squeezed the can. And  
that's exactly, you can do it with a  
stream of water from the kitchen faucet  
as well. If you pass a current  
down through the water, you  
can actually squeeze the  
stream. Let me tell you what  
I see in here and maybe it's like  
looking at that and seeing that  
ballerina earlier. I hope it isn't, I  
think it's real. What I see when I look  
at this picture of the ant  
nebula is, I see one of these  
currents and I see that here  
at the upper end of it,  
the current, the plasma is not too  
visible. It's sort of been getting into  
the darkish mode where you don't see  
things. And as you should come closer to  
the center of it, as you come closer to  
the site of the the z-pinch,  
the plasma gets brighter  
and of course changes



shape. And I think  
that that's exactly  
what, the mechanism that causes the ant  
nebula is the one that crushed the Pepsi  
can. So, it's a z-pinch on a cosmic  
current that does that. There's another  
diagram. It, sort of, shows it. The idea  
here is that, if the z-pinch is a  
relatively mild pinch, it can produce  
those magnetic field lines that actually  
hold and give stability to  
the current. Stronger z-pinches can  
initiate a discharge or a short  
circuit. Here's... Sorry, I'm a  
professor, I got to put a graph  
of something like this on  
the board every time I talk.

What this is, is in a plasma.

I'll pick a point. Go to that, I don't  
know whether that exit sign is a plasma  
or not, but go to the typical, you know,  
sign. It says, eat at Joe's, you know, go  
into that neon sign, go into the center  
of that tube and you're in the middle of  
a plasma. At every point in the middle of  
a plasma, there are really two important

qualities. One is what's the electric field there. By that I mean, what is the force per unit charge. You've got a positive ion sitting there in the middle of this thing. What is the force on him? Is it a strong force, a high E-field, or is it a low force, a low E-field. That's .., pick a point, anywhere in the diagram. At the end of it, like the letter "n" there, that says that the force on it, on a point in the plasma at that point is sort of medium. It's not way up here and it's not way down there. The other important quality or quantity associated with any point in a plasma is the current density. That says, in your neighborhood how many amps, how many amperes are going past you, how many amperes are going through every square meter, let's say. Every cross-sectional unit area. If you have a lot of amperes going through a plasma, and the plasma is very big, very wide, then that doesn't mean that the current density is very high,

because if the cross-sectional area is big, well, then you can get a lot of amperes through there without squeezing.

If the cross sectional area of the current is smaller, then of course the current density is higher. And so, you would take that point at the end and stick it over here, or over here.

And there are really three main modes of operation of a plasma, (there is going to be an exam at the end of the week) OK.

The dark mode, you can't see it. The ionosphere of the Earth is in dark mode. You know it's there because you can bounce radio signals off it, but it's not visible. Except in the aurora, when it jumps from being in the dark mode to being in the glow mode and it glows and you can actually see it. So the difference between a plasma in the dark mode and a plasma in the glow mode is one simply of current density. So if there's a lot of amps running through this thing, and at the bottom of that funnel you've really compressed

that current cross-section of  
that cosmic current, and so the density,  
current density goes up. And I maintain  
that the center of one of these like the  
Ant Nebula have also gone and popped  
into the arc mode. And that's that  
bright star-like arc, maybe it is a  
star, maybe it is the beginning in  
the cosmos of a new star. I would like to  
say one thing. I don't know if there are any of  
SAFIRE people here or whatever, but  
I've heard people say, we've looked at  
this plasma and we don't see any  
arc in there at all. There's  
no arc discharges in there. A  
lot of people confuse the  
word arc. Arc has two meanings.  
One is a jagged lightning  
bolt, lightning bolt  
discharge. It's an arc discharge,  
that's true. But not all arcs are  
lightning bolts. If you look into the arc  
light of a motion picture projector (in a  
typical motion picture camera) a motion  
picture projector in the theater,  
you've got two electrodes that

come together, and an arc is struck. You pull those electrodes apart and what you get is not anything that looks like a lightning bolt, which it looks like a sheet of flame.

So arc discharges are arc discharges not because of their shape, the lightning bolt shape. They're arc discharges because of what they emit. And the one big difference between the arc discharge and the glow mode discharge is that the arc discharge, well you know if you've, anyone has done any electric arc welding, the copious amounts of ultraviolet. If you look at an arc welder, an arc welder is a perfect example. If you look at an electric arc welder between the tool and the workpiece, it's not a lightning bolt. It's like a sheet of flame. The best arc welders look like gas welders. I mean, they look like flame. And so, you can't look at a plasma with the naked eye nor should you, if you think it's in a glow mode.

Never look at it with your naked eye, you should use ultraviolet protection. And if you want to know if it's a plasma in ultraviolet, is it in the arc or glow mode, see if it's putting ultraviolet out.

Anyway, end of that mini lecture. There's all sorts of things I can tell you about that diagram. Well, one of the interesting ones is number four down here, is there are certain parts of this diagram that have what's called a negative slope. These are positive slopes, they're rising with increasing current density.

But right in here is a negative slope and certainly in the arc mode, in the beginning of the arc mode, there's a negative slope. And that means if you're a particle in a plasma and you're sitting up here like right there over there where that arrow is, what are you sensing?

What's at your point? The answer is, it's a reasonably high electric field.

You're pretty high up on the axis here, but for the glow mode, you're not in particularly heavy current density. And you say to yourself, gee, I don't like to be pushed around, I don't like to have a force on me.

Water flows downhill, right. So the plasma will say, I can reduce the pushing and pulling that I'm suffering by going down the chute, down to here. Well, how do I do that? Well, I move from left to right and go down, I reduce the electric field on me and I increase the current density. Are you going to do that?

How is the plasma going to reduce its current density? Excuse me, increase its current density;

It goes higher, right?

It automatically, I shouldn't say it takes itself onto its own head because it doesn't have a head but it makes filaments. It says, why should I use my whole area here to go down when I can clamp down and make a filament

here and a filament here and nothing in the middle? So, if you see a plasma in a place like this, you will expect if it's got a negative slope to it, that it will form filaments. And so, I submit to you that the reason that lightning bolts are jagged, what you call lightning bolts, is because they form filaments and there's a natural tendency to filament here.

There's also a natural tendency to filament here at the breakdown between dark mode, where you don't see it, and glow mode. You know what is a perfect example of that? It's the outer regions of our Sun's corona. If you ever looked at a picture of the Sun in a solar eclipse, you see the corona is very bright around the Sun.

The farther out you get in the corona, you see these striations, these fingers reach out and that's what's happening there. So, OK, that's a mini lecture on plasma. Why did I put you through that? Well, because I'd like to talk a little bit about what I think, at



least, happens in one of these pinches. If you up the current, that's the red arrows, you will up the B-field going around and maybe you'll get a pinch. I'm suggesting as a sort of an ideal model that instead of crumpling it up like the Pepsi can crumpled up, let's say it just sort of crunches down and what you get from this point down to this point is a cone, OK, can you see it getting smaller? And then beyond the pinch point out here, you're getting a widening out cone, OK?

So what's happening as the charges come in, as this current comes in here? It may well be in the dark mode if it's a minimum energy current, a force-free current, a field-aligned current, it may be very quiet, quiescent and be in dark mode, you might not see anything. Remember in the Ant Nebula out at the ends? You don't see anything. So, it may well be that that's dark mode plasma and as you get in, what

happens at the beginning of  
the cone as the thing narrows  
down, as you squeeze that  
cross-section, you got the same  
amount of current. I mean, you can't have  
more current over here than you have  
over here. It's in a wire, the  
current's the same no matter where  
in the wire you measure it. So if you  
squeeze the wire down, it's same amount  
of current going through the squeeze  
point but you have a higher current  
density. And on that previous slide  
what happens when you increase the  
current density you pop the plasma from  
dark mode into glow mode and maybe into  
arc mode as you get farther and farther  
down that cone until finally right in  
the middle,  
I'm suggesting you get, if the thing  
works like a picture I'm going to show  
you in a minute, that is the arc, that is  
an arc mode discharge. And what  
happens is there's an arc mode discharge,  
more possibly glow mode discharge  
from both sides of this thing, this is

this crimp point. And they look like, I  
tried to draw them in here in light blue,  
they look like a pair of umbrellas,  
umbrella shapes smooshed together. Sort  
of like you take two torpedo shapes and  
push them together so they smash in each  
other's nose. You see,  
there's one torpedo that goes around  
this way and the other torpedo or  
umbrella, more pacifistic than I am,  
umbrella shaped thing goes around that  
way. And the intersections of the  
discharges with the shells of  
conductive material are always at  
right angles. Electric fields always  
impinge on a conductor orthogonally,  
straight in. They don't come in this way,  
they come in straight down. And so if you  
notice I've tried to draw the blue curve  
orthogonal to the slope of the cone. You  
see that? So what will happen here is  
that the discharge, this curved  
discharge will move out toward the left.  
Why, because between this point and this  
point, the voltage is the same as it is  
between this point and this point and

therefore the electric field  
between here and around this  
way is higher, is a stronger  
electric field than it would be  
if you move the discharge out to,  
let's say, around there. The discharge  
would still come in perpendicularly to  
the surface, OK, and you can say well,  
gee, why do you beat your gums about  
this, why is this so important?  
Well, it's so important because  
this is what happens in the z-  
pinch. This is the important  
mechanism by which we believe,  
I believe certainly, that stars are  
formed, and it's that crunch in the  
middle that... It's not an accretion  
disk. That across there, it may be a disc  
that surface looks like a  
circle, but it isn't an accretion disk.  
It's a z-pinch disc and it's, that's  
where the compression comes from. So, if  
you ask the typical astronomer, you know,  
what goes on in one of these pinches.  
They know they exist. You will get that  
as an answer. Um, I hope you folks

in the back can see it. Do you see the labels on there? It says black hole, accretion disk, and magnetic field lines.

There's no such thing as a magnetic field line just like there's no such thing as a line of constant altitude in a topographical map. It's a very convenient thing and it brings a lot of information to the people who use it, very useful, but it's not a real thing.

You shouldn't reify it into meaning something real and astronomers have done that with magnetic field lines and when you, when they talk about reconnection of these field lines, it's like they really exist, you would grab this one over here and stick it over here and put them together.

There's no such thing. It's like worrying about whether Pinocchio is going to have a fight with his brother. They don't exist.

So anyway, there is a real one. That, I think, is one of Dave Talbott's favorite words is archetype and that is my archetype. That is the archetype z-pinch

and I'll point out some of the things  
that are obvious and if you listen to me  
carefully, I haven't put  
you to sleep yet,  
you'll realize what  
I'm saying here. Look  
down to the way down to the lower left  
and way up to the upper right disappears.  
That's right, because the plasma there is  
in dark mode. But as you approach the  
pinch, as you start squeezing down on  
this, you pop that plasma, both ends of it  
into the glow mode. So the greenish  
things here, here, you can see.  
You get less of the black  
striae through it. The whole plasma goes  
into glow mode. Here there's like  
partially some of it's in glow and some is  
in dark mode. But eventually up in here,  
it all becomes glow mode. Also you see  
two sheets, there's one sheath here and  
an inner sheath. Remember that picture of  
the Birkeland current, is one sheath  
within another. That's the same thing  
that happens here and it happens on both  
sides. You can also see, I think, I hope, my

two umbrella-shaped overlapping,  
umbrella-shaped what, paraboloids? Call  
them torpedoes crashing together,  
whatever. The middle business is sort of  
interesting too. This through here this  
thing, this thing, this thing, and this  
thing are called double  
layers. Double layers are a  
plasma phenomenon that happen  
under very heavy current  
conditions and in the center, this is  
typically of this kind of configuration  
the currents are the  
heaviest in the center and  
then in the outer shells,  
they're less and less and less.

So anyway, here's another picture of, this  
is, if I had more time I would talk to  
you about the making of concentrated  
shells of material of what I claim and,  
my friend I'm sure will disagree with me,  
but what I claim is that if you squeeze  
this thing, this force-free, field  
aligned current, squeeze it down, what are  
you doing to it?

You're increasing the current density.

And if you increase the current density,  
it's the same thing really as not  
squeezing it but increasing the current.  
And if you do that, you can show, by  
Lorentz force rules, that matter will be  
moved from regions like this into  
regions like that. The black arrows  
and along the three o'clock  
horizontal plane show the directions in  
which matter will be moved. This matter  
concentration will not occur in a force-  
free current. But I suspect and I think it  
will in, if you squeeze that force-  
free current into a Birkeland current and  
we've seen pictures of the Birkeland  
current, so we know what they look like,  
you saw that picture of that, that last  
picture of the object was a  
Minkowski 2-9, I think, and that's a  
planetary nebula. The Minkowski is  
not the Minkowski of Minkowski space,  
it's another much younger guy who is an  
astronomer. In any event, that's what  
you'll get from the typical astronomer,  
OK. They refuse, absolutely refuse to  
use any electrical kind of voltage,



electric field, current density... Whoo! They  
talk about bow shocks, ladder rungs,  
wineglass parabolas, hyperbolic arcs. How  
the parabolic arc  
changes into a hyperbolic arc? I  
don't know but I don't  
think anybody's measured that closely  
but... And close, of course, in the middle of  
the whole thing instead of my arc  
discharge, they've got a dust disc. They  
will not give up the accretion disk as a  
figment of their real imaginations. It's  
all garbage, none of it exists.  
It's all electrical and  
what you see back here may  
indeed be vortices but they're  
not hydrodynamic vortices, they're  
electrical vortices. So that's  
what you're going to get if you look up  
z-pinches from an astronomer. Here is  
just, I think one of the best  
examples of the fact that  
this thing really does work.  
Here is a current and it's  
suffering obviously multiple z-pinches,  
and when they discovered one of these,

one of these objects, there were two astronomers. Their names were Herbig and Haro. So, they got credit for this and they called objects and now there's more than one. Herbig-Haro objects. This is Herbig-Haro object number 111 and you can see that there are periodic z-pinches. Tony Peratt calls that 'the sausage instability' because they happen in a periodic way. Any electrical engineers who have studied electrical transmission lines, you know that there's pulses back and forth on the electrical transmission lines. They get out of control, you have northeast blackouts, every once in a while. There, I submit, is a perfect example of that. That thing is like a big transmission line and there are all sorts of pulses and when the pulses come up together, that's where the z-pinch happens and it happens periodically all the way down the jet. Here's a picture of that one and you can

see, it actually moves and those, that set of pictures was taken between 1994 and 1998, that's how much it moved in four years. So when Dave Talbott first came up with this idea of a polar configuration, of a bunch of planets in a line, astronomers just about broke up laughing. That was so stupid that they could never imagine anybody would ever, ever think about a stable configuration of objects in a line, like planets on a shish-kebab, OK. There's the shish-kebab. It's real and you can see the one in the front is sort of getting a little bit expanded as it goes along but it does move and there are many more of these, so this is a bunch of, essentially, protostars in a row. All this points out is that this configuration is indeed stable and can exist. You don't need to have stars in circular orbits around the center star, a sun, whatever, in order to exist. This is another one and the number

of that is HH34. I guess there's another one, they go on, there's many, many, many, many of these, and they all were looked at various scans set by astronomers when they were first discovered. If you go and ask NASA to describe this HH 111, that's what you're going to get. That is a NASA artist's conception of what Herbig Haro 111, this one right here. They think this is what this looks like, and of course it's got the accretion disk and it's got a dust torus, OK, nothing electrical.

Anyway, there's, I can go on forever, now showing you these things that oh, 20 years ago were inconceivable. There are many of them in space now. There's just one constellation and that each one of those is labeled as a Herbig-Haro object.

If you use a big scope on it, you'll see them, pin balls in a row. There's the best drawing that I've come upon that shows what happens at a z-pinch, at a normal z-pinch. If I were to draw this, I would

draw this purple line continued down  
around the bottom of the blue and back  
up there, and that would be one of my  
umbrella-shaped surfaces. Do you see what  
I'm saying? This purple would come  
up over the top and then back down here.  
That's what I think happens, that's why  
that blue, central, almost spherical  
body, how it's formed. It's the overlap  
between those arcs, those  
discharges (in the Birkeland pinch),  
in the Z pinch. This is a picture  
sent back well, it's combination, I  
kind of cheated. Half of that picture was  
sent back by the IBEX mission. The  
IBEX mission is the Interstellar  
Boundary Explorer and they maintain  
pretty much that they have discovered  
certainly a spherical thing inside which  
our Sun, the little tiny dot in the  
middle, is center of, and it is a trail  
and they've taken pictures of the trail.  
Now, whether they've turned the camera  
around and looked for the other tail, which  
of course is the one  
down here, I don't know.

So this one is, I  
cheated a little bit, I  
duplicated the upper half of this  
picture and turned it upside down and  
stuck it on the bottom because that's  
what I think happened. And I think, that  
will eventually be found, but so far IBEX  
has found only the top part. Now, Wal  
Thornhill and I are very good buddies  
and so I unabashedly stole from him that  
picture, which he made up and  
you can see, there's some  
differences but not a lot. If I  
were to draw this over again, I  
would make these, this thing come in more  
parabolically and out that way and I'd  
make this one come up around the top and  
come back down  
parabolically that way. We don't know  
where these areas here are but we  
know they exist.

That's what IBEX has found. They found  
that there are heavy concentrations out  
in the plane of the solar system  
where electrons combine here  
with solar ions to form, what

is it, excited, wanted to say  
right what is it, it's an  
excited nuclear atom. Neutral, yeah. I  
said that but where the e is what's  
bugging me, I think it's excited. Anyway,  
that's just like what happens in a  
plasma tube. In a plasma discharge,  
you've got an anode over here and a  
cathode over here and you got ions going  
one way and electrons going the other  
way. Think about that for a second. You're  
an ion, OK, and you're in the  
middle of this plasma discharge. Which  
way you're going to go? I'm going to head  
toward the cathode because that's  
negative and you're a positive. You want  
to go, negative and positive attract. You  
don't want to go to the anode, he's  
positive too, that repels you. So you go  
screaming down there, you're an ion,  
toward the cathode. What happens when you  
get to the cathode? There's a sign  
that says, no ions beyond this point.  
Because ions can't go in wires. Ions live  
and die inside the plasma  
tube. Electrons go in the

wires, so if you have an  
electron that's going down this way,  
it'll go into the anode, into the wire  
and all the way around through the power  
supply to come back out the  
cathode again and get into the  
plasma tube. But the ion has to  
stop and when it stops it recombines  
with an electron and becomes  
neutral. That's what they found.

A whole bunch of excited neutral  
atoms and they bunch up.

And one of the investigators for  
the IBEX mission said, it's kind of like  
you pour maple syrup on your pancake.

When you do that, it all, sort of, the  
maple syrup sort of piles up a little  
bit and then eventually oozes down over  
the size of the stack. And what we're  
seeing in these areas, and of course this  
and this are part of a circle. That's  
just the thing in cross-section, right. So  
what we're seeing here is a  
pileup of the maple syrup, but  
it works exactly like a plasma  
discharge tube. And anyway,



Wal has also included here,  
these pictures are the pictures  
of the z-pinch and remember,  
David talked about the necklace  
with the points around here. This is an  
example of the filamentation process  
going on that the plasma is forming  
filaments. Individual filaments, not just  
a sheet of plasma. And so, this is what we  
think is going on or at least did go  
on when the Sun and the solar system, the  
original solar system which did not  
include Saturn, Earth, Mars, Venus,  
it included maybe Uranus and Neptune and  
maybe Jupiter but nobody knows really.  
But this is what forms a star. This is  
the process by which that star can form  
and it isn't going to happen  
with accretion discs.  
This is what you used to hear from  
astronomers. They have since realized  
there is no such thing as a bow shock  
out there. What we just saw on the  
previous slide is pretty much, they don't  
admit it's electrical of course, but  
they admit the geometry is

pretty much the same. The IBEX mission discovered, that's the IBEX ring. That's that ring of ENAs that are out there, that are piling up.

It's an excited neutral atom surrounding the heliosphere, and as I said, this is very similar to what you see in a discharge tube. Exciting, that's moving, hot. Lots of motion to it. It's been banged around. It's not just placid. The standard description omits any discussion of a z-pinch. That's not far off.

You see what happens, see how it comes down and what happens in the middle. They're getting the picture little by little, but of course it's not electrical. This suggests that our Sun's heliosphere may be formed by a similar z-pinch, that's what I just said, and there is, I took the liberty to draw in what I think those parabolic arcs should be, those two kissing Zeppelins or intersecting umbrellas... Just think of scaling this whole thing up. That's maybe

the way our star, our Sun was  
made, maybe the way  
all suns are made. But could  
it be that, if you step it up,  
that's also the way those galaxies were  
made? And it could well be. I said,  
those galaxies were connected by strings,  
well...

This is a picture of, you  
folks see this, the ghostly  
bubbles. The Electric Universe  
doesn't use words like  
mysterious, dark, ghostly. That's for NASA.  
These are the ghostly gamma rays and  
they were discovered by the Fermi  
gamma ray telescope and they exist there.  
I think may be too, I went through that  
thing too fast. I'm sort of proud of my  
superposition of the ghostly  
bubbles on top of that. It makes  
sense, it makes a great deal  
of sense. Just to finish up,  
there's the ghostly gamma rays  
on their own. That's an, we can't  
see our galaxy obviously, so that's an  
artist... You can't get outside of it to

see what it looks like but that's probably pretty much what it looks like. Here's another thing that they are good at. What's the center of the Milky Way. Again, I'm not asking you guys to really believe this but I'm suggesting it maybe, could that be a z-pinch? On the upper-left, do you see the umbrella shape going out? I don't see anything on the lower right but if you listen to NASA or any of the astronomical organizations, they will tell you that at the center of our universe is a black hole. Well, I'm sorry guys, it does not look like a black hole to me. Besides, you can't see black holes, so how do they know? Anyway, this may be what is at the center. Is it suggestive of a pinch? I think it is, but anyway, it's not a black hole because you can't see black holes. This is a picture, I think, Dave used this as advertisement for this conference. This is a real image, taken in the direction of what we think is the center

of the Milky Way galaxy. And  
NASA says that there is  
a great deal of evidence  
that just to the right of the  
the center of this, there's a  
supermassive black hole at the galactic  
center of the Milky Way, otherwise it  
couldn't have formed. You take your  
choice, I guess. But anyway, there's more  
to come in the next discussion. Thanks a lot!

[Music]

In the beginning, a long time ago and far, far away,  
there was nothing, which manifested a singularity, which  
exploded, and over millions and billions of years  
produced not only our vast material universe,  
but also life in the entire spectrum  
of the non-material or spiritual realm.

So goes the Big Bang theory, encapsulated in one  
long sentence. Let me reply with first of all, there is  
no such thing as nothing. Never was and  
never could be, because you cannot get  
something from nothing. Nothing nothings as Heidegger  
said about nothingness not being able to do anything.

Nothingness is just and only a conceptual  
marker, like zero used only for contrast  
and mental reference. To posit otherwise  
is reification; making something unreal  
into something real. A violation of rationality logic  
and reason, a breach of intellectual responsibility.

Secondly, since we are all familiar with the concept of  
nothing, the average person should be able to realize that  
you cannot start creation with it. But a  
material singularity is an unknown, a  
more effective, yet an even worse reification and is  
nothing short of cosmological chicanery. This would seem  
to be why some cosmologist speculators

are replacing nothing with inflation and quantum fluctuations. Is it not germane and crucial to understand why these dystopian concepts were ever devised and gained traction in the scientific community? But more on that later.

So, what is a singularity? Is it not just a fabulous invention that can do whatever the theorist needs it to do?

In the early days of modern science development, the new more rigorous approach needed to throw off the oppressive trammels of reality-defying religious dogma and sacred writings. And rightfully so, to uncouple from all mythology.

Of late, the marvelous James Webb Space Telescope is making waves in the astronomical and cosmological world of scientism.

Some even characterize the effect as inspiring panic.

"Right now, I find myself lying awake at three in the morning" says Allison Kirkpatrick, an astronomer at the University of Kansas, "...and wondering if everything I've done is wrong."

Well, that's the call from this corner Professor Kirkpatrick. It's about time and it makes no difference if establishment cosmology

pressures you enough to recant.

The new exquisite graphic vistas are providing clear and extensive viewing of a vast volume of space, and bringing back images that are nothing like you would expect from a violent explosion and its implied expansion.

Most people, including many astronomers and cosmologists, realize these images are not like more nebulous hypotheses.

They should be increasingly unwilling to conclude that what they are seeing is a manifestation from their own 'lying eyes'.

Such good old clarity and vision may sometimes cut through unworthy hypotheses and false theory, especially when many of the theorists already have an uneasy feeling about the foundational assumptions underpinning the Big Bang.

From my learning and perspective the premier astronomer to this point in time was Halton Arp who earned his PhD from Caltech. For 29 years he did his stellar work at Palomar Observatory where he and his associated astronomers Geoffrey and Margaret Burbidge, and others, cataloged enough examples of highly redshifted quasars that were clearly in front of lower redshifted galaxies in



the background. Of course, this is an unequivocal violation of expanding universe theory. Being a respected and highly qualified astronomer in the 1970s, he went to the astronomical community, expecting them to see and address the Arp group's findings. They didn't want to hear it for reasons that should be obvious. Too drastic violation of established theory, too much controversy, too much damage to their standing and careers. Being patient, gracious and experienced, aware of the sordid history of scientific pioneers being treated as pariahs, like Galileo and Semmelweis, Arp felt this time it would be different. If he was patient and careful enough to compile the group's findings in a composite and convincing way. Thus he authored and published the book 'Quasars Redshifts and Controversies' 1987, portraying and explaining why they should listen. No deal. Still no response, except a growing distancing and alienation. Welcome to the cruel dystopian world, Dr. Arp. After about ten patient years he got exercised and authored another book with a double entendre title, 'Seeing Red', June 1997. 'Seeing Red' was an obvious reflection of not only redshift, but of how he felt.

When I met Arp at a June 1999 Symposium organized by the University of Milano, Bergamo in Lombardy, Italy, we were fellow lecturers.

I had my copy of 'Quasar's, Redshifts and Controversies' with me, in anticipation of getting it autographed.

When we talked and he realized I was representing a group of admirers and supporters of his findings, he not only signed my copy, but gave me an autographed copy of 'Seeing Red'.

The Arp group developed a sterling case for a paradigm much superior to the Big Bang.

They showed that certain unusual pregnant galaxies with Active Galactic Nuclei -

some of which are called Seyfert Galaxies - evidently charge up and give birth to,

expel from their cores, twin quasars in opposite directions. These expulsions are usually

perpendicular to the plane of the galaxy

These expelled highly redshift quasars

slow in velocity over time, while losing redshift in

quantized steps. They ultimately differentiate into new galaxies. Thus we have the growing

Universe increasing in size, instead of a

violently exploding or expanding one. This

of course is a much more orderly process,

which is what is reflected and portrayed

by the James Webb Telescope visuals.

What these images show is an extensive array of stars and galaxies that are all connected by a three-dimensional web of shining helical filaments. In the Electric Universe paradigm these are the intergalactic and/or interstellar Birkeland currents that deliver power to these astral constructions. This was the vision and understanding of Nobel prize winning Hannes Alfvén and his protégé Anthony Peratt which they called the Plasma Universe.

I should also mention that the Big Bang gravity-only-dominated theory, along with galactic revolution rotation problems, laid the foundation for the fantasy creations of dark matter and dark energy.

Big Bang dark matter was always a huge enigma and dark energy was even more egregious. These both now have to be rejected as well. But there are so many options for colorful, or should I say colorless, replacements.

If dark ambrosia doesn't completely satisfy this penchant for 'scientismic' mysticism, I see all kinds of other options. We could have dark entropy, anti-momentum, dark volume, anti-charge, dark movement, anti-shape, dark time, anti-size, or some other esoteric combination

that will quote 'save the appearances'.

I suspect there are six, six, six possibilities.

You get the idea. When defenders of establishment cosmology have been braced by the accepted fact of plasma in space, the reply has been generally along the lines of "Yes, but it doesn't do anything."

Those of us who understand the validity of the Electric Universe paradigm and theory, are impatient to see all of these intellectually ungainly abstractions swept off the scientific cosmological table.

There are many, including myself, who have never been able to fathom the universe with life and all that goes with being human, springing up spontaneously or developing from mere, non-living, non-intelligent matter.

The universe is obviously infused with design and we are spiritual vessels with personality, intelligence, intellect, emotions, purpose, principles, values, and will.

This would seem to demand an intelligent creator or designer with purpose as well.

Given the deplorable human condition of struggling and suffering, culminating in death, it is an entirely different issue whether that agency is worthy to be

worshiped, rather than feared, and thus called God,  
a term that is a contraction of 'good'. Our world has  
around 4,000 different identifiable organized religions,  
in which I include the most dominant of them all now.

Scientism. Scientism is the making of a dogmatic  
religion out of the pursuit of science or knowledge  
which, as we all know, has a sordid  
history of always resisting significant new  
truths that challenges the existing paradigm.

The multiplicity of concepts of God in  
these various religions, many of which  
are ugly and alien to humane beings, have always violated  
our sensibility and idealism. Yet, many cling to these  
prevailing bad or anti-God paradigms like lichens  
cling to rock, as if their lives depend on it,  
which they clearly do not, given that we  
all age, decay and die, regardless of  
which of these religions we profess. Maybe this lack of  
intellectual responsibility and integrity is the problem.

I am unaware of anyone in western  
science or religion who doesn't  
understand and accept that the very foundation of  
the physical universe is binary electric charge.

This is manifested in negative electrons,  
positive protons, with neutrons that  
decay into these charged particles.

The material universe is electric.

Maybe someday soon more people can  
become reasonable, intellectually honest  
and responsible. And open-mindedly consider  
a much more elegant and beautiful vision,  
one that in both realms is based on the  
evidence of historical demonstration.

A vision that we can one hundred percent go all-in for.

[Music]

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

Today, we continue our exploration  
of the recent update shared by the team  
behind the groundbreaking scientific  
experiment, the SAFIRE project.

As described in our recent interviews with  
physicist Wal Thornhill, the SAFIRE  
project is an independent audit of the  
Electric Sun model first proposed by  
engineer Ralph Juergens  
in the 1970s.

As Thornhill noted, Thunderbolts colleague  
Dr. Donald Scott also extended Juergens'  
Electric Sun model through his  
recognition of what is called the PNP  
transistor action of anode tufts or  
photospheric granulations on the Sun,  
which were successfully reproduced in  
SAFIRE's phase one -- proof of concept.

In this episode, Dr. Scott shares his  
thoughts on SAFIRE's most exciting  
results to date, including the evidence, that is

produced, of low-energy nuclear transmutations.

For over a hundred years now,

since Eddington first dictated that

he knew the answer how did the Sun make

all its power and all that energy, where

does it come from, it came from the

fusion of hydrogen into helium.

And they, everybody immediately sucked that

up, because Einstein was in his glory at

that time, the atomic nuclear chemistry

was in the news and so yeah, that's and

we got it, that's the way it is, stars make

their energy from hydrogen to helium fusion.

And then, some hundred years

went by and nobody had

questioned that until finally, I guess

you know, we also realized that there has

been 200 years of people looking

at the Sun through spectroscopes.

And we've managed to discover about 68

of the known chemicals, that is to say

elements, on the Sun, in the Sun's

atmosphere, they're there, they're in the

Sun, where did they come from, if the Sun gets

its energy from this hydrogen helium fusion?

OK, I see where the



hydrogen and helium

came from, but where did the calcium

and the manganese and the titanium and

all the rest of it come from?

And the standard answer is oh, it was made

by explosions in novae stars, way up

somewhere in our galaxy or even

in other galaxies, and then those

explosions blew it all over the place

like, it's like fairy dust, fairy dust

spreading through the cosmos and

then it, that settled on our star.

But that has nothing to do with our star,

stars are only hydrogen and helium.

What Monty did was not to falsify,

I mean, I say Monty but of

course, it's everybody

on the team.

But to simply give a real, we have done it

here in our lab, not explanation but example

that yes, you can form these other

elements in a very, well, let's say non-

hydrogen bomb kind of way, that is to

say, you do it in the laboratory in

a, yes, it requires something, this

magnificent SAFIRE, but the

only reason we need SAFIRE is because  
we can't duplicate the Sun in our own  
laboratories here on Earth,  
we'd burn the place up.

So what we're trying to do is to  
model the Sun, we're trying to come up  
with example here in our lab of how the  
Sun works, and he's done a very good job  
and he's produced exactly  
what we see in the Sun.

It is obvious now that those other  
elements are indeed made right in  
our Sun and very probably in all other  
stars, at least most other stars, and it  
is done not in the core of  
the Sun but on the surface.

If you look at Monty's film,  
those other elements  
appear on the surface of the anode and  
it's done electrically through electric  
plasma, and I just think it's almost  
obvious that we don't need any more fairy  
tales about explosions of  
novae in Alpha Centauri.

I did predict that, back in my,  
when I first wrote my book

in 2006, I said that, "Whatever nuclear fusion is taking place on the Sun is likely occurring in the double-layer above the photosphere, not deep within the Sun's core. And the products of this fusion process are the metals that give rise to the absorption lines in the Sun's spectrum."

And I think, Monty's work has certainly shown that that is very likely the answer, that's what's happening.

The point is that it really isn't that important.

It's not our purpose to disprove or falsify their answers, but SAFIRE has offered a very good reason why there are the other types of elements and even some molecules formed that are not from these novae explosions gazillion light-years away.

Couple of observations I made when I looked at that film.

You will notice there that Monty was very excited by, and I can see why, I am

excited by it too -- he found in the very  
powerful scanning electron microscope photos,  
a sphere, and he found that at the highest  
magnification he was able to get to,  
when they were looking and they found  
all these other calcium, sodium  
and all the rest of it in there, that had  
not started there but was formed there.

Right down in the middle of this was a  
little sphere, and I'm not sure if they  
figured out what that sphere  
was yet, but the first  
thing that occurred to  
me was uh-huh, a sphere!

Well, have we in the Electric  
Universe ever come upon  
anything like that?

Well, what about C.J. Ransom and Wal's  
blueberries that they formed in C.J.'s lab?

And we saw those, they're called "the  
Martian blueberries" for the reason that  
they were first discovered on the  
surface of the planet Mars, and as Monty  
pointed out, nobody knew or could figure out why  
these things were in such nice little spheres?

So there they are, they found,

it could be, at least I think

they should further investigate is that,  
the genesis of these Martian blueberries  
in a process very much like this.

The other thing that I did notice  
is, if you look very carefully at  
the image that Monty presents there, in  
that video, at those little spherules, you  
will see that the equator, if you will,  
is slightly raised and it looked like  
the last Space News with, who was it, Wal  
talking about Bennu and the other one  
and yeah, they have this strange shape,  
and there is this raised equator.

Well, if you look very carefully at that  
little sphere that Monty found with his  
scanning microscope, that too has a  
raised equator, and so we're seeing when  
things begin to jibe like that, that  
begins to make you think gee, maybe we  
should see and think about why they're  
the same, what's going on there.

That's all I really have  
to say about the video  
except to say that I think it's  
magnificent, I think the future does

maybe hold jobs for the SAFIRE-like reactor, for the remediation of nuclear radiation from decaying atomic fuel, you know.

As said, you don't have to bury it in there in Nevada someplace but can we make it, can we decontaminate the fuel by somehow treating it?

It's all in the future and it's all possible and it's all wonderful.

But the point is, I think, what we really should celebrate and be happy about is, that SAFIRE has definitely shown that we don't need these explosions on these far, far distant stars to explain how the fairy dust got spread through the cosmos.

It's formed right there on the surface of our Sun.

of course since I've been involved with the electric universe for eight more than eight years now which seems astonishing to me I've seen a lot of things change I've seen a lot of people come and a lot of people go and a lot of people stick around I've seen ideas develop I've seen old ideas grow into something that was never expected I've seen new ideas appear that seemed to challenge other well-established thinking in the electric universe community and people are not afraid to express that it all probably started when I was seven when my father explained to me what a Lightyear was and that whole idea that you could calculate distance based on time as a matter of fact the calculation of the distance in a Lightyear in miles was something I used to perform over and over again I would get the the length of the light year 5 trillion 865 billion 656 million miles one of the first ideas about numbers that ever came to me all those years ago so that sparked my interest in

almost all fields of science not just mathematics but mostly what we would call the Natural Sciences I was really into hands-on experience and what I could actually conceive through my senses so I was given microscopes for my birthday and telescopes and other devices that I could use to explore the natural world and I'm grateful even to this day that my parents at least my father especially was able to recognize that interest in me and nurture it so eventually that led me to the discovery of Immanuel Velikovsky's worlds in collision was given to me by a botany professor that I knew at the University of California Riverside I used to help him with his experiments he was doing an investigation into a viral cancer of the tobacco plant and doing sections and this and that and other so he could look at them through an electron microscope it was interesting being in the lab with him and seeing an electron microscope and actually being able to



experience what scientific research was  
all about when I was a teenager immanuel  
velikovsky worlds in collision then of  
course Earth an upheaval and the idea  
that even the very stones themselves cry  
out that you can look at various  
formations and features around the world  
and see that something happened to earth  
that is not the long slow gradualism the  
conventional geology teaches earth is  
the scene of tremendous devastation it's  
been carved up like a pumpkin we've got  
30,000 foot mountain ranges if you  
consider Mon Aloha for example that's a  
35,000 foot mountain in the Pacific  
Ocean twenty-nine thousand foot Mount  
Everest and then you have the the  
Challenger Deep at 35,000 feet below the  
surface of the ocean these are amazing  
structures that conventional geology  
can't adequately explain things that i  
would call fatal flaws and the theory  
that I've detailed in several pictures  
of the day as far as I'm concerned  
Immanuel Velikovsky 'he's research  
founded of course on people who came

before him like Ignatius Donnelly and his concept of the great comet appearing in the sky and virtually devastating earth those two ideas I considered to be breakthrough concepts in my thinking that something other than conventional cosmogony was at work in the solar system and that I have not been exposed to or had not been exposed to up until that point so once that happened once that door opened of course that gave me insight into an

I early new dimension of thinking about things like the electric sun when I read Ralph Jergens article on the electric sun in Velikovsky reconsidered published by Pons I was amazed that thermo nuclear theory was um was so inadequate when it came to the Sun the corona you know people just gloss over the problem of the corona they had been two million degrees hotter than the photosphere or the surface of the Sun nothing even still has been suggested as an adequate explanation over time once the internet came into things you know back in 1992

when I first got online before there were such things as search engines I started looking for information about Immanuel Velikovsky because I knew that a lot of this stuff had not been published in print and there must be an archive of it somewhere I thought that with this new emerging technology of the internet that somebody would put a database up someplace with velikovsky data it was until a few years later that I discovered the velikovsky archive and indeed wal Thornhill had a cd-rom available I don't know if people remember CD ROMs but he had a cd-rom available called the electric universe so I immediately purchased that in 1998 and began long correspondence with wal at that point then as I had begun writing to Dave Talbot as well as wal thornhill and in fact the three of us had correspondence about crater chains on the moon and other formations that were very anomalous as far as the solar system was concerned in fact I think at around that time in the late 90s the mid

to late 90s all of us were starting to  
get involved in ideas about the  
anomalies in the solar system and  
velikovsky and what we're actually  
seeing as new spacecraft were being  
launched farther and farther into space  
and  
being with greater and greater  
resolution suddenly confirmation seemed  
to be everywhere  
you

Welcome to Space News from  
the Electric Universe,  
brought to you by The  
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Today, we continue our  
examination of arguably  
the most perplexing meteorite  
ever discovered on planet Earth.

As science headlines have announced in  
recent weeks, the so-called Hypatia stone,  
a tiny rock fragment found in a  
Libyan desert glass field is  
"rattling" the solar system's status quo,  
challenging astronomers'  
fundamental ideas  
about our solar system's  
formation and history.

In 2015, a number of research  
teams reported that the material  
could not be identified based on any  
known type of meteorite or comet.

As reported by [phys.org](http://phys.org)  
in January of 2018,  
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 resembles no known meteorite or comet fragment and consists of strange and never-before-seen combinations of minerals.

The dust material found in the fragments confounds the very core of the solar nebula hypothesis.

As described by [phys.org](http://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."

Scientists analyzing the fragments suggest

they may be pieces of a deep space

cometary intruder which impacted

Earth around 29 million years ago.

But it's essential to remember

what we've actually observed

when comets have encountered

planets in modern times.

On two occasions in recent decades, when

astronomers have been able to anticipate

close encounters between

comets and planets,

the electromagnetic effects have been exponentially

greater than scientists had anticipated.

When Shoemaker-Levy 9 reached Jupiter

in 1994, the electromagnetic explosion

and unprecedented brightening of

the gas giant's radiation belts

"knocked" the astronomical

world off its feet.

More recently, when comet

Siding Spring approached Mars,

NASA's MAVEN team was amazed when the comet

"blew off" part of Mars's upper atmosphere

and the electrical nature  
of these kinds of events  
is finally becoming a part of  
mainstream science literature.

In 2017, a scientific study published  
in the Geophysical Research Letters  
proposed that the mysterious  
radiophonic sounds produced by some meteors  
may ultimately be caused by giant electric  
fields driving electric currents.

In this episode, our guest,  
archaeologist Peter Mungo Jupp  
continues his case that the Hypatia  
stone's bizarre composition  
may have resulted from the transmutation of  
elements by high-energy electrical discharge.

Although reference is made  
to the Hypatia stone's,  
positioning in the  
green glass fields of Libya,  
it's mainly assumed that this  
part of a disintegrating comet  
allied with the  
formation of the pebble.

Why is not the green glass  
or a silicon unique as well?



Further, the vast stretches of sand  
that make up the underlying component  
of both of these geological curios,  
are themselves relatively historic  
as judged by the Egyptian sources and  
petroglyphs strongly related to modern man.

Now also, we've got to take into  
account the existence nearby  
of Oasis crater  
and Kibera crater.

They may be well involved in producing  
these tektite-like formations.

These could well be  
plasma discharge craters  
with electrical machining able to  
produce effects over a wide area.

The newly discovered role  
of electrical discharge  
in producing not only  
shocked quartz,  
but in all probability shock  
diamonds, is not taken into account.

A new study from the University of  
Pennsylvania reinforces this alternate,  
but I suspect, prime method  
of shocked rock creation. And I quote,

"To bolster the notion that rocks were  
beat up in an extra-terrestrial impact,  
geologists search for a  
distinctive signature:  
that is microscopic bands  
in the mineral quartz,  
created when powerful pressure  
waves ripple through the rock.  
This study suggests that a different sort of  
shock can create the same banding patterns:  
that is a lightning bolt."

The result of the study could cast further  
doubt on claims of asteroid impacts  
that relied on observations  
of shocked quartz."

Now let's pause for a moment.

This could even more apply  
to Anthony Peratt's historic  
plasma discharge events  
which are theorized to be millions of times  
more powerful than ordinary lightning.

Mythology often talks of  
the cosmic thunderbolt.

Could the Oasis crater be the  
result of such a strike?

Does mythology provide us with

examples from this area?

In Greek mythology, such as Ovid's  
Metamorphoses, Phaethon set out  
but was entirely unable to  
control the Sun chariot's horses.

They wandered too close to the  
Earth and began to scorch it.

To prevent further damage,  
Zeus, or as we name, Jupiter,  
hurled a cosmic  
thunderbolt at Phaethon  
who fell to the earth at the mouth  
of the river Eridanus in the Red Sea.

Such an archetypal  
scenario may often reveal  
historical clues to a  
geological disaster.

Moreover, the role of electrical discharge  
in creating new elements and compounds,  
as per Matsumoto's studies of cold  
electrofusion, does not rate a mention.

A cosmic electro-discharge  
or magnetic reversal,  
with its massive attendant current  
flow, has shattering power,  
particularly in the case of a major z-pinch

effect occurring above or below the Earth.

This could be a decisive factor

in explaining the curious, so-called,

cosmic mixture of compounds and

elements found in the Hypatia stone.

Finally, the noting of the rarer C-13 isotope

of carbon as distinct from carbon-12,

which is mainly found in

crustal carbon deposits,

assumes a cosmic origin for the

carbon components of the pebble.

However, deep earth layers of methane, kerogens,

petroleum and concretized crack filling,

as mentioned by Thomas Gold, are well

sourced with much higher levels of C-13.

So this may well be a simpler explanation

for the source of this phenomenon.

And I just note in passing the possibility of

scenarios of cosmic naphtha or petroleum

pervading the atmosphere mentioned in ancient

historical sources such as the Talmud.

It's also a clear possibility if

we can rely on historical fact.

Just remember, so often in science we

reject the clear witnesses to events

in ancient history

not seen today.

Can you imagine, an atmospheric  
invasion of volatile hydrocarbons  
well may be a source of diamonds  
when a plasma discharge enters it.

So let's discuss some of the counters  
to the extra-terrestrial theory.

The Hypatia stone differs from  
the normal chondritic meteorites  
due to dominance of carbon  
as distinct from silicon.

It also contains compounds not  
normally found in Earth's source rocks.

But could it, nevertheless, be an ejection  
from a faraway impact source  
similar to silicon  
based tektites?

Tektites too are claimed  
to be produced by impacts  
that created tiny  
classically shaped rocks.

These then travel long distances to be found  
in a few strewn fields around the world.

But, remember, they're essentially made  
of material from the impact source.

Could not the extraordinary conditions

needed for tektite production  
be of a similar methodology?  
Remember, there are several  
different types of tektites,  
even if they are  
essentially silicon based.

This presumption of a cosmic  
source for tektites, however,  
rests purely on the pebbles'  
relative uniqueness.

However, I would advocate that  
a massive plasma discharge,  
rather than a conventional  
meteor impact,  
presents a more likely scenario  
for the eccentric creation  
of the Hypatia stone's rare  
combination of compounds.

[Music]

so we're talk a bit about the Earth's  
electrical environment in the history of  
scientific ideas there is a pattern of  
how new ideas emerge when we know very  
little about something we tend to think  
it is very simple in the 1800s  
biologists knew very little about the  
cells that make up our bodies and  
reading some of their papers about cells  
is very interesting one of the top  
naturalist of the time Haeckel claimed  
with great confidence that cells are  
uninteresting cells are just bags of  
undifferentiated plasma they are not  
worth anyone's attention and then slowly  
over years we discovered what was in  
cells and we learned that each cell of  
our body is very complex in fact a  
single cell in your body is just as  
complex as your entire body that's a  
truth that's very difficult for our  
logical minds to comprehend but it is  
true nonetheless and we are in a similar  
situation with regard to the electrical  
environments of planets and Suns not too

long ago the average scientist would  
tell you there was not much between the  
earth and the Sun I recall as a boy  
being told about the vast vacuums of  
empty space and it never sat well with  
me that there should be nothing between  
the Earth and the Sun our five senses  
lead us to believe that a thing is  
simply what it looks like a colony looks  
like this to our eyes if our eyes could  
see x-rays the flower would look more  
like this

here's what the Sun looks like in  
visible light now something very strange  
happens when you look at the Sun only  
through a single wavelength of red light  
this beautiful shaggy landscape of  
tendrils and clouds is slightly above  
the image we were looking at just before  
there's an outer skin of the Sun that we  
do not see with our eyes and if  
structure follows function which is  
basically a natural law then we're left  
wondering what function is played by  
this very particularly structured part  
of our Sun now are there other skins



other layers beyond this we see the next layer to the Sun when we look only at the more energetic wavelengths the hot wavelengths this is what the hot Sun looks like very different and all this extra activities taking place farther out from those first two images the Sun appears to get hotter and more energetic as we move away from the surface studying the Sun at different wavelengths of light is one of the most powerful tools we have for understanding the physics of the Sun I will get back to the Sun at the end of the talk for now let us turn our attention to the electrical environment of the earth I will show you some pictures based upon my attempts to understand the data but you must keep in mind that no one has a nice tidy picture that sums all of this up so it is fine if after this talk you are left with questions this talk is an investigation of the idea that the solar system is a giant electrical transformer electrical transformers on earth change the quality of electricity simple

transformers raise and lower voltage  
very complicated transformers turn  
Envisat invisible radio signals back  
into music for our ears to hear and this  
talk proposes that energies coming from  
the Sun are absorbed and changed by the  
earth and the other planets there were a  
couple of surprises this year from two  
saddle

lights that are orbiting the Earth and  
measuring the electrical properties  
around us the surprises came in what are  
called the Van Allen belts these are  
very high energy structures that  
surround the earth this is a picture  
looking down on the North Pole of the  
earth now around the earth is a ring or  
a doughnut you could imagine a very  
high-energy positive particles ions and  
protons and then there's a gap and then  
there's a larger ring of high-energy  
electrons now the recently these two  
satellites that are put into orbit go  
through these belts to measure the  
electrical properties now one point of  
contention about these structures and

space is whether or not they are electrically neutral does this inner ring really have more positive charges in it a lot of people say no that structures in space cannot have an excess of charge for myself looking at the data returned from these satellites I think we see clear evidence of charge separation inside of these belts and I've come to realize that overall charge neutrality is not really the point a battery that you hold in your hand has no overall charge on it but that's not the point the point is we've separated the charges in the battery so it can do work our nervous systems maintain a small charge separation with respect to the rest of our bodies that carefully managed charge separation allows you to have thoughts and feelings and move around all day so whether or not these Van Allen belts are overall charge neutral is not really so important what is important is all the phenomena that result from charge separation now the jet propulsion laboratory is making all

the data from these satellites available  
on their web sites someone here to do a  
one-year research project simply on the  
data coming back from these satellites  
so getting back to the discoveries the  
first two stars discovery was that the  
Van Allen belts can  
additional shells that appear and  
disappear this picture of two rings is  
what we thought completely described the  
Van Allen belts around the earth then  
during the first few months of  
collecting data a burst of energy came  
from the Sun and the belts very quickly  
turned into that an additional shell had  
appeared then a few days went by and  
they returned to that this was a  
beautiful surprise completely unexpected  
what does it mean not sure do we see  
behavior like this anywhere else in the  
world we see something like this in the  
electron orbits in atoms and molecules  
this is a picture of an atom a positive  
charge in the center and then clouds  
fast moving negative charges around the  
center if you add energy to an atom then

a second discrete shell will appear  
around the atom this is the basis of the  
whole world of quantum mechanics the  
world of the very small changes in jumps  
in steps and now we have seen the exact  
same thing happens in a much larger  
realm around us the Van Allen belts they  
were too then some energy comes from the  
Sun and they are three and it's soon  
after that they're back to two again  
nature it seems is quantized both at the  
level of changes around atoms and  
changes around planets the second  
discovery was the detection of double  
layers inside these large belts the  
material up in the Van Allen belts is an  
electrical plasma it's not a gas like we  
breathe it's much finer and more  
rarefied like a fire and then the plasma  
electrical charges are free to move  
around the charges and plasmas are very  
sensitive slight changes in electric  
fields can cause huge changes in how the  
plasma is arranged and one common  
structure in plasma is walls  
double layers in which charges build up

say positive charges on one side of the wall and then a gap and the negative charges on the other side of the wall I look at this sometimes as a way for plasma to store energy if the plasma is in an energetic environment it will form and destroy these double layers to store and release energy these double layers can also travel in packs they can be lined up one after another and be moving through space

the satellites saw something like this so here's the earth the magnetic field lines of the earth going from north to south this is the region of the outer Van Allen belt and they saw the satellite saw in a few seconds thousands thousands of little double layers go zooming past it at a very high speed each one of the little layers being about 30 volts but there are thousands of them so when you add all that up it's about a million volt difference from one end to the other and this giant traveling million volt waterfall seems to be accelerating electrons up to

nearly the speed of light so a picture  
in your mind coming from the Sun large  
quantities of charged matter but which  
are very low energies a small number of  
these charges enter the Earth's  
environment and are stepped up to  
extremely high voltages now this is  
exactly what an electrical transformer  
does it takes high current and low  
voltage and changes that to low current  
at high voltage outside this building  
there's an electrical transformer that  
takes the thirty thousand volts from the  
long-distance power lines and steps that  
down to the hundred and ten volts we  
need for our wall sockets humanity's  
entire electrical infrastructure is  
built upon this one idea of electrical  
transformers every city on earth is  
packed with thousands of a  
electrical transformers it makes one  
wonder to ponder that all of us are  
sitting on a giant cosmological  
electrical transformer we'll look at one  
more part of the Earth's electrical  
environment so picture is the Sun

picture the earth orbiting around the Sun all the while the Sun is pushing out the solar wind streams and streams of charged particles going past the earth the earth has its own magnetic north and south poles and in addition to simply orbiting around the Sun the earth is also spinning this is the shadow side of the earth and when we are in there we call it night and then as our little portion of the earth spins into the light of the Sun we call that dawn sunrise now when you put all of this together you get millions of amperes of current that are constantly streaming down into the dawn side interacting with the earth in ways that we do not understand and then exiting back out on the sunset side in a very simple way new energy comes streaming down to all of us at the start of every day and then at the other end when the day is over all the results from the day are pulled back out and sent back to the solar system each day the activity from plants and animals all the killings and the



birthings and the growths and the decays  
all that is somehow taken back up from  
the earth each day all human activity  
all that you have sought for and found  
achieved and failed at the end of the  
day it is pulled off and sent back to  
whence it came to fulfill uses that we  
cannot comprehend fascinating that the  
same flow has been seen around IO which  
is a moon of Jupiter IO also has million  
ampere currents that come streaming  
it's side of the of its side that is  
turning to face Jupiter and similarly  
currents being drawn off on the side of  
Io that's turning away from Jupiter this  
makes me think this phenomena might be  
an electrical feature of all planets and  
moons whenever a smaller body orbits a  
larger body we might see this sort of  
exchange this also will be a good topic  
for someone here to take on either from  
an experimental or a theoretical side  
now if you're like me right about now  
your head is really starting to hurt how  
do we put this all together we have an  
earth that looks like an atom with a

positive Center and discrete shells of  
electrons surrounding it inside these  
shells are megavolt cascades of  
electrical double layers zooming between  
north and south pole accelerating  
electrons to nearly the speed of light  
we have mega ampere current streaming  
down on the dawn side and back out at  
dusk we're not in Kansas anymore with  
the earth surrounded by empty space we  
can no longer think the earth in the  
electrical environment is simple just  
the opposite we must admit that it is  
more complicated than we can think about  
so how do we think better about this  
when we see a part separated from the  
hole we often see only a collection of  
facts and if we continue to look at the  
parts without understanding the hole we  
usually come to wrong conclusions the  
world of genetics has recently had to  
admit that it had formed wrong  
conclusions we used to think that DNA  
would explain everything but it cannot  
because DNA is part of a larger whole  
and there are other parts in us that are

deciding how and when to use the information in the DNA it takes a lot of effort to place things correctly together into a whole here's a drawing of the electrical potential between the earth and the Sun the Sun is at a higher electrical potential than the earth how do we know this well some people put up a satellite with a 70 meter boom arm to measure the electrical properties on either side of that 70 meter distance and when the boom arm was aligned one arm pointing towards the Sun and the other pointing towards the earth then they measured similar to those Van Allen belts a steady stream of double layers coming from the Sun going past the earth and each one of those layers was oriented in the same direction always going lower potential away from the Sun an image would be like a stream meandering down a hillside with all those little waves on the surface as you fall down from rock to rock each little fallen height represents a little bit of available energy between the Earth and

the Sun there are a series of little discrete voltage drops and if you assume that the steps we see here that earth continued all the way back to the Sun then you get about 600 volts difference between the earth and the Sun and nature has yet again chosen to effect energy differences an energy transfer through a series of small steps there are it seems very few Niagara Falls in nature where the energy transition takes place in one giant step nature appears to prefer many small steps let us look at this again the earth is orbiting around the Sun downhill some seven of several hundred volts from the Sun it's orbiting a sixty thousand miles an hour through the solar wind

the earth has concentric shells red and indicating elect negative blue positive charged particles from the Sun and the Earth's ionosphere combined inside of these shells these particles are accelerated to nearly the speed of light by million volt double layers flying back and forth between the Earth's North

and South Poles some of that transformed energy comes zooming back down to earth in the North and the South Poles some of that energy continues back to the solar wind and then to connect to other planets to Mars or to Jupiter or maybe head out past the bounds of the solar system pondering this picture it is about the most complicated electrical transformer one could imagine recall us at the beginning of the talk that each cell in your body is just as complicated as your entire body well it's starting to look like our solar system may be that complicated we have focused on just the earth in this talk remember there are other planets each with unique electrical environments and therefore different transforming capabilities and let's not even talk about comets the solar system is a vast transforming apparatus if we did not know that previously it was only because we assumed the solar system must be simple and an uninteresting place mostly empty space now we are starting to know more

and this little scratch of the surface  
absolutely pushes our powers of  
comprehension the Sun and the planets  
have electrical properties no scientists  
would disagree with that  
the real fights begin when you start  
discussing the importance of those  
electrical properties as one  
astrophysicist explained and asked  
exasperation okay there are electrical  
currents near the Sun but they're not  
doing anything now you may recall the  
Sun has dark spots on it sunspots about  
a hundred billion amperes of current are  
coming out of sunspots a single sunspot  
that much current would power every home  
in the United States now we live in a  
very economical universe and that  
hundred billion amps is not being wasted  
it is doing something the earth also has  
electrical properties no one would argue  
with that  
again the arguments come about how  
important it all is and perhaps the  
arguments are really about two things  
one set of fights is about whether or

not there's any purpose to it all  
another set of fights is about whether  
or not we humans are the most important  
thing in the picture  
purpose is a very practical word we do  
not need to get into religious fights  
about it  
purpose is related to function inside  
your stomach there are cells whose  
function it is to manufacture and  
excrete acids for the practical purpose  
of digesting your food inside each plant  
there are many chlorophyll molecules  
whose function it is to begin the  
multi-step process of locking energy of  
sunlight into organic matter of fruits  
and vegetables in part for the practical  
purpose of keeping animals like you and  
me alive these are functions and  
purposes that are visible to our eyes so  
why looking at connections between the  
Earth and the Sun do we have such a  
difficult time seeing practical  
purposeful function so this leads to the  
second problem our tendency is to think  
that we are the most important thing in

the universe if I'm the most important  
thing then how could there be a purpose  
that is bigger than me it is similar to  
the difficulty of accepting that the  
earth is not the center of the universe  
we are ok thinking that everything  
revolves around us but we get upset if  
someone tells us that we are orbiting  
around something so if someone suggests  
that between the Sun and the earth there  
are large scale processes of  
transformation in which we humans appear  
to play only a very small part  
well that is insulting to our exalted  
opinion of ourselves studying these  
larger connections studying how the  
earth digests and transforms solar  
energies might be insulting to me  
because these are functions that I serve  
those functions do not serve me 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 the part to the whole and  
seeing the part in relation to the whole  
is one definition of the word meaning so



we are exploring a world of new meaning

and that is very exciting thank you

[Applause]

[Music]

[Music]

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

On this series, a clear picture of  
cosmic scale phenomena has emerged.

Networks of filaments  
pervade space

and are closely linked to the formation  
and evolution of stars and galaxies.

The Electric Universe and Plasma  
Cosmology have always predicted  
that these filaments are in fact  
electrical Birkeland currents  
which light the stars and connect celestial  
bodies across vast cosmic distances.

Recently, two separate  
teams of scientists,  
both of whom were attempting to resolve  
the so-called missing baryon problem,  
have published papers identifying  
vast intergalactic plasma filaments.

In this episode, our  
guest Eugene Bagashov  
analyzes the significance of

these independent findings.

Eugene Bagashov: I would like to talk about two recently published papers discussing the large scale properties of cosmic plasma.

What is interesting in this case is that both teams worked independently but ended up using the same methods and instruments.

Somewhat encouraging is the fact that their conclusions are also very similar meaning that at least the technique is reproducible and, as far as the assumptions are correct, there have been no mistakes made in the process.

Now that I've mentioned it, I personally have serious doubts about the assumptions themselves, so let us take a closer look at the picture presented by this research and see if we could make some alternative conclusions.

The research addresses one of the key problems of observations of cosmic processes,

the so-called missing

baryon problem.

It has been known for some time that if

one considers the Big Bang cosmology,

with its model for

primordial nucleosynthesis,

and at the same time look at the properties

of the so-called Cosmic Microwave Background,

one would get a figure for the matter

content in the observable universe

that is at least 30% too high

with respect to the observations

that is, if we directly sum up

all the known mass content.

I should note that this is not to be

confused with dark matter problem

that we've discussed in detail in

some of the previous episodes.

Dark matter was invented to solve

the smaller scale problems

with incorrect description

of galactic rotation curves

which roughly corresponds to spatial

scales of 100,000 light years or so

whereas in the case of missing baryons

we're talking about intergalactic scales

that are hundreds to

thousands of times bigger.

So in these two papers the researchers have tried to implement a new method of detection that potentially could solve the missing baryon problem capturing the yet unobserved fraction of matter and thus reconciling the observations with Big Bang hypothesis and hypothetical Cosmic Microwave Background.

It is supposed in their work that one might observe the missing matter by looking for its emissions in consequence of the so-called Sunyaev-Zel'dovich effect.

The effect is quite simple.

Plainly put, when a low-energy photon encounters a high-energy charged particles, such as electron, it might interact with it and become more energetic.

It is the so-called Inverse Compton scattering.

So it is supposed that photons of the hypothesized Cosmic Microwave Background could also be scattered in such a way

by the hot intergalactic plasma,  
thus increasing in energy and we might  
detect this more energetic signal  
on top of the supposed  
background radiation.

Both research teams have  
devoted their efforts  
to looking for the electromagnetic  
signal of such sort.

They've been looking at the  
data from Planck satellite  
in the frequency range from 30 to 857 gigahertz,  
that is microwave to far infrared range,  
for which the Planck research team have  
released the Compton scattering maps.

They've compared these maps with the  
data from Sloan Digital Sky Survey  
to identify the actual sources of  
the signals received by Planck.

The main attention was focused on  
the regions in-between galaxies  
where the contamination of the signal  
by the known sources, such as stars,  
is supposed to be minimal.

The total sample used in the research  
included over a million of pairs of galaxies

with average separation of  
about 30 million light-years.

So what they found was a  
quite noticeable signal  
coming from the regions  
in-between galaxies.

The authors conclude that these galaxies  
must be connected by the plasma filaments  
that are supposedly providing additional energy  
to the Cosmic Microwave Background photons,  
so in these areas we see a  
stronger signal from it.

So the minimalistic conclusion that  
one might make from this research  
is that it confirms the existence  
of intergalactic plasma filaments  
which is of course no surprise from  
the Electric Universe perspective.

The authors claim that the supposed  
density of those filaments  
is enough to solve the missing baryon problem  
in the standard cosmological scenario.

Be that as it may, as  
I've noted before,  
for our purposes it might be productive to  
analyze the assumptions that have been made

and see if their revision might  
provide additional insights.

In order to do that, I would like to  
remember Pierre Marie Robitaille's work  
on Cosmic Microwave Background.

In short, his independent  
research shows that the signal  
that is considered to be a  
Cosmic Microwave Background,  
might actually be generated  
by the Earth's oceans.

These oceanic emissions are then  
scattered by the Earth's atmosphere  
and are thus apparently  
coming from all directions.

The microwave background was also observed  
from low Earth orbit by COBE mission  
but, as Robitaille has shown, the  
signals received in this case  
resemble the ones that  
will be coming from Earth  
and undergoing diffraction on  
the edges of the horn-antennas.

One has to remember that even at  
about 900 kilometers altitude,  
where the COBE satellite



was positioned,  
the Earth still blocks more than the  
quarter of the whole celestial sphere.

Planck satellite was positioned  
much farther than that,  
about 1.5 million kilometres from  
Earth, at the Lagrange L2 point.

An independent analysis shows that it should  
detect virtually no microwaves from Earth,  
so there should be no

Cosmic Microwave Background  
detected by Planck in  
Robitaille's theory.

Contrary to that, the research  
team working on the Planck mission  
have claimed to have detected the  
microwave background signal.

But Robitaille's analysis of  
the Planck's instrument layout  
seemed to indicate that its  
readings have been misinterpreted  
because of the flaws in the design of the  
reference loads onboard the satellite.

These loads were supposed to be giving off  
thermal radiation at about 4 Kelvin temperature  
but because of the almost

perfect heat conduction,  
allowed by the design  
of the instrument,  
the favorable way of transmitting heat  
and achieving thermal equilibrium  
was through conduction,  
not radiation,  
making the laws of thermal radiation  
inapplicable in this case.

So according to Robitaille,  
Planck satellite reference loads  
were giving off near-zero  
thermal radiative signal  
and as the instrument was  
matching this near-zero signal  
to the signal received by the  
antenna pointed into space,  
which also yielded  
near-zero reading,  
the detector showed a good match  
and a strong output signal.

I should note that there  
was another mission  
that supposedly observed Cosmic  
Microwave Background far from Earth.  
It was a Soviet experiment RELIKT-1

on board of the Prognoz 9 spacecraft.

It had an apogee of about

700,000 kilometers

from where it made observations

of the background radiation

as well as some

other measurements.

It would be interesting to hear Dr.

Robitaille's comment on that.

Anyway, if Robitaille's

theory is correct,

then of course Big Bang Theory

loses one of its main arguments.

Well, Big Bang contradicts

all the known physics laws,

namely the conservation laws and the

causality, so it's not that big of a loss.

But let us look at the findings outlined

before, to see what the complete absence

or at least the significant weakness of

the Microwave Background would mean.

First of all, the Compton scattering

maps, used in aforementioned research,

come from the combination of data

from both the high frequency

and low frequency instruments

of the Planck satellite,  
and it was the low  
frequency instrument  
that supposedly detected the  
background signal in the first place.

Now, let us imagine that we subtract this low  
frequency background signal from the map since,  
according to Robitaille's  
theory, it is false.

This would leave us a lower  
near-zero background  
but the higher frequency part characteristic of  
the detected filaments would remain in place  
and become even stronger in comparison  
to the now lower baseline signal.

It's as if one would look at  
Hawaiian mountain Mauna Kea  
after lowering the water line  
to the ocean floor level.

The mountain would actually stand  
higher than the Mount Everest.

Though if it is partly hidden by the so-to-speak  
background of the surrounding water,  
it would appear to be much  
less prominent as it does now.

So if Robitaille is correct,

their observations seem to show  
that the detected filaments  
are actually brighter  
than what would be  
expected otherwise.

Now the question arises about the  
nature of the observed emissions.  
They might indeed be caused by  
the Sunyaev-Zel'dovich effect  
but now the initial  
low-energy photons  
would not come from a hypothetical  
remnant of the Big Bang  
but rather be produced  
by real objects  
such as dust, stars, galaxies  
and other plasma structures  
emitting electromagnetic waves  
over the whole spectral range.

These emissions might not  
bear the thermal spectrum  
that is expected for the Cosmic Microwave  
Background in the Big Bang scenario.  
Moreover, if these background  
emissions would, on average,  
yield a lower photonic

flux in the given range,  
then the model used  
by the authors  
would underestimate the density of  
the filaments and their temperature.

There are other  
possibilities, of course.

The registered photons might not  
result from some scattering process  
but actually be emitted by these  
plasma filaments themselves.

In fact, in this case they could be subject  
to Regular, not Inverse, Compton effect  
and initially have a higher energy  
than that detected by Planck.

They might give off some  
portion of their energy  
to the charged particles in the filaments  
and the colder surrounding plasma.

This, of course, also leads to the  
conclusion that the detected filaments  
could be more dense and more energetic than  
what follows from the Big Bang interpretation.

Then there is also a scenario in which  
these photons might be the result  
of the intergalactic currents that shape

the filaments in the first place.

The energy range of photons,  
that Planck was able to detect,  
corresponds to one  
milli-electron volts or so.

So any of those photons could  
be emitted by an electron  
that was accelerated by one  
milli-volt of potential difference  
and here we assume that it has lost all  
of its energy to the outcoming photon.

But in reality, this emission might represent  
only a tiny fraction of the electron energy.

We don't really  
know any of that,  
and depending on the actual nature of the  
processes that lead to this emission,  
it might have very different  
directional distribution.

The filaments described  
in the mentioned research  
are observed in the direction  
perpendicular to the line of sight.

Maybe when observed head-on, looking into  
the filament like into a barrel of a gun,  
one would get completely

different readings etc.

Now the energy gained from

the electric potential

would also depend on the length

of the acceleration path.

So if one underestimates

the filament density

and thus overestimates

the acceleration length,

one would come with a smaller overall

potential difference measure than otherwise.

So, to conclude my notes on this subject,

I would like to repeat two key points;

Firstly, under any

possible scenario,

this research acknowledges the existence

of intergalactic plasma filaments

that make up a significant portion

of the matter in the universe.

And secondly, depending

on the used assumptions,

one might get dramatically different picture

of the parameters of those filaments

and draw different conclusions about the

processes that take place in these regions.

Outside the Big Bang framework, the filaments



might demonstrate higher temperatures,  
higher plasma densities and significant  
electric current and potential values.

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the Electric Universe,  
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The French author Marcel  
Proust once stated,  
"The real voyage of discovery consists  
not in seeking new landscapes  
but in having new eyes."

In 2017, the journey of space  
discovery demands new eyes  
and indeed an entirely new way  
of perceiving our universe.

In our own celestial  
neighborhood in our solar system  
no type of object consistently provokes greater  
surprise and perplexity than the comet.

As we've reported in  
recent episodes,  
no reasonable debate can remain  
that the more than half century old  
dirty snowball hypothesis  
of comets is falsified.

Every comet mission to date has  
refuted the consensus belief

that comets are fluffy  
aggregates of ice and dust  
that condensed or accreted  
billions of years ago  
out in the "Siberia"  
of the solar system.

Comet nuclei are  
not icy or snowy.

They are desiccated, rocky  
bodies that appear virtually  
indistinguishable from asteroids.

Comet activity, including powerful jets and  
the production of the cometary tail and coma,  
cannot be the result of sublimating  
volatiles and outgassing,  
a fact that only grows more  
evident with each new discovery.

A new image released in the last week by  
the European Space Agency's Rosetta team  
underscores the desperate need for new  
theoretical pathways in comet science.

Here we see one of the clearest,  
perhaps undeniable, images to date  
of an electrical discharge  
on a comet nucleus.

The image was taken on July 3rd, 2016, by

the Rosetta spacecraft at comet 67P.

At the time, the comet was at a distance of about 500 million kilometers from the Sun, a distance at which astronomers do not expect sublimation of invisible hypothetical water ice.

The lead author of a new scientific paper on the observation states, "We saw a bright plume of dust, blowing away from the surface like a fountain... It lasted for roughly an hour, producing around 18 kg of dust every second."

The team admits they have no idea what mechanism could have actually powered the so-called plume.

The ESA's website states, "Initially, scientists thought that the plume might have been surface ice evaporating in the sunlight. However, Rosetta's measurements showed there had to be something more energetic going on to fling that amount of dust into space."

The lead author states, "Energy must have been released from

beneath the surface to power it.

There are evidently processes in comets that we do not yet fully understand."

The understatement of this comment cannot be overemphasized.

As we see in this side-by-side image comparison, the structure of the so-called plume has its ideal analog in the form of an electrical discharge in the laboratory.

The electrical nature of this type of cometary phenomena has been self-evident since long before the Rosetta mission.

In 2004, when the Stardust spacecraft arrived at the comet Wild 2, scientists were astonished by the comet's explosive jets some of which emanated from the dark unheated side of the asteroid-like nucleus.

Principal investigator

Donald Brownlee said in 2004, "We thought comet Wild 2 would be like a dirty, black, fluffy snowball.

Instead, it was mind-boggling to see the diverse

landscape in the first pictures from Stardust, including spires, pits and craters, which must be supported by a cohesive surface."

Nothing in the behavior of the comet's jets fit investigators' expectations.

Stardust investigator Dr.

Benton Clark stated,

"Another big surprise was the abundance and behavior of jets of particles shooting up from the comet's surface.

We expected a couple of jets, but saw more than two dozen in the brief flyby."

A June 17, 2004, NASA report described the conundrum,

"The team predicted the jets would shoot up for a short distance, and then be dispersed into a halo around Wild 2.

Instead, some super-speedy jets remained intact, like blasts of water from a powerful garden hose."

Of course, a garden hose is a completely inappropriate analogy

for such explosive jets

in the "vacuum of space".

As we've discussed in

many recent episodes,

astronomers have sometimes

used the same terminology

in their attempts to explain light-years

long stellar and galactic jets.

The question is,

what mechanism confines the jets

and prevents their dispersal?

On 67P, the merging filaments within the

collimated jets reveal a vital clue,

as seen in the side-by-side comparison

with a plasma discharge in the laboratory.

Radio astronomers have now measured the

electric currents in galactic jets

which produce

tremendous velocities

and confine the jetted material up to

many hundreds of thousands of light-years.

If comet jets and plumes are also

electrical discharge phenomena,

as the Electric Universe

model has always predicted,

the mystery of the velocity and

confinement of the jets is resolved.

Another problem for comet scientists is that the hypothetical apertures, required for the collimation of material that is supposedly outgassed from a comet or the "nozzle" from which a hypothetical garden hose would release its stream, have not been seen on comet nuclei.

This problem is acknowledged in the paper "Cometary Jet Collimation Without Physical Confinement" published in the 2012 fall meeting of the American Geophysical Union.

It states,

"Contemporary models postulate that these jets collimate when the expanding gases and dust pass through a physical aperture or nozzle.

However, recent high-resolution spacecraft observations fail to detect such apertures on cometary surfaces.

Recent high-resolution images of comet nuclei reveal that the gas and dust



expelled by the comet is organized  
into narrow plumes or jets..."

"Furthermore, these models do  
not explain why cometary jets  
appear to be directed normal to  
the local gravitational potential.

This is especially puzzling  
because the jet velocity,  
typically 300 m/sec  
far from the comet,  
greatly exceeds the escape  
velocity of only about 1 m/sec."

As we've also recently reported,  
it could not be more clear  
that dramatic comet activity has  
nothing to do with sublimating ices.

Scientists using NASA's  
Hubble Telescope  
have detected unprecedented  
activity from the comet C/2017 K2  
at a billion and a half  
miles from the Sun  
or 16 astronomical units (AU).

Comet water-ice ceases to  
sublimate beyond just a few AU.

The scientists can only propose that

the comet must have been recently  
"gravitationally kicked  
out of the Oort cloud"  
and is therefore covered  
with pristine hyper-volatiles,  
surface ices of methane, carbon  
monoxide and/or nitrogen  
that might sublime  
at such a distance.

Such attempts to cling  
to discredited theory  
grow more disturbing  
with each new discovery.

The electric theory of comets  
has successfully predicted  
the extraordinary  
geology of comet nuclei  
and the completely unexpected  
findings of comet activity  
at great varieties of  
distances from the Sun.

The bright, so-called, plume on 67P can  
be seen as an electrical discharge  
resulting from an explosive redistribution  
of charge on the comet nucleus.

Neither an imaginary

reservoir of subsurface ice  
nor theoretical nozzles from which outgassing  
supposedly sprays like a garden hose  
will ever account for this type of  
remarkable cometary phenomena.

The Rosetta mission and other  
spectacular voyages in space discovery  
represent remarkable technical  
achievements and yet, tragically,  
they are also enormous  
missed opportunities.

Before seeking out new  
landscapes to explore  
comet scientist must see with new eyes  
which might perceive a self-evident truth,  
comets and the universe in  
which they exist are electric.

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New observations are again  
challenging astronomers' ideas  
about the so-called volcanoes  
on Jupiter's moon Io.

For nearly 40 years  
astronomers have told us  
that Io is the most volcanically  
active body in the solar system.

In 1979 NASA's Voyager spacecraft offered  
scientists on Earth their first glimpse  
of mysterious structures jetting hundreds  
of kilometers above the moon's surface.

A phenomenon astronomers  
interpreted as volcanic plumes.

But that same year the world-renowned  
astrophysicist Thomas Gold  
proposed that the locations  
of the so-called volcanoes  
were instead the sites of  
powerful electrical discharges.

Eight years later in 1987,

plasma scientist Anthony Peratt

and co-author Alex Dessler

published the paper,

"Filamentation of Volcanic Plumes

on the Jovian Satellite Io".

Peratt and Dessler argue that the filamentation

and cross-sectional shape of the plumes

are "consistent with theories developed

from laboratory observation".

Nevertheless, despite the contributions

of Gold, Peratt and Dessler,

planetary scientists have held to the

theory that Io's mysterious plumes

are the product of volcanism

which is caused by Jupiter

gravitationally squeezing the moon.

But the problems with this theory

have only continue to grow

with better images and data

from the Jovian system.

NASA scientists have

acknowledged their struggle

to explain the plume structure

as volcanic in nature.

Concerning the so-called volcano

Tvashtar, they state that

"the knots and filaments that allow us to track  
the plume's motions are still mysterious."

In recent years, the tidal heating  
model applied to Io's "volcanoes"  
has been directly falsified  
by additional discoveries.

In 2013, a geologic survey found  
that the locations of the plumes  
were incompatible with the predictions  
of the tidal heating model.

And now, scientists observing  
the so-called plume  
of the volcano Loki have  
encountered a new mystery.

A New Scientist's report  
on the observation states,  
"over decades of study, observers  
have noticed a pattern.

About every 540 days, a wave of brightness  
starts at one end of the lake of lava  
and pivots anti-clockwise  
like a windshield wiper.

That front of warmer lava moves  
about one kilometer per day  
until the whole lake glows hot.

Then the surface of Loki cools

until the process starts again.

But in 2002, right when we thought we had Loki pegged, those phases stopped.

Then in 2009, according to recent

work by Katherine de Kleer

at the University of

California Berkeley,

they started again but are

now moving clockwise.

Appropriate behavior for a feature

named after the Norse trickster god.

However, anomalous movements of

Io's so-called volcanic plumes

is not a new problem

for astronomers.

When the Galileo probe arrived

in the Jovian system in 1996,

it revealed that the plume of the

so-called volcano Prometheus

had moved more than 80 kilometers since

it was first imaged by the Voyager probe.

This fulfilled one of several predictions

that physicist and Electric Universe

proponent Wal Thornhill had made

prior to the Galileo mission.

Thornhill also predicted that the

so-called vents of the volcanic plumes  
would be much hotter than lava  
and that the plumes are in fact  
the jets of moving cathode arcs eroding  
the periphery of the dark areas  
that planetary geologists  
have been calling lava lakes.

According to Thornhill,  
these so-called lava lakes  
are the solid dark surface  
of Io beneath the  
"snow that has been deposited by  
continuous discharge activity".

Therefore the "lava lakes" would not reveal  
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Therefore the "lava lakes" would not reveal  
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Each of these predictions  
received stunning confirmation.

Io's volcanic hot spots were not  
only hotter than any lava on earth.

They were too hot to be measured  
by Galileo's instruments.

Also as predicted by Thornhill, the



discharging is found to be focused

on the edges of the

so-called lava lakes

though the rest of these dark

fields are comparatively cool.

In fact, the expected volcanic

vents could not be found.

Inspiring further astonishment

among mission scientists,

the "volcanic plumes"

emit ultraviolet light.

Something inconceivable under normal

conditions of volcanic venting.

But ultraviolet light is of course

characteristic of an electric arc.

Space scientists have come

to depend on Io's volcanoes

to account for the extraordinary electrical

activity witnessed in Jupiter's atmosphere.

Many claim that charged particles from Io's

volcanoes are responsible for the Jovian Aurorans

which are 1,000 times more intense

than anything seen on Earth.

In this scenario, the profuse

electrical activity at Jupiter's poles,

approximately 10 million Volts, is generated

mechanically by the planet's spin.

Ions from the "volcanoes" on Io are thought to travel to the planet's poles, then interact with the magnetic spin generated electricity, creating an extraordinary charge exchange, producing the auroras.

The following NASA statement which quotes investigator Randy Gladstone reads, "the polar electric fields grab any charged particles they can find and slam them into the atmosphere.

Particles for slamming can come from the sun but Jupiter has another more abundant source nearby: the volcanic moon Io which spews oxygen and sulfur ions into Jupiter's spinning magnetic field.

Somehow these ions make their way to Jupiter's poles where electric fields send them hurtling toward the planet below.

Upon entering the atmosphere, their electrons are first stripped away by molecules they run into but as they slow down they

start grabbing electrons back.

The charge exchange reaction  
produces intense X-ray auroras."

This rationale arises from the assumption  
that Jupiter itself has no net charge.

But since it is behaving  
like a charged body  
the scientists looked to localized  
mechanically induced charge separation  
as if an island in space,  
for some internal process,  
can acquire and dissipate  
electric charge.

From the Electric Universe perspective,  
what is actually occurring  
is an electrical connection between  
the Sun, Jupiter and its moons.

In recent years, discoveries  
have only supported this view.

When scientists discovered the  
most prominent auroral trail  
or footprint of Io in  
the Jovian atmosphere,  
they assumed it must be an effect of charge  
separation generated by Io's volcanoes.

However, this theory

was undermined in 2005

when Hubble images of the Jovian aurora  
revealed a similar electrical footprint  
imprinted by the moon Europa with  
its own swirling plasma tail.

A research team wrote

of this discovery,

"Europa is not thought to be volcanic, so  
what could produce the electrical current  
that zips along and eventually gives  
rise to Europa's auroral footprint?

NASA investigators also found

that the electrical exchange

does not stop with Europa and

also includes the moon Ganymede.

As reported on this series, in recent years  
space scientists have slowly edged closer  
to recognizing significant electrical  
discharge activity on planets and moons.

It's now known that once a month when the  
Earth's magnetotail passes over the Moon,  
the result is electrostatic dust  
storms and electrical discharges.

And in the past year, scientists  
reported that a coronal mass ejection  
struck the planet Mars immediately

before mysterious plumes  
were seen jetting hundreds of kilometers  
into the planet's upper atmosphere.

A complete surprise to  
planetary scientists.

The purely gravitational processes  
that astronomers still prefer  
have failed to explain  
Io's so called volcanoes.

But today, the basis is clear for scientists  
to consider an alternative explanation  
in our electric universe.

For continuous updates on Space  
News from the Electric Universe,  
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