

Central to this series has been the argument that cosmology is presently at a crisis point and headed towards an inevitable paradigm shift, or revolution.

And secondly, that the Electric Universe model has an important role to play in the cosmology of the future.

The term 'paradigm shift' underlines much of the series. It was made popular through Thomas Kuhn's seminal work "The Structure of Scientific Revolutions."

Since the publication of this book in 1962, there has been much misunderstanding and/or misrepresentation of its overall thesis.

Let's revisit Kuhn's work and clarify its meaning and give some examples of why cosmology is still in crisis in 2023.

It is important to note that Kuhn did not set out to write the book that he eventually ended up with.

He originally set out to write a book about the history of science, and discovered something unexpected about how science is done along the way.

In the process of exploring the history of scientific change, Kuhn discovered that predominant or institutionalized science operates much differently than

how we've been led to believe it does.

The larger and deeper thesis of

"Structure" is that predominant science

ultimately does not do science the way it

claims to-meaning that it is not absolutely

empirical. Through historical study of science,

Kuhn discovered that once a paradigm becomes deeply

entrenched and institutionalized, it often becomes

dogmatic, hegemonic, and unyielding to falsification

and change. Almost by accident, Kuhn's work became an

interrogation of science in and of

itself, and it paints an unflattering but

arguably more realistic picture of

science than the idealized or utopian

image of science as presented by for instance,

one of Kuhn's biggest critics, Karl Popper.

Popper was an Austrian-born philosopher

with a doctorate in psychology."

For Popper quote "...the 'core scientific

ethic' was falsifiability-meaning that all

knowledge, at all times, should be exposed to

constant and deliberate criticism." End quote.

This is what distinguishes science from

non-science, according to Popper. Kuhn

would wholeheartedly agree with Popper. Falsifiability

should be the core scientific ethic or principle.

The problem is, that in reality, or in practice,
it is not. And this is what Kuhn's work reveals.

Another critic of Kuhn's was Austrian-born
philosopher of science Paul Feyerabend.

Feyerabend is most known for his book "Against Method",
wherein he argues that there are no universally valid
methodological rules for scientific inquiry, and instead
champions theoretical pluralism. Both Feyerabend
and Popper accuse Kuhn of glorifying normal science
and hiding behind it. Kuhn argued that science does not
progress gradually, organically, but is
actually forced to change due to crisis
and model breakdown. This happens through
a paradigm shift process with distinct
stages. Normal science is the stage where a field
or discipline has a scientifically based model of
understanding that works, and can properly guide
the field. Because Kuhn uses the word 'crisis' to
describe later stages, Feyerabend and
Popper accused Kuhn of wanting science
to always stay at the stage of normal
science and therefore of resisting
paradigm criticism and change. This is a blatant
misreading and misrepresentation of Kuhn. Kuhn
did not insist that science should not
progress beyond the non-problematic

stage of normal science. On the contrary, he revealed and lamented that scientists tend to insist that they are doing normal science, meaning that their model and paradigm has no holes or problems, long after the model has started to drift and fail.

His book "Structure" problematizes the fact that in practice, predominant science attempts to force a model to stay at the normal stage-meaning 'business as usual', despite mounting anomalies and contradictions that the model cannot adequately address. This is especially true in the field of cosmology.

As the esteemed philosopher of science Ian Hacking points out in his introductory essay to the 2012 edition of Kuhn's book, Big Bang cosmology is quote "...full of outstanding problems pursued as normal science." End quote.

This is the crux of the problem and this is why Kuhn's work is indispensable for any critical analysis of the present state of cosmology. For Kuhn, after 'normal science' the predominant model of understanding starts to drift due to the accumulation

of anomalies and phenomena that the model cannot explain. This is the 'model drift' stage. At this stage, rather than address the problems directly and re-examine their premises and assumptions, Kuhn found that scientists working within a predominant model, focus on patching the model up and attempting to manage the problem. This process of perpetual patchwork actually creates more problems and more contradictions, and eventually leads to crisis and model breakdown. This is where standard cosmology presently finds itself - at the stage of 'model crisis' and 'model breakdown'.

Contemporary cosmology is still in deep crisis and the awareness of this crisis is increasing every day. Mainstream cosmologists even openly use the word 'crisis' to describe their present reality.

And mainstream media is full of headlines that suggest that cosmology is in deep trouble. As physicist and science writer Eric Lerner points out, in 2019 there were 130 media references to the crisis in cosmology, which marks an exponential increase from the mid-2000s where there were only 12 references a year.

We first explored the crisis in 2021 and it has only gotten worse since then. In 2023, there have already been numerous expert panels and symposiums that discussed the growing crisis in cosmology and astrophysics. The crisis in cosmology centers around new information, measurements, and/or findings that undermine or contradict the major principles, assumptions and/or expectations of the Big Bang Theory in some way. These include, new information or measurements that suggest that the universe is not expanding as we thought or at all, known as the Hubble tension; that the universe is older or younger than the standard model claims; and that the universe is more or less homogenous than we thought. There are also numerous foundational predictions of the Big Bang Theory that have been contradicted by abundant observations, including various observations and accurate predictions made by Electric Universe proponents such as the late Wal Thornhill. The most recent problems have been sparked by even more contradictory measurements and observations that are

coming back every day from the James Webb Space Telescope. In a recent video Michio Kaku states that "The James Webb Telescope is upsetting the apple cart. All of a sudden, we realize that we may have to rewrite all of the textbooks about the beginning of the universe."

Kaku: "Well that's the problem, the James Webb Space Telescope is upsetting the apple cart. All of a sudden, we realize that we may have to rewrite all the textbooks about the beginning of the universe. Now, it takes many billions of years to create a galaxy, like the Milky Way galaxy with a hundred billion stars, many billions of years old. But the James Webb Telescope has identified six galaxies that exist half a billion years after the Big Bang that are up to 10 times bigger than the Milky Way galaxy. That shouldn't happen. There should not be primordial galaxies that are bigger than the Milky Way galaxy that are only half a billion years old. Something is wrong. We may have to revise our theory of the creation of the universe." In another recent video, Science Time 24 magazine reports that the

James Webb Telescope has discovered
six ancient galaxies that shatter our
understanding of the universe.

Beyond these individual contradictions
or discrepancies, the larger and
deeper crisis has to do with Standard
Cosmology's underlying narrative and its very
approach to cosmology in the first place.

As theoretical physicists Sabine Hossenfelder aptly
pointed out at a recent symposium entitled: 'What is wrong
with current physics', a good scientific
explanation should quote "...be as simple as
possible and you shouldn't add any
unnecessary assumptions, no matter how
much you need them to justify your hypothesis."

End quote. It's interesting to note that simplicity
is actually one of Thomas Kuhn's main criteria
for model revolution and paradigm change.

Hossenfelder maintains that the stories
and assumptions of current physics are
all quote "...creation myths written in the
language of mathematics." End quote.

She concludes that while we don't know
if Big Bang creationists are wrong, we
also cannot say that they are right,
because quote "...they just add this

unnecessary structure at a time where we don't have any data." End quote.

At the same symposium, Eric Lerner argued

that the Big Bang is a theory that quote

"...requires imaginary entities that are

made up after the fact." End quote. He

explains that without imaginary concepts

and entities like inflation, dark matter,

and dark energy, the theory basically collapses.

These concepts were introduced to quote

"...prevent or overcome severe conflicts

with observation." End quote. For instance,

as Lerner explains, without dark energy

under the Big Bang, the universe would be

younger than the Milky Way galaxy.

And without dark matter, the universe

wouldn't form any clusters or galaxies at all.

He maintains that quote "...you can't say

that you want a pure Big Bang without

all this fairy dust." End quote. Lerner

concludes that we should look to alternative theories

that rely on verified laboratory evidence and points

to his own work on plasma phenomena as an

example. In a very recent Symposium entitled

'Beyond the Darkness, Dark Matter,

a Baseless Hypothesis?' scientist and

professor John Joe McFadden points out
quote "...decades of searching have so far
revealed exactly zero dark matter
particles, and now some cosmologists are
starting to look for alternative models of the
universe that don't posit dark matter." End quote.

For Eric Lerner, the real crisis in
cosmology is that the Big Bang never
happened a sentiment that is echoed by
Electric Universe proponents. Whatever
alternative one chooses to explore,
it is becoming increasingly apparent that
current cosmology and astrophysics are
in deep trouble, or to use Kuhns language,
are presently at the 'crisis stage'. At the crisis stage,
scientists continue to attempt to patch up the model, but
also go beyond this, inventing convoluted
ad hoc revisions in an effort to deflect
or mask the mounting contradictions and
inconsistencies. Now, with respect to the
current crisis in standard cosmology,
scientists are doing this and so much
more. Many working within the Standard
Model actually double down and triple
down on the model's contradictions and inconsistencies,
and have even gone as far as to celebrate them and

characterize them as exciting

opportunities for future research.

One example is a claim made in a PBS space-time video entitled 'The New Crisis in Cosmology'. In this video, the host argues that, while contradictory measurements on how fast the universe is expanding, or the Hubble tension, are getting worse, this is actually exciting because the growing contradiction and crisis opens up new avenues for research.

One can imagine that if and when the James Webb Telescope brings back even more contradictory measurements and observation-let's say that the Big Bang happened much, much earlier than they originally thought-that Big Bang scientists will again move the goal posts, giving them enough patchwork to keep them busy and in business for generations to come.

This die-hard reluctance to question a failing model flies in the face of falsifiability which, as we recall, is the underlying ethic of science according to Karl Popper. The fact that science shuns falsifiability, which is supposed to be

its fundamental principle when it is most urgently needed, begs the question why?

Either science is not what Popper claims it to be, or there's something else at play, or both.

When viewed from a socio-cultural perspective, one begins to see power and hegemony at play and this is what Kuhn's work strongly implies. What begins to emerge at the crisis stage, is the idea that institutionalized and entrenched scientific models, and those working within them, tend to become more concerned with not relinquishing power and self-preservation than empirical observation and problem solving, or the pursuit of truth and new knowledge.

The main takeaway from Kuhn's work and from the present state of cosmology, is that entrenched, or institutionalized science does not do, or is not willing to do, what it claims to do-test the theories and hypotheses empirically and change course when needed.

If that is the case then can we still call it science?

Popper and others were infuriated by such findings and implications, not least because it tarnished the idealized and

noble image of science that had been espoused up until the publication of Kuhn's book. It is worth restating that Kuhn also held science to a higher standard, and he hoped for it to conduct itself empirically. Kuhn did not set out to tarnish the image of science. He was a trained physicist after all. But as any truly empirical scientist can attest to, scientists often end up with unexpected results once they enter the lab and conduct their experiments and analyses. In the case of Kuhn, his lab was history itself, and as a true empiricist, he was not willing to deny or skew his findings, no matter how unpleasant or inconvenient they may be to the status quo. And he suffered tremendously for his integrity. Since the publication of his groundbreaking book Kuhn has been attacked, both personally and professionally, for shining an unflattering light on the true nature of institutionalized science. For his opponents, one of Kuhn's biggest crimes was making conclusions in what they perceive as predictions about how

science operates based on history. In other words, they condemned him for being historical.

We should point out that historicism is defined as quote "...an approach to explaining the existence of phenomena, especially social and cultural practices (including ideas and beliefs), by studying their history, that is by studying the process by which they came about." End quote.

Now it seems strange, if not duplicitous, to condemn the author of a book on the history of science for using history in his analysis.

This criticism of Kuhn is in fact an Orwellian act that condemns historicism for philosophical reasons that date all the way back to philosophical disagreements from antiquity, when Kuhn is merely using history as a method. And it begs the question, why not just refute or attempt to disprove Kuhn's findings?

But rather than refute Kuhn's findings, his critics condemn him for arriving at them in the first place. In what appears to be an obvious case of 'shoot the messenger'. For instance, in his critique of Kuhn, American social philosopher and

hardcore proponent of transhumanism, Steve Fuller, accuses him of presenting an image of predominant or institutionalized science and science education that resembles a quote “mini-Vatican”, a “Royal Dynasty”, and even “the Mafia”, end quote. For opponents like Fuller, Kuhn is guilty of presenting a predominant paradigm as quote “...an irrefutable theory that becomes the basis for an irreversible policy” end quote. It is interesting to note that Kuhn's detractors never attempt to disprove this particular view of dominant science. They simply complain and condemn Kuhn for having the nerve to come to such a conclusion in the first place and for using historical analysis to get there. While Fuller and others may be outraged by Kuhn's depiction of institutional science, evidence of his findings is not hard to find, especially in cosmology. For instance, for an example of the circular and self-preserving nature of predominant science, one need only look at an article in Discover magazine entitled “Could the Big Bang be Wrong?”, author Corey S. Powell states that quote

"...we have a lot to learn about our place in nature's grand scheme. But we can be quite confident that, wherever future theories and discoveries take us, the Big Bang will be part of the picture." End quote.

Given Powell's statement, we can assume that the answer to the article's title "Could the Big Bang be Wrong?" is a resounding no.

The article more or less implies that there can be no advancement from the Big Bang to any alternative theory, since the Big Bang is the best one to ever exist.

Now, if this is not an example of an irrefutable theory that becomes the basis for an irreversible policy, then I don't know what is. Given the current state of institutionalized science and the current crisis in Standard Cosmology, I think it is fair to say that Kuhn's findings still hold and are presently more valid than ever.

Sorry Popper and Company, but if it looks, sounds and acts like a duck, then Kuhn must be right.

Kuhn's work is a paradigm shift in and of itself in so far as it radically changed the way we view and understand science. This is why it angered, and continues to

anger, so many mainstream scientists and philosophers. Its larger thesis is a commentary on how science is done and how we as humans carry it out.

Essentially, Kuhn's work reveals that, at the institutional level, science often ceases to be empirical and becomes unyielding, preventing its own progress.

Kuhn's paradigm shift cycle is presently unfolding right before our eyes. The current crisis in cosmology proves this and has vindicated Kuhn from beyond the grave. Mainstream cosmology even uses the word 'crisis' which is one of Kuhn's definitive stages to describe its present reality.

At the same time, Standard Cosmology has been unwilling to address the crisis in any meaningful way and is not open to new ideas or falsification. These are telltale signs of the unyielding dogmatic and self-preserving nature of institutionalized science. For this reason, Kuhn's work is even more relevant today and is indispensable for understanding the true nature of predominant science, and the present state of cosmology in particular.

One cannot ignore the similarities between Thornhill and Kuhn. Both of these great thinkers were unwaveringly

empirical in their search for truth, and
both dared to report their findings with
honesty and integrity, no matter how controversial
it made them. In light of Wal's passing, it is more
important than ever to highlight the implications of
Kuhn's work and what it reveals about the true nature of
predominant science, and allows us to appreciate just how
important, and how courageous, Wal's work and legacy are.

[Music]

When I concocted this title I kind of realized
that what makes the world go round but what's the
world? What I really meant is the Earth.

And that's something that we don't often
think about, the driving force that makes
the Earth rotate and in fact all of this
came from the book that David
mentioned, The Fourth Phase of Water.

I think some of you have heard the
presentations on the fourth phase of
water. We all know three phases of water,
we know solid, liquid and vapor.

The book presented evidence that
there's actually a fourth phase of water
and there are few properties of that
phase that actually gave rise to what I
want to talk about today. Let me just
begin by mentioning some of those
properties. The first one is that
when water, and you can see the water,
I think there is a, let's see..

So this is water that you see here and
next to the water is some kind of
hydrophilic surface and what we found is
that when water meets the hydrophilic
surface it builds this huge zone, this is

not one or two molecular layers, but up to millions of molecular layers of water that actually changes its properties amazingly. And we call this, because the properties are so different, we call it the fourth phase of water. And one of the features that it has is that it's got negative charge and the region beyond that has positive charge.

We call it the fourth phase and sometimes we call that the exclusion zone because we found that this zone excludes practically everything from it, just like ice. It moves out into the region of ordinary bulk water. So because this region is negatively charged and this region is positively charged you can actually put on electrode in here and electrode in here and extract current from it. So that's one of the interesting features of this. Another interesting feature is where the energy comes from, to build this zone of water and to separate the charge. It comes from light. This was rather a surprise to us but we found that if you

expose the water to light, what happens
is this exclusion zone, EZ, exclusion
zone, fourth phase of water builds and
the charges separate so we found it
really interesting that light, sunlight
for example, is the energy that drives
the buildup of this phase of water.

Now,
when you think about it, this has
led to a lot of thinking about the
consequences of this. And what are the
consequences that I'm going to be
talking about is the rotation of the
earth. I know it's impossible to think of
any linkage between what I showed you a
moment ago and the Earth's rotation but
I bet that a lot of people here don't
really think about what makes the earth
turn. Maybe you do, I'm not sure. Most
of my colleagues don't think about, oh
you know, it just turns it spins, right,
it started spinning from day one and it
just keeps spinning. But when you think about
it, you know, most things that spinned runned
down. There are energy losses and it just
doesn't keep going forever and when we

think of the Earth, you know, something may have set it spinning five billion years ago or something. You can imagine something spinning for maybe a few times or a few years or even a few hundred years but a thousand years, a million years, a billion years.. Can it really keep going on that initial energy? Is inertia enough to keep it going? So we started thinking about that, or I started thinking about that and so where I wanna get to toward the end of this talk, and I'll give you a punch line, is that I'm going to suggest to you that the wind, blowing over the earth, is actually what's responsible, at least hypothetically as speculation, for keeping the earth rotating. In that of course the question arises, well okay so I'm suggesting that the wind is responsible but what gives rise to the wind? That's another topic that I had bet not too many people have thought about and I'm going to be suggesting to you that the wind actually comes from charge gradients, lateral gradients of

charge- particularly positive charge in
the atmosphere. So that's where I'm going.

And the way I'm gonna do it, I'm gonna answer a
series of questions and the list is here.

First of all when we think of charges,
charges can exert force, repulsions and
attractions and I think most of us, maybe
with the exception of the people here in
this audience, don't really think of
charges as having really powerful
forces. We think you know, we touch
something, we get a shock and ok but we
don't think of really strong forces so
the first question is well

ok well, how strong are charged forces
if you got a plus and a plus near one
another. Is it weak, is it strong?

Next question. Where on earth do
charges, where on the earth
do charges hang out? OK and I want to talk about
the earth itself and the atmosphere and
the charges that we find there and the
next question which you could have
surmised is, are there really gradients of
charge that we can identify and and then,
can charge gradients really drive the

prevailing winds and if so, can the

prevailing winds spins the earth?

OK so first question, how powerful are

charged forces? Well one of the phenomena that got me started

is something shown by our previous

speaker Don Scott in one of his books

and and that is,

if you put a proton next to an

electron, let's say at a distance d between

them, there are actually 2 forces that you

can think of. The first one is the

obvious one which is the attraction- the

electrostatic force but also, since the

two have mass, there's a gravitational

force and the question is ok, which one

is stronger and by how much. I'm sure

most of you will of course guess that the

electrostatic force is larger than the

gravitational force but by how much?

So that's a question and

the answer turns out to be, ten to

the 38th. It's not trivial it's a huge

amount but I think most of us don't really

understand what ten to the 38 really

means. We can understand 10 times or a

hundred times or a million times but

ten to the 38th.. Ten to the 38th is something like this schematic shown here. If you take a proton on the upper left and consider that diameter of the proton, okay, and then consider another distance if you look at, next to the last panel there, you see the solar system and if you take the distance from the Sun to the edge of the solar system, take the ratio of that distance to the diameter of a proton, that's only a mere ten to the nineteenth. We need ten to the 38th!

So you know, we're talking about the ratio of the size of a proton to the distance between, between us and some distant galaxy. That's ten to the 38th.

To give you some idea about how strong the forces are, the electrostatic forces compared to gravitational forces. OK here's another example, you take two copper balls sitting on top of one another and you start removing electrons from each one of them. That of course leaves the two copper balls positively charged. And so the question is well,

how many electrons do you need to remove so that the top 1 levitates? OK and I dunno maybe you know the answer to that, it turns out the answer is, one in 10 to the seventh. In other words only one in ten million approximately, electrons need to be removed so that this ball, because of repulsion, starts levitating. A really small force. Another example. You take a light bulb, take one of the old fashioned hundred twenty watt light bulbs and you know the current goes through the filament, right, and if you could suppose you could capture electrons and capture, let's say, one seconds worth of electrons running through that filament. And suppose you could take that and compress it into just like a sort of a nucleus of positive charges, you compress it into a dot and you put one one of those dots down at the bottom resting on the ground and the other one one metre higher. And so question is, in order to prevent the levitation to keep it where it is, how much weight would you have to put on that? Anybody want to take a guess? Lots. OK, thank you!

The answer is 50,000 fully-loaded

garbage trucks!

I would have shown jumbo jets, 20 actually, there are

5,000 fully loaded seven forty sevens

but my son, the artist, couldn't draw

them. OK and here is finally not to belabor

the point but it's an important point,

consider this. Suppose you, you're lying

down and somebody is lying

suspended let's say 1 meter above you

okay, and you remove one percent of her

electrons, she's got a lot of electrons and

protons, you remove one percent of her

electrons and 1% of the electrons of the

person below, they're one metre apart and

of course both of them become positively

charged so instead of coming together

which they might like they're actually

coming apart and the same question, how

much weight would you need to put on top of

the upper person in order to prevent

the levitation?

A guess, lots! OK how much is lots? Right, the

Earth.

The weight of the Earth. And this is not

my calculation, you'll see it in

Feynman's lectures. He calculated it, I guess he knows how to calculate. So, in other words the point of these somewhat repetitious slides is that charge forces can be astonishing and if we don't take into account the force exerted by those charges we're missing something and probably we're missing something really important. OK so one question is well okay, so charged forces can be astonishing but to do that you need to separate, you need to have separated charges and the question is, can substances really bear net charge? OK and the answer I'm gonna say is yes, although chemist will generally say that no, they can't bear net charge because everything tends toward neutrality but here's an experiment from last week. Here's an electrolyzer and some of you may know this electrolyzer, it produces so-called health promoting water. If you drink, it separates the water into negatively charged and positively charged, but they don't tell

you it's negatively or positively charged. It's high pH or low pH and if you would have drink a low pH water you'd spit it out because it's awful, kills bacteria. But if you drink the high pH water, pH 10.5, 11.5, something like that, it tastes delicious and there is a lot of evidence that it actually is, is good for your health. And you find in Japan for example, this kind of water is, if you have any kind of gastrointestinal problem you go into a clinic and I am told by my colleague in Japan that first thing they do is they put you on this alkaline water and the government pays for it. So it's got something. Anyway this has nothing to do with the health benefits of this water but you can take the water and you can as you see on the left side, you can fill a couple of beakers with it and what we did is, we took a simple voltmeter and we put one probe in the high pH and one probe in the low pH and voila! Half a volt between those and a half of volt sustained easily

for an hour. That's as far as we we went. So yes, you can have sustained charge in vessels of something.

This is water. Here's another example.

This one is kind of cool if you if you've seen it, this is.. well you start start with some beaker of water sitting on the top and so here is the.. so you start with the water and then what happens is that the water goes in, divides into two columns and the water drips into both, it passes through this ring and it passes through this ring, by the way this is called the Kelvin water dropper experiment done by Lord Kelvin, okay. And the drips go through these and these collect in this container and these collect in this container and what happens is that, well you know, they they drop into there and after a while the charge seems to build up in some way and and then you get a zap you get a discharge between those two electrodes. It's audible, you can see it, it's really astonishing and if you look, I mean, and even before the zap, if you stop the flow, these two

containers will sustain charges and one's got negative and one's got positive and these charges can be amazing if you look at the drops falling into the beaker after a lot of water has got, not enough to discharge but quite a bit and it looks like this. So at the bottom is the cup and you can see these traces, these traces are actually falling droplets of water, they should fall into the cup but the cup has so much charge and the following droplet is the same charge that they get repelled, you can see these traces going upward.

So it means that the charge forces can easily defy gravity. So we're talking about really strong forces. Now the point is, substances can bear charge and charge forces can be huge. So I've answered the first question- how powerful are charged forces and the answer is much more than most of us think, extreme!

Next question is ok, where on the earth do charges hang out? And it's known, it's well known that there is an electric field. I remember when I was told that

there is, and I come from a different field I don't know what most of you people have known since childhood and a Russian colleague of mine who was working in my laboratory one day just happens to ask me if I knew anything about the earth's electric field and I said, what are you talking about, you mean magnetic field? No, electric field and he said, you don't know about it? And it was kind of amazing, he said he grew up in Russia, of contemporary age and he said, every middle school student knew about the electric field of the earth and and and the negative charge on the face of the earth and I guess in this country we we don't learn that or at least these we didn't learn that. But anyway it's well known, in the text books, especially the text books from fifty to hundred years ago, the electric field is about a hundred volts per meter at the surface of the earth and there must be therefore some negative charge on the earth and positive charge somewhere up there. So essentially

the point is that the earth somehow bears negative charge and again back to the health issue, some of you may know that it's now advocated by people in alternative health or any kind of health to just walk barefoot on the beach.

If you walk barefoot on the beach you're basically soaking up the electric charge, negative electric charge from the earth and you need that charge, the body needs negative electric charge to thrive.

That's a different issue, I don't wanna go into it. So it's called earthing or grounding, depending on where you come from and in, in Japan and some of the other Asian countries mud baths are pretty common and mud baths are said to have healing properties and and I think the the reason for this has to do with connecting to the negative earth. OK, so question is now where does this negative charge come from? The standard interpretation, again if you read Feynman's lectures, volume 2 chapter 9, lightning. This is commonly thought to

give rise to the negative charge on the earth. We don't get that much lightning at least in Seattle, maybe here in Phoenix there there's more but around the earth there are huge numbers of discharges and so it's possible that the lightning comb strikes the earth, brings negative charge and the earth can't rid itself of that negative charge rapidly enough and therefore it accumulates a negative, net negative charge. That's one idea. Another idea is that it may come from the Earth's water and this, as you can see, came from the work that we had done to produce the book that I mention. If you have EZ water down, the earth is of course filled with water and if much of that is the fourth phase or EZ water, it bears negative charge, you see. That could be another source of this negative charge and interestingly the Sun builds this EZ and negative charge so, so we have some sort of relationship with with the Sun. Essentially we have the Sun beating on the earth and

we have negative charge that, that builds and if the Earth is highly conductive, as many investigators think, then these charges would be all around and fill the subsurface of the earth with net negative charge. So ok, there's the negative charge and you might say well, where do the corresponding positive charges lodge? They're initially together with water but many of these protons evaporate into the air, so we have a negative and the positive. And the positive ones, along with negatives which actually form clouds, the positive ones are rising up into the air and as they rise up into the air we have a situation that looks like this. The earth is negative and then you have positive charges that begin rising up as you see here. Close to the earth there's a high concentration of positive charges because those charges are attracted to the negativity of the earth but as you get higher up, the protons, or hydroium ions, tend to repel one another and they rise vertically and

begin to spread out. You have positive charges in the atmosphere and negative charges on the Earth. If you think about that plus and minus, you have situation like this and you know, basic electrostatics tells you that the positive charges are clinging to the negative charges and so the atmosphere clings to the Earth and question that arises well, you know, if the atmosphere clings to the earth it exerts pressure on the earth, does this explain atmospheric pressure? The prevailing pressure mechanism is fraught with several paradoxes. You know, we think of pressure arising from the weight of the air, you know, so the weight of the air is pressing down on us and if you are on top of Mount Everest there's less air and it's pressing less on you.. But if you think about that, if you think about, we have a gas up there and question is, well we define a gas as, you have molecules and they don't stick together, they actually bounce around and hardly interact with one another and so. If they don't interact

except very rarely then is it, can we easily
imagine how they press on the earth? Or why,
when you are higher up you have less pressure?
It's possible but it, kind of, when you think
about it, those isolated air molecules
not clinging to the earth the way I
suggested to you by just sort of hanging
out there, it leads to the spectacle of
you know, there's a lot of winds up there and why
doesn't the atmosphere just blow away?
Don't know if you ever thought about
that. Okay here's another paradox about
the atmosphere and the way we think
about the atmosphere and we are ignoring
the positive charges that I told you
about. Well you know, the atmosphere is a
mixture of gases, it's not just nitrogen
and oxygen, a whole bunch of other other
gases. So among them argon is about 1
percent, it's actually quite a lot of
argon that we have in the air and CO_2 of
course causing apparently, maybe if you,
depending on your belief system, a lot of
problems. Now but argon is the densest of all
and so if argon is the densest of all
you think after all these years that you

might have a situation like this. So you know, if density really matters we're fraught with a serious problem.

OK, so we got positive charges in the atmosphere and negative charges on the earth and so it's possible I think, that atmospheric pressure may arise from the positive charges attracting to the negative earth and pressing down. Quite, quite simple.

OK, where do these charges hang out in the earth and in the atmosphere. Next question, do you, are there are substantial charge gradients, differences of charge that we can imagine? And the answer I suggest you is yes, they're both vertical gradients and lateral gradients, the lateral ones being the ones going to be focused on at the moment but the first is, you know, I mentioned to you that the protons diminish with increasing altitude. That's, that's shown on the two panels there now, suppose you put a test charge, the red one, down near the surface of the earth, a lot of positive charges there. And you'll

detect the high electric field and if you put the test charge higher up, there are fewer positive charges there and the electric field will diminish. So, the field strength diminishes with increasing altitude and that's well known. Well reported, this is nothing controversial. The field strength also increases with sunshine. This is the interesting part that maybe some people are unaware but there is enough evidence for this, so if the positive charges are caused by evaporation from the Earth's water then nighttime there's not much evaporation. The charges should be fairly low in altitude and during the daytime when you have ample sunshine creating evaporation, those positive charges should rise way up, right. So there should be a big difference between daytime and nighttime and so therefore the electric field, which depends on all that charge, should vary with the time of day. So if you have for example in the middle of the day you are to see a lot of electric field

when you're measuring up, well up above the earth
and at night time it wanes so it
waxes and wanes. And the evidence for that
is right here. So this is a plot, a
bit complicated but on the apscise you
have time and if you look right in the
middle at twelve o'clock that's noontime
GMT that would be Greenwich ok, in
England, and the electric field that was
measured, up in the air.

Look at the oscilation, so first look at
the middle one, Africa and Europe and you
can see that the peak occurs roughly 2-3
p.m. around around Europe, just when the
Sun is kind of, has been around for a
while high in the sky, maximum
evaporation, all those positive charges
high so you can see that the electric
field there is very high. Now look to the
right and you can see the US- that
occurs six or so hours later during our
afternoon so you can see that during,
it doesn't matter where
you are,
during the nighttime the electric field
is low and during the daytime it's high.

And look at the differences between them,
look at the Americas- the blue one. You can
see that during the daytime the electric
field is ten times, ten times higher than
it is at night, it's a huge difference that,
I think, many people are unaware of.

So there's a great big difference
between day and night and you can see
that there is a gradient, when night
meets day there's a gradient,
and also on the other side, the upper
right of the figure there's another
gradient, there is a morning gradient and
there is an evening gradient. Big, huge
lateral gradient of positive charge. So
do substantial charge gradients exist?

Both vertically and horizontally. OK now,
can those charge gradients drive the
prevailing wind? So think about it.

Seattle, on the left you know, we're
snoozing and snoring and, you know, we
haven't really gotten there yet and New
York is beginning to be bathed in
sunshine and if it's bathed in sunshine
those positive charges are rising up
into the atmosphere. But at night time

there are very few of those, so there's a lateral gradient, those charges repel one another, they want to get away from one another, where do they go? Well they're gonna go to the left in this and if the charges are moving, the charges are at least dragging the air with them because these charges are either protons or more likely hydronium ions and they're either dragging the air or they may be attached to the air, bound for example to electronegative oxygens or nitrogens. So the air is going to move also and if the air moves basically we have wind. So I believe that charge gradients can create wind, especially the large gradients with powerful forces that we're talking about. So there's the morning boundary and the evening boundary and I think those give rise to something interesting and characteristic. Here's the morning boundary ok again, New York has received its sunshine and Seattle, with the space near, is still dark and we have this charge gradient, charges in the morning, the charges are

beginning to rise up and there's going to be a wind that goes across that gradient toward Seattle. OK now, it's also, this is also shown on the next slide. Now sorry, this one's a little complicated too so let me explain. So, this is the surface of the earth spread out so we have night time in the center and we have morning on the right side and evening on the left side. Now start on the right side and morning and remember that's just what I was talking about the wind is blowing from the east toward the west and it's not a strong wind because the charges on the right side are just beginning to rise up, there are not so many and it causes a wind, you might call it the morning wind and the wind blows from east to west and that's known as the trade wind. Trade wind blows gently that's what got Columbus to the, to the New World.

Now look at the other side, look at, this is, the left side is the evening, ok, and by the evening, mid-afternoon, late afternoon the charges are way up

high and the gradient is in the opposite direction,
it blows from late afternoon toward the evening so it blows from west to east and anybody who's flown knows that there is a wind that blows continuously up high, it's called the jet stream that flows from west to east and it's pretty strong, a hundred, 200 miles per hour so if you fly to New York it's quicker than if you fly from New York to Seattle or Los Angeles. So, I think we can understand, this high wind is going to be stronger, this high westerly wind is gonna be stronger than the low easterly wind because there are many many more charges by late afternoon, by mid-afternoon to late afternoon. So I think those two gradients, from morning, the morning gradient and the evening gradient could perhaps adequately explain why we have trade winds and jetstream.

Question was, can charge gradients drive the prevailing wind and I've shown you some evidence suggesting that maybe that

could be the case. OK now, can the prevailing wind spin the Earth?

Well if you think about it you really don't need a whole lot to, you have a wind that's blowing at 100 or a two hundred miles an hour, actually you know the earth is spinning itself right, it's spinning at, sorry what is it roughly, I think 1,200 miles miles per hour compared to the reference frame of the cosmos and the wind is going, the jet stream is going a hundred or two hundred miles per hour faster. So it's like the jet stream is blowing and it could be blowing the earth and the earth can't quite keep up so it's a little bit slower and that's why we have a jetstream relative to the earth that's a hundred or two hundred miles per hour faster. So I think it's possible that, we don't need this tall piece, this is obviously just illustrative but all you need is a gradient and something rubbing on the earth or rubbing on some protrusions. The advantage of this kind of wind mechanism is that so, the

rotation of the earth now no longer depends on the inertia. As I said, maybe you think differently but it's difficult for me to imagine that inertia could keep us going for 5 billion years. It's a, it's a lot of time. And also the sun's energy is the ultimate driver because remember, the sun's energy is what splits the charge in the water which gives rise to the positive charge and so it all comes back to the energy from the Sun and so the conclusion from this is that the reason the Sun, the reason the Earth keeps spinning is, it gets energy from the Sun to make it spin. It just doesn't do it. It's known that the rotation speed of the earth is not constant. It fluctuates even by the day. If the earth turned by inertia, there shouldn't be fluctuations. There are fluctuations and so this can explain it. So the question is, can the prevailing winds spin the earth and I think the answer is possibly, perhaps that could be. Finally the last few slides as a sort of extra. So I'm suggesting to you

that there's charge flow around the earth, right. Charge flow, wind and I want to touch on magnetic fields because charge flow, current, magnetic fields, they're kind of tied together and with those charges constantly, like jet stream, constantly flowing around the Earth, basically, oops sorry, basically we have a current that's flowing around the earth. So think of a current now flowing around the Earth from west to east and think about what we know from basic electrostatics and dynamics- if we have a current flow going this way we have a magnetic field using the right hand rule as shown here. Now think about applying this rule to the Earth. So, the horizontal arrows- that's the wind, that's the jet stream that blows constantly around the earth, it's a current, the current is flowing around the earth and if you have a current flowing that way then those thicker lines show the magnetic field. So it's possible that you can actually get magnetic field occurring just from those

charged gradients creating current that flows around the earth. So it's possible, I mean we like to think that the Earth's magnetic field comes somewhere from the core of the earth but you know, nobody's ever been there to make that measurement and it's kind of odd that, you know, you got a magnet sitting there but the angle of the magnet keeps changing, which it does, sometimes even flips.. That's that's not, so I mean we're really not sure that the magnetic field arises from the core of the earth and I'm suggesting to you that it's possible that the Earth's magnetic field arises externally and not internally. So, I draw some conclusions and I don't really mean that they're conclusions, I mean they are speculations. I've shown you very little evidence, I have shown you just a few ideas that have stemmed largely from the book that I've produced and the ideas that went into it and a bit of evidence but mostly just logical sequences. The first, the first one is not a, is well known and we all should know

that charges can exert enormous forces.

Sometimes we attribute phenomena to

gravitational forces, for example

settling in a beaker of water with some

particles, we think of gravitation but

that beaker of water contains enormous

numbers of charges. The charge forces

outweigh the gravitational forces

enormously, remember ten to the 38th. The

earth bears negative charge, again,

there's a lot of evidence for that,

evidence starting more than a

hundred years ago and continuing, it's

just that, it's not really well known. The

atmospheric scientists know that the

atmosphere is full of positive charge.

Oddly it doesn't seem to me, I've

never seen anybody make the suggestion

that plus attracts minus, that atmosphere

attracts earth. It seems almost a

no-brainer,

one has to calculate how much force but

seems like a really simple and easy

interpretation of atmospheric pressure

that the atmosphere clings to the earth

because plus and minus attract. It's the sun's

energy that builds that atmospheric positivity through evaporation. At night there's not much evaporation, not much atmospheric positivity and because of the regions between sunshine and darkness you have lateral charge gradients and remember how strong the force of those charges can be and so that inevitably drives winds and winds create friction and the question is whether that friction is sufficient to create the earth's, and keep it, spinning and giving us day and night. And it's possible that those charges may actually create the Earth's magnetic field. So I guess I would like to conclude with the fact that the universe or at least the Earth around us is indeed Electric as I know many of the people here would like to think and also the point is that, you know, alternative theories can sometimes make sense and I, I am with one example of an alternative theory, this, this is an alternative theory for global warming and the rise of the sea suggesting

alternative mechanism and thank you for
listening!

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

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

Our world was once a
vastly different place.

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

Sekhmet: The Ranging Eye of Ra

Throughout this video series we've claimed
that the origins of world mythology,
ancient symbolism
and magical rites
lie in human memories of
extraordinary natural events.

It was from the emerging
commemorative practices
that the ancient civilizations
themselves arose.

And so we've repeatedly emphasized
that the reconstruction offered here
is far too specific to allow us to make
up stories or to make up explanations.

The evidence will either
be there in unique detail
that the reconstruction demands

or it will not be there.

Our explanation lies in a congregation
of planets gathered close to the earth
long before the rise of
observational astronomy.

And that means before any of these
bodies were even named as planets.

We've called this celestial
formation The Polar Configuration
and we've identified many of its varying
forms as electric discharge activity
between these bodies.

Extraordinary events in the sky provoked
an explosion of human imagination,
now discoverable as story content
within every ancient culture.

In the course of these presentations it
should also become clear that no archetype,
no global theme could ever be explained
by natural events in our own time.

Things occurring today provide
no referent whatsoever.

The impact of this human experience requires
that we follow the instincts of a detective,
noting things too
consistently out of place.

And we must never forget that
the more unusual the detail,
the more compelling is the
improbable convergence of testimony.
Our claim is that the link
of the mythic archetypes
to the evolution of the
polar configuration
requires that we uncover the concrete
reference beneath the imaginative symbols.

Amongst the cross-cultural
points of agreement
is the repeated identity of the
mother goddess as the planet Venus.

This identity is not
just worth following,
it is a window to a
mind-altering human experience,
a story that reverberated through
history for thousands of years.

The paradoxical identity of the
mother goddess with life itself,
her role as the great protectress,
but also as a world destroyer,
can only be explained at the level of
concrete origins beneath that symbolism.

The discharge streamers of Venus and
effusion of mythic power and glory
were the animating
life of heaven

seen in mythic terms as the luminous
heart and soul of the universal power
we've identified as Saturn.

But the connection runs in two directions
since the discharging sphere of Venus
was also interpreted as the protective
shield of the warrior God, named as Mars,
who occupied the impenetrable spot as if
protected from the sky darkening clouds
or celestial armies of chaos.

When the heavens fell into disorder, the
sky itself became a mythic battlefield.

Swarms of debris, seen as rebelling
hordes, appeared to overtake the world.

It was in this context that the most active
and spectacular form of the goddess emerged,
affecting every ancient culture's ideas about the
meaning of war, conquest and magical defense.

Star of chaos:

California rock art

But was the goddess a divine weapon
launched against rebelling powers

or was she herself the provocation,
the feared destroyer of cosmic order?
Human imagination would stand
in competition for millennia
but more fundamental than the
interpretation was the underlying event
and our purpose here is to see the events
through the lens of global patterns.

Ironically, it is the
competing interpretations
that confirm both the patterns and
the events that provoked them.

Confirmation comes wherever,
without the underlying event,
the global patterns would not be
conceivable, not even be possible.

Egypt: "The Destruction
of Mankind"

In the presence of the goddess' visible
power, enemies were scattered.

Dark clouds of chaos gave way
to a blast of fire and light.

The rebelling hordes of heaven
fled from its onslaught.

One of the most dramatic illustrations
of this archetypal theme

is the Egyptian legend called

The Destruction of Mankind.

The myth says that the

primeval sun god Ra

had grown aged and perhaps

a bit weary of humanity.

It recounts how, in that remote

time, the children of Ra

had rebelled against the god.

In response to the rebellion,

Ra sent out his powerful eye

to take vengeance on a

disrespectful world.

The agent of the conflagration that

followed was the goddess Sekhmet.

Not just a goddess, Sekhmet

was the far-famed eye of Ra,

the Utchat, the giver of life

and the great protectress,

the very heart and soul of

the primeval sun himself.

Egypt: The Eye of Ra (Utchat)

as the goddess Sekhmet

Enigmatically, Sekhmet also possessed

both a leonine and a serpentine form,

a remarkable parallel to the

Sumerian Venus goddess Inanna,
who displayed the same forms in her
role as the terrifying radiance
in the center of the god An, the
overarching ruler of the sky.

This is no coincidence,
these mythic forms reveal no
relationship whatsoever to today's sky
but they are not
accidental, not random
and they direct our attention to
the archetype of the great comet,
the human experience from which the
female comet archetype descended.

The comet as the eye, heart
and soul of a great king.

Comet as a star with disordered
hair or leonine mane.

Comet as a cosmic serpent
and the comet as a sign or an
agent of world destruction.

And so we find a remarkable
juxtaposition of comet attributes
in the titles of the
Egyptian goddess Sekhmet,
called the Beautiful Eye

of the primeval sun.

She was the Great Flame or Flaming

One, the Destroyer by Fire,

the Destroyer of Rebellions,

the Ruler of Serpents

and the Ruler of Lions.

Strangely, all of the well documented

goddesses in Egypt were like Sekhmet,

called the eye of Ra,

suggesting an underlying identity entirely

outside natural experience today.

And no goddess figure

in ancient Egypt

tells this story of the sun god's

eye more vividly than Sekhmet

whose very name derives

from the root Khem

signifying a blast of glory or majesty, the

essential character of the eye-goddess.

Sekhmet entered the conflagration

displaying a trail of fire.

The texts say, "Behold

me, men and gods!

I have come into being as the

Lady of Glorious Appearings....

my flame is behind me.

It is a flame which drives

away on its account.

The tip of its flame crosses

the land from the sky...:

No one at all can approach her, the

streams behind her are flames of fire."

In fact, the Egyptian traditions

constitute a remarkable parallel

to Sumerian descriptions of a

world in fear and trembling

at the tempestuous radiance of

Inanna, identified as Venus.

Sumerian Inanna (Venus) with her

foot on her alter ego, the lion

Precisely the same way, Sekhmet appeared

as a flame of fire in her tempest,

instilling terror on Earth and

threatening to destroy the world.

"I am mistress of the flame",

the goddess announces,...

"The fear of me is in their hearts and

the awe of me is in their hearts.

The flame makes

his enemies fall.

It is a flame moving before the wind

of the sky to the end of the earth."

Surely it is no coincidence
that the great flame in heaven,
taking the form of
a fiery serpent,
found its symbolic place on
the crown of kings in Egypt,
exactly as we've seen
in ancient Mesopotamia.

It was the headgear of the king
that reflected the protective role
of the explosive majesty
most dramatically.

In later times, when Egyptian
armies confronted foreign nations,
these peoples were seen as
barbarians outside the gate,
they were the terrestrial counterparts
of the primeval chaos themes
and so the king invariably called
upon the shining majesty of Ra,
remembering how the eye-
goddess, in her rage,
had destroyed rebelling powers
in the sky in former times.

In considering this theme, the critical
steps will require comparative analysis

of an incontrovertible

historical pattern.

The ancient story of the goddess

says the explosive glory of heaven

was the story of

the great comet.

In this experience we find the

origins of the astronomical language

and symbolism of comets around the

world, there is no other explanation.

And so too, the attributes

of the celestial glory

are the defining attributes of the

planet Venus as mother goddess.

And as we continue our series,

this truth can be verified

in the astronomical lexicon of every

well-documented culture in ancient times.

In their essential details, the

global story of the great comet

is the story of

the planet Venus.

Always look for the

underlying form!

Could it really be that we live in an Electric Universe? That claim challenges some of the most popular and long held ideas in the sciences and it's provoked a lot of banter amongst journalists and internet bloggers. As public interest grows, so do the reflexes on behalf of more traditional, more acceptable ideas. Earlier this year, we invited the popular skeptic Michael Shermer to our EU2015 Conference Paths of Discovery. The event was held in Phoenix, Arizona in late June. Shermer spoke at the event and participated in a panel discussion on the ground rules for evaluating extraordinary challenges to long held theoretical assumptions. We envisioned the adventure as a cautious experiment - is it possible to communicate, even if imperfectly, across a gap that has never been bridged since the birth of the Electric Universe movement some 15-20 years ago? I participated on the panel as well, along with Dr. Gary Schwartz of the University of Arizona and Wal Thornhill, chief science

adviser to the Thunderbolts Project.

Expectations were mixed. In fact, we received some advanced criticism for inviting Shermer, "letting the fox into the hen-house" as some put it. Others said it was our best strategic move ever, but that response came largely from those who saw the event.

You can see it for yourself through the link provided below. About 3 months after the event, as we had expected, Shermer's response appeared in Scientific American.

Shermer's opening words set up his premise: that the electrical theorists argue against science that is already settled.

Newton was wrong.

Einstein was wrong.

Black holes do not exist.

The Big Bang never happened. Dark energy and dark matter are unsubstantiated conjectures.

Stars are electrically charged plasma masses.

Venus was once a comet.

The massive Valles Marineris canyon on Mars was carved out in a few minutes by a giant electric arc sweeping across the red planet. The 'thunderbolt'

icons found in ancient art and petroglyphs are not the iconography of imagined gods but realistic representation of spectacular electrical activity in space. These are just a few of the things I learned at the Electric Universe conference EU2015. With these words Shermer opened the door to a highly dismissive review of the Electric Universe themes all written with no personal awareness of the subject matter. It seems that dismissive quips come quite easily when one is fending-off challenges to a belief system - just remind your congregation of things they already know, the challenges can then become a subject of ridicule, no actual science needed. For many years, the EU community has warned about the dangers of self-perpetuating dogma. Yes, modern technological advances are impressive but it seems that theoretical foundations are frozen at levels prior to the Space Age. Add the growing centralization of funding and the cost of institutionalized but mistaken ideas

could be catastrophic. As one can see in Shermer's review, he has little or no concerns of this sort. All is well within the sciences! This state of good health, he assures us, is confirmed by thousands of scientists sharing in an underlying consensus, the big questions such as relativity, and the Big Bang, and of course, many others are reliably settled. A much different understanding drives the Electric Universe movement. Electrical theorists have paid close attention to the roles of electric fields, electric currents and high energy electric discharge in space plasma. Plasma is the medium of charged particles that fill the vacuum of space. Space is not empty and the sciences cannot afford to ignore the sea of plasma across the cosmos. That's why the experts in our group have raised an alarm. They recognize that leading institutions responsible for guiding the vision management and funding of research may well have wasted hundreds of billions of dollars asking the wrong questions. In his response, Shermer reverses the role

of skepticism - he assumes the mantle of a true believer - one who already knows, the guide for the faithful is already in hand and shared by thousands of trusting followers. Read his response for yourself and you'll see exactly what this means.

The Electric Universe movement is inspired by interdisciplinary research, from new data delivered by the space program to volumes of historical evidence. Anyone who wants to know can compare Shermer's review to the actual situation. The EU movement throws a spotlight on a steady stream of new facts that have caught standard theorist by surprise. In one instance after another, the great surprises of the space age are the inherent predictions of the Electric Universe. Simply follow the surprises and the picture of space changes as surely as night and day. In Shermer's published dismissal of the Electric Universe, his treatment of mathematician Stephen Crothers was perhaps the lowest of low points - just dismissive with no science. Crothers is recognized as

amongst the most capable critics of
relativity theory and his criticism can,
indeed, send orthodox theorists into a frenzy.

But Shermer's own words are telling. First,
he acknowledges that he wasn't up to
understanding Crothers, but then he adds
a priceless confession. He writes, "I am
confident he's wrong by the fact that
for a century thousands of physicists
have challenged Einstein, and still he
stands as Time's Person of the Century".

It's a bit astonishing to see someone cite a
celebrity rating as an argument in
Scientific American. For an exclamation
point on this curiosity, viewers need
only consider Shermer's comment in the
light of Crothers actual conference
presentation. (which you can access through the
link given below)

Shermer's Scientific American article
merely stacks some EU claims on top of
each other without any reference to
substantiating data, so it's only
appropriate here to review the scale of
erroneous perception that follows.

EU proponents do not claim that Newton was

wrong, but for good reason, the electrical view emphasizes that gravity alone could never complete our understanding of celestial mechanics. There's no problem with gravity until or unless a gravity centric dogma takes over allowing theorists to overlook the effective charge and charged particle movement at cosmic scales. Across the vastness of space, even the most minuscule and immeasurable electric field, at any particular place, can add up to a stupendous potential across the volume of interplanetary, interstellar and intergalactic distances. In fact, Newtonian explanations fall short all the time. And we provided hundreds of examples based on original research and published contributions from the world's leading experts on space plasma. Plasma is defined by the presence of charged particles, even in an immeasurably weak electric field, charged particles easily override Newtonian gravity. In fact, we're all living in the presence of charged particles exploding from the Sun. These

particles care very little about gravity and continue to accelerate across the vacuum of interplanetary space before crashing into the Earth's magnetosphere to provoke the auroras.

For decades, we overlooked the evidence of this until the 1970's when instruments in space confirmed an electrical connection of the Earth and Sun, first stated by the experimentalist Kristian Birkeland, almost a hundred years ago. Yes, we live in a rather quiet corner of the universe today, though it's not always been this way, and gravity is not the only force doing real work across the cosmos.

Earth's auroras pale by comparison with the higher energy events we see in space.

Explosive events and exotic electrical structures in space mean that gravity does not singularly dominate the macrocosm. The phrase Electric Universe comes from observations of electrical phenomena, in both the laboratory and across the vacuum of space. The work of Nobel laureates and other pioneers of plasma science has for too long been

kept in the back room. The highest energy events in the cosmos exhibit every predictable signature of electrical events, including synchrotron radiation pointing to the highest energy plasma instabilities, it's signature showing up across the entire electromagnetic spectrum.

Well before it's confirmation synchrotron radiation from the cores and along the polar axis of galaxies, was predicted by the father of modern plasma science Nobel laureate, Hannes Alfvén.

Yes, the stars and our Sun, in particular, offer excellent tests of the electrical perspective.

Well before our space probes and advanced telescopes began to more deeply explore the mysteries of the Sun, astronomers had already settled on the idea of a thermonuclear core driving solar activity. But almost immediately, a mystery arose as our satellites in space probes detected a continuing acceleration of charged particles away from the Sun across interplanetary space.

How does it happen that the great

attractor, holding planets in their orbits, cannot hold onto charged particles as they race away from the Sun, continuing to accelerate up to speeds of millions of miles per hour. This is not a question to be downplayed and much less to be ignored.

So, the EU researchers offered a science-based possibility never considered in 60 years of solar physics - the acceleration of the solar wind is the confirmation of the Sun's electric field. Electric fields accelerate charged particles.

This is a well-known fact, not something to be denied or ignored. This confirmed electric field exposes one of the greatest challenges facing modern astronomy and cosmology - literally the collapse of the longstanding official dogma. The central tenet of the dogma has been the imagined cosmic pre-eminence of gravity alone across electrically neutral space. That dogma left the Sun as an isolated island where all of it's dynamic activity

could only be explained by events occurring inside the island. That means no causative link between it's primary features and it's larger environment - no external electrical influence on the Sun at all, just the trivial gravitational effects exerted on the massive body of the Sun by the remote circling planets.

The archaic, but worldwide idea that the planet Venus formerly appeared as a comet is fully documented and will forever remain a mystery, until that global tradition is given the attention it deserves. In every major culture, the regional language of a comet is the regional language of Venus and there's just no escaping the implications. When cultures the world over give the same details in different languages, and different symbols, it's just not rational to ignore the converging testimony. The story of the comet Venus has a long history tracing back to ancient Egyptian and Mesopotamian sources. The theme continuing through Greek and Roman times,

into the medieval period. As the Egyptian goddess Sekhmet, Venus was the great flame instilling overwhelming terror.

As the Sumerian goddess, Inanna, she was the Great Dragon raining fire down upon the land. For the Greeks, Venus was Aphrodite Comaetho. In the language of classical astronomy, the words mean "the long-haired Venus", the comet Venus, the goddess's cometary train seen mythically as a horde of wild beasts.

And even in Galileo's time, it is known that popular traditions retained the idea that Venus was a comet. The most striking fact is that the same mystery occurs in Meso-America, where the planet Venus wears the symbolic dress of the comet - the smoking star, a flaming ember envisioned as a luminous soul rising in the sky. The language and symbolism of Venus is the language and symbolism of the comet.

It's ironic that Shermer's litany of EU themes culminates with two statements about the cosmic thunderbolt, perhaps the greatest of all ancient mysteries left untouched by modern investigations. What

was the earth shaking heaven altering
weapon of the ancient gods?

While the theme is far too broad for adequate
coverage here, the subject must be considered by anyone
hoping to make sense of things that were
once remembered around the world.

The cosmic Thunderbolt never looks like
lightning, and yet, it's recorded forms
are remarkably similar to high energy
electric discharge configurations in
laboratory vacuum chambers, with
surprising parallels to formations seen
in space, as well. Until this cross
cultural memory is fully comprehended,
astronomers and planetary scientists will
labor under the spell of a profound
misunderstanding, assuming that planets
have moved on their present courses for
billions of years. For those ready to
hear the ancient witnesses, the cosmic
thunderbolt will explain what has been
left unexplained across the centuries.

For the Electric Universe community, this
remarkable weapon of ancient gods
provides a critical interdisciplinary
bridge that connects the space sciences

to a deeper understanding of the human past. Multiple phenomena speaking to us in a hundred different ways, all perplexing, but only until we see the electric force at work.

Ignore that force and you are left with a fragmented universe, each fragment calling for a different explanation - dark matter and dark energy, black holes and neutron stars, hidden thermonuclear furnaces and much more. In remote space, impossible galactic jets held in place across a hundred thousand light years and more ...

Closer to home, intensely energized planetary nebulae revealing exotic structure beyond any reasonable gravitational explanation. And in our own cosmic neighborhood, countless mysteries of comets; their forms make no sense, they often explode for no acceptable reason, and their nuclei do not exhibit the water that theories require. And also nearby, in overwhelming abundance, the pervasive scars on planets and moons boldly defying theoretical attempts at explanations. At our website,

thunderbolts.info you'll discover
large libraries of evidence reconnecting
observed phenomena to their electrical
cause. Consider this research and you'll
discover for yourself that we do, indeed,
live in an Electric Universe.

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

The following presentation is an adaptation
of the Picture of the Day article
'What is light?' by
author Mel Acheson.

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

When you're in a boat, you see waves
of water lap against the hull.

If you could tie a flag
to a molecule of water,
you could see that
molecule move up and down.

When you're at a concert, you hear
waves of sound press against your ear.

If you could tie a flag
to a molecule of air,
you could see that molecule
move back and forth.

When you tune your radio
to your favorite station,
you set its sensory organ-the

antenna and tuning circuit-
to respond to waves of
electromagnetic potential.

The water or air molecule moves.

You can measure its spatial
displacement as it varies with time,
and you can plot those
measurements on a graph
with displacement along one
axis and time along the other.

The result is a sinusoidal curve that
resembles the form of the water's surface
which we call a wave.

Hence we speak of water waves,
usually without distinguishing the
"real" surface feature(s) from the
metaphorical mathematical form.

And we speak of sound waves
usually without being aware that the term
is, in this instance, entirely metaphorical.

We have developed mathematical
manipulations that enable us,
on the basis of
metaphorical resemblances,
to predict and to utilize
various attributes

of periodically moving

water and air molecules.

The wave theory of water and

the wave theory of sound

have been wondrously

productive cognitive tools.

So, too, we speak of

electromagnetic waves.

And we have developed

mathematical manipulations

that have been

wondrously productive.

We measure voltages or currents;

we graph their

variation with time;

and the graphs have

the form of a wave.

But what moves?

The variation is a changing

potential, not a changing location.

I could plot the changes in my thinking

against time and produce a wave of opinion.

Would Quantum

Mechanics then apply?

Opinions do become entangled

and they frequently collapse,

but this is hardly what Dr. Schrödinger
had in mind with his wave equation.
He was thinking of something
"material" that moved.

The assumption that light is something
that moves from one place to another
goes beyond even the
analogy with water:

In water and sound waves, the particles
only move back and forth in place.

The water molecule doesn't move
from the boat to the beach;
the air molecule doesn't move
from the horn to your ear.

The apparent movement "from-to"
is a sequential periodicity in the
oscillations of the molecules.

The idea that light is something that
moves from one location to another
gives rise to the further
ideas of a "ray" of light
and, if interrupted into
segments, a "bullet of light."

The shortest segment imaginable we
imagine to be a tiny particle, a photon,
shot out of an emitting atom traveling

to another atom, and being absorbed.

The analogous image with water or sound is not associated with waves but with such things as fire hoses and jet engines-"streams" of water or air.

The question of what, if anything, moves with light is an open one.

This question goes back 300 years.

And-surprise!-it was never settled.

It was decided but not settled.

A Danish astronomer, Olaus Roemer, measured variations in the times of occultation of Jupiter's innermost moon, Io, when the Earth was at opposite points in its orbit.

He attributed the differences to the travel time of something that moved from Io to the Earth, i.e., to the speed of light.

The director of the Royal Observatory in Paris, Gian Domenico Cassini, the first of four generations of Royal astronomers, disagreed.

He thought light might instead be a cumulative response of the eye,

perhaps to variations

in some force

acting instantaneously at a

distance like Newton's gravity.

He noted that Roemer's measurements were

dependent on a great many variables-

different velocities

of Earth and Io,

different angles of view,

different intensities of light,

different observing

conditions, etc. --

any one of which, or some

combination of which,

could account for the variations

in his (Roemer's) observations.

Cassini also took

measurements, not only of Io

but of the other Galilean

satellites of Jupiter.

And the other satellites did not

show the same variations as Io.

Edmund Halley, of

Halley's Comet fame,

who had helped publish and

promote Newton's Principia,

became enamored with Roemer's idea
(that light was something that moved)
and promoted it in the
scientific press of the time.

Roemer and Cassini died.

Halley carried the torch, and

Roemer's idea caught on.

The mob of scientists rushed
down Something That Moves Street
and vacated Cumulative
Response Street.

No one even thought to look for
other streets of explanation
in the Village of
Electromagnetism.

Even Cassini's son, who succeeded
him at the Royal Observatory,
abandoned his objections.

As I said, the issue was
decided-by mob rule
but not settled.

What really is the case?

Light might be something that
moves-but what else could it be?

That light is something
that moves is plausible.

That assumption explains many
observations-though not all.

But plausibility is
not reliability:

Unless a systematic effort is made
to seek out what else light might be
and to devise tests that will distinguish
among the various possibilities,
no one will ever know if
"something moving" is the truth
or merely a plausible
artifact of selected data.

Roemer simply reversed
the older intuitive idea
that understood seeing
as analogous to touching:
something-an "ocular ray"-reaches out like
a finger and touches/sees the object seen.

Roemer assumed rays come not
from the eye but to the eye,
and that too is intuitive.

But as more observations accumulated,
things got more complicated.

Today, Quantum Mechanics has had to
abandon intuitiveness altogether
and embrace "Quantum weirdness".

Its justification is

that it gets results:

The math goes from an empirical

start to an empirical finish.

It's predictive to a very, very,

very great degree of accuracy.

However, accurate prediction is a

sign of a theory's usefulness,

not its truthfulness.

The theory could be

merely instrumental

but instrumentalism is not as

satisfying as the conviction

that one possesses The

Truth in capital letters.

Light must be something

that travels,

who could doubt that?

The mob must have gone down

the Street of Truth after all.

What else could

light be!

That exclamation point begs a question

that should be taken seriously.

It's a question that lies at

the heart of reliability.

It lies at the heart of

scientific discovery.

What else, indeed, could light be?

The math (of Quantum

Mechanics) goes from 1,

which we observe, to 4,

which we also observe:

$$1 + 1 + 1 + 1 = 4$$

But there's no guarantee

reality goes that way:

Maybe the real

path is $1 + 3 = 4$.

Quantum weirdness may only be

ambiguity in our categories

(of waves/particles that

move) rather than in light.

What if light is a

"cumulative response"?

No one has bothered to develop a

mathematical theory for that ... yet.

What if light is something else?

No one has bothered to peer

down the cognitive alleyways

for a third or

fourth possibility:

Consider that plasma

discharge phenomena

are scalable over at least

14 orders of magnitude,

from the scale of galaxies

to the scale of atoms.

Why stop with "fundamental"

subatomic particles?

What if the "zoo" of subatomic particles is

merely a spritz of tiny electrical sparks-

plasmoids-observed at different

stages of their evolution

or under different

discharge conditions?

(Imagine a subatomic-

sized Herbig-Haro star

or active Seyfert galaxy-

the "doughnut on a stick" form typical of

so many plasma discharge phenomena.)

What if reality consists of larger

sparks driving smaller sparks

all the way down the scales,

and there is no such thing as

a "particle" or a "wave"?

With electromagnetism, the electric and

magnetic fields vary in strength and polarity.

It's not immediately obvious

that anything moves-

except scientists'

opinions about it.

And they move more like a mob:

Fervency of belief so easily

obscures enlightenment.

It's been 300 years, and the

question is still open.

What moves?

Welcome to Space News from
the Electric Universe,
brought to you by The
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On August 12, 2018, NASA's Parker
Solar Probe was launched from Cape
Canaveral, Florida, beginning its historic
journey that would take it closer to the
Sun than any man-made object to date.

In early December, the
first scientific papers
were published on the
mission's earliest findings.

The first four papers
have suggested a number of
"surprising discoveries" including the
speed of the solar wind rotating around
the Sun, and the behaviors of dust
particles that the probe has
encountered at its perihelion.

From the perspective
of the electric Sun model, perhaps the
most intriguing discovery to date is the
"unexpected changes" in the Sun's
magnetic field, which the probe encountered

as it moved through the plasma environment.

As one news report describes,

"Unexpectedly, the probe also

detected a series of flips in the Sun's

magnetic fields--dubbed 'switchbacks' -- as

streaming winds of plasma flowed past

the spacecraft. During these periods, the

magnetic field suddenly

reversed itself by 180 degrees

and then, seconds to hours

later, flipped back."

In part one of this two-

part presentation, retired

professor of electrical

engineering, Dr. Donald

Scott begins his analysis

of the Parker Probe data.

Well, about a week or so ago,

at a NASA press conference, the

investigators that are in charge of the

Parker Solar Probe described their new

findings from the first

flybys of that probe.

Now, as far as I have been

able to find out, the probe has made

about three closer and

closer passages to
the Sun and it will
continue to do that for
several years and hopefully, if it
doesn't burn up, it'll continue to do that.
But in any event, the NASA press
conference included the statement, which
is sort of typical of them, "This is
the first time we've been able to fly a
spacecraft into the
atmosphere of a star."

They said that last time too, and I
commented on that kind of statement.
It all depends on what you call the
atmosphere of a star.

What is the Sun's atmosphere?

Well, the Sun's local plasma
extends out to the
extent of the heliosphere which is,
ends in what we call the heliopause and
that's several times the distance out of
Pluto, so by definition, any probe or
satellite that gets out of Earth's
atmosphere is in the Sun's atmosphere,
if you familiarize the Sun's
atmosphere goes out that far.

But actually, the proper question is: how close to the Sun's photospheric surface will the Parker Probe get?

Will it get into the Sun's Corona?

Will it get below the Corona-
-no, certainly not

below the Corona, and nothing's going to, in the foreseeable future, will ever get through that kind of temperature, but NASA says that the probe will, in 2025, get within a distance of four million miles.

OK, I think as I said last time, that four million miles is about nine solar radii.

That is, if you take a picture of the Sun during the full solar eclipse and see the Corona there, if you look and scale the distance, let's say from the center of the Sun to the edge of the black dot, the shadow of the Moon in front of the Sun, that's of course the solar radius.

And so, if you measure out ten times that distance,

that's where closest approach of the
Parker Probe will get.

It used to be said that
the farthest out that
the Corona extends is
about five solar radii.

So I said last time
and I still think,
that the Parker probe
was not going to
get even close to the outermost
regions of the Corona.

But recently NASA says no, the Corona
extends out to something like five
million miles, twelve solar radii, and so
it could make, get in, depending on
what they guess the feeling of the Sun
at the moment is, what it's, how far it
extends its Corona, it may touch
the outer reaches of the Corona.

But there is something
that it's going to.

The press release goes on to say that the
present data that they're getting back
"...hints at the likely birthplace of
dynamic solar winds, which bathe our

entire solar system in energy." Well,
that's certainly true. They continue to
say, "It describes startling reversals
(that is to say switchbacks) in the Sun's
magnetic fields. And it detects dust in
the solar wind and it shows that solar
winds spin," and they say of course in
their airy frivolous language, "it spins
like children riding on
a playground carousel."

Anyway, if you can get through
that, whenever you hear about things
spinning, just quietly think about the
fact that force-free currents are
collections of counter-rotating spinning
magnetic field and current pathways.

I submit and I have submitted for a
long while, that they're about the only
natural phenomenon that do consist of
concentric counter-rotating cylinders
that do indeed spin
or at least twist.

In one of our last Space News segments, we
discussed reports that the Voyager
probes have observed
unexpected rotation of the

magnetic fields through

which it is traveling.

That is the Voyagers,

they're out at the end, the other end

of the thing, they're out of the

heliopause and my comment at that time

says wow, that's fantastic because that

would fit like a hand into a glove with

our Juergens' Electric Sun model, and that

would say that yes, they have left the

heliopause or heliosphere, out through

the heliopause, but it still hasn't left

the giant Birkeland current that feeds

this whole solar system and feeds our Sun,

still seeing them, rotating magnetic

fields, within that Birkeland current.

Getting back to the present though, the

present report, I feel it's very likely

that the pointed tops of the

so-called coronal caps,

regions were the arrays of plasma that

are leaving up through the corona,

instead of diverging from a central

point, i.e. the Sun, after they leave

they seem to, certain places at least,

come back together again and form a

triangular or at least a

conical kind of a cap.

But anyway, a long time

EU member, good friend of ours, Chris

Reeve apparently asked the question:

isn't it possible that these switchbacks

are simply the probe moving

through the counter-

flowing Birkeland current

cylinders of each filament?

And when I saw that I said,

hurrah, thank you Chris!

Yes, absolutely,

yes, of course, yes,

it's quite likely that

the coronal caps, those

pointed-hat-shapes we observe in the

outer regions of the Corona, are exactly

where Birkeland currents form, and those

Birkeland currents extend out to places

like the north poles of the planets, so

Birkeland currents would explain the

spinning and the reversal of direction

of magnetic fields that the Parker Solar

Probe observes and

that the investigators

have found so

typically surprising.

Scientific reports describe

the Parker Probe being bombarded with

dust particles during its

closest approaches to the Sun.

A phys.org report states,

"Another surprise was a dust that

peppered the spacecraft

repeatedly during

each fly-by at perihelion...

The dust

particles are likely debris from

asteroids or comets that melted near the

Sun and left behind

their trapped dust."

But this begs the question: how large an

amount of rocky comet and asteroid

material would have to be spread through

such an unimaginably vast volume of space?

We asked Dr. Scott how the

Electric Sun model of the solar plasma

environment might better explain

the presence of such dust?

I think that that

explanation is, it's akin to the

typical explanation

that they give for why

are there all sorts of

different elements?

You know; manganese, calcium, iron,

sulfur, oxygen, you name it, all the other

elements in addition to the hydrogen and

helium that their model says has to be

there, but their model of nuclear fusion

does not produce manganese, calcium,

oxygen, and sulfur and all

the raft of other elements.

And so, where does

it come from?

In deeper outer cosmic space there are

novae explosions, Suns explode and

they pepper the universe with, and Scott

adds parenthetically, (fairy dust) that

sprinkles throughout the galaxies and

intergalactic space, and that's how all

these other kinds of elements that the

Sun doesn't generate, that's how they get

on the Sun, it's like a snowstorm

and they come in from deeper outer space.

Now, if you believe that, I've got a

bridge that connects Manhattan and

Brooklyn that I would be very
willing to sell you.

Alfven and all of the
earlier plasma physicists were well
aware that most plasmas are what are
called dusty plasmas and that means that
they contain neutrals; a fully ionized
plasma is very rare, they say that the
outer regions of the Coronas, of the Corona
of our Sun and probably other stars, are
fully ionized plasma, but 99% of most
plasmas are not fully ionized.

In fact, Hannes Alfven
was quoted as saying,
if the plasma was
more than ten percent
ionized, it could be considered a fully
ionized plasma because, the forces
between the ions and electrons that were
there are so much stronger than the
gravitation between the
neutrals that the neutrals,
the gravitational effects
just don't count.

So that's a long-winded way
of saying sure, plasmas are dusty,

that's where the dust comes from, it comes from within the Sun, as the ions and the electrons come blasting out of the Sun they bring neutrals with them and that's where it came from.

I don't think you have to depend on asteroids melting near the Sun to explain that.

Stay tuned for part 2

[Music]

In June of 2022, I offered an explanation of why dark matter doesn't exist. That line of reasoning came directly from an application of the properties of the Electric Sun model. The mainstream, accepted model has no way to describe or explain dark matter. I

presented that discussion in my latest book "The Interconnected Cosmos", and also in there are explanations of several other phenomena that can only be understood by referencing the properties of the Electric Sun model.

One of these is the so-called solar wind.

Now, a gigantic flow of electrically charged particles is more accurately called an electric current. But astronomers had already completely convinced themselves that there was no possibility of separated charges moving through interplanetary space, when in 1962 the Mariner-2 space probe that was on its way to Venus, detected it.

Astronomers didn't know what to make of this.

Ignoring the earlier 1908 prediction by Kristian Birkeland that electric corpuscles such as this would indeed be discovered, Eugene Parker named the flow the solar wind, effectively robbing from Birkeland the recognition he so richly deserved for his now validated

prediction. Also naming it a wind, successfully camouflaged its true electrical nature. Anyway, later the Ulysses Solar Probe discovered that this wind came in two varieties, an irregular, relatively slow type of flow with speeds of up to 400 kilometers per second - that's not slow - but there's also a fast one with speeds up to twice that, 800 kilometers per second. So there are two different types, two different speeds of these two different solar winds.

The slow one typically comes from the Sun's equatorially-located so-called 'streamer belt'.

The fast type comes from the relatively peaceful surface that we see when we look down through coronal holes at the normal surface of the smooth photosphere.

In my book, I point out "...that some skeptics have made much of the idea that electrons are found in both the fast and slow solar winds along with positive ions.

Yes. That's true. But that doesn't mean that the net flow of charge is zero. In a plasma, electrons and ions are separated.

If they weren't, we wouldn't have a plasma, we would have a simple neutral gas flow." But in interplanetary space they are

separated; negative electrons are generally attracted toward the positively charged Sun, and positive ions are repelled by that Sun.

These forces are generally relatively weak.

An interplanetary electric field of only a few volts or even microvolts per kilometer is sufficient - given that it extends over millions of kilometers to accelerate those solar wind ions to speeds of 400 kilometers per second and 800 kilometers per second.

But consider what occurs when an electron, moving in toward the Sun approaches an ion that is moving outward away from the Sun. As the ion and the electron get closer to each other, the attractive force between them increases. The strength of the attractive force applied to the positive ion is exactly equal to the force applied to the electron.

These are purely attractive electrical forces and they're equal because both particles have exactly the same amount of electric charge and they are of opposite sign.

But the ion has about 1800 times the mass of the electron. It's sort of like a tug-of-war between a mouse running in one direction and an elephant going in the other direction.

They're both pulling with the same amount of force on the stretched spring between them. But the elephant - the plus ion - continues merely on his trajectory carrying the poor mouse - the electron - roughly in his direction. The ion does not capture the electron, because recombination would quench the plasma.

So the electron often ends up being dragged along by the ion but wildly oscillating around the ion at what is called the "plasma frequency." So how does the Electric Sun model explain the two different solar winds?

The essence of the Electric Sun is shown in this image.

In this diagram the horizontal axis of each plot is the radial distance outward from a point just below the Sun's photospheric surface.

That surface is opaque; we can't see down through it.

That's why some people think that is a surface.

The top plot shows how the voltage changes as we go out from the surface.

It isn't really a surface, it's a layer. But it's analogous to what we would get if we plotted a cross section of the dam at the end of a reservoir that holds back water. The middle plot shows three different charge layers that create that voltage distribution.

They are three very thin concentric spherical shells that surround the Sun.

The height of those triangular regions that you see, shows the force per unit charge that a positive ion would experience at those various radial distances. A positive value of that is an outward force. So, any ion that can get to a point in the chromosphere (this would be between points b and d), will fall down the voltage hill just like a ball rolls down a hill. Dropping down the voltage hill makes the ion go faster and faster. In other words, it accelerates. Its velocity is plotted in the bottom curve. This next image shows what happens normally, when the level of the most energetic ions within the body of the Sun have just enough energy to leak over the top of the voltage dam. The purple is the water and you can see it just being a little higher than the photospheric tuft and it's leaking over the top there. If the effective height of the dam can be varied, the volume - that's called the density flow; how much stuff is flowing there - can be varied. This flow, as it passes out of the image toward the lower right, experiences turbulence. This is measured as the temperature of the ion flow; this creates the anomalous

extremely high temperature of the lower corona
that begins here something like two million Kelvin.
Clearly our dam on the Sun is electrical; not
made of steel and cement that holds back a fluid.
It's made from what astronomers call photospheric
granules. But plasma scientists call them anode tufts.

The flow, as it moves off to the right is called the
fast solar wind. Its velocity is due solely to the height
of the dam - the height of the voltage
drop through which the ions fall.

Its density, that is how many amperes it contains
or how many gallons per minute are flowing,
is controlled by the height of the
floodgate, the little floodgate at the
top and a very minor movement of that floodgate
can really change the amount of the flow.

The solar wind actually stopped for
a day or two a few years ago. Why?

Did somebody raise the floodgate and cut the water flow?

Needless to say the Standard Model has
no explanation for this phenomenon, but the Electric
Sun does. The higher the face of the dam, the
greater the velocity of the water when it
gets to the bottom. It's just that simple.

But what happens if in some region the dam is
taken away? You visualize somebody blows a hole in

the dam, or the dike breaks. Then water,
or ions in our case, would flood out from the reservoir.
The density of the flood would be greater,
more gallons per second, more amperes. But
the velocity would be lower because the
stuff would be falling from a lower height.
Not over the top of the dam wall which
is way up high. The lower voltage, in the
real case a lower height from the water analogy.
The real explanation is obvious from this diagram.
This is the same cross section we saw earlier, but a
sunspot is a place where there is no photospheric tuft to
create a dam. So, if you remove the black
line, all you're left with is the interior of
the Sun. There is at voltage V_1 on the vertical axis
and the the ions - you can see the red curve - just
flood outward from that out toward the
lower corona. They're not restrained in
any way as the path of the ions coming
through the granules, the ones on
the top, they have to get up over that higher voltage V_2 .
And then they fall higher - it's steeper - drop down
to where they created some turbulence.
But anyway a Sunspot is a place where
there are no photospheric tufts to
create the dam and the Sun's internal

energy, being that voltage V_1 and the energy level of the dam itself is V_2 , so in a Sunspot the internal ions are unrestrained and are able to get out of the Sun by just falling from level V_1 . So they aren't going as fast as those that fall all the way down from level V_2 . And this is how the slow solar wind is created from sunspots. The voluminous but relatively slow moving ions of the slow solar wind flow easily up and out of a sunspot. So we see here the same region of the Sun in all three images. The top picture is the photosphere which is the innermost layer that is closest to the center of the Sun, the one that's at lowest solar altitude, if you want to think of it that way, and it obviously includes a beautiful big sunspot group. The middle picture is taken at a slightly higher level than the one at the top, and it's of the chromosphere. In reality that's of course above the photosphere. And the bottom picture is higher still in altitude, and it's a picture of the lower part of the corona which extends outward from that point out to those

several radiuses of the values of the Sun. So the layer that's at the lowest altitude on the Sun, the photosphere at the top in this image, and the layer that's located at the highest solar altitude, the lower corona, appears in the bottom of the image.

You can see the effect of ions that pour up from the sunspots. They create a high level of turbulence when they enter the chromosphere and even more when they hit the lower corona, so you can see they're white.

The photosphere is covered by granulation.

It consists of closely packed plasma tufts.

The chromosphere is a layer that begins about 250 miles above the photosphere and it's about a thousand miles thick.

The lower corona begins just above the chromosphere and it extends outward a distance of several solar radii. The

dark region at the bottom left of this image is a coronal hole. It's simply an area in the Sun's corona that's located above a nice normal quiescent photospheric region that is devoid of any sunspots or other irregularities.

These holes are associated with quiet Sun.

It may seem to an inexperienced person and to some scaremongers on the internet that coronal holes are something to be feared or worried about. They aren't. They're just not disturbed regions from which coronal mass ejections or any other violent ejections of matter usually emanate. They're peaceful regions more than any other area such as the streamer belt. It's a normal region on the Sun where the photosphere has a smooth appearance and tufting is relatively uniform and undisturbed. And that's where the fast solar wind comes from.

Please summarize the important properties of the so-called solar wind.

First, there's a factor of two difference between the maximum velocities of the two winds.

Secondly, the density of the slow wind is well over that of the fast wind. The amount of matter, the amount of stuff, in the slow wind is 85 percent greater than in the more controlled fast wind. Slow wind just pours out of an open hole, so that's why there's more material in it. Thirdly, temperature is a measure of the random

excitement motion of the particles in a plasma. In the fast wind this level is six times greater than in the slow wind.

In the fast wind ions collide forcefully with the bottom of their great fall.

Slow wind ions easily escape without falling through a great voltage drop, so they're not as turbulent as the as the fast solar wind.

Fourth, the random motions of electrons in the two winds are relatively in the same order of magnitude, the slow wind electrons being only about 30 percent more excited than those in the fast wind.

But this observation was made at roughly Earth's distance from the Sun. If you realize that the electrons in both winds at that point are coming in toward the Sun from the outer regions of the solar system.

And so they have not yet been through the mixing effects, the scrambling effects of the tuft voltage drops just above the photosphere. That lies in their future when they get closer in.

Fifth, in the Electric Sun model the turbulence of the fast wind ions is caused by their falling through this high voltage drop. And that explains the extreme temperature of the lower corona which has baffled astronomers for decades. Sixth and final,

the Electric Sun model explains the fluctuations in the volume, that is to say the quantity of material, in the fast solar wind and how it once was cut off for more than a day.

Now, none of these six observed facts are explained by the Standard Model of cosmology. They all result from electrical forces that the ions experience. They're prime pieces of evidence of the validity of the Electric Sun model which is a major component of the overall Electric Universe hypothesis or the Electric Universe model of cosmology.

In the Standard Model their eyes are wide shut to the obvious presence of electricity in the cosmos. But those that use common sense and think for themselves can see the magnificence of our truly Electric Universe.

How long do you think it'll be before astronomers open their eyes to what is actually going on in the cosmos?

Is conventional science presently living in a reincarnation of the middle ages, where there was a privileged class, consisting of the king, the nobles and the clergy who held all the power and the general population believed whatever nobility told them?

And the ascendance of real empirical science
would not emerge for many centuries to come,
until enough people caught on
that the emperor had no clothes.

[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
contributor archaeologist Peter Mungo Jupp
began his comprehensive analysis
on the nature of comets
including the Electric Universe
perspective that comets are not
4.5 billion year old icy
leftovers of the early solar system.

Included in his analysis, Jupp
presented outtakes of his interview
with physicist Wal Thornhill
recorded a few years ago
discussing Thornhill's
perspective on comet origins.

In this episode, we begin
with Thornhill explaining
why the notion of comets
as sublimating ice balls
cannot explain most
comet activity.

The other thing is that if you

have one of these objects,
if it was just a ball of icy
dust approaching the Sun,
what would happen is that
the ice would turn to a gas
and it should just blow
off like a kind of a wind.

But that's not what we see. We see
these very well-defined jets
and we also see bright spots on the
nucleus when they photograph the nucleus.
And those bright spots
are unexplained
but in the electrical model, of course, that
is the point where the arcs are coming from.
Okay, yep.

And that's from within
the comet itself
and is this the reason you get this huge
tail of discharge on the comet, is that?
It's one of the reasons why you get these
well-collimated jets of very fine material
because it's the sort of technique
used in electrical sputtering,
- the coating of astronomical
mirrors and so on

- Yeah

where you just take atoms
at a time off a cathode
and then attract them
towards a charged surface
or you just have them floating in space, if
you like, and then they land on the mirror,
the glass surface, and form this
coating of metal, just a few atoms thick.

And so these atoms are shunted way out
in space on the tail of the comet.

Yes, and they're,

and they're

phosphorescing...

...well they are glowing because they're
an electrical discharge, yeah.

And the trajectory that they take is that
which is also seen in the laboratory
in an electrical discharge.

This a parabolic curve.

And there's plenty of evidence that this
is the kind of thing we should expect.

For instance, on Io, the so called
volcanoes of Io, they too are cathode jets
and they're very distinctive in
that, unlike any volcano known on Earth,

they deposit their
material in a ring
but this is characteristic
of an electrical discharge
because it sorts the material according
to atomic or molecular weight...

Okay...

and it follows a
distinct trajectory.

Okay, now so we've got a little
bit of the nature of a comet now
which is basically a negatively
charged body moving towards the Sun
and something else happens then.

It can either go past the Sun,
it can split and explode, just
like Shoemaker-Levy 9 did,
when it impacted on, flash-
impacted, I like to call it, on Jupiter,
or it can actually
hit the Sun. Now,
what happens when

it hits the Sun?

Well this is, we've got photos or movies of
this sort of thing and usually it seems...

Yes, well, the electrical influence of a

comet extends to the boundary of its coma
and the coma of some comets, like the recent
one of Hartley, was bigger than the Sun.

So this tiny lump of rock has an electrical
influence which extends over a vast volume.

So they're incredibly powerful
compared to their physical size?

Absolutely, and so you can
understand then that that

intrusion of a charged
body near a charged Sun
can give rise to a sudden
discharge from the Sun,

in other words a
coronal mass ejection.

Okay, and that's on the opposite side
of the Sun, at least in the films I've seen?

Well, actually, you get effects occurring on
opposite sides of the Sun almost simultaneously
which is absolutely impossible
if the Sun is powered internally.

Yep.

However, if the Sun is an
electrical body, that is possible
because the influences
are coming from outside

and they can be

synchronized electrically.

So this huge coronal

thing you called it,

as it flies towards the Sun, is

exhibiting a massive impact

in fact not impact, effect or

discharge effect on the Sun...

yes...

and this coronal mass ejection is nearly as

big as the Sun in some cases if not bigger.

They're huge, yeah.

So the puny little comet

isn't quite so puny

and carrying on this thing,

when Shoemaker-Levy 9

split into 23 pieces as

it headed towards Jupiter...

On the first go-around

Jupiter, it split up.

Ah, that is when it

split in 23 sections.

And then it went into an orbit where

they were able to predict that it would impact.

Now, you think this split up is

another electrical phenomenon?

Sure, comets inexplicably
split and fragment
as they cross the ecliptic, usually,
which is the current sheet of the Sun
or when they're
approaching the Sun
when the voltage on the
surface is changing rapidly.

And the reason for that is that any body
in the universe, of any considerable mass,
will have an internal gravitational
field, albeit maybe weak,
but that gravitational field will offset
all of the positively charged particles
which are heavier, more massive,
towards the center of the object
and the electrons will then
adopt elliptical orbits
with the nucleus at a focus
which is nearer the center.

In other words, every atom in that
object will be a tiny electric dipole.

Okay.

So every object of any
considerable size in the universe
will have the characteristics

of an electret

which is an object which
maintains an electric field.

That's an interesting
term, electret.

Electret, yeah.

So, a comet, if sufficient charge is either
removed or added to one of these bodies,
it can cause internal discharges
through the body of the comet
and this is what I call earthquake,
this is the harbinger of an earthquake.

Now, on a small body like a comet,
that earthquake is sufficient
to shatter it, quite often.

So this is the
effect ...

Yeah, this is the
electrical effect, yeah.

I mean, the same thing happens on earth,
earthquakes are underground lightning.

So that explains
the fragmentation
and the very fine particles
that you see in the jets
that are all just part of this

whole electrical aspect of comets.

So we have some good

ideas as to how comets

are created by ejection from

say Jupiter, Saturn, etc.

and we have some understanding

about their electrical nature.

But what about what we now

know is it's rocky terrain,

gone are the days of the

farcical dusty snowball comet.

If, for instance, we take

comet P-69 as an example,

there is no doubt its topography

closely resembles that of many planets

such as Mercury and Mars.

It's complete with valleys, electrical

erosion, sand fills and rocky outcrops.

But comets, unlike major planets

and most moons, are not spherical.

We're not sure why

but in fact a large percentage of imaged

comets, and their similar sisters, asteroids,

have nuclei that are

double, even triple-lobed.

Now, where have I

seen this before?

Many comets and asteroids
have a remarkable similarity

to the thunder egg

seen on earth

and if, as Wal Thornhill often says,
electrical phenomena are scalable,
we may have an example, on a much
smaller scale, of a comet structure.

Creation of similar tektites by C.J.

Ransom in the Vemasat Laboratories,
by electrical discharge,

may hold the key

to an understanding of both
asteroids, comets and planets.

Now, thunder egg rocks come
in an incredible array.

Look at these ones I'm about
to show you. Some are hollow,
some have crystalline interiors,
some have gaseous inclusions
and some are filled with liquid,
star-shaped interiors,
you name it.

Depending on the layer the
thunder eggs were found in,

rapid progression from spherical to
double- and triple-lobed rocks develop.

I'll just read a little

bit from Robert Colburn

who wrote, if you like, the quintessential
information on thunder eggs.

This is his quote on the

formation of thunder eggs,

"On the bedrock, in contrast with the ashy
clay, some eggs could be pried off whole.

With more melded into doubles,

triples or even clusters,

most broke apart revealing a hollow top

consisting of a thin layer of chalcedony

coating the walls of

the egg's interior.

Horizontally banded, waterline opal is

contained within the thin concentric layer

and occupying from 1/4 to 1/2

of the interior at the bottom

with the tops being flat floors,

some with chalky surfaces

that can be scraped

with the finger nail.

Perhaps we can get closer to

understanding thunder eggs

by approaching them as gas cavities
filled with water-based minerals
like those of amygdules, an idea fairly
well accepted by most geologists.
An amygdule is a mineral-filled gas
cavity found in basalt and endocytite lava.

So let's begin with a question,
how homogeneous is the earth and for
that matter comets and meteors?

Is it molded within by
strict circular boundaries,
or is it perhaps, like the internals
of this classic thunderegg
with a 3d star-shaped interior?

Plasma pioneers such as
C.J. Ransom, remember,
recreated spherical
Martian rock blueberries
in the lab with electrical
discharge techniques.

Were thundereggs created
by similar measures?

And if electrical
effects are scalable,
could a large Earth body perhaps
replicate a thunderegg formation

with its gaseous enclosures
and spiky outreaches
that may, perhaps, resemble
the jets of a comet.

Now, let's take this
a little further.

Thomas Gold, in his book 'The Deep
Hot Biosphere', makes a strong case
for the intervention of gas upwelling
as a powerful but neglected process
in the workings of large
hydrocarbon deposits,
either gaseous, liquid or solid
from deep within our own Earth.

But perhaps even Gold failed to realize the
effects of electrical telluric currents
swayed by cosmic effects
as the primal cause
of the chaotic meandering of gases
and liquids within charged bodies.

Were they the agent that
caused cometary instabilities?

As Wal Thornhill has
always pointed out,
the planets, comets and asteroids
are electrets or charged bodies

revolving in a constantly changing
cosmic electromagnetic environment.

They thus react with
other charged bodies,
working towards
electrical equilibrium.

Thus our big question: Could
common interiors also possess
hydrocarbon enclosures; the
kerogens, oil, coal etc.?

Nicolas Biver of the Paris Observatory,
France, lead author of a paper
on the discovery published
october 23rd, in Science Advances,
found that Comet Lovejoy was
releasing as much alcohol
as at least 500 bottles of wine every
second during its peak activity.

The team found 21 different organic
molecules in gas from the comet
including ethyl alcohol and
glycol aldehyde, a simple sugar.

Further in July, the European Space
Agency reported that the Philae Lander
from its Rosetta spacecraft, in orbit around
comet 67P, detected 16 organic compounds

as it descended toward, and then
bounced across the comet's surface.

According to the agency, some of the
compounds detected play key roles
in the creation of amino acids, nucleobases and
sugars from simple building block molecules.

So where does this all lead us?

We certainly learned the comet
is an electrical phenomenon.

We've learned that it's not
a dusty snowball, it's solid.

It moves in elliptical orbits
of various combinations

but most important of all, I
believe the next comet revelation
will be the fact that it
sustains the molecules of life.

The carbohydrates, the hydrocarbons, the
kerogens, coal, oil, methane gases
contained within the
body of the comet.

These are common fundamentals
of the solar system.

Perhaps we've seen a
traveling Z-pinch

creating all the molecules

necessary for life
and the fundamentals
of this solar system.

December 2010 Russian astronomer Leonid Elenin announces the discovery of a new comet roughly 400 million miles from Earth

calculations show that the comet moving on a highly eccentric orbit will intersect the orbit of the earth based on the size of its coma most astronomers viewed the comet as typical and unexceptional suggesting a body two or three miles wide but the projected earth-crossing orbits sparked an outburst of internet rumors and doomsday predictions most remarkable with the suggestions that the comet was a rogue planet and claims that it would profoundly disturb the Earth causing earthquakes or a shifting of the poles and even the end of the world

respected astronomers were dismayed how could such scientific illiteracy attract millions of viewers to Internet articles and videos

experts reminded us of the trivial mass of a comet just two to three miles wide passing millions of miles of Earth

as it turned out what actually happened
to Elenin posed a profound mystery for
common science

in the summer of 2011 Elenin grew
brighter than expected and astronomers
began to anticipate a respectable show
but the situation changed when a
powerful coronal mass ejection erupted
from the Sun

on August 19th the CM II struck the
comet Elenin the comet flared brightly
appearing to disintegrate explosively
while rapidly dimming before it was
visually lost against the glare of the
Sun on October 24th only days after the
expected closest approach to earth
Italian astronomers captured the remains
of Ellen and on film an extremely faint
and diffuse cloud of dust was all that
could be seen how did the disintegration
and virtual disappearance of Elenin
occur the answer appears to lie in the
role of charged particles in an
electrical event
popular astronomy imagines comets to be
dirty chunks of ice moving through

electrically neutral space but a growing number of electrical experts say that comet nuclei are negatively charged they say that a comet begins discharging electrically as it moves more deeply into the electric field of the positively charged Sun when the charged particles of a coronal mass ejection struck the comet Elenin the oppositely charged nucleus could not withstand the electrical stresses it disintegrated like an exploding capacitor

Electrical theorists assure us that comets are not what we were taught in school no practical experiment ever demonstrated that a dirty chunk of ice would disintegrate explosively under gentle warming from the Sun

one of the strongest challenges to astronomers assumptions occurred in December 2011

that was when the Comet Lovejoy plunged into the atmosphere of the Sun its fate seemed certain

but to the amazement of astronomers the comet emerged in spectacular fashion

it's pale undulating violently under
electromagnetic forces then separating
from the nucleus only to be reborn after
the emergence of the nucleus from the
Sun

the explosive demise of comets cannot be
due to solar heating in fact eruptions
and comet disintegration have occurred
and regions so remote from the Sun that
warming is not even a factor we saw one
of the most improbable flaring in the
case of comet Halley a regular visitor
to the inner solar system in 1991
five years after Halley's closest
approach to the Sun it was well beyond
the orbit of Uranus where temperatures
hover around minus 330 degrees
Fahrenheit it erupted producing a dust
cloud a hundred and eighty thousand
miles across

if thermal stresses are excluded it
seems that only one consideration
remains shortly after the Hali outburst
a few astronomers began to wonder could
charged particles from the Sun be a
factor at the time solar wind activity

had peaked at a higher level than had been seen in decades then two astronomers observed that the charged particles of a powerful solar flare on January 31 would have likely reached halle around February 12 the date of the outburst the coincidence of the outburst with that arrival seemed too great to dismiss

could electrical events be the key to comet outbursts and fragmentation to this day astronomers have no explanation for the sudden and spectacular brightening of Comet Holmes in 2007 it had been moving rapidly away from the Sun for about five months when its coma size suddenly grew by a factor of a million making it even larger than the Sun was it a coincidence that just two days before the Comets display there was a sharp spike in the output of the solar wind in the electrical view the sudden arrival of charged particles from the Sun will explain what otherwise would have no known cause electrical surges and capacitor breakdowns go together

high-tech image processing later showed that the nucleus of comet Halley had broken apart with many fragments contributing to its brightening confirming a general pattern comet's flare brightly when breaking apart

in 1976 comet West brightened greatly in a series of outbursts perhaps a dozen or so then shocked astronomers by breaking into fragments warming by the Sun is not a reasonable explanation of such events when comet Tempel-Tuttle fragmented it in 1957 it was just inside the orbit of icy Saturn much the same occurred in the case of comet Biela Bamberg more than once comets have broken up at their greatest distances from the Sun well beyond the orbit of Neptune and when breakup occurs the fragments have separated and inexplicably high velocities mainstream theory has no explanation for the energies driving such events the progressive disintegration of the comet Schwassman-Wachmann three beginning in 1995 left astronomers

grasping for answers a 150 million miles
away it brightened spectacularly shining
hundreds of times more brightly than
expected then astronomers discovered
that the comet had broken into at least
four pieces then in 2006 the Hubble
Space Telescope captured the spectacular
disintegration of the comet in progress
while it was still out beyond Earth's
orbit

it was then clear that the comet had
broken into more than three dozen
fragments as how sized chunks of a comet
appeared to disintegrate completely some
within the span of a single day
remarkably similar to the fate of Elenin
was the explosive demise of the comet
linear in July 2000 like Elenin linear
entered the inner solar system from its
outermost regions on a highly eccentric
orbit for the electrical theorists that
means a maximum change in the electrical
environment as it approached its
perihelion some 70 million miles from
the Sun it flared
then rapidly disintegrated then came the

announcement that the event produced an explosion of x-rays at the interface of the debris cloud and charged particles from the Sun intense interfacial energies of this sort up to the level of x-ray emissions can only be the signature of electric charge exchange the disintegration of Lennear provides a strong parallel to the story of Elenin the teardrop form of the flare and the relationship of the flare to disintegration are virtually identical all that was left of Lennier was a cloud of dust the expected abundance of water was simply not there and what of element as reported by Leonid Elenin himself the expected water vapor was missing and so the mysteries of comets deepen and the most urgent need is to reconsider the nature of comets as a whole it's now clear that comet outbursts did not occur because of surface warming but charged particles exploding from the Sun are implicated in cometary outbursts insulating material around a charged

body gives way under an electrical kick
or spike the point is well illustrated
an electric discharge at Stone Ridge
engineering here blocks of acrylic are
bombarded by high-energy electrons
creating an internal cloud of charge but
nothing spectacular happens until the
blocks are tapped sharply with a
metallic spike then charge is released
through instantaneous breakdown and
fracturing the Lightning pathways of the
fractures frozen into acrylic the
energies of electrical breakdown and
fracturing of this sort will not just
explain the flaring and disintegration
of comets but the remarkable velocities
at which the fragments separate it seems
that anomalies are just too easily
ignored or forgotten but recurring
anomalies can be the door to discovery
what better way to move science forward
than to start with the forgotten
question what is a common
how are comets formed what holds the
cometary coma in place against the force
of the solar wind

how're the long filamentary tails
created and maintained in the extreme
vacuum of space what force creates and
confined the powerful collimated jets
from the nucleus where is the water-ice
of which all comets were supposed to be
constituted
if charged particles from the Sun are
triggers for outbursts or disintegration
of comets the behavior of these bodies
has almost nothing to do with relative
masses or surface temperatures and
everything to do with the electric force
above all else we must now ask what is
the Comets place in the electric
universe is it possible that one
question could remove all of the
anomalies that one answer could explain
the flurry the fragmentation and the
catastrophic demise of these cosmic
intruders

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

In a Space News episode, earlier this year, we reported on the mysterious sounds associated with electromagnetic phenomena in Earth's atmosphere. In addition to centuries-old accounts of strange noises, apparently connected to earthly auroras, we discussed the electro-static noises, reported by some witnesses, of spectacular meteors. Today, a new scientific study, published in the *Geophysical Research Letters*, argues that the sounds associated with some meteor sightings are the products of electrical activity. As reported by *Science* magazine, "As a meteor streaks through Earth's atmosphere, it ionizes the air around it, splitting it into heavy, positively charged ions and lighter, negatively charged electrons. The ions follow the meteor, whereas the electrons are deflected by Earth's magnetic field. That separation of positive and negative

charges in the meteor's wake produces a large electric field that drives an electrical current." The authors state that the electric current launches radio waves which are then conducted through nearby objects producing audible sounds. This explanation brings mainstream scientists much closer to the Electric Universe interpretation. A key difference is that, according to Electric Universe proponents, any object that comes far from Earth will be differently charged and can discharge electrically when it enters the atmosphere. In the 2005 Thunderbolts Picture Of the Day article, The Peekskill Meteor, authors Michael Armstrong and Jim Payette suggest that not only the electrophonic sounds of meteors; but also their bright glare, flare-ups and disintegration, involve electrical discharge activity. They state, "One proposed explanation, with which the Electric Universe would agree, is that 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." For many decades, institutional science has imagined that spectacular meteor explosions occur when fast-moving bolides encounter extreme pressure, heat and chemical reactions when passing through Earth's upper atmosphere. But this interpretation has left many unresolved mysteries. In fact, the most renowned of meteor explosions, in modern times, leaves many facts that beg for a new interpretation. In 1908, in a remote region of Central Siberia, a blue-white fireball, which some described as brighter than the sun, exploded with the force of a 10 to 15 megaton hydrogen bomb.

The explosion felled some 60 million trees across an area of 2,000 square

kilometers.

Yet some trees near the blast center were not burnt and a ring of burnt trees, circling the epicenter, was left standing.

The thunderous clouds were accompanied by a shock wave that knocked people off their feet and broke windows hundreds of kilometers away. The explosion registered on seismic stations across Europe and Asia and as far away as Britain;

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

Curiously, as noted in the Australian Journal of Astronomy in 1993, the Sir Douglas Mawson expedition in Antarctica reported an extensive auroral display a few hours before the Tunguska event. Many historical accounts also exist of strange weather, including lightning and thunder, and even seismic activity, well before the devastating explosion. Despite

occasional claims to the contrary, no impact crater for the intruding body has ever been found nor the remains of an impactor.

Well, some have occasionally claimed to have discovered Tunguska meteorite fragments. Nevertheless, Tunguska remains officially classified as the largest impact event ever recorded on earth. In the Electric Universe theory, the energy released from an intruding; comet, asteroid or meteor; is not limited by its mass and kinetic energy but also the electrical energy due to its charge differential with Earth. This stored electrical energy also explains the astonishing effects of the comet Shoemaker-Levy 9's explosion as it approached Jupiter; including the completely unexpected dramatic brightening of the gas giant's radiation belts. Similar effects were seen on Mars when the close passage of the comet Siding Spring "blew away part of Mars' upper atmosphere." Calculations of the mass and size of the Tunguska bolide based

solely on mechanical considerations

cannot be accurate.

These principles were more recently demonstrated in 2013, when a meteor exploded in the sky over the Urals region in Russia. Thousands of homes and buildings were damaged and more than 1,400 were injured by an explosion that produced as much energy as two dozen Hiroshima-sized atomic bombs. The object is said to be the largest to have "struck the earth since Tunguska." It's important to note that, based on infrasound data from around the world, NASA scientists stated that the meteorite had to be about 1,000 times larger than they originally thought, based on the object's visual trail. As Wal Thornhill explains in a 2003 article; In the study of meteors, a key element that institutional science has long overlooked is, "The connection between ionized meteor trails and electrical discharge activity in the ionosphere. The meteor trail acts as a giant lightning rod that connects the

conducting ionosphere to the upper atmosphere. If the earth is an electrical body in an electrical solar system, it is the equivalent of a temporary short-circuit of a giant capacitor. The current flowing along the meteor trail gives rise to the unexplained brilliance and long-lasting glows of some meteors. It causes them to disintegrate like an exploding capacitor, high in the atmosphere.

The Tunguska explosion was probably the most noteworthy example of the effect." Increasingly today, scientists are proposing electrical processes as the answers to long-standing mysteries on comets, asteroids and meteors; revealing a slow, yet inevitable, recognition of our electric universe. For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

[Music]

In the early 1960s, radio astronomy was still in its infancy. Still, it revealed the marvels of the universe in ways no one could have imagined.

When they observed images of the whole sky in radio, two giant mysterious structures stuck out like a sore thumb.

These structures seemed to be polarized, meaning that light that passed through it from a distant source was being rotated, and this meant that there had to be a magnetic field present.

In 1965 Tom Landecker wrote a paper and speculated that the polarized radio signals could arise from our view of the local arm of the Galaxy from inside it.

When we look up at the sky, if we could see in radio, we would see a tunnel-like structure in just about every direction we look.

The North Polar Spur and the Fan Region are by far the two brightest and most dramatic extended features in the large-scale radio-synchrotron sky.

Since their original discovery and up until the present day, astronomers have

questioned the origin of these two regions.

Some argue that they are local features, and some argue that they are large-scale distant galactic scale features.

Both of these features have high fractional polarization and coherent magnetic fields, revealing the synchrotron origins of this emission, and confirming the presence of relativistic cosmic ray electrons. Both are clearly seen in dust polarization and have a similar scale.

Despite the similarities, very few studies have considered that they might have a common origin. In addition to the North Polar Spur and the Fan Region, there are several other polarized loops and spurs in the large-scale galactic emissions.

One idea is that all of these have a common origin in the wall of what they describe as a nearby bubble.

The structures of these regions are also important in understanding what they are.

They are long and narrow, and reminiscent of other long and narrow filamentary structures that seem to be

abundant throughout our Galaxy.

These seem to form the bones or skeleton of the Galaxy many of these filaments seem to be strongly aligned with the galactic magnetic field and some filaments are shown to be aligned with the polarization features. Increasing evidence is suggesting that there is a strong connection between these two observations. In a new paper the author makes the suggestion that both the North Polar Spur and the Fan Region are actually connected together and form a giant structure which is part of the local arm of the Milky Way. Their suggestion to the origin remains firmly fixed in the old rhetoric: a large old supernova remnant, a portion of the local arm, or an expanding shell, are examples of the origins. Although they outline a large amount of evidence that the North Polar Spur is local, there is disagreement as to the exact distance, and several studies have pointed out what seems to be contradictory evidence that suggests a portion is local, at about 100 parsecs away,

while other portions are more distant at 250 parsecs away. All these studies come to a similar conclusion, that the high latitude portions are local, while the lower latitude portions are more distant.

And this is hard to reconcile with the idea of the origin of the North Polar Spur that they have suggested.

The Fan Regions refer to a variety of features in diffuse polarized radio emissions, extending several degrees North and somewhat South of the galactic plane. It was originally called the Fan Region because its electric field vectors, as seen from the polarized radio emissions, appear to fan out and away from the galactic plane. Similar to the North Polar Spur, it is highly polarized and extremely bright, but unlike the North Polar Spur, it is not nearly as obvious in radio, and is mostly unremarkable at other wavelengths.

The idea that the author of this paper has, is that if you are an observer embedded in a uniform magnetic field aligned with a local arm, you would observe two bright patches of

synchrotron emissions, filling a large fraction of the sky at approximately the positions of the North Polar Spur and the Fan Region. The idea is that there would be a series of filaments that run across the sky, which then create the shapes we see. In their analysis, they calculate that one possible interpretation of this would be a series of arc filaments that lie behind, above, and below our solar system.

Now, it may come as no surprise that we are finding these types of structures, but there are a number of points that are worth considering from this analysis.

Firstly, where there is a magnetic field, there are inevitably moving charges.

Could these structures that they identify, be the filaments that connect and power the stars?

Both Don Scott and Wal Thornhill have proposed that filaments run along the arms of the Milky Way, back towards the center of the Galaxy. Are these confirmation of these ideas?

One thing that is important to consider is that of scale. We know that filaments exist in many structures that have been

observed, from molecular clouds, to the edges of what they call bubbles. The most remarkable of these is probably the Local Chimney. At the center of this, is the Pleiades, and we sit on the edge of this vast structure. So, are these filaments in any way connected to this?

The author of the paper sees the structure as arcs that have an origin that would actually be in the next arm closest to the center of the Galaxy. This is actually in the opposite direction to the Local Chimney. The author does not really go into any details about what might have created this structure, but postulates it might be similar to the Local Chimney. The problem is that the mainstream origin story for the Local Chimney is a rather unbelievable affair that involves dark matter. Of course, if this was part of a filament that runs along the arm of the Galaxy, then we would not expect it to flow in a straight line, but we would expect it to undulate, forming arcs.

Still, I question if what we see is all at

the same scale. From an EU perspective,
it is a very appealing idea that we sit next
to these giant filaments on either side of us.

Does our knowledge of the local stars in
any way help us to place some markers on
what these structures might be? For
those who have seen my precession
series, you will be familiar with Jim
Weninger's concept that we are on a
filament that is twisting around Arcturus,
which in turn orbits around the Pleiades.

If we examine Arcturus, we know that
it is part of a group of stars that are
moving together. Our speculation is
that they are all part of a filament that
runs through these stars: a stellar
filament. Our star is on a different
filament which wraps around this one. If
we jump back to the North Polar Spur,
there is an image that may show
you a different perspective.

In the image, we can see on the right
the North Polar Spur coming down the
center of the image. Towards the top of
this, we can see what is marked as Boötes.

This is a constellation and the

brightest star, that is Arcturus.

So, could this line actually be the filament that Arcturus sits on? Jumping to a wider-view image of the stars I have drawn on the three Spurs. The longer line is the North Polar Spur from the previous image. The red dots that are marked, are other known stars that form part of the Arcturus star stream.

So, is it possible that part, or maybe all of it, is part of this star stream?

This could be the closest large filament to us, based on Jim's concept. Closer to us, is the Sirius filament which we would be wrapped around. The distortions in the line may be caused by the interference from this closer filament, but at this stage this is just a guess. Further analysis of the distances of the stars may help to identify if any of the parts of the structure, can be linked to the Arcturus star stream. It may also be possible that we are seeing a distortion of the magnetic fields at many different levels, superimposed on top of each other.

We are unlikely to see the effects of the filaments we reside on. The most obvious would be those filaments closer. We must consider that there are many, many filaments, so the further away from us we get, the more these would end up looking like random noise. If we consider that larger filaments are constructed of many smaller filaments, then from a large enough distance, these may appear as a single filament, when in fact they are composed of many smaller ones. Understanding what these structures in the sky are, is therefore not an easy task. In any case, the identification of these magnetic filaments once more confirms the idea that the arms of the Galaxy are filled with filaments that carry electric charges.

[Music]

Hello. I wanted to give a short tutorial on how I go about analyzing images. A friend of mine sent me a link to an image from the James Webb Space Telescope. As I was playing around with it, I thought this would be a good opportunity to give a little demo. OK, so enjoy.

And here is the Webb page that my friend sent me.

James Webb reveals complex galactic structures.

Look at that, that is incredible. This is apparently a galaxy, just looking at the caption here, IC 5332. That's a catalog number for galaxies. So, I'm going to copy that, and I'm going to go to one of my go-to applications for looking at telescope data, which is this sky.esa.int.

It combines telescope data across a very wide range of telescopes. Very easy, very good interface to use.

Right now, we're looking at the Crab Nebula. When you launch it up, it'll [shows you things to choose from]. So that's the Crab Nebula. Look over here on the left.

This is the layers you can put on top of each other.

We're looking at an optical image, DSS2 which is the Digital Sky Survey number two, in color. But we can choose different telescopes. Look at that. All those choices; those are all optical telescopes. HST is Hubble. Let's see if there's a Hubble image of this. That might be good for later research. Good raw data. Okay, nothing that's beautiful from Hubble on this one. So, let's go back where we were on digital Sky Survey. Let's

add on a new row, say in the near infrared. Oh, that's nice.

How about the mid infrared, "Oh look at that!." OK, so

we're going to do a near infrared and then I'm

going to add also a new row of far infrared.

OK. [excitement] You can change the opacity.

So, I can blend the images. This is

one of the great things about this tool, you can blend the

images from different wavelengths and different telescopes.

We're looking at one object here, the Crab Nebula.

We're looking at it in different wavelengths

captured by different telescopes, and we're

blending across the telescopes to give us a

fuller view of this mysterious thing that we are looking at.

OK. Got a little sidetrack there. Let's go to the

IC 5332. That was what we started with here.

So, I'm going to type in IC 5332.

(Oops, I got an editing problem here, it's going to say

nothing there) ... And there is the galaxy that is the

subject of this video - IC 5332, it's coming

up. An optical telescope Digital Sky Survey

Cool, I'm just going to zoom out a little bit. (Just for

the heck of it, let's just see what else we got here.

We can see this in near infrared, a little bit,

not much). There's different telescopes one can

choose; not all telescopes have all the data on here.

You're not guaranteed to find a picture of this

in any other wavelength. I'm just showing that you can choose different wavelengths. Okay, so there's the object in question. You'll notice up here there's a couple of icons for Hubble and for James Webb. Hubble and James Webb have both made the effort to put some of their specialty images, high quality images, into this tool. it's not the best integration, but it certainly is worth using. So, I'm going to click on the James Webb version, since that's where this all started. It knows that I'm looking at this part of the sky. It calls up the pictures that I want. Let's look at this one. Webb, I see, yeah that's it. That's the one, right? That's the one that we started with. There it is. Now the blending, it's awkward with these James Webb and Hubble specialty images. You don't get to do everything you want. So, what I'm going to do, is take this image and put it into another tool, to do my own blending with it. I'm going to zoom in a bit, so that I can get rid of those boxes. There we go, and I'm going to zoom in - nice big image - and on the upper right hand here, take a screenshot and you can download this image (I already did it), so I'm just going to say, you can download the image, save it to your computer and then I'm going to look at a the Hubble version of this. So, there's the Hubble one. It's amazing, right? And then I can

save the Hubble version of this, download that.

Now I want to blend them. You can use

Photoshop - I don't have photoshop on this computer - so

they go to 'Online Image Editing Tool'. This one [Photopea]

(I don't know how to pronounce it - 'photopia'?) I'm

going to load up, one image. Say put Hubble first,

IC 5332 Hubble Space Telescope. Open that.

There it is! Oops. Just want to zoom in.

There we go, and now I'm going to open up

the James Webb, but I open it in place,

so that they can be layers. So they can

be on the same image, but just layers of

the same image. So, open the James Webb. All right.

so now you can see over here. Here's the layers.

We have the Hubble and then we have the James

Webb beneath it - I'm just toggling the visibility here -

of the top layer. Let me rename that. That is IC 5332 Hubble

Space Telescope, so I can keep track here. When you blend...

there's a lot of ways to blend, and

the simplest is with 'opacity' or 'fill' for

these images. They're basically the same option. So,

opacity - I'm going to toggle the opacity of the top layer,

which is the Hubble Space Telescope. That's kind of

awkward. How it's blending out the blacks there. Let me try

switching the order - see if it matters. Opacity, that's

better. So, there was something weird going on there with

having the one image on top versus the other. I don't know what it is, don't really care right now. I think it had something to do with how the zero pixel was being stored.

Okay, back to the project. The top image is the James Webb. I'm going to toggle the opacity and you can see there's the Hubble, there's the James Webb. There's the Hubble, there's your James Webb.

And the human visual system is very advanced, and it will start putting things together for you, if you give it information and let it do its job. Wow! So, what I'm seeing - which I didn't even notice till now - is on the Hubble there are these dark areas. Wow! Didn't even notice those.

Look at all those dark areas and what do you want to bet that those are exactly where the James Webb is bright. So, we got to choose some features and check it out. Like right around here,

See this orange thing here. You see like an S-shaped 'wiggle - wiggle' dark lane. Let's see if that 'wiggle - wiggle' dark lane... Yeah, pretty much.

Okay, it's not a hundred percent, but clearly, like up here, let's look up here. There's nothing in the James Webb there, it's a dark area with the James Webb.

What does Hubble give us? Yep, that is a very clear image for the Hubble - it almost reminds me of the Nautilus shells, when you cut them,

and they have the chambers in them. This reminds me of that. That kind of segregation. So, segregation in the plasma world is... It's a very elaborate complex thing. Plasma does it very well. You can see...

There's these very well-defined boundaries.

I'll zoom in on one of these boundaries here. Now.

Oh, no back up. Hey, I want to zoom in. Well anyway.

Those boundaries are a clear delineation of energy levels - a very sharp delineation of composition.

So, whatever is along this thin line here, is a very different energy and composition than what's over here in this dark area. And that kind of segregation is everywhere in the plasma universe. It's everywhere in biology too, frankly. You know the body is segregated into ...

The muscles are in bundles; the nerves have their own segregation; the nerves go on their own channels, etc. Okay. Well, that was really it. I am done with the little demo. I'm just going to keep playing with this, and hope you enjoy it. Bye.

[Music]

[Music]

Previous episodes of this story arc describe some historical revolutions and how people thought about the cosmos.

Before the revolution became accepted, there was a time of growing doubt about the established ideas, along with the hardening of the inertia of belief in them.

But there came a time when new observations and new ideas made the old assumptions and unquestioned world views, more of a nuisance than an aid for explanations.

The old ideas couldn't explain the new observations without patching them and the patches became increasingly ad-hoc and ill-fitting.

The limits of what was thought to be possible needed to be expanded, and that meant replacing the framework of the old way of thinking with a different worldview.

It required a change in what was considered to be reality. It required picking up the stick of knowledge by another end. We

seem to be in a similar condition today.

Modern observations of events in space exceed the possibilities of accepted mechanisms of gravity-and-gas-thinking.

But the emerging understanding of electrically active plasma does provide sufficiently expanded possibilities.

One of them is the greater power available in plasma systems. In physics, power is the rate of change of energy. With mechanisms that provide greater power, larger events can happen faster.

To become familiar with them, and to develop them, we need to be playing with larger and faster thinking, or in other words: with power thinking. One distinguishing difference between gravity-and-gas-thinking, typified by the Standard Model of cosmology, and electricity-and-plasma thinking, such as the Electric Universe model, is the matter of power.

Plasma systems not only have more energy than gravity systems, they have more power.

An excess of energy, beyond what would be required for an equilibrium condition, flows through them.

Similar to the flow of electricity in a string of lights being greater than what's dissipated in an individual light. If conditions suddenly change, for example a short circuit, much more energy can appear in the system in an unexpectedly short time.

For example an electric arc, such as high voltage

switch-arcings. At a stellar scale, the result would be a flare or a nova. I mentioned previously that space age observations have revealed a Universe that is too energetic for its calculated mass.

It's also too powerful. For example, the age of the Universe, as calculated from a Doppler interpretation of galaxies' redshifts is too short for the processes of gravity and gas to form its observed structure. Astronomers augmented those processes by imagining dark unobservable processes that must be there, because otherwise the theories of gravity and gas are falsified.

Electricity and plasma processes on the other hand, can be many orders of magnitude more powerful than those of gravity and gas. And they could aggregate matter over a much larger volume in a much shorter time.

Furthermore, those processes are not only observable, but also can be investigated in a laboratory, empirical rather than imaginary.

My primary interest in these essays however, is in the new thinking that these discoveries suggest. The implications of larger and faster for the cognitive framework or assumptions,

underlying particular explanatory ideas, or theories. The present framework was established in the 19th and 20th centuries, before plasma was discovered. It assumed that change in the natural world was only by relatively weak mechanical mechanisms that worked gradually and uniformly. The new discoveries expand that framework to include more powerful electrical causes that can be sudden and transient. Astronomical phenomena and plasma behavior have received the most attention, but other sciences and processes are also affected. For example, conventional thinking in geology assumes that weak and slow processes created the formations we see: erosion, sedimentation, an occasional local earthquake or eruption, creeping continental plates. Millions of years are required for significant changes to occur. But an instability in the plasma dynamics of the Earth's sheath, conventionally called a magnetosphere, could trigger an electrical discharge to the surface or below. It might be triggered by an unusually large flare from the Sun. Flares of that power

have been observed on other Sun-like stars.

A powerful discharge would scar the surface with craters, canyons and mountains.

A sufficiently powerful one could reshape and relocate continents and oceans in days, rather than in millions of years. That would be impossible with gravity.

Also, we have experienced the small disturbances in rotation that present-day flares have caused. When the flare strikes, rotation suddenly changes. After it passes, rotation gradually returns to its previous rate, as if the rotation were driven, like a motor, rather than being purely inertial.

One with an order or two of magnitude greater energy and power, could suddenly and significantly change the rotation rate, and cause oceans to wash over continents: a global slosh. The resulting super tsunami would stir up the sediment that's distributed around the globe. As the slurry flowed back toward the basins, it would be sorted into strata of like composition and be cemented, perhaps electrically, into distorted layers of rock.

Sedimentology experiments have shown

that deposition in flowing sediment can lay down multiple strata in non-horizontal, and even twisted formations.

The sediment is sorted as it's deposited extending the group of strata downstream diachronically.

Time advances not perpendicularly to the strata, one stratum at a time, as assumed by conventional theories, but parallel with the strata, several strata together.

A large flare, that disrupts the Earth's rotation fast enough, could produce the strata we see, in the positions we see, without needing long times for horizontal deposition and tectonic warping.

The effects would be larger than the Standard Model imagines - global instead of local, and faster, days instead of millions of years.

Also, the electromagnetic fields in a large flare could alter atomic decay rates.

Decay rates were once thought to be constants of nature, but they have been found to vary in resonance with several astronomical cycles. That means that they're related to their environment. Observations of terrella experiments and lightning strikes have indicated that atoms may be transmuted en masse and to other

species by the plasma behavior in a discharge.

A discharge that affects the entire globe would transmute elements in the debris around the globe. Those materials would then be sorted into like strata in the aftermath of a super tsunami, and radio dating would calculate their age erroneously past the disruptive event.

The geological clocks could be reset globally, scrambling the conventional geological record. I've used the term 'catastrophic' to label such a disruptive event, but I have misgivings about that. Larger and faster in geology means sudden global change. But electricity and plasma ideas of sudden global change are distinctly different from past catastrophist ideas, even though much of the evidence, uninterpreted observations, is the same.

With new ideas and a new theory, the facts, interpreted evidence, are different.

The difference between evidence and facts was described in the first episode of this series, Playing with New Thinking.

Perhaps the biggest difference is that many past catastrophist ideas assumed that the gods did it, divine catastrophism.

They assumed the intervention of some supernatural mechanism that lies outside the scientific and naturalist criterion, that phenomena must be sensible, that is able to be sensed. They stepped beyond sensation and experimentation, into the magic land of must-be and there's nothing more we can do with it.

Epistemically, and ironically, this is not unlike the role of dark matter and dark energy in astronomy today. It's a ghost in the machine. Another difference is the anthropocentric baggage that catastrophism carries. In the past, before uniformitarianism became the conventional presumption, such change was called catastrophic in relation to human values, scale, and expectations.

An event was catastrophic if it greatly disrupted human life. But an electricity and plasma catastrophic event is only a step up in energy and power above non-catastrophic events.

A flare that browns out a power grid is disruptive, one that produces a sheath-to-ground discharge leaves a catastrophic crater.

It would be better to have a term that only refers to the upper end of an energy

or power scale and that does not evoke the anthropocentric connotations. Larger and faster changes the framework with which we understand our experiences of the world. It changes our understanding of how the world works. The stories or theories we compose that make sense of selected ambiguous workings that make sense to us, with our particular and limited nerve arrangements and cognitive faculties. Stories that we tell a lot, especially if they help us invent and run gadgets and processes every day, become familiar. We tend to mistake familiar for ultimate truth. When we encounter an unfamiliar story, we notice the differences from the familiar one and dismiss the unfamiliar one as impossible. It becomes habitual. For instance, conventional astronomers for decades, dismissed electrical ideas because they would say, you can't get charge separation in space. After charge separations were observed toward the end of the last century, they admitted that, sure there was electricity in space, but it didn't do anything! When the ambiguities of our observations

break through the habits of the impossible, we have an opportunity to step into what will seem like a new world with new thinking. An Electric Universe suggests the possibility that present-day processes could be supplanted by orders of magnitude larger and faster ones. It suggests the possibility that geological formations could be created in a day. It suggests the possibility that the ancient stories of worldwide cataclysms, actually happened. The important question is not what happened, but what will we think, happened.

[Music]

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

New scientific reports may provide
insights into catastrophic events
that once occurred
on the planet Mars.

Scientists at an observatory
in Northern Ireland
have conducted analysis of nine asteroids
that orbit Mars, called Trojans,
and they've come to the conclusion that the
asteroids are the remains of a former planet.
The team discovered that the so-called Trojans
appear to be composed of the same material
including the mineral olivine which only
forms at extremely high temperatures
and is thought to be associated
with planetary collisions.

The team has concluded that the asteroids
orbiting Mars are pieces of a former mini planet
or planetesimal which was
destroyed eons ago by collisions.

Those who have followed The

Thunderbolts Project may understand why neither mechanical collisions nor a hypothetical former planet are necessary to explain the asteroids formation.

For decades, the chief principals of The Thunderbolts Project, Dave Talbott and Wal Thornhill, have proposed a very different history for Mars and all of the planets in the inner solar system.

In ancient myth, Mars was identified as both the warrior hero and as his own weapon, the cosmic thunderbolt.

Thornhill and Talbott state that Mars was devastated by electrical discharges in an epoch of planetary instability in the relatively recent past, perhaps several thousand years ago in prehistory.

As "radical as a theory may seem" it explains and in fact continues to successfully predict countless discoveries that only prove puzzling

to planetary scientists.

More than six miles

of crustal depth

was mysteriously removed from the

Martian northern hemisphere.

Consider also the many millions of

cubic kilometers excavated from Mars

in the formation of the stupendous

feature known as Valles Marineris.

Material from Mars still

occasionally strikes the earth

in the form of

mysterious meteorites.

Indeed, the discovery of Martian meteorites

was treated with great initial skepticism

since astronomers could not

envision the escaped material

reaching the necessary velocities

to bring the material to Earth.

If electrical discharges did in fact

devastate the Red Planet from pole to pole,

both the, so called,

Trojan asteroids

and the presence of the mineral

olivine are to be expected.

No collisions with former

planets are necessary.

The mineral olivine

presented a puzzle

when it was discovered, completely

unexpectedly, on a comet.

Such was the case with the Stardust's

next mission to the comet Wild 2 in 2004.

NASA investigators were

amazed to discover olivine,

and other minerals that only

form at super hot temperatures,

and dust samples from a

so-called "dirty snowball."

As NASA curator Michael

Zolensky said at the time,

"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."

In fact, in the Electric Universe hypothesis,

comets, asteroids and meteoroids

did not accrete billions of years

ago in the solar system's infancy

but they were in fact torn from planetary surfaces by electrical discharges.

NASA scientists were also amazed to discover the mineral tridymite, on Mars, which only forms at extremely high temperatures and is thought to result from a kind of volcanism never suspected on Mars.

As NASA geochemist Richard Morris said of the discovery, "It's really nifty, but we were shocked ...

There is no evidence for plate tectonics on Mars.

That's why it's such a surprise to find this tridymite."

However, as noted in a recent Space News report, tridymite has been reported to form as a product of lightning in a roofing slate, as documented in the book The Data Of Geochemistry.

In the feature-length documentary film, The Lightning Scarred Planet Mars, detailed analysis is given of countless geological features on Mars

that find ideal analogs in laboratory experiments with electrical discharges. One such example is the towering Olympus Mons, a nearly 22 kilometer high, so-called, shield volcano and the tallest mountain of any planet in the solar system.

As noted in the film, this shield volcano interpretation of Olympus Mons presents far more enigmas than answers.

The defining feature of a shield volcano is a gentle extrusion of fluid or low viscosity lava.

Shield volcanoes on Earth do not present a scarp whereas the scarp of Olympus Mons towers a nearly four miles high.

A NASA report freely acknowledges,

"The scarp is of unknown origin..." And...

"The steep cliff around Olympus Mons is peculiar and not characteristic of terrestrial shield volcanoes."

But perhaps most striking of all may be the blanket of incredibly fine

filamentary ridges and ravines

within the terrain of Olympus Mons.

In fact, the continuing discovery of perplexing dendritic patterns on Mars

is a key prediction of the

Electrical Scarring hypothesis.

New images taken by NASA's

Mars Reconnaissance Orbiter

reveal precisely the kinds of features

expected from electrical discharges.

Consider this recently

released image of the terrain

within the 10-kilometer

Zunil crater on Mars.

Scientists insist that the

crater was produced by an impact

but they have no real explanation

for the raised dendritic features

associated with secondary

craters within the crater.

NASA's description of the

image reads as follows,

"Secondary craters form from rocks ejected

at high speed from the primary crater,

which then impact the ground

at sufficiently high speed

to make huge numbers of much smaller
craters over a large region....

In this scene, however, the
secondary crater ejecta
has an unusual raised-relief appearance,
like bas-relief sculpture."

The best guess that NASA can offer
is that the so-called impact crater
has been mysteriously
weathered over eons of time.

The agency states,
"One idea is that the region was covered
with a layer of fine-grained materials
like dust or pyroclastics
about 1 to 2 meters thick
when the Zunil impact occurred
(about a million years ago),
and the ejecta served to
harden or otherwise protect
the fine-grained layer from
later erosion by the wind."

But experimental research within
the Electric Universe community
provides far more
promising possibilities.

One such experiment, conducted

by Billy Yelverton,
produced raised dendritic ridges simply
by applying intense vibrations to soil.

Consider also this experiment,
performed by YouTube user diveflyfish,
subjecting aluminum foil
to electrical discharge.

Indeed we have called the Martian
environment a "laboratory in space,
ideal for testing the concepts
of electric universe geology."

It was well over a decade ago that physicist
dr. C.J. Ransom of Vemasat laboratories
was able to reproduce the mysterious,
so-called, Martian blueberries
by blasting quantities of
hematite with an electric arc.

Only one of many such
pathways of investigation,
as repeatedly outlined
on this series

as well as many dozens of The Picture Of
the Day articles on Thunderbolts.info.

Electrical discharges produce
effects that could account
for much of the consistently

bizarre Martian geology.

Space discovery today routinely
provides surprising discoveries
about the Martian environment.

As human exploration brings
Mars into ever finer focus,
we confidently predict that the evidence will
continue to mount for catastrophic events
that left their indelible
imprint on the Red Planet.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

Thank you everybody, it's
a real pleasure and honor
and I echo Monte's thanks to everybody
that's involved in this project,
including my co-authors here.

So, before everyone falls asleep
when we're talking about statistics
or goes to get a coffee, I'll make
this as exciting as possible.

I get really excited to talk
about this simply because I...

Although many people think statistics
is a very mundane dry subject
it is really at the
heart of true science.

I do believe, when I hope to show here is
a basic concepts of experimental design
and how we are
using it in SAFIRE
to look at what various factors
contribute to various responses.

I do believe that design of experiments
will be the future of science,
statistical approach to
design of experiments.

So, before I get into though

there is a very alarming trend
that I've seen, that I
want to talk about here.

You will see that the US spending on space
science and technology, as it has gone up,
there is also a concomitant rise
and very unfortunate suicides.

Serious, is a direct correlation, you
can see it's a very strong correlation,
I mean, I figured that if we decreased
our spending by about 20 billion
we could end these
unfortunate events, right?

So, what does this
really show us?

This is an excellent
website, by the way,
if you've never seen it,
spurious-correlations, right?

It's very, very easy to draw a
conclusion from spurious correlation.

Correlation does not, don't
know causation, right?

and, me as a scientist, I'm
guilty of that sometimes too.

We see something, we see a trend

just as Ben talked about earlier.

He sees a trend and

then falls apart.

Well, that means that something

might be there statistically,

but maybe there's

a missing factor

and I'll explain by what I mean by factors

and everything like that, very soon here.

So, an introduction to terminology, this is

what I'll be talking about in the slides

I'll just race through this

to the final outline here.

And what the following mean for SAFIRE

and experimentation in general really.

Okay

Statistical and efficiency, statistical

and experimental efficiency

I wanna say no more "one

factor at the time",

OFAT is used in the statistical

rounds to describe how...

actually many of us are trained

as scientists and engineers.

We very one thing, we look at

the response, we write it down.

We increase that one thing,
we write down the response.

Now, when we're all done with that maybe
we change something else in the system
and we do the same thing.

But really what you're doing is you're
isolating your factors away from each other,
you're not taking into account any interactions
between those things that you're tweaking.

That's "one factor at the
time" experimentation.

Now, people in the past have done that
before there's nothing wrong with that
sometimes you got establish your
boundary conditions in your experiment.

And that is, that is good.

But when you get down to really
discerning what causes what,
you cannot use this approach.

And 2nd order interactions,
that's a red font there,

I'll explain more what they are
and why we must detect them.

And really, why do we want to use
the design of experiments approach?

Means less experiments and better statistical

results, it's really that simple.

And I'll share some results, future considerations that we're encountering in SAFIRE in just the way to try and track things for those who are visual a green square in this presentation will denote a point that I'm trying to make for decreasing the number of runs by using, no longer using "one factor at the time", and I'll try tie that in.

Whereas there are red star will denote a second order interaction, those items where, where two things might interact on a level that you might not be able to resolve if you were to do "one factor at a time".

So, some factors and in response to the factor is a "knob setting", many of you might have heard variables in the experiment, for many variables in the experiment.

Well that's a factor, okay?

It's an independent variable controlled or uncontrolled in an experiment.

I like to say it's innocent

until proven guilty,
in other words, if you have something
happening in your observing that changes
you gotta go into that experiment unbiased and
see what factors influence that response
and then you statistically
prove that it's guilty.

So, a response, though, is a result of the
system responding to the factor(s) settings.

It must be measurable with
understood deviation.

A response can also be qualitative,
a visual quality of a system.

I like it, I don't like it, advertising
companies are very good at that.

So, this is a fun video.

You can turn off the sound, there
is really nothing to hear, but...

Until the factors and
responses here, right?

This is great, I can't wait to
do this for my six-year-old.

I'm not going to build my own,
though, I'm a chemist not a...

and we won't be doing this

in SAFIRE either, so...

Because most of us

don't have any hair.

So, what are the factors?

voltage and van der Graaf

Generator, right?

If you really want to get detailed,

the materials of construction,

if that was a dielectric on the surface of that

sphere it definitely wouldn't work as well if at all.

And also maybe the person

receiving that charge,

what happens if they have shorter, different

type hair, really short curly hair

is gonna work the same way?

What kind of response

are you looking for?

Do you wanna hurt the person

or do you want them to laugh, right?

So, this is an example of

a factors and responses

of how it's important to

understand your system, okay?

What I will say is that...

the design of experiments is not merely

coming up with an experimental plan, okay?

It is a statistical method of

experimental observation,

statistics are used to

characterize results,

it entails randomizing

test when possible.

Now, not always can, you can always

randomized tests understandable

we encountered that a lot in SAFIRE

due to experimental constraints,

but you want to try, because that make

sure that no time factors are involved.

It assure the test

is repeatable,

you want to come back the next day

or maybe in another lab and do it.

You want to ensure that, and I'll

talk about this more a little bit.

It incorporate an orthogonal or

symmetrical approach to experimentation,

that's really the inherent

power in design of experiment.

And ensures discernment of higher

order interactions between factors,

I mentioned that before, I get

into it a little bit more.

So, as an experimentalist, you still

wanna establish the boundary conditions,
especially working in the
unknown, that's fine.

But when it gets to the point where you have to
understand what's involved with those experiments
you truly do need
design of experiments.

So, as an experimentalist,
I will correct you,
if you claim to be using design
of experiments and you're not.

So, I've been that guy at a dinner party and
I'll be that guy at the dinner party, so...

Let's talk about something
we're all familiar with, baking.

Other factors involved in bread?

Any one?

Yeast, yes.

Salt, sugar, what else?

Rise time, temperature,
water and big
temperature, right?

There's probably a few other
factors I missing here.

Right now that's

9 factors, OK?

And may be a response here would be
the rise in the taste and texture,
crust thickness of the bread,
stuff you can measure,
may be a qualitative assessment
of how how good it tastes.

Now, bread is a pretty everyday thing that
we all pretty much know how to make, right?

But what if you're working with a
new grain, a new lot of flour,
the different particle size there's lots
of factors to take into account here.

And if you really did want to look
at 9 factors in a baking experiment,
if you, even if you use a factorial approach
which means a design of experiments approach
if you wanna resolve all the interactions between
flour and yeast and rise time and all that,
you need 512 experiments.

So, 512 experiments and then not to mention
you also have these factors of noise
you don't know if these are gonna
play a role in your experiment,
maybe your oven goes dead after 250
experiments and get a new oven, right?

So, that's just gonna

give you a general idea,
luckily people have worked
out the bread experiment
and we pretty well every day,
we're thankful for that.

So, let's get into the, now that we
have an idea of how complex bread is
we'll get into the much simpler
system of the Sun, right?

It's pretty easy, those gravitational
compression, Monte talked about this earlier,
there's hot turbulent gases coming up
from the fusion
that's created by the gravitational
collapse of the mass
from that gradual accretion
disk in it compresses down.

The energy was
released in some ways,
there's some debate of how that
energy gets released to the surface
and eventually reaches
us here on the Earth.

There's a lot of responses we
can look at in the system.

One of them being fusion, I know

there's been a lot of talk about that.

Fusion, is it a factor or

response in this model?

Is it a response to the gravitational

collapse, and fusion is initiated,

and then it drives the Sun, and

they're going to run out of energy?

As it, is it a factor for those other

responses that happened on the surface.

There's also the electric Sun model

that has been talked about extensively,

charged plasma affecting matter

at a different potential.

And in this case we

have an anode Sun,

and these are from a Wal

Thornhill e-book by the way,

haven't put the credits

on there Wal, I'm sorry.

And there's a steady drift of

electrons towards the Sun.

Probably emanating from a dense plasma

sheet or some sort of double layer.

So, which of these two

models can we test in a lab?

Which of these models that are listed in the

EU row, charge differential affecting matter
of a different charge differential
acting on the material
and the responses there,
if fusion is happening,
we should see if some
response to that.

In addition to all these other things, these
responses should be consistent with the EU model
just like was said
in Ben's film.

And the factors in a traditional model
we have to weigh against as well.

Fusion, I think, could be both the
factor and the response in that.

So, that makes it a very hard
system to test statistically
if we don't know which is a
factor and which is a response.

So, let's get into
some experimentation.

We have a particular
knob in our system
and this is gonna walk
through this just because

I want to show you how that feeds

into actual design of experiments.

When you have a knob in a system you have a continuous set of factors, we call these 'continuous factors', you can dial that knob to whatever number you want, right?

So, some experimentation is needed to understand what your limits are, but let's say we can dial this knob to whatever level we want, we measure response this is a graph of a line $Y = mx + b$

So, 'm' being the slope of this line, 'Y' is the value of a response, the hardness of the bread crusts, the taste of the creek bed plus whatever may be and 'x' is the setting of our knob, say on our oven.

So, the hypothetical response 'Y' is a measurement of the oven temperature, or the voltage drop or the plasma intensity, whatever it may be.

Now, in this hypothetical example, I kind of scattered ± 0.1 , across that whole response. and it might not always be a straight line in real life, oftentimes is a curve and we have

to apply certain mathematics

but for the purpose of this illustration I just want to illustrate a straight line, right?

So, there are two ways to approach experimentation.

You could set there, you could dial the knob 10 times and look at the response.

10 times along that line, right?

One factor at a time.

Could also do possibly 3 settings.

May be replicated, you can build in some replication to your system, which is important, right?

So, maybe dial to 1 we take a few readings, we dial to 7 we take a few readings, we dial to the midpoint of 4 we take a few readings, then we go back to the other set points.

So, you can see here that we have pretty much the same data from our 3 level test and we have a set of data from our 10 level test.

Now, there's a difference between these, when you're in the real world and in the lab.

We could do this one of two ways we
can set the knob 10 different times
and do 10 different readings
or we can do it a few times
and utilize the average and the
deviation in those responses. Right?

So, we can do our 10 levels and I
can say, Jano here are 10 levels,
and Jano being the good guy that he
is he'll carry out the experiments
He doesn't crumble,
right, he doesn't crumble
and he will continue to
do those experiments
but then I gotta go to Michael and I gotta
say Michael here are 10 spectra that we have
we got a look at these peak
ratios these full with half max's
and says; 'Man we don't have grad
students at least not yet, not yet'.
but in actuality if you really think
about this can be very overwhelming
and this is what we're up against
right now is with NASA data.

If you do find some NASA data and
you've dug into the data from NASA

it is often very, very
difficult to get through.

Some of the data is
very easy to find,
but it's harder to manipulate
into a usable form
and it's even harder
to data mine, okay?

And is an example of that, will have gobs
and gobs of data may be 10 data points
which we then gotta
translate into a response
that we can analyze and
our scientific method.

So, Michael illustrate on this,
illustrate that on this slide
and that's why grad
students are very valuable
and just a side note I think there's
a great future for the young folks
or even all other folks who are looking
in data mining and data analytics
that's really the secret of Science
in the future with these gobs
and gobs of data coming out us from the
right and the left we really need people

who know how to dig into data, filter it
out and get good, good statistics from it.
So, this is where we introduce a little bit of
course fog analogy in some mystery into the design
now we're just gonna run three
different settings, right?
a lot easier to just let it run a few
times at each setting

Jano is much happier with that your three
levels replicate them a few times, okay right?

That's what Canadians say.

And then, I give that to Michael, but
I say, hey, here respects from 10 runs
but we can take the variance
in the averages and use them.

Michael's thumbs up there, he can
go home in Canada the next day.

Not very much difference
between the data
again this is just a very
hypothetical experiment, right?

But on the left we see that 10
data points
on the right we see the 10 data
points at three different levels.

So, which looks easier to do?

So, what we're looking to do is
furthermore utilize this in terms of
experiment has cushioned and
data acquisition and storage.

It's much easier to store say the
average and variance of a few data runs
rather than a full suite
at different levels, okay?

Additionally, for those who are more data
minded I apologize for a small fun here
which is more symmetrical, I introduced
the concept of orthogonality here,
orthogonality is necessary in the
design of experiments to do statistics.

There even though it's evenly
spaced there truly is North
orthogonality associated with that
10 point data design on the left
and on the right we

do have orthogonality
there are 3 data points that
can be symmetrical with

another 3 data points
from another factor

and then we let the math and statistics work
out the relationships between the factors.

And if you do look, I don't
know if you can see but
I'll go into the statistics one more
little bit later on our SAFIRE experiment
but the statistics
are the same, okay?
For the most part there
they are the same.
So, I want to emphasize here the efficiency
of statistical experimental design.

This chart was made
by Louis Volante,
he really pioneered the
statistical experiments at Kodak
back in the heyday of
photography, of print photography
and it really shows the advantages of
using a design of experiments approach
in the first column we have a number
of factors in your experiment.

So, 3 factors time
temperature pressure, right?
in the center of 4 factors
will be one more factor 5.

So, these will be selections of a number
of factors which were gonna look at.

The efficiency all be on the right there is
actually a measure of variance in the design.

And what that means?

It's statistical efficiency, it's how well
the designers set up in space, right?

Data points take up a
certain type of space.

So, it's a measure of inherent variants
before you even doing experiments
you can do that with statistics, you can measure
the variants associated with the design.

So, to have the same
statistical efficiency
this one factor that I'm type runs
you need a minimum of 16 runs
compared to 8 runs in
a full factorial DOE.

you need double the amount of runs to
obtain the same statistics, really,
as you would using a design
of experiments approach.

And something to take
away here full factorial DOEs.

They are not the best
DOEs to use anyway,
but they lend insight into

interactions that you wouldn't get

from 'one factor at a time'

or you would do many runs.

So, this is where the

orthogonality and the symmetry

really empowers the design

of experiments approach.

So, bring it back to the

factors of bake time,

here's where I can introduce the

concept of 2nd order interactions.

We have bake time, temperature

rise time, etcetera,

and to really resolve the second order

interactions we need many more runs.

Already told you 512 runs if we

were to use a full factorial DOE.

Maybe if we can decrease

our number of factors,

we can decrease the

runs, we could do that,

but we do need to resolve the

interactions between certain things

we know that between rise

time to rise temperature

there's a there's some sort

of relationship there, right?

You know when you put your rising

bread next to the fireplace

it will rise will quickly

and then collapse,

whereas you put in a nice medium warm

corner all drives nice and slowly.

There is a relationship there,

likewise between yeast and sugar,

there is a relationship there, the

yeast need certain amount of sugar.

And finally between

yeast and a liquid,

you don't want to overdo

the liquid in your system.

Those are examples of 2nd order interactions

and to resolve them mathematically

it requires at least 2 to 3

runs between those factors

in addition to those factors

being related to others.

So, how are we doing

that in real life

if you're so inclined to

read the statistics paper.

I'm a chemist, I'm not

statistics person

and for me as a challenge get

through the paper but it

but it really is enlightening because

there is a level to resolve second

there's a way to resolve 2nd order interactions

with a proper kind of design of experiments

this more recently has been a leap forward

for design of experiments in screenings sense,

in other words, when we wanna, when we

first establish our boundary conditions

we want to know what interactions

are there between the factors

and really this, what they call

Definitive Screening Design

when you have second-order

interactions and effects

which we know are there from plasma,

it's a very nonlinear response,

this is a very

valuable approach.

Really only when you have more than 6 factors

otherwise there are other approaches.

But going back to our dial,

if you think about it now,

if we just code are settings between negative

1 0 and one being low medium and high

those can be any numbers,

right, for each factor setting,

but just for the ease

of picturing this,

yes 6 dials, you can dial them in at 6

different methods, 6 different ways.

Try to think of that

experimental matrix in your head

without the use of computers,

is nearly impossible.

And so, what you're seeing on the right

there is this definitive screening design

which will resolve the second order

interactions between these factors.

So, how a design of experiments would work is that after

much discussion we would sit down and we decide on the runs

that we're going to do the limits on each

factor we devise the design of experiments

So, the $X_{i,1}$ factor here, these

would be the settings for each run

for the $X_{i,2}$ factor, pressure,

time, whatever may be, here,

$X_{i,3}$ factor voltage, etc, etc.

So, these are 6 factors and these

are each experimental run

and we get the response

out that were looking for.

Whether be a certain peak height, full with

half max, mass loss on the anode, etc.

There's a specific response

for each experiment

and you can have as many

responses as you want, okay?

But notice, I circled the zeros

because of the midpoints, right?

You notice the symmetry

in this design?

You see I can fold

it over, diagonally?

So, you can see that this -1, -1,

-1, -1 is down here -1, -1, -1, -1.

So, that's the symmetry I was talking about

orthogonality that really empowers DOE.

Now, we only have to run 13 runs

to resolve second order interactions

that are not confused with

any main order affects.

I'll get into more detail what

those main order effects are.

So, it's a very powerful approach,

this approach was used

by a company recently to find a
catalyst for CO₂ sequestration
and they won a prize
for the DOE using it.

It's got to cut off a little
bit but this is just a
to note the symmetry of
the design space, right?

If you look at the design space,
all the designs bases covered.

If it wasn't symmetrical you'd
see gaps in those those dots.

And what this axis is?

This is actually X_2 ,
 X_3 , X_4 , X_5 and X_6

these are the factors and these
are also factor settings.

So, just the way to visualize what the factory
settings are associated with each experiment
and to make sure you have your
design space covered it efficiently.

So, again 13 runs we can get
that design of experiments done
and then you follow up on that once you
figure out your second order actions
you do further experiments

to increase your response.

In a typical deal we factorial
you would need to do 64 runs
'one factor at time', don't
even try to calculate it.

When we were first... When
we first assembled SAFIRE
I took the approach of
using screening designs.

We had a number of factors,
we didn't have enough factors to
utilize a definitive screens design,
so I just used to be
a factorial designs.

You'll notice again the symmetry
were symmetry comes into play here.

We typically had 4 to 6
factors in each experiment,
in this case we're three
dimensional creatures,
so we can envision three
dimensions at once.

We have pressure, voltage and
current as our settings,
we also had type of gas, the type of anode
and type of cathode in some experiments,

and we had a voltmeter

that was across...

...between the cathode anode across

their to measure the voltage drop.

Okay, and we also had other

responses that we are monitoring,

but this is just to give you an

example of design of experiments.

You can see that each of these

data points is a unique data point

and this is why I also design of

experiments builds and reproducibility

each of those data points actually

augments that orthogonal approach

to help us reproduce

these settings.

Is also center point here and

what that center point does

is it says; okay, I think there is

curvature between these factors.

It doesn't give you an exact

measurement of that curvature

it just says hey you look between

these two factors in further detail.

Okay, so that's 9 data points in a single

experimental run, in a very dynamic system

and money give you a

teaser of this graphic

I try to do this in as

many runs as possible

to kind of monitor what

the plasma is doing.

As I said before, think about this in

your experiment if you run experiments

especially the qualitative experiments

were you looking say a creators

or trying to rate different responses

that are a qualitative in nature

at all times we should try and

make them quantitative, right?

Maybe the number of Tufts that

come into existence, etcetera,

but in some way at

least rate them.

Yes, I like it, no I don't,

scale of 1 to 5 or 1 to 4,

so you're not sitting

there on the fence.

There are ways to do that

for qualitative responses

that goes along way for quantifying

and optimizing your process later on.

Again I said the advertising
companies do very well
with their there are many, many
surveys that they perform
to figure out the best factors
involved in an advertising.

Qualitatively, as we're going
into some numbers here, so...

this is not really a graph of a
response, is a graph of the model.

So, you hear models talked about in the
literature and in the press a lot.

These models are derived from real data,
they're not derived from a computer, okay?

The data that's going in
still controlled by us,
we saw how to choose the
right statistical aspects,
but this voltages on Y-axis and we
have our model that we've built
from our various
terms on the X-axis.

This model is composed of voltage,
of the pressure, of the current, etc
how many factors are
involved with your response.

And what it's doing is, it's plotting a line that if it's perfect and a perfect world, you'd perfect model goes to zero axis, here, or the 0 point here in the origin and you would have no scattered, but we're dealing with real data, so you have scatter.

And it's measuring the ability of the model to predict the response at a certain setting.

So, once we have this, in this design space, I know that I can go to a setting here I can back out those settings in real life, I can dial that in and I'm going to predict a certain voltage drop.

And statistics here are telling me that, you know what?

That's an R squared of 98, that's pretty good 98%.

You have a Root Mean Square Error (RMSE) of about 23, plus or minus 23 volts in this response, that is unaccounted for by the model.

Doesn't mean that error,
it means it's just unknown,
the models telling me
that I have 23 volts
that you're just gonna have to deal
with, that I can't tell you what it is.
I don't know why it's
plus or minus, right?
Most importantly you see the
P value is less than .0001
And that value needs to be below
.05 for the model to be valid,
in other words, it deviates from the norm
significantly, so less than .005, so...
So, let's dig it in
a little further.

Ben really struggle with me because he
was searching for the other factors,
how can you tell what other
factors contribute to response?

And really that's
what science is about.

When we're dealing
with the response
we want to know what factors
are contributing to that.

And through statistical design of experiments we can do that, okay?

So again, I already mentioned that the model matches real data, because of predictable result.

There's a very small variance in the model, as you can see in the line there.

So, small variances good, you're not dealing with very large confidence intervals here,

which means you can predict things very well

and the deviation from

the norm is significant

it's a valid model, we can use it for engineering to dial in further.

So, let's get the crowd involved with parameter estimates.

So, every one wants to know what causes something to happen

and when you're dealing with

systems with more than one factor

which pretty much I believe every physical system is, you always have that question.

It's an unfortunate

series of events that,

I read many technical papers on a

weekly basis and I would say maybe, maybe, 5% of all these papers utilize a statistical design of experiments approach.

So, that means a building models without having proper control of all the factors going into that model.

It's not taught very much in schools, it's starting to catch on

I know the US military schools are are doing it and they're leading the charge in that.

But really what this tells us, if everyone can look there at the highlighted region.

For those of you who can see the font, what's the biggest number?

It can be negative or positive.

Pressure, right?

It's pressure.

It's not that hard to discern which of these effects is the most important in the response of voltage drop across in this experiment.

Pressure is the main effect.

What's interesting is that, the next effect is squared term of pressure, positive 107.

So, right now, out of all
this number which is about,
you know, a little over 300
these parameter estimates,
pressure is taking up
nearly $2/3$ of the model.

In other words, that model
that was there, that graph
 $2/3$ of that response that it's
predicting is due to pressure.

Then what this is telling us also
is a second-order interaction,
that's the third largest term.

Pressure time set voltage,
what does that mean?

All it's telling us is that in some way the
voltage is interacting with the pressure.

It's not giving us
a physical model,
it's not giving us a natural
model that we can go from.

Now, is the hard job of me sit down
with Wal and understand what he's doing
and for us to ask if this
data makes sense, right?

But a second order effect that

is drawing down that voltage
it's a negative number draws down the
voltage, as pressure and voltage go higher.

And finally, the main effect or the single
factor here, Set voltage is about 47
and statistical speak it's about the
same as the second order interaction.

This is what design of experiments gives
us, it gives us a series of factors
and ratings associated
with each factor.

So, you know when you go back to
your bread that the type of flower
and the amount of water you added
were the most important effects,
they contribute 80% of the model, the rest
20% you could live with not worrying about.

They often call that the 80%
solution in Department of Defense,
sometimes that's good enough.

So, what does that do for us in
terms of parameter response?

Again, you know, 'one factor at a time'
it's just not gonna be capable of this,
the parameter estimates tell us
what extent of each factor

contributes to the overall response.

What that really does for us, is it enables
the mathematical model to be generated,
it enables a response
curve to be generated
that give me, in just at real time,
and we can understand these effects.

So, we can see that at low
pressure and low voltage settings
we have predicted voltage
drop about 393
and this is a setting about 400 volts
maybe to .5 toor, actually to .6 toor.

Now, as we move
cursor over to...

This is bilt from a predictive
model to about 10 toor.

What happens to the voltage drop?
It drops, right?

It's not a linear drop, it's definitively
not linear and that's due to that 2nd order
or that the higher power effect,
that squared term of pressure.

That's why you have this curvature
associated with this response.

So, we have a predicted

voltage of 230.

So, now I hope you see

the power in this, but

because we now have predictability in the whole
region of design space for SAFIRE project.

And most importantly, what we look for
are regions of what we call, robustness.

So, if you look at going from this
graph to now sliding over the...

...sliding over the cursor.

If you look at the slope of the

Set voltage, flattens out, right?

Where the implications of that?

The implications of that are, I can now set
my voltage wherever I want on this curve
and the voltage drop is
gonna remain at 257 volts.

So, that's leading a little bit insight
into what might be happening in the plasma
again this is where we sit down
and discuss what this means.

And I interpreted this as

just being a robust area

where like Monty alluded to before, doesn't
matter what kind of voltage you put in
that voltage drop is gonna remain

constant, something else might change,
the appearance of the plasma might change,
other aspects of the plasma might change,
but the voltage drop is
going to remain constant.

And you can do this through a series of
responses and build up yourself a few curves.

So, DOEs are our way to
decrease experimental runs
while you maintain your
statistical efficiency.

You also look to make...

...to resolve your higher order

interactions between your factors

those are really the two main points to

take away points that I like to put forth

but also take home message that

this methodology can be implemented

into many areas of research

and process optimization.

Years ago I...

the reason I came across design of experiments

was I had to do training for my job

and I went to a course talk by Doug

Montgomery for the American Chemical Society

and I came out that course because he

taught the basics of design experience,

I came out that

course slap my head

realizing how much time and energy that

could have saved me in my grad school days.

But these kind of things you

learn and it's really come about

more recently because of the the computer

software that's really available to us.

Because a computer software can

handle these really complex arrays

of design of experiments and

help us layout the experiments

and do them more efficiently and resolve

the interactions between these factors.

Shamelessly, I don't particularly

have a favorite software,

but this will be

my ending slide.

So, if you're interested feel free to check out

any other software that you see on the screen

with no particular

favorite on my part, so...

I earn my nickel and

that's really all I have.

Thank you.

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

Of all the planets in
the inner solar system
perhaps none have proved more puzzling
to scientists on Earth than Venus.

On close examination we see that almost
nothing about the planet makes sense
from a conventional viewpoint.

From the extraordinary movements
of Venus's atmosphere
at speeds up to 60 times faster
than the planet's rotation

to its extraordinary
super bolts of lightning
vastly more powerful and
prolific than lightning on Earth

to its super hot
temperatures, well over 800° F
hot enough at the planet's
surface to melt lead,
to the mysterious vortices seen
wandering at the planet's poles

to its vast stringy
cometary tail
stretching for millions of miles sometimes
even touching the Earth's orbit.
Countless unresolved mysteries on Venus
demand entirely new theoretical pathways.
A scientific paper published this year in
Nature Astronomy only deepens the mysteries.
A team analyzing data from the
ESA's Venus Express mission
have discovered a mystery in the darkness
of Venus's nightside atmosphere.
Of course, the planet's
forementioned superfast winds
have long been a puzzle
for planetary scientists.
Lead author astrophysicist Javier
Peralta says of the enduring mystery,
"We've spent decades studying
the super-rotating winds
by tracking how the upper
clouds move on Venus's dayside
- these are clearly visible in images
acquired in ultraviolet light.
However, our models of Venus remain
unable to reproduce this super-rotation,

which clearly indicates that we might
be missing some pieces of this puzzle."

Using the visible and infrared
thermal imaging spectrometer
or VIRTIS instrument,
the team gained new insights into what happens
to these winds on the planet's night side
which remains hidden in darkness
for hundreds of days.

They found that Venus's
tremendous baffling winds
are even "more chaotic" on its
night side than on its day side.

They had expected
just the opposite.

As described on Sciencealert.com
"Existing models of the atmosphere
have predicted super-rotation
largely occurred the same way on
both Venus's day and night sides,
but the new infrared perspective
shows the whirling Venusian winds
are actually more irregular and
chaotic when hidden from the Sun."

As seen in this image, the most
puzzling feature to the scientists

is the filamentary patterns
seen in these clouds
which are not seen on
the planet's day side.

The team characterizes the phenomena
as essentially a type of gravity waves
in this case what they refer
to as stationary waves.

One of the researchers states,
"Stationary waves are probably
what we'd call gravity waves
- in other words, rising waves
generated lower in Venus's atmosphere
that appear not to move
with the planet's rotation.

These waves are concentrated over
steep, mountainous areas of Venus;
this suggests that the
planet's topography
is affecting what happens way
up above in the clouds."

However, the scientists are forced to acknowledge
some of the problems with this theory.

As the Sciencealert
article states,

"VIRTIS observed areas in

Venus's southern hemisphere,
which is generally
low in elevation,
but the team says gravity waves still
influence the atmospheric movements
- but strangely enough, there was no
evidence of them in the lower cloud levels,
up to 50 kilometers
above the surface."

Team member Ricardo

Hueso states,

"It's an unexpected

result for sure,

and we'll all need to revisit our models

of Venus to explore its meaning."

From the Electric Universe perspective,

the striking filamentary clouds

are simply due to electric currents

in the Venusian ionosphere.

It has long been known that the solar wind

interacts directly with the ionosphere

and of course filaments

are the forms we see

when electric currents

travel through plasmas.

The concentration of

the filamentary clouds
on high mountain tops is also a
prediction of the electrical
interpretation.

For many years planetary
scientists have sought to explain
the bright mountaintops of Venus
which reflect radar signals.

Some scientists have proposed that the mountains
are covered by a "heavy metal frost".

However, in 2003
physicist Wal Thornhill wrote in an
article on his website Holoscience.com

"A much simpler answer is that
diffuse electric discharge,
known on Earth as
'St. Elmo's fire,'
occurs preferentially at the higher
altitudes of the mountains on Venus.

In that thick atmosphere it forms
a highly conductive dense plasma,
which is a superb reflector
of radar signals."

The difference between the day and
night side phenomena on Venus
may be due to the comet-

like electrical interaction

feeding Birkeland currents into the

planets so-called magnetotail.

Magnetic turbulence

on the night side

can then be the effect

driving the chaotic winds.

In the Electric

Universe view of Venus

it is not a coincidence that Venus today

shows such similarities to a comet.

In fact, following the hypothesis that was

first proposed by Immanuel Velikovsky

in his book 'Worlds in Collision',

it has always been the position of the chief

principals of the Thunderbolts Project

that Venus once appeared in the

earthly sky as a terrifying comet.

Before the earliest space probes

imaged the surface of Venus

a number of scientists,

most notably

Fred Whipple, the originator of

the dirty snowball hypothesis,

had predicted that Venus would

be covered with oceans.

Instead, of course, Venus is
extraordinarily hot and dry
and its surface is blanketed with
networks of filamentary scars
matching the form of so-called Lichtenberg
patterns produced by electrical discharge.
Today Venus has a much more direct electrical
connection to the Sun than the earth
and it is this relationship
that holds the key
to understanding its bizarre
atmospheric and weather phenomena.
As mentioned, the predictions of
the Electric Universe for Venus
are much different than those
of standard planetary science.
In 2005, physicist Wal Thornhill
offered such a radical prediction
in his analysis of the North
Polar vortex on Venus.
Professor Ross Taylor said
of the vortexes discovery,
"...the absence of viable
theories which can be tested,
or in this case any
theory at all,

leaves us uncomfortably in doubt as to our basic ability to understand even gross features of planetary atmospheric circulations."

It was Thornhill's position that such vortices would inevitably be found at both poles of the planet though only the one at the North Pole had been observed at the time.

He wrote,

"We should expect to see evidence of the twisted-pair configuration at the poles of Venus, if the input current is sufficiently strong and this model is correct...

The Venusian polar dipole shows the precise configuration and motion of Birkeland current pairs in plasma discharge experiments.

That includes a surrounding spiral vortex."

In 2006, scientists indeed found a similar vortex at the South Pole of Venus.

As we see in these images, it appears stunningly similar to twin current filaments

studied in laboratories on Earth.

But as Thornhill noted,

"...there was no reason, other than an appeal to symmetry, for scientists to expect a similar vortex at the South Pole of Venus."

Thornhill explained that the mysterious polar vortices and Venus's super-fast winds share the same source, incoming electrical currents from the Sun.

He wrote,

"Venus Express science team members say they want to know how these vortices remain stable and where they get their energy.

This goes to the heart of what drives the super-rotating upper atmosphere of Venus...

Venus, as shown by its cometary plasmasphere, is still discharging strongly to the solar plasma.

The enhanced infrared emissions seen from the polar dipole is due to the dissipation of electrical

energy in the upper atmosphere of Venus.

The polar dipole has a

variable rotation rate

and it varies the position of its axis of

rotation with respect to that of the planet.

It was observed to move 500 km from

the Venusian pole in less than a day

and return just as quickly.

The variable nature of the electrical

input to Venus via the Sun

and the snaking about of the Birkeland currents

explained both these characteristics."

However, in 2005 Thornhill offered

a similar outrageous prediction

on the planet Saturn, that science

discovery also confirmed.

In his analysis of the warm polar vortex

discovered at Saturn's South Pole

Thornhill wrote,

"The Electric Universe also

predicts, experimentum crucis,

that both poles should be hot,

not one hot and the other cold."

In 2008, the Cassini spacecraft

confirmed the astonishing prediction,

astonishing because the

freezing cold North Pole

had been deprived of sunlight

for more than 12 years.

The author of a paper

on the discovery stated,

"We didn't expect it to have

a hot spot at the north."

Electric currents

from an electric Sun

connect it to planets and (are) driving

atmospheric and weather phenomena.

How many enduring mysteries

will be resolved

when planetary scientists finally recognize

these simple and logical concepts?

Welcome to Space News from
the Electric Universe,
brought to you by The
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The essentialness of water to life is
self-evident to all inhabitants of our planet.

Wherever liquid water
flows, life is possible,
and thus cosmologists are
on a never-ending quest
to detect watery worlds
similar to Earth.

The human body is said to be
composed of "mostly water"
and of course water is vital
for the body's functioning.

Within the electric
universe community,
water's electrical properties and their
relationship to the structure of water,
is a subject of great
interest in growing research.

At past Thunderbolts
project meetings,

Dr. Gerald Pollack has presented

his thesis on structured water,
and the apparent relationship
between water's electrical charge
its inter-molecular structure
and its surrounding environment.

Pollack has proposed what
he describes as "EZ water"
an "Exclusion Zone" of water
which has a negative charge.

A new scientific paper may lend
credence to these notions and if valid,
could have ramifications reaching well
beyond the earth and life sciences,
affecting all of cosmology.

In this episode physicist
Eugene Bagashov
introduces the controversial research
to the Thunderbolts audience
and begins outlining the important
questions the paper may raise.

I would like to discuss a recent
paper published a few months ago
in the World Journal
of Applied Physics.

To be honest, when I first
read it, I was quite shocked

as I believe its contents might have a
wide range of highly important implications
for physics, including astrophysics
and also chemistry and biology,
and maybe other branches
of science as well.

Now before I begin talking
about the paper itself,
I should note that the journal
where this paper was published,
is only a couple of years old,
and it does not look very
credible, at least to my eye.

Of course, in general I am advocating
for more academic freedom
and certainly do not mean that this is
a bad Journal just because it's new,
but I've read the text of the paper carefully
and there are a few hints here and there
that might indicate (on) a certain
lack of a review process.

Just as an example, in the
last section of the paper,
the author provides very important results
of a group of "scientists from Israel,"
but he never gives any actual reference

to their work to verify his words.

And it seems that the author
performed this research alone,
so in the end we're basically left
to rely on his goodwill, if you like,
and to believe that the experiments
that he performed, were done properly
and that his judgement about their
implications is reasonable.

So, in general I would advise a very
careful and skeptical approach
to the results

reported in this paper,
especially given its already
mentioned potential importance.

Well, since I've already
stated my general concerns,
from now on I'm going to proceed
with the description of the results
provided by the author, pretty
much taken at face value.

And after that I'll describe my own vision of
the possible implications of these results,
again implicitly supposing
that they are genuine.

The paper deals with the

properties of charged water.

So essentially, the author has been performing a series of different experiments, in comparing the behavior of uncharged versus positively or negatively charged water.

Uncharged water was stored in closed aluminum containers and to charge it positively, the author was either treating it with gaseous oxygen, or filtering it through silica gel.

The oxygen was supposed to absorb some of the electrons from the water and silica gel absorbs hydroxyl ions, thus leaving the water with excess positive charge.

Negatively charged water was obtained by either treating the uncharged water with gaseous hydrogen or by filtering it through the activated carbon.

The hydrogen was supposed to provide additional electrons to the water and carbon absorbs hydrogen ions from it. thus leaving the water with excess negative charge.

By changing the intensity or duration of any of these procedures, the researcher was able to control the resulting electric potential of the water.

Now let's take a look at the reported findings.

The first result that the author reports is the significant change in ultraviolet absorption spectra of charged water.

One can see that charged water absorbs much more UV light than uncharged one and the spectrum itself significantly depends on the sign of the charge.

In particular, the positively charged water demonstrates a sharp peak with the maximum shifted

into the shortwave area,

and the negatively charged one

demonstrates a flatter peak,

shifted slightly into the

longer wave area.

It is interesting that the paper also contains

UV absorption spectra of DNA solutions

in positively and negatively

charged water which also differ.

The second result is a change in mechanical behavior of charged water, namely when it is flowing out of a narrow gap, the stream of positively charged water rotates counterclockwise and the stream of negatively charged water rotates clockwise.

The author also mentions that the solutions of surface active substances demonstrate behavior similar to the positively charged water both in their UV absorption spectra and in flow dynamics.

And the solutions of surface-inactive substances behave like negatively charged water.

It looks like the solutions themselves are acquiring different charge, depending on the interaction of the dissolved substance with water.

At least that is what the author suggests.

The third result is a different behavior of solutions prepared with the use of water with different electric potential.

In particular, the evaporation
of solutions of salts
leads to the formation of different crystal
forms, depending on the charge of the water.

One example is the evaporation
of a positively charged solution
which leads to the formation of large cubic
crystals of mono-potassium phosphate,
while the negatively
charged water evaporates,
leaving thin needle-like
crystals of the same substance.

The author also shows that the
copper powder behaves differently
in the water with positive
and negative charge.

In the negatively charged water it forms
typical dendritic Lichtenberg patterns
on the bottom of a container,
while in positively charged water,
it remains a bit more inert.

The fourth result is a significant change
in surface tension of charged water.

The author shows that the
negatively charged water
has much lower surface tension

than the positively charged one.

I'll remind you that surface tension
is the parameter that determines
how hard it is to spread
the liquid, so to speak.

So liquids with high surface tension would
tend to be more lumped as one might say,
concentrating in isolated droplets
and thus having a lower surface area,
while liquids with low surface
tension can be more easily spread
and their droplets are more
likely to join into a continuum.

So the positively charged water, having a
higher surface tension, tends to be more lumped,
while the negatively charged water with lower
surface tension, tends to be more spread.

The author demonstrates
this in a petri dish,
where the negatively charged water
covers its bottom completely,
spreading over all of its area,
while the positively charged water
concentrates in isolated droplets.

Another experiment to demonstrate
this change in surface tension,

is performed with starch powder.

When it is deposited on top of the negatively charged water in the dish, it covers all of its surface in less than two seconds, and thus is able to remain afloat.

But when it is deposited on top of the positively charged water it accumulates at the deposition site and quickly sinks because of that.

The author also performs a pretty staggering experiment, where he shows that the steel needles, when placed on the surface of negatively charged water, sink immediately.

But on the surface of positively charged water, they can remain afloat for up to 12 hours.

He also mentions that the same effect can be achieved with uncharged water and charged needles.

In this case, a negatively

charged needle would sink
and the positively charged needle
would not, at least for some time.

The fifth result is the change in the
ability of water to hydrate polymers.

In particular positively charged water
hydrates polymers of biological origin
faster than the
negatively charged one.

To demonstrate that, the author puts
some starch powder in two bottles:
one with positively charged water and
the other with negatively charged water.

After half an hour
at room temperature,
the starch swells in the bottle
with positively charged water
and does not swell in the bottle
with negatively charged water.

The author also notes that the bottles
themselves were made of polymer,
polyethylene in particular,
and it seems that the positively charged
water can penetrate through it easier
than the negatively charged,
or uncharged water,

since he noted that the
positively charged water
was able to partially evaporate,
even from a closed bottle.

And the sixth result that
the author describes,
is the change in the freezing temperature
of water, depending on its charge.

Here he does not perform any experiments
but describes some other people's results.

Remember that note I made before
about scientists from Israel.

So it is well known that
perfectly pure uncharged water
can stay liquid up to very low temperatures
something like -42 or even -48°C ,
so called supercooled water.

It does not turn into ice, because there
are no centers of crystallization in it,
which are usually represented
by various impurities.

So the ice crystals in pure water cannot
find any starting point for their growth.

The author adds to this that the
impurities must always be charged,
either initially or because of their

interactions with water itself.

So the lack of these charges

inside the water volume

seems to reduce its

ability to crystallize,

which means it might

be fruitful to study

the freezing of charged

water in the first place.

The researchers that the author mentions,

were studying the freezing of water droplets

deposited on surfaces with

different electric charge,

and they've supposedly found

that the uncharged pure water

froze at the

temperature of -12.5°C ,

while the negatively charged water

froze at lower temperature of -18°C ,

and positively charged water froze at

the higher temperature of only -7°C .

The author even goes as far as

to state that the charge might

change the heat capacity and

thermal conductivity of water.

So, to sum up all these results,

the paper states that the electric charge of water influences:

- 1) its ultraviolet absorption spectrum;
- 2) its mechanical behavior (namely the direction of rotation of the stream);
- 3) the behavior of water solutions;
- 4) its surface tension;
- 5) its interaction with polymers, namely the ability to hydrate them and penetrate through them;
- and 6) its freezing temperature.

Overall, the author suggests that the charge of water actually changes its internal structure, which in its turn determines the observed differences.

I'd like to note that, although I have certain doubts about some statements that have been made in this paper, the good thing about all of this is that

it all can be quite easily
experimentally verified or falsified,
and I definitely hope to see more research
in this area in the coming months or years.

So even if the author is wrong we
will probably know soon enough.

In our next episode, Eugene will offer
an extensive thought-provoking analysis
on the far-reaching ramifications
of this theoretical pathway,
including its significance for
manufacturing and industry,
for biology, and for all
of the space sciences,
perhaps demanding entirely new
attempts to understand our universe.

It's rather tough, following two
such accomplished story tellers.

The story that I want to tell though
is one of elegant simplicity.

It was that, a title I
suggested to David Talbott
when I looked at the picture
that was emerging from
an understanding of gravity,
which I spoke about last year,
and as I worked on it I understood that
the universe really is much simpler
then anyone could
have considered.

But then, at the same time, there was
something that occurred in Canada,
a presentation which I
watched with dismay,
called the elegance or the
simplicity of everything.

I'll see if I can get this to..

it says the connection is lost..

Here we go.

So The Elegant Simplicity
of the Electric Universe.

How come so many clever

people can't see it?

Only in the last few months

that I've found out why.

It's an understanding that's

important for everyone,

including all of you here.

Today specialization is

the enemy of science.

It produces more complication

than simplification

because experts mislead

each other with things,

as Tom said: "they don't

know they don't know."

The result is a useless

reflection in a shattered mirror.

So, who am I to be speaking to you about

the elegant simplicity of the universe?

Looking back I can see how

I got into this position,

how I became a boundary

writer of science,

as the science editor of the Canberra

times dubbed me some years ago.

From the earliest age I was

curious about how things worked,

or read books and investigated
things on my own.

Other kids did the same so I didn't
consider myself exceptionally clever.

Looking back, it seems the event
that separated me from my peers
was being inspired by an extraordinary
story of planetary chaos
by Immanuel Velikovsky and his
book "Worlds in Collision".

This happened while I
was in high school.

So, I began to question many of
the things I was being taught
and when I got to university I think
I was the only physics undergrad
who used to haunt the Anthropology
shelves at the library,
checking to see whether Velikovsky
had cherry-picked his sources
or whether he had made a
real case to be answered.

And I came to the conclusion that he had
made a very good case to be answered.

So what had Velikovsky done?

He'd thrown down a gauntlet

to astronomers that
they rejected by having his
best-selling book burned.

So, book burning didn't
finish centuries ago.

It happened last century.

Velikovsky's heresy
was to publish that
electromagnetism played a dominant
role in the solar system,
particularly during periods
of planetary chaos.

Many years later and shortly
before Velikovsky's passing,
I visited him at his home in
Princeton and discussed this issue
about the electrical
nature of gravity
because this was perhaps the
single most important thing
that the astronomers
threw at him.

That his mechanism
disobeyed Newton's laws.

Once again this is the certainty
that there's only this law,

there's no what if.. There is some
other aspect to the mechanism?
So, it has taken me all of the intervening
years since then, there's quite a few,
to overcome the education
I received as a student,
to find the few true
pioneers of science
and to relate this to
everyday experience.

I firmly believe that the
Electric Universe is simple
and you could begin to teach
it in primary school.

It's an amazing and engrossing
story which fires the imagination
and the explanations relate
to everyday experience.

The Electric Universe is a cultural,
as well as a scientific, revolution
that has been
millennia in coming.

It allows us to understand,
for the first time,
the obsessive fear of
the planetary gods

and their doomsday weapon,
the mighty Thunderbolt.

The phenomenal thunderbolt of the planetary
gods is the link between our human story
and the science of the
electric universe.

Some of the renowned scientists of the
past like Newton and Faraday,
predicted that electricity is the
secret to understanding gravity
and therefore the universe.

But in the early 20th century,
following the madness of World War,
we reverted to the ancient geometric
religious mysticism of Pythagoras and Plato.

In fact mathematicians were
formerly called geometers.

And wartime established a fire hose of government
funding of science that hasn't ceased.

It has had the
unintended consequences
of paralyzing progress within
huge bureaucratic institutions
and fostering censorship in the
form of anonymous peer review
which stalls even

minor advances.

Paradigm shifts come from individuals and
are resisted vigorously by authorities.

The wartime command to large groups of
scientists to shut up and calculate
has become, with the advent of
computers, shut up and simulate!

Simulations' pretty pictures are routinely
used to persuade non-expert audiences.

Science is now in show business
producing CGI virtual reality
entertainment on big screens.

But computer models can only
reflect back what you put in.

As a scientist, one must attend
to what lies beyond any model.

Here is M74, a perfect example
of elegant simplicity.

It's called the perfect
spiral galaxy.

Cosmologists can't explain
its formation or rotation
without inventing weird stuff like
dark matter and a central black hole.

But adding arbitrary patches to a model
to make it work on a computer screen

is not simplifying and it's

certainly not elegant.

It's generally a sign that your model

is incomplete or just plain wrong.

You'll notice on the picture

the strings of red spots in M74.

They are star birth regions that

are brought out in this image.

I'll discuss this later because

they confirm the Electric Universe.

The definition of elegance for a scientific

theory or solution to a problem is,

well-designed, pleasingly

ingenious and simple.

Symmetry and balance are

also often important.

But assessments of ingenuity

and simplicity are subjective,

like an individual's

response to modern art.

Paul Gauguin wrote:

"The history of modern art is also the history

of the progressive loss of art's audience.

Art has increasingly become the concern of the

artist and the bafflement of the public."

So where are the art

critics of modern science
when presented with a chalkboard
covered in mathematical symbols,
most of which are undefined
in any real sense?

Critics of this art
of branded deniers,
as if consensus constitutes
a religious truth.

Only a belief can be denied
and if it's a consensus
belief it ain't science
as Michael Crichton said in
one of these famous speeches.

The late astronomer Halton Arp lamented
that investigative journalism,
or in other words art
criticism, in science is dead.

The Big Bang is the antithesis
of elegance and simplicity
with its random explosions and collisions and
its multiplicity of forces and particles.

Despite this, he is an
authority who said publicly
that everything is not just
simple but astonishingly simple.

Neil Turok, director of the Perimeter Institute
for Theoretical Physics in Waterloo, Canada
speaking on October the
seventh last year..

The astonishing
simplicity of everything,
but that implies you
know everything.

But I will show you that there
are many very basic things
that experts don't
know they don't know.

Neil Turok defined simplicity:

"Simplicity means
concepts which unify.

They bring together disparate
ideas, disparate knowledge,
make sense of them
and simplify."

I agree.

But adding fudge factors like
dark matter and dark energy
is the antithesis of simplicity.

What other disparate
knowledge was canvassed?

Certainly not Halton Arp's

observational research

that shows the universe

is not expanding.

Certainly not peer-reviewed

plasma cosmology

that explains it simply and

predicts so much in cosmology.

Simple concepts are those that

explain as much as we possibly can

with the least possible

number of assumptions.

And I agree, that's a good test.

The problem is how little theoretical

physics actually explains.

Quantum physics has no explanation,

gravity has no explanation

and the two are incompatible.

Theoretical physics, as it

stands today, is very limited.

But as British astrophysicist

Mike Disney shows,

the number of free parameters (assumptions)

in the Big Bang exceeds the measurements.

So consensus Big Bang cosmology fails

this test at the starting gate.

A recent massive supercomputer simulation

produced the universe of galaxies

that seems to match

observations.

Despite using concepts

that are invalid.

So what good are

computer simulations?

With all the free parameters it could

have produced a platypus or koala bear.

Nevertheless, simulations are offered

as experiments and proof of theories.

After describing the

Big Bang, Turok said:

"The universe has turned out

to be stunningly simple.

It's simpler than any of

our models can explain."

But hang on a minute, if none of the

models can explain the simplicity,

surely all of the

models have failed.

Now, here's the astonishingly simple

equation of all known physics.

I would ask, where is life and

consciousness in that equation?

You'll notice that Peter Higgs gets a

mention, the second from the right.

Turok said: "They've
found the Higgs boson"!

No, they didn't!

If the Higgs mechanism
explains masses
it should be able to calculate the mass
ratio of the proton to the electron.

It can't.

And who in this audience
thinks that's simple?

That it allows them to
understand everything.

But here we come to an
important qualifier.

"The grand unified theory is compact
and elegant in mathematical terms."

Turok then launches into numbers,
Pythagoras' theorem, imaginary numbers,
allowing the solution
of any equation
and an enthusiastic endorsement of
mathematics for the rest of the lecture.

But unless each symbol and
operator can be defined..

pardon me,

defined in real physical terms, an
equation is physically meaningless.

Mismatches with theory cause the invention
of ever more particles and forces.

Which violates the claim of
simplicity and elegance.

In fact, mathematics is an art often
applied unscientifically to science.

Unless you have all of the
correct physical concepts
and definitions in your
mathematical model,
the conclusions cannot
be relied upon.

The art becomes surreal.

The genius Johann Wolfgang

Von Goethe wrote:

"Mathematics has the completely false
reputation of yielding infallible conclusions."

So we come to art and surrealism

and the celebrity, Kip Thorne,

Feynman emeritus professor of

theoretical physics in Caltech

who has this to say

about simplicity:

"Simplicity is the touchstone

in finding new physical laws...

if it's elegant, then it's a rough rule
of thumb: you're on the right track."

Thorne was the executive producer
of the sci-fi film Interstellar.

The film blurb says: "His
math guided the creation of
the mesmerizing and the most
accurate simulation ever
of what a black hole
would look like.

And it was the product of the year of work
by 30 people and thousands of computers."

Kip Thorne said: "I think the thing
that makes this film different
is that the science is woven into this film
and into the story from the beginning.

And woven in deeply.

Real science."

Quite the reverse is true, cosmology has
become science fiction entertainment.

There's nothing scientific
about the slide on the right
from Thorne's Wolfgang Pauli
lecture in Zurich in 2011,

"a black hole is made from warped

space and space and time".

But as Steve Crothers has

shown, black hole theory

makes no sense mathematically,

let alone physically.

How do you make a material object out of

two immaterial concepts, space and time?

As science teacher Evan Camp,

Evan Camp's student asked: "How can

smart people believe this stuff?"

Recently I found the answer

and it shows that our education systems

damage our ability to do science.

The first thing to do, I think Tom touched

on this, is to first know yourself.

The distinguished

doctor Iain McGilchrist

is a psychiatrist, doctor, writer,

former Oxford literary scholar

who wrote: 'The Master

and his Emissary'

subtitled: "The Divided Brain and

the Making of the Western World"

His shorter e-book is: The Divided

Brain and the Search for Meaning.

Which I recommend to you.

There are also some
excellent Youtube videos,
interviews with him and
also an RSA animation
from which I will
have a few images.

He points out: The brain is profoundly divided
and this organ is profoundly asymmetric.

And he asked the question:

Why would nature divide brains if
there wasn't some use for that?

He said: It's not true
that one part of the brain
does reason and the other does emotion.

Both are profoundly involved.

It seems the main function
of the corpus callosum
that join, joining fibres between
the left and right hemispheres,
is to inhibit the
other hemisphere.

Something very important
is going on here.

The right hemisphere reacts faster
but inhibits less strongly.

I should point out too that

physically they are different.

One hemisphere is slightly
smaller than the other
and the left hemisphere
is slightly rotated
and the surface convolutions
are different..

And even the chemical signaling
is different on both sides
so they have a different
job to perform.

This is a slide from
the RSA academies,
the Royal Society of Arts
academies in the UK.

I presume you've probably
all seen the animated
swift drawing while
somebody is lecturing.

This is from the YouTube video that
I recommend you to have a look at.

In this he shows that the left hemisphere
is narrowly focused and attends to detail
while the right hemisphere
is more broadly focused,
it's alert and open to

what's going on around.

And he gives an example
of the chicken.

He said: the left hemisphere in the chicken
is looking for the seeds amongst the dirt,
the right hemisphere is making sure the
chicken doesn't become somebody else's lunch.

And I think that's a
good way to look at it.

In other words the left hemisphere is survival,
the right hemisphere is a broad picture
of what's going on around you.

I wrote to Iain McGilchrist and I sent him
a copy of the paper, PDF of the paper
which had actually studied the left and
right hemisphere and image the activity
that goes on when you ask physics
questions, of a student.

And you'll notice that the left hemisphere
lights up like a Christmas tree
and the right hemisphere
is rather passive.

The different colors just referred to different
characteristics of what's being asked.

Algebraic equation representation
is red, the green is periodicity,

energy flow is blue.

This brings me to, we've all
heard of cognitive dissonance,
as if you're presented with something
that you just cannot handle,
it just doesn't make
any sense to you.

And it seems that it's a
result of the differences
between the two
hemispheres of the brain.

The left hemisphere, as I said, has narrow
focus, only sees what it expects to see
and has automatic
machine-like responses.

It's about survival.

Education in science reinforces the
bits rather than the whole picture.

So the left hemisphere is
involved in the training.

It's a vicious cycle because it
focuses on aspects we expect to see.

You get stuck in a
certain way of thinking.

Also the left hemisphere
needs to be in control.

And the left hemisphere people,
that's those who have dominant
left hemisphere, exhibit denial.

We can all think of many
examples of this, I think
Michael Shermer's visit to our
last making was an example.

The right hemisphere: meaning comes
from understanding the whole.

In other words, it's trying
to take in the whole picture.

And being comfortable, and this is important,
with not being able to grasp everything.

You don't need to understand
the creation of the universe.

What's more, he said,
happiness comes from understanding your
connectedness and engagement with the world.

I would say the universe
because that's what the Electric
Universe is about, connectedness.

Left hemisphere, Big Bang cosmology is
consequently, I would say, hope-less.

McGilchrist's e-book is subtitled:
"Why are we so Unhappy?"

And this is an, this is the whole

thing about the Electric Universe,
there is no subject that it shouldn't
touch on if it is a real cosmology.

He says, happiness comes
from social connectedness
and a sense of purpose
beyond the immediate.

I would say that seems to
characterize our conferences.

There is a great
sense of purpose.

Modern goal-oriented
education, on the other hand,
and its constant audit
and inquisition,
turns off the intellectually
adventurous teachers and students.

We don't understand the world by
putting it together bit by bit.

Quite the opposite, in fact.

So, Left Hemisphere Training

The knowledge that is mediated by the left
hemisphere is within a closed system.

This is typical of the scientific
approach of course, you isolate
the small part of something and

then try and analyze that.

It has the advantage

of appearing perfect

but the perfection is bought

ultimately at the price of emptiness.

So you see, the Big Bang

is a closed system.

The universe expanded from a non-physical

point thirteen and a half billion years ago

and increasing entropy

and disorder is expected

but we see increasing order.

The universe is not

a closed system!

Geology is a closed system.

So geologists could simply

extrapolate things seen today

back a few billion years and

make up any story they fancied.

Biology is a closed system.

Each organism is self-contained.

Brain circuitry will

explain consciousness.

Sheldrake and others

show this is invalid.

The closed mechanical

model is wrong!

Einstein's inertial frames

are closed systems.

They have lost all

external references.

You gotta ask, the speed

of light, you know,

inertial reference frame

with respect to what?

Some arbitrary observer.

So modern science is

empty of real meaning.

Left hemisphere dominance

is the safeway.

A way that minimizes risk and

provides a way forward that seemingly

is a more secure and logical

approach to decision making.

The Machine metaphor reduces

things to isolated bits

and loses sight of

the connected whole.

Stars are isolated objects,

galaxies are isolated objects,

we are isolated individuals.

It's chickens, picking

at seeds in the dirt.

Of course, when you're tied
up with this narrow view
you end up with a whole
of mirrors effect.

The more we get
trapped into this,
the more we undercut the things
that might have led us out of it
and we just get reflected back
into more of what we know,
about what we know, about what
we know, about what we know...

So the greatest problem becomes the
things we don't know we don't know.

More information, we
have it in spades
but we get less and
less able to use it,
to understand it, to be wise.

These are Iain

McGilchrist's words.

Instead we go searching in the
crap for signals we expect to see.

That's my words.

"There's a paradoxical

relationship",

Iain says, "as I know

as a psychiatrist,

between the knowledge of the parts

and wisdom about the whole.

It's the machine model that is

supposed to answer everything

but it doesn't."

In other words the

theory of everything.

This is a perfect example

of a hall of mirrors.

This is the large hadron

collider control room.

Experiments are done on computer

screens, it's virtual research.

In our computerized world the virtual

makes something seem more real.

As one scientist said,

sexy images sell!

We see that all the

time in the media.

The picture, however, has become

fragmented and surreal science fiction.

Mistakes no longer mean going

back to the drawing board,

mistakes now need

to be de-bugged.

It creates a classic hall of

mirrors reflecting a single model.

Signals buried in noise become

statistical discoveries and proof.

The computers are programmed to find, deep

in the noise, what they expect to see.

I think the,

the LIGO and the gravitational wave

experiment is a prime example.

Images on a screen become

real discoveries or proof,

the Higgs boson,

gravitational waves.

It illustrates group-think and

left hemisphere dominance,

a blindness to alternatives.

...Sorry...

But paradigm shifts come from

individuals using their mind,

not large teams using computers,

the ultimate black boxes.

They invent new forces and particles

to reclaim control of the model.

The quark, the gluon,

dark energy, dark matter.

So big science is failing.

There have been no fundamental

advances for a century.

It's accepted that the

basis of what we now...

what is now known is

more or less correct.

A Copernican revolution is totally

unthinkable within the current system.

There are not many

differences between

the modern academy and the universities

in the 16th and 17th century

which conformed to the church

and to Aristotle's text.

The symptoms?

Science is non-predictive.

There are continual surprises.

Counter arguments are

ignored or unpublished

and the history of science is sanitized

to give the impression of progress.

What's the remedy?

Evan Camp is a teacher, an

8th grade science teacher

who ran an Electric Universe

group after school.

He presented an outstanding

talk at EU 2013,

Exciting Students with

Unsettled Science.

It's available on the

Thunderbolts.info YouTube channel.

He said: "Every mile you go in the wrong

direction is really a two-mile error.

Unlearning is twice

as hard as learning."

In fact it's much harder than that because

at the end of the first mile you are lost.

Because what you have learned

inhibits new learning

and accelerates forgetting.

This requires an active

remedial process.

It requires a conceptual mediation

program as early as possible.

Such a program has been tested

by Dr. Harry Lyndon in south

Australia, with encouraging results.

He says, the primary goal of science

educators involves helping young people

to acquire scientific knowledge
with greater facility.

To achieve a deeper level of
understanding in their studies
and for these understandings
to be lasting.

It has been
established, however,
that a universal
problem in schooling
concerns the fact that science learning
is evidently difficult for most students.

A general conclusion that
even students who are
successful in examinations
are unable to retain and
apply scientific concepts.

When students move into high school,
many experience disappointment
because the science they are taught
is neither relevant nor engaging
and doesn't connect with their
interests and experiences.

When new information or
ideas disagree or conflict
with what the left

hemisphere already knows,
the left hemisphere inhibits
or denies the new information
and causes accelerated forgetting
of the new knowledge or skill.

It protects all prior knowledge.

Old learning disables
new learning.

According to Lyndon, it's
why old habits die hard.

Old Way/New Way Learning where the old
and the new are repeatedly contrasted
is a method developed by Dr.

Lyndon and a colleague
and it's an innovative
teaching method.

It's a system where the students
actively and repeatedly
contrast the old and the new until
the inhibition is overcome.

It forces the student to
think about thinking.

This is important for
what is to follow.

Because it will help those who
follow the Thunderbolts movement

to understand the
problems others face
when confronted with
a paradigm shift
of the magnitude of the
Electric Universe.

And also some areas of
your own personal denial.

So, cosmology must address the
infinitesimal as well as the infinite.

So let's go to the
heart of the matter.

Because, incredibly,
mass is undefined!

In every textbook
and encyclopedia
the amount of mass is confused
with the amount of matter.

Perhaps because they both
begin with the letter 'M'.

This means that no scientist
understands $E=mc^2$

This confusion allows
particle physicists
to talk of creation and
annihilation of matter

which is impossible without
understanding what matter is.

It's not physics.

$E = mc^2$ is simply

telling us that

that mass is a measure of the
amount of energy held in matter.

Particles have no
mass, we're told.

And with this ignorance the
standard particle model says,
subatomic particles have no
intrinsic mass which is nonsense.

Are they saying protons and electrons
have no rest mass, no energy?

It seems so.

In the standard particle model
mass is provided externally
by a kind of cosmic trickle
of imaginary Higgs bosons.

The total cost of finding
something dubbed the Higgs boson
at the Large Hadron Collider ran over
13 billion dollars in July 2012,
at the running cost of a
billion dollars a year.

That makes it more than 17
billion years, billion dollars
wasted, chasing the green
of the Cheshire cat.

The LHC operates like smashing
countless jumbo jets in the mountains
and picking over the debris
to see how they fly.

But the whole is more than the
sum of the bits, we can see.

We are not dealing
with closed systems.

Even worse, it's like asking
one of Douglas Adams'
telephone hygienists to
do the investigation.

The investigators are
not properly trained.

Energy is undefined.

What you will find in textbooks are
examples of different forms of energy.

The Big Bang is supposed to have
originated from pure energy
which is nonsense when energy only makes
sense in relation to matter in motion,
with respect to

all other matter.

But matter hasn't been defined

in any physical sense

involving sensible

internal movement.

The quantum realm is weird.

It's admitted by leading physicists that

no one understands quantum mechanics.

It's incompatible with Einstein's postulate

of no instantaneous information transfer

and it seems to involve even

the experimenter's thoughts

in the outcome of

some experiments.

Once again, any experiment

is not a closed system

as physicists like to assume.

That is why the quantum

realm appears weird.

Light and the electric force are mysteriously

transferred through empty space.

We have all experienced the

force between two magnets.

What's happening in the

space between them?

The pioneers of electromagnetism

knew there has to be a medium

to transfer the electric force.

They called it the ether.

The ether has to be an electrically

polarizable medium that fills the universe.

In that way you can daisy-chain

the electric force directly.

It's a longitudinal force.

And applying the speed of light limit

to that makes no sense whatsoever

because light is a wave motion.

I think I've said before that's like the

difference between pulling on a rope

and feeling the tug at the

other end almost instantly,

and waving one end of the rope and waiting

for the wave to get to the other end.

Light is a slow process

in the universe.

So if we have this ether that fills

the universe, space is full.

There's no such thing

as a perfect vacuum.

Einstein knew there has to be an ether but

his postulates somehow did away with it.

He admitted that his theory

of relativity would fail

if the Earth's motion through

the ether were detected.

That's because his inertial frames of

reference would not be equivalent.

It would be like having one observer

experiencing a gentle breeze from the ether wind

while another might be

suffering a howling gale.

As it turns out, Dayton Miller repeated

the Michelson-Morley ether experiments

far more rigorously and

at different elevations.

He found an ether drift.

Sadly, left hemisphere training

denied and quickly forgot this fact.

So let's have a look at the

standard particle model.

An atom, once a promise of

fundamental simplicity,

is really a nucleus within a hazy

probabilistic fog of electrons.

The nucleus is some protons

and neutrons held together

by the mysterious short range

nuclear or strong force.

The particles in the
nucleus have a hidden,
unknown number of weird
undetectable bits inside.
These bits are appearing
and disappearing
in defiance of a principle of science
that miracles are forbidden.

Meanwhile, a recent report
from the Large Hadron Collider
suggests new findings that
don't fit this model.

Here's a snapshot of a proton
by Professor Matthew Strassler.

He writes: "...imagine all of the quarks
(up, down, and strange -- u, d, s),
antiquarks (u, d, s with a
bar on top), and gluons (g),
zipping around near
the speed of light,
banging into each other, and
appearing and disappearing."

So, a proton is said to be some
quarks held together by some gluons
which are themselves the quantized
manifestations of the strong force.

There is no mention of how a
force manifests as a particle.

It gets much worse.

A gluon is really one of
several colors of gluon.

But it also has the simultaneous
property of anti-color.

Gluons mediate the
interaction between quarks
but they also mediate the interaction
between themselves and quarks.

That's right, gluons
are the strong force
but they also experience
the strong force.

Happily for the physicists, quarks
are unobservable in principle
because they only exist
inside the nucleon.

It's very convenient..

This is simple?

You can forget elegance.

This is extreme, narrow, left
hemisphere focus on a model
with no basic definitions to make
sense of the words being used.

Andrew Pickering, the author
of "Constructing Quarks",
it is a sociological study
of particle physics
and it's interesting book, says:
"There's no obligation on anyone
to take account of what 20th
century science has to say.

To listen too closely to scientists may
be simply to stifle the imagination,"
that is the right hemisphere.

"Worldviews are cultural products, there
is no need to be intimidated by them."

We come to the Electric
Universe model of the atom.

The electrically neutral atom
is made of charged particles,
positive and negative
in equal numbers,
together with a number of neutral
particles called neutrons.

Stating the obvious.

All subatomic particles are real
with real locations in space,
it's not a probabilistic fog.

There is a polarizable ether which transmits

force and carries electromagnetic waves.

The universe is full of an electrically
neutral perfect fluid of neutral particles
which passes through atoms and celestial
bodies practically as if they weren't there.

Neutrinos fit this description.

So, the Electric Universe then defines
what it means by energy and mass.

Energy is matter in motion relative to
the matter in the rest of the universe.

It used to be said, in
relation to the fixed stars.

This is not a closed
system approach.

It is a unifying relational concept
first articulated by Ernst Mach.

So we define mass:

Mass is a measure of particle
distortion instead of acceleration
in response to the electric forces
from all other matter in the universe.

It's a bit like pushing a
balloon full of water.

It will tend to distort,
rather than move.

And it's the same with these orbital systems

of electrons and protons and so on.

Once again, this conforms
with Ernst Mach's principle.

Neutrons may not exist
in the nucleus.

If so, only two particles are necessary
to build all of the elements.

This idea came from Edwin Kaal
who I'm pleased to say is here
and will be presenting
in the breakout room.

And the problem for physicists
is how do you hold together
all of the positive
charges in the nucleus,
they should repel one
another very powerfully.

The repulsion of those
positive charged protons
should prevent it from
forming in the first place.

However, atomic nuclei seem to
require neutrons for stability.

That's because when a
radioactive atom nucleus decays
neutral particles are sometimes

observed to leave the nucleus
and exist for a few minutes
before further decaying into
an electron and a proton.

So it was assumed, such a neutral
particle pre-existed in the nucleus.

The "what if" question
wasn't asked.

That maybe that wasn't so.

This is an assumption that
still does not explain
how the positive nucleus
remains cohesive.

So a special short-range strong
nuclear force was invented.

The proliferation of
forces and particles.

Edwin Kaal suggested
a simpler solution.

If the electrons remain as
discrete particles in the nucleus
that will tend to
arrange themselves
to, on average, seat equidistant
between the protons;
because the distance between

the protons is greater than
that between each proton and
a neighboring electron,
the attractive electric force
between the proton and electron,
sorry if it's too fast,
will be four times greater
than the repulsive force.

This simple hypothesis removes the need for
an extra strong force within the nucleus.

It's much simpler.

And then it seems that
neutrons are short-lived,
metastable resonance of a closely
bound proton and electron.

This is simple.

The Electric Universe simply proposes
structure within structure, repeated pattern.

To understand magnetism and gravity
we must go to the heart of matter
a similar approach to that
of Andre Marie Ampere,
Carl Friedrich Gauss, Wilhelm
Weber and Walther Ritz,
who considered the behavior of positive and
negative charged particles of different mass

with great success but were
ignored for political reasons.

Chiefly, they weren't

English, I think.

Here's a simple hypothesis.

The electron and

proton have stable

resonant orbital structures

of smaller charged particles.

In that case,

the positron, that is the antiparticles,

and anti proton are mirror particles.

They're not antiparticles,

they're mirrors.

There is no antimatter, no

creation or annihilation.

But this requires that

there be an ether

of composite neutral particles of

vanishingly small mass, the neutrinos.

Neutrinos must be quite complex

inside but totally collapsed

so that they can accept energy and

then become a particle and its mirror.

But there's nothing,

it is just assumed that when these

particles seem to disappear,
that they're annihilated,
the matter has disappeared.

That's not so.

So the ether must be not matter
of vanishingly small mass
composed of all the sub particles needed
to split into an electron and a positron
for example, when subjected to the
appropriate energy, electromagnetic energy.

For stability,
and this is one of the
stumbling blocks, of course,
for particle physicists
to go this way,
is that the electric
force must act
between the tiny particles
within the atom instantly.

No speed of light delay.

The two stable particles --
the electron and the proton,
if we assume the neutron is
just a metastable particle,
form 254 stable nuclides
plus another 85 metastable,

that is radioactive nuclides,

for a total of 339.

So from this simple resonant systems

of structure within structure

we have all of the

materials we need to see,

to make what we see in

the world around us.

When those nuclei combine with the

requisite number of negative electrons

to form atoms and molecules, the

possibilities are boundless

in the living world.

What does this mean?

Only a single force is necessary, the

powerful instantaneous electric force.

The phenomenal strength of the

naked electric force can be

judged by the simple

illustration in the lower left.

This shows that if the charge; passing through

two 120 watt light bulbs in one second,

were to be transferred

equally to two metal plates,

the repulsive force between those

plates would equal 1 million tons.

So it's critical that the electric
force is a balanced force,
attractive or repulsive.

These two propositions are the epitome
of elegant simplicity balance.

The little diagram
there on the left,
extreme left at the top, shows the
attraction between positive and negative
and the repulsion
between like-particles.

There are two forms of the
electric force that we experience.

One is the electrostatic, we have
separated charge some distance apart,
and the electric dipole where the distance
between the two charges becomes so small
that the field is altered and
you get a different effect
called the dipole field.

So it just depends on the degree of
separation of a positive and negative charge.

It's a difference in scale.

On our scale we experience the dipole
field of atomic electric fields
and subatomic electric fields in

the form of magnetism and gravity.

They are dipole fields.

So both forms of the electrostatic

and the dipole field

occur between atoms and is

responsible for chemistry.

The e-force operates between all of the

particles and sub particles within each atom.

In close proximity this can

result in distortion of the atoms

to form electric

dipoles themselves.

Which can result in the

attraction to form a molecule

or they may enter a new resonant dance

by sharing an electron as chemistry.

The dipole distorting action on electrons

and protons produces dipolar magnetism.

The diagram there is actually,

I made a mistake, the positive and negative

on the left and right should be reversed.

But this just shows

that if you...

just try this thing here...

if you have an electric field

operating on a particle here,

charged particle here,
and accelerating it
and on the opposite
side decelerating it,
the result will be an elliptical orbit
with the nucleus at one of the focuses.

And the result of this is that
you get a transverse dipole
and that transverse dipole is
shown there as the magnetic force
because if you have two
current-carrying wires,
where the electric field in the wire is
causing this distortion in electrons,
then the dipoles are aligned
so they tend to attract
and we know that current
flowing down two wires
in the same direction attract,
in the opposite way they repel.

OK, so. And the other
thing is that,
I mentioned the ultra-week
dipolar gravity.

And this is the diagram, what
happens to an atom in that case.

The gravitational field
cannot be shielded from,
so the gravitational force
operates on the heavy nucleus
so that it falls towards one
of the focuses of the ellipse.

This time it's oriented radially
towards the surface of the body.

But the interesting thing
about that is that
once you've said that,
this means that
the body like the Earth and the
Moon, which are shown here,
the negative poles on both
bodies are facing outwards
which means they're
repelling one another.

So it means that the, it's long-range
repulsive, short-range attractive.

We, on the surface of the earth, are
like iron filings. We don't care
which magnet, we go to adjust,
the nearest one will do.

The gravitational mass of the distant
galaxies has a fundamental influence

over the motion of the
bodies in the solar system
and this is actually shown by precession
of the perihelion of the planets
which is tied to the distant stars and
not to the Sun or general relativity.

Because general relativity doesn't
have a reference frame like that.

Short-term changes in the
Earth's magnetic field
that occur over periods
of just years or decades
have now been shown in new
research to have a very close
relationship with
changes in gravity.

The two are very
similar, similar forces.

There is no gravitational
collapse in space,
no black hole
swallowing everything.

It is the electromagnetic force alone
that coalesces matter in deep space.

So the assumption that gravity was the controlling
force on the large-scale is incorrect.

There's no need for a Big Bang to
separate everything initially,
gravity is a balanced force like
magnetism and cannot form neutron stars
or other fanciful super-condensed
celestial objects.

A planet's gravity is established at its
birth by powerful electromagnetic forces.

Once the body is formed and the
charge on the surface is established,
the gravitational field is set
by both the surface charge
and the initial coalescence
by electromagnetic forces.

So the outcome of
all that is that
all matter in the local universe is
connected by the electric force instantly.

That's Mach's principle.

The origin of mass and
quantum spooky connection.

Because this force is instantaneous, this
so called, entanglement and non-locality
suddenly has a
simple explanation.

And energy is a measure of motion with respect

to the matter in the rest of the universe.

Mass is a measure of the energy stored
in the orbital motion inside a particle.

And simultaneity means there is a universal
time and three-dimensional space.

We return to the sanity and
simplicity of classical physics.

These matter resonances

are interesting too

because having an

orbital structure

allows resonant instantaneous

connections and complex interactions

which explains weird

quantum behavior.

The important thing is that

the electron and proton

have an orbital charge

structure like atoms

which explains their internal

energy and their magnetic moment.

And distortion in an electric field appears as
an increase in mass rather than acceleration.

Quantum tunneling

In transistors electrons face a barrier

like the illustration in the diagram.

It's like having to carry
a weight over a hill
but in a weird quantum
phenomenon called tunneling
the electron passes through that
barrier as if there's a tunnel.

The Electric Universe model
of the electron and proton,
having an orbital structure of
oppositely charged particles,
allows us to see that the hill or
the repulsive electrical force
between similar charges can instantly
disappear or become a downhill race.

The reason is that the force
between two similar particles
can become attractive
instead of repulsive
if you get the particles together
at just the right moment.

In chemistry this resonance is achieved
by the use of heavy metal catalyst
which has numerous internal
subatomic resonances.

The same catalytic process is available,
in my opinion, for nuclear fusion.

So called warm fusion is
possible by nuclear chemistry,
catalyzing the nuclei to
attract instead of repel.

So catalytic chemistry is
possible, in my opinion,
in the photospheric
plasma of all bright stars
where the nuclei are
separated from the electrons
and can actually come close
together in the presence
of the heavy elements
we see in the spectrum.

And you've gotta ask the question then,
is this the path to the future power?
Like the Sun.

But only "unlike the sun" that
is believed by present science.

In this way all-stars generate the
heavy elements in their photospheres
where we detect them
in their spectra.

Rare exploding super novae are the most
ineffectual production means imaginable.

Because having produced it you

then disperse it into deep space.

There's also an unsuspected resonant
means of connection in living systems.

The morphic field of Rupert
Sheldrake, the mind-body connection,
consciousness, subtle energies.

The Electric Universe model
explains biological transmutations
at body temperature as demonstrated by Dr.
Louis Kervran.

His is a clear demonstration
of this simple process.

Is light a wave or a particle?

If so, what's waving?

Einstein did away with
a medium to waive.

Or is light a
particle, a photon?

It can't be both, a
wave and a particle.

You'll notice they merely mouthed a
term that it's particle-like, they say.

It's a meaningless
use of language.

If so, according to Einstein, to travel at
the speed of light it must have zero mass.

But a particle of zero

mass has no energy.

You can't multiply $0 \times \text{infinity}$

and get a real number.

And if it's got 0 mass it

can't be affected by gravity

so there can be no

gravitational lensing.

Lensing occurs as a simple atmospheric

diffraction effect in the ether.

It's like an atmosphere

around the body.

Evidence from stars at the galactic

center show no gravitational lensing

as expected from

standard theory.

Clearly, we depend on light

to observe the universe

but we don't understand light.

Photons don't exist.

Light is a transverse electrical

disturbance in the ether.

And the ether must be a dielectric medium

to transfer an electrical disturbance.

The wave carries energy

through the medium..

..catch up here..

..and the energy is absorbed by the first atom that is in instantaneous resonance with the sending atom.

It gives the appearance that a photon has traveled between the sender and the receiver.

It's appearance only.

Talking about light brings us to cosmological redshift.

Hubble found, the fainter and smaller a galaxy appeared -- the higher was its redshift.

In the diagram you can see the spectral lines of hydrogen move progressively to the red end of the spectrum as the distance is thought to increase.

The redshift was simply assumed to be due to velocity away from us by analogy with the Doppler shift of sound.

Hubble's law is considered the first observational basis for the expansion of the universe.

But ironically, Hubble thought
it the least likely explanation.
He felt, it more likely
indicated some new physics.
So it was Hubble's professional
astronomer assistant,
Halton C. Arp, who later
proved this to be so.
If the redshift is not
simply a Doppler effect,
Hubble wrote, the region observed
appears as a small homogeneous
but insignificant portion of the universe
extended indefinitely both in space and time.
Recently and surprisingly more distant
galaxies seem to be accelerating away from us.
This discovery won the Nobel
Prize and gave rise to the need
for huge amounts of mysterious dark
energy to power the acceleration.
I read about that discovery
on October the sixth 2011.
The discovery of the acceleration
of the expanding universe
is an interpretation based on total
ignorance of the real nature of stars

and the standard candle which
was used as the measurement
to determine the distance away.

So it's gratifying to find support once
more in a report this month titled:

"Could a new type of supernova
eliminate dark energy?"

It has been found that the near-UV
light from the most distant supernovae
is brighter than
the closer ones.

In other words, there's something going
on at the atomic and subatomic level.

Of course, this is
unexpected and unexplained.

The diagram on the left shows the
difference between the Big Bang universe
and the Plasma Universe.

It's easy to see which
one is simpler.

Intrinsic redshift and Dr.

Halton Arp

(Hubble's assistant who was
dubbed the modern Galileo).

He found redshifts, quasars, physically
connected to and in front of,

high redshift quasars rather,
physically connected to
and in front of low
redshift active galaxies.

This observation of a quasar between
the galaxies NGC 73 19 and the Earth
is impossible if the quasars are over
90 times farther away than the galaxy.

So, Hubble was right.

Something is wrong with physics.

Arp showed the redshift happened
in small jumps or quanta
which indicates a
subatomic effect.

But subatomic, these
quantum effects
are supposed to only occur
at the subatomic level,
here we've got occurring
on the galactic.

This requires, once again,
the electric force to be operating at
ultra-high speed, instantaneously.

So, quasars are born at high
speed and with low redshift.

This is Arp's diagram, you see

the parent galaxy in the center.

This is one here.

And the high redshift quasars, and the redshift decreases as they move away.

Initially their

velocity is very high,

they are faint,

highly red-shifted

and traveling at the fair

fraction of the speed of light.

Over time they gain in mass.

This is interesting.

That means that energy is being

supplied to the matter in the quasar,

the mass is increasing.

So that eventually they

can actually become

a turnaround here and

become a companion galaxy.

This is an example of another

path that they can take

where you end up with another

Bi Lac objects as it's called,

producing multiple

galaxies here.

So there is a genealogy,

if you like, of galaxies.

The idea that the

Andromeda galaxy

is going to crash into our galaxy

in the future, is rubbish.

It's based on the idea that

Andromeda's blue shift,

with respect to us, means

that it's approaching us.

No, just means that

it's older than us.

So the Electric

Universe explains this.

Quasars are born at high

speed and with low mass.

They escape the forces of the

electromagnetic galactic nucleus,

that's the parent

galaxy, as neutrons.

And because the neutrons

have no charge,

they can escape the intense

electromagnetic forces

that hold that plasmoid in

the center of the galaxy.

They have enough time

to get away from the,
those powerful forces and then they
decompose into electrons and protons
which are the forerunners
of hydrogen.

So, as the electrical energy pours into
the quasar its mass and brightness
increases and it slows down
to become a companion galaxy.

So this was an explanation, the only
explanation for Halton Arp's observations.

Quasars are not the brightest and
most distant objects in the universe.

They are among the youngest
and closest, so they..

the objects in the mirror really
are closer than they appear.

The visible universe is smaller
than we have been told.

So the universe, the real
universe, is in balance.

It is not expanding.

This is important for
understanding of gravity.

Gravity cannot be simply
an attractive force.

The universe is of
unknown age and extent,
the origin of the
universe is unknown,
there is a universal now and space
has three physical dimensions.

This brings everything back down
to, as Tom was pointing out,
conditions as we
experience it on Earth.

Dark Matter Galaxies

Galaxies are treated as
isolated objects in space
produced somehow by attractive
gravity in an expanding universe.

Their rotation and structure
remains a mystery.

They're made of eighty percent
invisible dark matter.

Tom got a good introduction to
that story about dark matter.

Dark matter has been described as
an invisible elephant in the room.

You know it's there by the dent
it makes in the floorboards.

Dark matter is only inferred theoretically

by using our experience of gravity on earth
and projecting it onto the
rest of the universe.

Once again it's the
geocentric problem.

We look at the gravity on earth and
then we just extrapolate outwards.

Because that's all
mathematicians can do.

It needs an impossible gravitational
black hole in the center,
black holes exist theoretically in
asymptotically flat space in an empty universe.

You cannot superimpose any other matter
in such a hypothetical universe.

Black holes don't exist!

Yet some sport long thin high-velocity
jets over intergalactic distances.

There's no satisfactory theoretical
explanation for these jets.

This is the standard, taking
the standard approach.

Electric Galaxies

On the other hand,

Plasma Cosmology shows
experimentally and observationally

that galaxies are governed
by electromagnetic forces.
Tony Peratt said that
they introduced gravity
into their super computer runs and
it made no difference whatsoever.

Spirals rotate as
simple Faraday motors,
that's why that curve is flat.

It's as if you've got a plate and
you're just spinning the plate.

Stars are born in and trace
the spiral power lines.

Where there is a higher
density of gas and dust,
it's typical of an electrical
discharge, where the density of the
material becomes greater, the
discharge becomes more filamentary.

Stars form along those
pinched current filaments.

There are no black holes.

It's a compact high-energy
plasmoid and this
comes down to peer-reviewed

Plasma Cosmology.

Their apparent mass is due to the
relationship between mass and energy.

If $e = mc^2$, if you got a high concentration
of energy in that tiny plasmoid,
it will exhibit a
considerable mass.

It's certainly not a black hole.

The other thing is that galaxies
lineup axially showing the electrical
connectedness because they're threaded
like catherine wheels on a wire.

And that wire is one of these intergalactic
Birkeland current filaments.

So let's look at stars.

We've done galaxies,
let's look at stars.

Eddington, Arthur Eddington
had the temerity to say,
"it should not be too difficult to
understand something as simple as a star".

This is typical left hemisphere.

His quote is typical.

Isolate, simplify and
ignore a global view
because if you look at corona, sunspots,
flares, magnetic cycles, etc.

his gas model doesn't

predict any of them.

And the alternatives

are not explored.

He dismisses electrical

aspects in a few paragraphs.

The failure of this approach is

shown by continual complications

with each new discovery.

It's treated as an isolated

gravitating ball of gas.

Conventionally, it's a body

that satisfies 3 conditions.

It's made of hydrogen

plus a few impurities,

having core of the lightest element

is the most fanciful assumption.

It's needed to allow the thermonuclear

energy model to be viable.

That also requires a hypothetical

extreme conditions in the core.

It's only required by the thermonuclear

theory and is completely untestable.

It also has,

I mean that's unverifiable,

and also the sequence of nuclear

reactions that take place in the core

cannot be verified.

They're very complex and requires quantum

tunneling which I referred to earlier,

and what's more, there's a more complex

different story for different stars.

It's certainly not simple.

It's an explosive model

because one of the reactions

is sensitive to the temperature

to the fifth power.

It also needs an

unknown radiation zone

to break down the x-rays

from the nuclear core.

There's no body known

that has a radiation

or the energy transferred through

the body, through a radiation zone.

So this is hypothetical.

And also from the point of view

of life on Earth and so on

it has a restrictive and variable

'Goldilocks zones' distance from the star.

It's not the best place to

nurture life in the universe.

Impossible Stars

Formation by gravitational
accretion doesn't work.

It's never been explained
satisfactorily.

It has hydrogen, the lightest
element in the core,
the model doesn't predict the
observed features of behavior,
has different models for white
dwarfs, neutron stars, etc
and the life story of stars is
super complicated and untestable.

And some stars do strange things,
they switch from one place to another
without going through
the transition stages.

Renowned scientists like Eddington
who made grave mistakes
about the Sun and Einstein's
general relativity,
he went out explicitly to prove Einstein
correct -- not to test his theory,
continue to haunt us today.

It gives the light to the belief
that science is self-correcting.

It is, oh sorry, it is not, given the way in which science is done today.

As Eddington said, if there's no other way out we may have to suppose that bright line spectra in the star are produced by electric discharges.

The clues were there but "what if" was not followed through.

Herschel reveals a ribbon of future stars.

This was reported on March the 30th this year.

So this is a very recent picture.

Stars and planets are formed by powerful electromagnetic forces like pearls on a cosmic string.

This is a quote from an earlier report.

Gravity can be ignored.

In Plasma Cosmology there's no gravitational accretion.

There's no way you can form a string like that using gravity.

Gravity is a central force and material tends to come in to a center.

It doesn't form a string.

But this recent report says,

this is important,

stars are shot out of the filaments

by a slingshot mechanism.

And there's a diagram here which

shows the filaments moving around

like those in the plasma

ball, they snake about.

The stars having been formed in

this filament are left behind

as the filament moves on

and these stars are shot out.

And it's interesting because plasma..

Tony Peratt described to us

once the effects seen in high

energy discharge experiments

as these plasmoids

scattered like buckshot.

Now it's not only stars

that are formed here,

it's all solid bodies

including planets.

And they may be captured by the

stars to form the weird assortment,

over three-and-a-half

thousand of them, so far,
of exo-planetary systems
that have been observed.

New stars also may fission to produce
hot Jupiters in very close orbits
and achieve electrical stability with
their changing electrical environment.

The movement of the filaments, as I
said, is like those in the plasma ball.

Heavy elements convect
into a cool core.

This is interesting because these,
those blue filaments you saw before
are the coldest part of the cloud and
this is where the stars are forming.

The traditional view is that the stars
had to form by gravitational collapse
and not lose any of the
heat of the collapse,
otherwise they couldn't
start their nuclear fires.

This doesn't require
any of that.

It was one of the
surprises for theorists.

Is that the,

the blue filament I mentioned is
the coldest part of the cloud
and contains eight hundred
times as much mass as the Sun.

This is not a surprise
for plasma cosmologists.

So, all stars have a
cool planetary core.

Stars and many planets
are born together
along the same electrical
umbilical cord.

Other planets and moons are born later
in electrical fissioning events
and capture events.

Hydrogen and helium tend to
form the outermost atmosphere.

This is a diagram showing the
actual form of the filaments.

You'll notice the pattern there.

This is showing an experimental pattern
of a discharge on an insulating plate.

And this shows a Martian
electrical scar.

You can see the similarities.

As the cosmic

lightning bolt fades,
stars and planets are captured
into planetary systems.

So, electric stars,
they remain a gaseous
electric discharge phenomena
like spherical searchlights,
following their birth.

In fact some of the
characteristics of the
photospheres are like
that of a searchlight.

All bright stars catalytically
produce heavy elements
in the photospheric
plasma discharges.

Red stars have gigantic
anode sheaths.

Sorry, got the right
picture there.

Plasma discharges adjust to their
environment by moving electrical barriers
called plasma sheaths or
misleadingly, magnetospheres,
because they trap the
magnetic fields inside.

If Jupiter's plasma
sheath would lit up
it would appear the size of the full
Moon in the sky, at opposition.
And its Galilean moons would be
orbiting comfortably inside it.
So red dwarfs are not dwarfs
and their bloated glowing anode sheaths
are the cosmic wombs for life.
Because inside that
radiant red sphere
all satellites receive uniform heat
and light over their entire surfaces.
It doesn't matter how they're moving
or rotating, that will be the case.
Of course this poses a
problem for the SETI project
because radio waves cannot penetrate
the glowing plasma sheath.
So if these are the
wombs of life,
we don't have any way of radio
communication with them.
But of course, gravity
can pass through.
White dwarfs are not dwarfs at all, they're

just stars with no bright photosphere.

And a faint white

coronal discharge.

These are some of the planetary
systems that have been discovered.

You can see that it's
quite a shambles.

So as I said before, at the galactic
scale electromagnetic forces
form these gigantic Birkeland
currents and they dominate.

At the planetary scale, inside the
star's protective plasma sheath,
gravity dominates.

So you have to choose the
region you're talking about
when you talk, when you try to apply
your model to stars, galaxies and so on.

In fact, the inside the
star's protective sheath,
with gravity dominating
and it dominates because it
cannot be electrically shielded
so the impact from all of the
other stars in the universe
is acting like a

pressure in on the,
the planets moving
around the Sun.

In fact this repulsive force
from the rest of the universe
can reverse the Earth's motion
about the Sun in 6 months.

That is 6 sextillion tons
by 140,000 miles an hour.

So it gives you an
idea of the impact.

Then the Thunderbolts of the
Gods operate to modify masses..
oh, sorry..

In planetary systems the electric force comes
into play only when plasma sheaths collide
because then the electrical
insulation breaks down.

And the electric current flows
between the two bodies.

Then the Thunderbolts of the Gods operate
to modify masses and change orbits
and to quickly
reestablish order.

This is one of the problems
that Velikovsky faced,

how do you explain events,
within the memory of mankind,
of chaos in the solar system and
it looks like clockwork today.

This is the answer, you have to
apply the electric model of gravity
to be able to do this.

So Velikovsky was right.

Electricity and magnetism
are involved in the
celestial mechanism.

Changing the surface
charge on a planet

Change modifies the strength of
the internal electric dipole
which is responsible for the
planet's mass and gravity.

And the changes to both bodies, which
I've shown in previous YouTube talks,
tends to move the two bodies
apart, which is very convenient..

This overcomes the objections
of the Harvard book burners
to Velikovsky's

Worlds in Collision.

However, it doesn't detract from the

title to say that Worlds didn't collide.

It was an electrical
clash of the titans.

There's Velikovsky
with his great book.

So what we have now in science
is a mythical journey.

It is a rehash of
a creation myth.

The Earth was born and for four-and-a-half
billion has remained roughly where it is now.

Long ago the Earth had a few
massive impacts to birth the Moon
and almost wipe out life
on Earth at intervals.

Ironically, planetary collisions
have been found essential
66 years after Velikovsk's book
Worlds in Collision was burned.

Thousands of exo-planetary
systems don't fit the story.

There are stars that shouldn't exist, hot
Jupiters that orbit the star in hours or days,
backward orbits
and polar orbits.

Life on earth remains

unexplained.

The odds against random events producing
life are practically infinite.

The rest of the story is once-upon-a-time,
fragmented, boring and non-predictive.

We are an isolated and
improbable accident.

That's why we have difficulty imagining
life elsewhere in the universe.

Alan Alda complains, everybody
is ignorant about science.

Alda was 11 years a host of
Scientific American Frontiers on PBS
and he helped inspire the creation of
the Center for Communicating Science
at Stony Brook in 2009.

Is it any wonder?

When this is the face
of science today.

There is no real
meaning or morality
in modern mechanistic science to
engage students or the public.

Everyone thinks it
is all mathematics.

It saddens me to see so much talent

wasted in the pursuit of myth,
hunting for dark matter.

Their heads have
been filled with it.

Our REAL journey.

You're looking for the nearest
exoplanet -- we're standing on it.

Pay attention to the oldest
stories of the celestial gods
who created the skies
and land we see today.

Yorro Yorro is a
research book about the
Kimberley region, Aborigines
in western Australia.

And they, some of their
stories are so close to
the reconstruction of the
Saturnian polar configuration
that it's almost scary.

And these are the words from the elders and
they were very precise in their words.

It says, in the beginning
people saw before the Ice Age,
that the Moon, Sun and some of
the stars had been on Earth.

In other words, they
were very close.

One song told about a flood,
long before the last,
that was brought on by
a star with trails.

The symbols that testify to these
events are still in the Kimberley.

The Wandjina creator-figure,
which is the one you can see on
the front of the book there,
that features are explained.

All rings around the head
represent clouds and lightning.

The big spirit Wandjina
have large eyes.

This is the eye-god motive that David
Talbott has explained at length.

They never have a mouth nor ears
and the line between the eyes
indicates where the power flows
down and it's not a nose.

And it has, it looks
like a hollow tube
which, in the plasma column scenario of
the Saturnian instability, is accurate.

Wallanganda, the
Creator of Wandjina,
did not create with his hands, only
through his voice, with power.

It reminds me of, "in the
beginning was the Word".

Andy Hall has recently explained that the
overpressure from supersonic shock-waves,
that is from the electrical blast
that striked the surface of the body,
are powerful enough
to form mountains.

Rock flows until the overpressure drops
whereupon it solidifies instantly
but retains an imprint
of the shock-wave.

Those shock-waves would have
produced harmonics and overtones,
a global sound like a
symphony of giant trumpets.

There's many traditions about the
creation being associated with sound.

This little book I bought in Central
Australia on a visit to Uluru,
that great red rock which looks
just like an asteroid has landed.

And it also tells a story by
these people in the Kimberleys
but is illustrated by children
and it's very quaint.

Yet the story is by David
More Jolly, who's the elder,
It tells of two suns in the sky
who lived in hollow
logs, plasma columns.

There is a period of
intense heat from them.

Then one sun is attacked with
a spear, the thunderbolt,
and is bitten by a
snake, cometary Venus,
who lives in the sky.

The little sun gets snagged in
the fog of a celestial tree
which is the Axis Mundi thing.

The Tree of Life,
the Celestial Tree.

So this is an extension of the forensic
technique that Velikovsky introduced.

He never referred to the
Australian Aborigines
but some of their memories

are, seem to be so accurate
that they are a better source
than some of the more,
so-called, advanced
cultural reports.

All of these story elements
makes sense to mytho-historians
and to the leading plasma cosmologist and
colleague of Hannes Alfvén -- Tony Peratt.

Accept the best evidence
regardless of its fit
with modern consensus science
and man-made theoretical laws.

It is better to adopt the
forensic science approach
to the evidence for past
events that cannot be repeated
than to rely on theoretical science
which is based on sets of beliefs
and a geocentric perspective.

Use that evidence to develop
a more holistic science
that brings a phenomenal
real journey to light.

To be real and useful,
science must be holistic.

The Electric Universe

is a holistic science

that applies seamlessly from the

galactic to the earthly to the biosphere

and on down to

subatomic particles.

Humanity's dramatic experience of the

electrical nature of celestial mechanics

would make an awe inspiring

and frightening IMAX movie

that would make science fiction

seem a pale shadow in comparison.

But in my opinion, once understood,

there will be no rational urge

to revisit doomsday upon

each other and the earth

under the unrecognized banners of the

prehistoric warring planetary gods.

Planets bear the scars of their electrical

birth and past encounters on their faces.

Apollo astronauts commented on the

fresh appearance of lunar craters,

the event that caused the great

gush across the face of Mars

appears in stories

from ancient cultures.

These are just yesterday

in geological time.

I recommend you to see episode

II Symbols of an Alien Sky,

The Lightning Scarred

Planet Mars.

We may understand our history and place in

the electric universe for the this time.

This is singularly important

for our sense of well-being.

It gives dramatic new

meaning to our lives

in a sense of responsibility

for our jewel of a planet.

Without this sense we probably

have no future on Earth.

Also in the event,

myth becomes science.

There was a unique myth-making

period and all surviving cultures

required their stories to be

faithfully transmitted for millennia,

such was their importance.

We look at these enigmatic rock art

figures from the remote Kimberley region

in Western Australia and see only their

strange, haunting and artistic beauty.

And it was rather ironic

that just a week or so ago,

and David Novak was there

to see it too I think,

they had the vivid

festival in Sydney

where they project images

onto public buildings

and of course the Opera House's the

the most public building in Sydney

and this was a presentation

of Wandjina figures.

I mean they are haunting and

I think they probably evoke

some kind of a

subconscious connection

but how much more would they mean if

people really understood their origin.

We need to give more credit

to the indigenous people.

Now Even Camp said that

one of the unique aspects of the Electric

Universe theory is that it's good storytelling.

It answers all three questions,

what if..

What if the sky was
different in the past?

What if Saturn was
worshipped as the Sun?

What if there were electrical
discharges between planets?
..sketch of him..

What if there were electric
discharges between planets?

Today we have
meteorites from Mars.

What if Lichtenberg figures explain
the scars on Mars and Earth?

Shows students pictures of
cratering on different bodies
and asks students to explain
them from two points of view.

The standard model needs
different explanations for each.

..oops, sorry
that was unexpected..

The Electric Universe, on the other hand,
has a single explanation for them all.

Then there is the story
of the dissidents.

If only Birkeland

hadn't been ignored,

Hannes Alfvén had

been listened to,

Halton Arp's research

hadn't been dismissed.

A pixar rule for storytelling

number 16: what are the stakes?

Give us reasons to

support the character.

What happens if

they don't succeed?

Stack the odds against them!

What of the future

if this goes on?

We continue wasting money and careers

looking for things that don't exist.

We cripple students by not

training them to think.

We may have no future

on this planet.

As Evan Camp says,

"the power of eliciting engagement is to get

people to come to their own conclusions".

Thinking is going to be

the future of education.

So, our Electric Universe future.

Mahatma Gandhi said:

"There is a force in the universe which,
if we permit it, will flow through us
and produce miraculous results."

The Electric Universe

is an inspiring story
that motivates students both
conceptually and artistically
and that is what's needed for left and
right brain hemisphere development.

Education, classical science and the
arts, left and right hemispheres
..just catch up here..

Many principles of the Electric
Universe were foresaying
by scholars in the past;
Newton, Faraday etc.

A Release from existential fear.

Velikovsky's The Bonds of
the Past, a documentary.

There is a collective inability to face the
truth that prehistoric mankind faced doomsday.

For millennia, sciences
preached stability and order
but as amnesiacs we
have a compulsion

to instinctively repeat the
catastrophes of the past
destroying each other and the earth
from the sky with apocalyptic weapons
like the planetary gods of old.

This was one of Velikovsky's
greatest fears.

But we have, on the other hand, the
possibility of an unparalleled renaissance
with the Electric Universe, bringing
everything together seamlessly,
understanding ourselves
and our past,
can heal the wounds and provide a more
universal sense of connection and purpose.

Understand the electric
force of nature.

Power "like the Sun."

And Gravity.

Quantum Interactions.

All three rely on understanding
matter interactions
by the instantaneous
electric force.

Understanding living organisms, the
mind-body connection and beyond.

Also understanding the dangers of genetically modified organisms and manufactured food.

There's no thought given to the effects, the unintended consequences of fiddling with these things when our basic knowledge is so lacking.

And the idea in an Electric Universe is to live in tune with the Earth and each other.

Resonant Connection

On the most general level, the Electric Universe is a new paradigm of universal resonant connection.

The arbitrary inertial frames of reference of physics are not equivalent when everything is connected in real time.

How and where you are makes a difference to your energy state.

For example, the GPS system is supposed to prove relativity theory.

It doesn't.

The atoms in orbiting clocks have a different energy from identical clocks on Earth

so engineers simply count a different
number of ticks to compensate.

Time is universal,
unchanging and unchangeable.

Clocks are not.

Think of the relationships between all things
connected by the universe electric force
and consider that the electric force
must act instantly otherwise no
information transfer is possible
between resonant tune systems.

Spacecraft using slow speed
of light transmissions,
require constant retuning
of receivers on Earth
to compensate for their motion.

Obviously living systems
could not function
if moving parts of the body
lost contact with the brain.

Acknowledging this simple fact will explain
quantum weirdness and open up science,
particularly biology, to amazing
possibilities that are presently forbidden.

And understanding gravity and magnetism
as balancing electric forces

will change forever our view of the
heavens and the earth under our feet.

As the morphic resonance experiments of the
biologist Rupert Sheldrake have shown,
the things that are learned by one organism are
immediately available to others like them,
anywhere on earth.

The universe learns.

Resonance between molecular tuning forks
allows instant information transfer,
the mind-body
connection and beyond.

Life is structured water.

This was said to me
by Gerald Pollack.

The experiments, or his
experiments, show that structure of
electrically polarized water molecules
gives rise to water's amazing properties.

It allows information to be stored and
transferred within a living cell.

The memory mechanism
of homeopathy.

It suggests that the electrically
polarizable ether particles may also
participate in information

storage as well as transmission.

The Electric Universe resonant

electrical model of matter

and the all-pervasive

neutrino ether,

suggests that resonance and

structure within structure

can store unlimited information

and transfer it instantly.

There is more to life

than meets the eye.

We've always known

that instinctively.

The Electric Universe suggests that

the information needed for life,

forget the gene -- that's just

the factory floor, is universal.

So life can take hold wherever

conditions arise that allow it.

We see evidence for that

in the great changes

immediately following catastrophic

mass extinctions on earth.

We see it in organisms living in

anoxic conditions over volcanic vents,

on the ocean floor and at

great depths in rocks.

Just as gravity

cannot be shielded,

since all matter participates

in force transfer,

so it is with this universal

information bank.

There are no islands in space.

We are Earthlings in the complete

resonant connection sense

in a meaningful

Electrical Universe.

The fact that we exist suggests

the purposeful universe.

Our lives have purpose.

We don't manifest

as a blank slate.

So, children should be observed and

supported in their individual passions,

not suppressed and molded

to have desires for them.

We are born with a purpose but many

need help to discover that purpose.

In answering the question:

Why are we so unhappy,

Iain McGilchrist says: "True happiness

is based on connections with others
and a sense of purpose
beyond the immediate."

True happiness is one
aim of this conference.

The new panorama of an amazing shared
history and kinship must change the world.

In the search for meaning, the
Electric Universe paradigm can,
as Iain McGilchrist
says, change the world.

Elegance, harmony and
simplicity of concepts
are the Electric Universe
guiding principles.

Thank you.

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

Today, the chief principals of the

Thunderbolts project, Wal Thornhill and

Dave Talbott, take a closer look at

the latest information from the Rosetta

mission to comet 67P. As discussed in

previous episodes, the comet nucleus

looks nothing like the smooth icy body

expected by mainstream scientists.

67P's double-lobed form may have its

ideal analog in the structure achieved

by plasma scientists Dr. C. J. Ransom,

blasting hematite with an electric arc.

and the mysteries do not end with the

comet's appearance. The so-called "water

output" detected in the comet's coma has

puzzled scientists on Earth. Months ago,

the detected signal of water was much

too high to explain through sublimating

ices from solar heating.

And on October 23rd,

scientists from the University of Bern

announced that they are "detecting

many more molecules already at large

distances from the Sun," which comes as

quite a surprise. The surface of the comet does not reveal a single trace of water ice. It is covered with abundant rocks and debris, including this 150-foot boulder which Rosetta scientists have called Cheops. Many of the comet's features make it appear as if it were torn from a mountain. We also see curious chains of pits, reminiscent of many planets and moons. At the comet's neck, we even see features resembling the Martian sand dunes, which planetary scientists attribute to mechanical wind on Mars. Wal Thornhill begins our discussion with a closer look at the features on comet 67P, which testify to electrical discharge machining having shaped the comet's surface. One of the key arguments used to support the impact origin of craters in the solar system, is that they seem similar to terrestrial explosion craters. However, superficial appearances can be deceptive: there are many unresolved problems with the impact cratering model. The more than

90% of circular craters on the moon require the supposed impact cause to hit the surface vertically. So, it was proposed that hypervelocity impacts would cause an explosion above the surface and generate circular craters. However, comets are supposed to have been formed by accretion. Circular craters should be rare, but Comet 67P shows many circular craters. In the image here, we see two overlapping circular craters, with no evidence of damage to, or in-filling of, the earlier crater. Professor Tommy Gould remarked upon this kind of crater overlap and the fresh appearance of craters, when viewing images of the moon's surface from the Lunar Orbiter. Planetary scientists have never solved this puzzle. Neat, overlapping circular craters are characteristic of electric discharge machining where an arc strikes the surface vertically, and moves from a newly excised crater to the nearest high point, which is generally the wall of the crater just formed. What's more telling is that the walls of the craters on

comet 67P are raised
above the surface and
sharp-edged. An impact tends to flatten
and scatter surface material. Once again,
an electric arc melts and sputters
surface material cleanly off into space.
When the arc ceases or moves on, we see
the process frozen, like a single frame
from a movie. The slightly
irregular shape of the crater
walls on 67P, is reminiscent of
Victoria crater on Mars, which has been
investigated both from above and on the
ground by the Mars rover Opportunity. I
proposed an explanation for its
irregular walls in 2006, based on the
unique behavior of an arc impinging
briefly on an anode. This may seem like a
contradiction of the comet as a
cathode in the Sun's discharge. But the
electrical birthing process from a
planetary surface can have the comet
temporarily more positively charged than
its surroundings. Victoria crater notably
has a pattern in its floor that is
attributed to windblown sand dunes, but

may more easily be accounted for by the detailed behavior of an anode arc. So, it is significant that the comet has a similar pattern in the neck region.

A good example of cathode edging is to be seen on this smooth area and is most closely matched by that scene on Io, with the scalloped walls of its so-called "calderas." That is where the comet jets originate, just as we see on Io, along the edge of the caldera. Prior to the Deep Impact mission of 2005, NASA scientists had suggested that Tempel 1 lost about one third of a meter of depth in each orbit. When the Stardust Next spacecraft reimaged the Tempel 1 comet's surface in 2010, it found that the wall of the most prominent mesa, which was 15 meters high, had retreated an astonishing 50 meters. The excavation of material was precisely focused at the location of the mysterious pixel saturation, which according to proponents of the Electric Universe, was the focal point of electrical arcs. The erosion along an escarpment is also one of the

features seen on comet Tempel 1.

Interestingly, judging by the muted feature to the right, some of the machined surface material is being deposited electrostatically, mostly in the neck region of the comet. Presumably, in a manner recently discussed by lunar scientists in reference to migrating lunar dust. All of the visual evidence so far, discounts the dirty snowball story of comets and supports the Electric Universe story of recent planetary history, witnessed by our prehistoric ancestors, and involving the Thunderbolts of the planetary gods. You know, week by week this comet is challenging all of our popular ideas about comets, their origin and their nature. Here, we see this amazing cold, black and scorched landscape. We can't find a trace of water; we see a surface dominated by craters and sharply cut, even mountainous peaks. And now we see the comet releasing gases that under present theory, could not be released at such distances from the Sun. Not if

warming is the cause. Now, keep in mind that these observations are not speculation. But how could our long-held comet theories withstand these latest surprises. For decades, comet science rested on a dirty snowball model. The claim has been that volatiles, most notably water and carbon dioxide ices, sublime as a comet moves closer to the Sun. Sublimation simply means volatiles converted directly into gases, without passing through a liquid phase. Now, today 67P is almost 300 million miles from the Sun. That's more than three times the distance from the Sun to the Earth. At that distance in the vacuum and the deep freeze of interplanetary space, theorists cannot find a way for trivial warming to account for the molecules now being actively removed from the surface and injected into the 67P coma. This includes formaldehyde, hydrogen sulfide, hydrogen cyanide, sulfur dioxide and carbon disulfide. At the present distance, origin by sublimation is just not even conceivable. Now, what do we do when a

theory runs into contradictory discoveries. Well, the first requirement is to simply expand the field of view. Consider alternative theories, alternative explanations.

You know for many years now, the leading theorists of the Electric Universe paradigm have claimed that popular comet theory no longer works. They see the 67P discoveries not as surprises, but as confirmation of explicit predictions that follow inescapably from an electric comet model.

When comets move through the electric field of the Sun, they begin discharging electrically. That would logically begin with sputtering of surface materials by the bombardment of protons in the solar wind. But as electrical stresses grow, that leads to excavation of material by electric arcs. Now that should show up, as the Rosetta probe draws closer to the surface or the Philae Lander, actually reaches the surface, and achieves the closest ever view of a cometary surface.

And as the comet itself moves toward
perihelion this coming summer, what will
be the surprises in store for us at that
time? For continuous updates on Space
News from the Electric Universe,
stay tuned to Thunderbolts.info.

[Music]

[Music]

more than two centuries after Benjamin Franklin flew his kite the origin and behavior of lightning continues to amaze and to puzzle the lightning specialist lightning will occasionally imprint its distinctive form on terrestrial surfaces and even on the skin of humans in the laboratory the counterpart to lightning is the Lichtenberg figure perhaps the most common and fascinating form taken by electric discharge dendritic means tree like branches and dendritic forms can be easily confused with fracturing the dendritic patterns seen here are not fracturing as the term is normally understood but electrical breakdown channels on a polycarbonate plate Georg Christoph Lichtenberg appears to have been the first to demonstrate the different forms taken by dust on positive and negative surfaces a line of investigation later followed by others but with no impact on planetary science late in the 19th century industrialist

Lord William G Armstrong explored the power of electricity to produce exquisite forms on surfaces of different charge the feathery qualities of Lichtenberg figures on a negative surface would be compared to the morgue and Hritik patterns on a positive surface at Stone reg engineering the technology of Lichtenberg figures has produced an art form lightning captured and clear acrylic blocks

the blocks are bombarded by electrons from a five mega volt particle accelerator arriving at nearly the speed of light but coming to a stop within a fraction of an inch into the block a cloud of trapped negative charge here the event producing the dendritic channels is triggered by a simple stroke of a metallic pin that is all it takes for a breakdown of the insulating material and a nearly instantaneous release of charge and dendritic channels

[Music]

millisecond lightning storm frozen into

the acrylic block

[Music]

the branching of the electron channels
gives a spectacular fractal pattern
apparently occurring all the way down
the scale to the molecular level from
what we have earlier presented it is
evident that planet wide electric
discharge created vast regions of raised
and Lichtenberg figures on Mars

[Music]

laboratory experiments show that in
regions of positive charge
dust will typically gather into raised
Lichtenberg formations standing out from
the surrounding terrain in fact sharply
sculpted dendritic Ridge systems are
abundant on Mars showing up wherever the
highest energy events are implied the
great trench of Valles Marineris is an
extraordinary example here we find the
raised Lichtenberg figures exactly where
we would expect them running down from
sharp cliffs and high points in
predictable patterns stretching for
hundreds of miles along the trench yet

strangely the mystery receives almost no
mention by planetary scientists

[Music]

we also observe dendritic ridges on the
great mound of olympus mons both on the
miles high scarp and on the caldera
walls

[Music]

[Laughter]

in fact the mystery is global we see the
same pattern on the walls of major rills
we see it along the so called fractured
terrain of noctus labyrinth as' and
everywhere on Mars we see the dendritic
patterns reaching down from towering
cliffs and mesas we even see such Ridge
systems descending from the rims of
large craters opening the door to a much
broader perspective on crater formation

[Music]

in the hypothesis presented here many
craters on Mars were produced by the
same electrical events that created
chains of craters and a great variety of
channels or rills

[Music]

as a discharge column sputters across a surface its diameter will vary with discharge energy and a narrowing or pinching by the induced magnetic field the pinching effect will be most strongly focused at the point of contact with the surface the sputtering arc will leave a unique signature in the form of scalloped walls popular explanations say that surface collapse must have produced these cratered channels

[Music]

but scalloping effects on Mars are by no means limited to chains of craters planetary scientists cannot agree on the forces that created this bizarre channel network north of Valles Marineris other channels that are said to have been caused by fluid flow either water or lava exhibit the same scalloped walls similar neatly cut scallops appear on the cliffs of towering mesas and the so called calderas of the great mountains of Mars reveal the same pattern

[Music]

even the celebrated Victoria crater
supposedly formed by impact exhibits
alcoves and scallops similar to those of
the great rills and valleys and the
scalloped walls of Zoo Neil crater are
virtually indistinguishable from the
scalloped walls of Valles Marineris

[Music]

additional patterns enter the picture as
well including a consistent global
connection between scallops and
dendritic Ridge networks

the explanation appears to lie in the
fractal nature of cylindrical current
sheets

current flow can metamorphosis into
secondary cylinders in fractal-like
substructures to be pinched by the
induced magnetic fields into a narrow
highly focused discharge we see this
interplay of different scales in the
cylindrical currents of Earth's Aurora's
as charged particles enter and exit the
polar regions in an electric circuit
invisible current sheets magnetically
pinched at Earth's poles divide into

visible curtains of secondary cylinders

[Music]

all dancing in the turbulence of Earth's

upper atmosphere

the same electromagnetic structure

arising from charged particle movement

will at times be seen in the electrified

tails of comets

[Music]

in the largest-scale events carving the

surface of Mars we envision multiple

columns of charged particles being

pinched into a narrow discharge at the

surface

this established principle will be

crucial to comprehending the giant

Valles Marineris with all of its

accompanying chasms smaller scallops

within larger scallops they are the

imprint of pinched cylindrical currents

constituted of smaller cylinders the

pattern occurs repeatedly and is surely

no accident

consider the consistent relationship

between the scalloping effects and

Lichtenberg Ridge systems the most

prominent of these dendritic forms are
those that separate the larger scallops
the smaller dendritic ridges define the
boundaries between smaller scallops at
both scales the ridge networks can be
seen as the final events and
catastrophic discharge activity as
charge redistribution gathered and fused
to loose material into the familiar
Lichtenberg patterns

[Music]

in this revision of margin history
contradictions find a unified resolution
in an electrical cause enigmatic craters
crater chains indirect ridges scalloped
craters calderas and rills all are
connected to the observed behavior of
electric discharge here is an image of
electric arcing to a negatively charged
surface capturing the feathery discharge
glow or Corona the corona is constituted
of extremely fine air like filaments
radiating from the primary streamers

[Music]

on a surface affected by electric arcing
experiments show that regions of

localized charge can attract dust or
sediment into a record of the electrical
activity or discharge pathways now too
many fine details

[Music]

here is a ridge complex on Mars covering
thousands of square miles

[Music]

the ridge forms have puzzled planetary
scientists for more than a decade now

[Music]

since standard geology does not include
such forms this unique behavior is a
logical test of the electrical
hypothesis examine closely we see
perpendicular hair like filaments
illuminated by the Sun

[Music]

confirming an electric discharge
attracted dust and to raised relief

[Music]

this exotic formation was produced
electrically by DZ Parker on a CRT
screen showing a gathering of dust in a
region of previous discharge activity
the ridge with its fine filaments offers

a striking counterpart to the baffling
margin formations
we have suggested that the northern
hemisphere of Mars was eroded
electrically to a depth of five miles or
more as seen on the global elevation map
it is only reasonable therefore to look
for transitional zones on the margins of
the more depressed or heavily eroded
regions

[Music]

if the erosion was electrical what
should we expect to find particularly in
the regions that separate the low-lying
northern latitudes from the elevated and
densely cratered southern hemisphere we
should expect to find what we do find
vast regions from the equator northward
join the predictable phases of
electrical erosion first electric arcs
raking across the surface created a
network of channels cutting the region
into discrete blocks then the arcs
acting on the sharp edges of the blocks
continued to extend the valley floors
leaving separate angular islands

the islands standing out above the newly excavated terrain were then progressively eroded into various pyramidal forms then mounds as electric arcs continued to erode the sharp edges and finally the remaining mounds were etched away just as industrial applications of electric discharge machining can erode high points to produce a flat surface all that is left of the earlier margin planes are the few scattered remnants of sculpted mesas and Bluffs disappearing altogether in the flat depression farther to the north

[Music]

this transitional process can be observed across great distances on Mars with a consistent pattern highly cratered elevated plains to the south giving way to isolated blocks then mound then the smooth lower terrain that characterizes so much of the Northern Hemisphere

[Music]

in early 2004 the Mars rover Opportunity returned images that alone could alter

our ideas about the recent history of the solar system the rover had landed in a crater and scattered around the walls of the crater were a multitude of BB sized spherules their blue grey color set them apart from the reddish hue of the iron-rich Martian soil thus the informal name given them blueberries as opportunity rolled across the margin landscape it found a profusion of the little spheres that apparently occupy the margins surface by the trillions but how were they formed not long after the discovery of the margin blueberries dr. ransom set up an experiment to test the effects of electric arcs on different materials he obtained a quantity of hematite roughly comparable to the Martian soil and blasted it with an electric arc the results were quite spectacular embedded in the soil were perfect counterparts of the margin blueberries from what is now known about the Martian surface it's clear that if the planet was engulfed in electric discharge this fuels are a predictable

effect

[Music]

Ransome's experiments did not end the investigation either cameras of the rover Opportunity captured a flat floored Channel with parallel sides from both walls of the channel we observed jagged Razorbacks one more feature with no place in the geologists lexicon but dr. Troy Chen brought and his colleagues at Rutgers University recently produced this very forum Razorbacks and electrostatic experiments and the researchers did indeed see a direct connection to the Razorbacks recorded by opportunity shortly thereafter DZ Parker also produced Razorbacks on the charged surface of a CRT screen both the Razorbacks and the blueberries point to electrical events and electrical events are scalable formations created on a small scale can also appear on a much larger scale in fact our orbiting cameras have found numerous craters with domes or spheres resting within them looking very much

like the spheres and craters of ransoms
blueberry experiment the pictures seen
here of domed craters on Mars are from
the Mars Global Surveyor but in contrast
to the rover blueberry images the domed
craters range in size from a hundred
meters or less to a mile or more in
diameter
and the pattern occurs even on a larger
scale in the polar region of Mars the
domed craters are up to many miles wide
it is surely reasonable to ask if the
tiny blueberries and the far more
massive domed craters were produced by
the same electrical force acting on
widely different scales in an earlier
phase of global electric discharge one
thing is certain if it was electricity
that sculpted the Martian surface the
events were vastly more dramatic than
planetary scientists have ever imagined
[Music]

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

In recent years, an incredible development
has transpired in the space sciences.
Mainstream astronomical literature
now rather routinely acknowledges
the existence of electric
currents in space.

But the question is, how significant
a role do these electric currents play
in the dynamics of the universe?

In our most recent Space News,
we reported on the discovery of a
radio-emitting plasma filament
which connects two
galaxy clusters.

If electric currents connect celestial
objects at such vast cosmic distances,
as plasma cosmologists have
proposed for decades,
then how might we also detect electric
currents in our own celestial neighborhood?

Today, physicist Eugene

Bagashov and several colleagues
are attempting to
answer this question
through a detailed analysis of the
conditions near our solar system.

In part 3 of this four-
part presentation,

Eugene continues his discussion
on the evidence for plasma currents
connecting our solar system with
the nearby interstellar environment.

Let's examine some other evidence that
the local interstellar chimney structure,
where our solar system is situated,
represents a large scale plasma filament.

One of the interesting pieces of evidence is
the existence of the so-called Gould Belt,
the belt of bright stars, molecular
clouds and star-forming regions
encircling the Sun at an average
distance of about 1,000 light years
and having a thickness of
about 2,000 light-years.

Perhaps the most fascinating
feature of that belt,
if we look at it in

galactic coordinates,
is that it doesn't quite coincide
with the galactic equator,
that is the galactic disk,
but is tilted with respect to it to
an angle of 18 degrees or about so.

In galactic coordinates, it makes
it look like a sine wave
with an amplitude of 18 degrees.

This structure seems to be the
largest of such sort in our vicinity,
so it's not quite clear how it came
to be and why is it tilted that way.

But, as we've previously seen,
the local chimney is also not strictly
perpendicular to the galactic plane
but slightly tilted.

And if we compare the relative positions
of the Gould Belt and the local chimney,
it would become clear that the Belt,
sort of, wraps around the chimney
and is most likely related to it, rather than
the larger structure of the galaxy itself.

Moreover, the whole structure of the
Chimney, plus the Gould Belt around it
would immediately start to resemble

the famous Squatterman Figure,
a typical shape produced
by the plasma discharge.

We see a current
column in the center
that widens at the bigger distances
up and down from the center
and we see the torus around it
represented by the Gould Belt.

Take another look at this picture
and you'll see what I mean.

The characteristic circles are there
on both sides of the chimney.

In my opinion, it is highly unlikely
that such a configuration
was produced by some chaotic
gravitational interactions.

Moreover, another prominent structure
of the so-called Lockman Hole
coincides with the axis
of the local chimney.

Lockman Hole is defined as a region of a
much lower density of neutral hydrogen,
so it looks much more transparent in
extreme ultraviolet and soft X-ray range
and it doesn't glow as much

itself in the infrared.

But it might just be the case that the very fact
that there's not much neutral material there,
is only the consequence
of a higher ionization.

There's a stronger current shooting
near the center of the local chimney
so we don't see many
neutral atoms along its way.

One might also look at the parameter
called the Interstellar Extinction.
and has nothing to do with mass
die-offs of species or something.

It means the extinction of light
that is its absorption or scattering
by the interstellar dust or atoms.

So if we look at both galactic
hemispheres, north and south
and measure this
parameter across the sky,
we'd see that right near the
galactic north and south,
perpendicular to the galactic plane,
there are quite prominent clearings
represented by the black
plumes on this picture.

The northern one, which you can see on the left, is exactly a Lockman Hole.

It's evident that both of them more or less coincide with galactic north and south but not quite, they are slightly tilted, just like the chimney axis is.

So they represent exactly that, the openings of the tube-like local chimney structure into the space below and above the galactic disk.

The existence of these clearings has been quite an asset for extragalactic astronomy as they represent the more or less transparent windows into the outer universe.

Perhaps another piece of evidence for plasma processes might be various anomalous readings of chemical compositions of stars, both in our vicinity and in the farther cosmos.

Again, Pleiades cluster may be a great example, but as some of the papers indicate, the problem seems to persist for stellar clusters in general.

The spectral characteristics
of even the most typical stars
somehow often violate
the expectations,
and perhaps it may all be
tied to their positions
with respect to the surrounding
filamentary structures.

Some works have actually directly stated
that the anomalous stellar chemistry
might be linked to the larger scale magnetic
fields in the corresponding regions.

One of the mechanisms of production
of these chemical anomalies,
as Don Scott himself indicates
in one of his papers,
might be in the so-called
Marklund Convection,
the sorting of the chemical elements
in a Birkeland current column,
according to their
ionization potential.

In fact, that might be one of the
reasons why there's less hydrogen
in the center of the
local chimney column,

just because, according to
Marklund, Alfven and Scott,
hydrogen would prefer to gather at
the outermost shells of the chimney,
sorted out by the
convection in plasma.

That way or another, this mechanism
definitely deserves a lot of attention
with regards to
stellar chemistry,
and plasma filaments might just be the right
tool that the astrophysics was missing so far
to explain many of these
observed peculiarities.

Another evidence for the actual existence
of the plasma currents in the local chimney
might be represented by the
scattering of the radio waves.

It has been previously
shown that this process,
which depends on the properties
of interstellar medium,
does not occur homogenously in
the area of the local chimney.

Which would mean that there are areas
of higher and lower plasma density

and perhaps, current strength.

Speaking of current strength, one of the hypotheses in the Electric Universe is the possible relation of the brightness and temperature of the stars to the current density of the plasma filaments that interact with them.

In that regard, I wish to bring up an interesting paper that discusses the changes in measured temperature of the star Arcturus, the brightest star in the northern celestial hemisphere, over the span of several decades.

The graph given in this paper is quite astonishing.

It almost seems like the temperature of the star was steadily rising over a very short time span, at least in astrophysical terms.

I haven't seen any explanations for that according to the current astrophysical models, but in the framework that we are dealing with here, perhaps we might assume that Arcturus

was just pretty quickly moving
into the area with a
higher current density,
and therefore its
brightness increased.

It's not very hard to believe in
as, although it's pretty close to
us, only some 37 light years or so,
its velocity relative to the Sun
is very high, some 122 km/second.

That's about half of our own
speed around the galactic center.

Most of the other
objects in our vicinity
typically have speeds of maybe
tens of km/s, relative to us.

That is not the only
example of such sort.

Perhaps another one might be represented
by another very bright star,
in this case the brightest
star in the whole sky, Sirius.

It has been a mystery for quite a long
time, why the ancient civilizations,
including Egyptians, Greeks and
Romans, called Sirius a red star.

It is clearly bright
blue right now,
and couldn't possibly have been
red, even 2,000 year ago
according to the
current stellar models.

But perhaps the change in color of
Sirius was caused by the same reason
as brightening of Arcturus--the shift with
respect to the surrounding plasma streams.

We might see that on the scales
of the local interstellar cloud,
Sirius seems to currently occupy a
somewhat clearer filamentary area.

That may indicate a stronger
current in the surroundings
and therefore higher
temperature of the star,
whereas in ancient times
it might have been connected to the
local current filaments more poorly
and demonstrate a
somewhat dimmer red color.

Another, perhaps more general consideration
that we might take into account,
concerns the frequency shifts of electromagnetic

waves that travel within space plasmas.

There has been some debate about

the possible intrinsic redshifts

of astrophysical objects as

promoted by Halton Arp, etc,

but there is a possibility that

even the regular wave of light

may change its frequency when

it propagates through plasma.

One of the known examples of that effect

is the frequency blueshift of laser beams.

It is known that under

certain conditions,

when the electromagnetic wave

encounters an area of strong ionization,

its frequency might rise

quite significantly.

Then there is a hypothesis that

an inverse process, a redshift,

might also occur in

certain conditions,

say if the plasma is very hot

but has a very low density.

So it could be seen that a lot of effects

that might usually be attributed to,

for example,

Doppler frequency shift,
might theoretically be related to the
distribution of various cosmic plasma structures
that the light that we observe
was travelling through.

Jim Weninger proposed an idea that, for
example, the so called Flyby Anomalies
might be explained through that.

A Flyby Anomaly is an unexpected
instantaneous change in speed of a spacecraft
that performs a gravitational
maneuver near Earth or other planet,
at least one other
example would be Jupiter.

So, since the velocity of a spacecraft
is measured through Doppler effect,
it is quite possible that some similar
plasma processes in the vicinity of Earth
cause this frequency change,
and not the actual change in velocity.

If all that is correct, this is yet another
indication that we need to pay more attention
to the distribution of plasmas in
the neighborhood of the solar system,
the local interstellar
cloud and the local chimney.

Stay tuned for part 4

[Music]

Pulsars are mysterious objects that emit electromagnetic radiation in a clockwork-like fashion. The period of this pulsing can be extremely short. Back in 1967, Jocelyn Bell Burnell, using a newly commissioned radio telescope, discovered a very strange signal. It was initially dismissed as radio interference by her supervisor. But continued observation showed that it appeared at the same declination and right ascension, which ruled out a terrestrial source of interference. They eventually were able to resolve the signal as a series of pulses, evenly spaced every 1.32 seconds.

At the time, no astronomical object of that nature had ever been observed. Speculation as to the origin of the signal started to grow, with some even suggesting that the signal might be beamed to Earth from extraterrestrial intelligence. In December of the same year she managed to discover a second pulsar and ruled out the idea of it being a signal from ETs.

In 1968 Thomas Gould suggested that pulsars were highly magnetized, rapidly rotating neutron stars.

This model required a high energy plasma beam to be emitted from the poles of a spinning neutron star, and accelerated along the star's dipole magnetic field, emitting radiation as pulses towards the observer.

Like the sweeping lights from a lighthouse.

Since then many more pulsars have been observed, and the shortest pulse ever detected was a staggering 1.4 milliseconds.

Where does the neutron star come from and why does it rotate so fast?

The mainstream idea is that these objects are the remnants of a supernova explosion. The central region of a star collapses, crushing together every proton and electron into a neutron.

The dense core of the star is all that is left. The angular momentum of the original star is conserved, meaning the much smaller object has to rotate at an incredible speed.

The only way for those beams to be produced is in the presence of a very strong magnetic field.

But all we have are neutrons.

The origin of the critically strong magnetic field required for their model is therefore unclear. To add to these problems, a new pulsar has been discovered, which seems to rewrite a lot of these ideas. The pulsar had one of the slowest pulse rates ever seen, at 76 seconds. Most are between a few seconds down to milliseconds.

Apart from the unexpected pulse rate, it also seems to reside in what scientists call the “neutron star graveyard.”

This is a region of space where they don't expect to detect any radio emissions, at all. This is because they theorize that neutron stars here, are at the end of their life cycle and therefore not active.

It is also unique, as it appears to produce at least seven distinctly different pulse shapes, whereas most neutron stars don't exhibit much variety. This makes it hard for them to explain, using their model of a rotating beam.

One particular type of pulse shows a strong quasi-periodic structure. This suggests that a type of oscillation is driving the radio emissions.

This is a large clue to understanding what causes the pulses in the pulsar.

Anthony Peratt and Kevin Healy have

proposed a completely different mechanism, which would not require a fast spinning plasma beam, but instead, utilize the known properties of transmission lines. This is similar to the way planetary magnetospheres are described. If the star is surrounded by a disk of plasma, then it is likely that it is electro-magnetically coupled to the magnetosphere via field-aligned currents. In a lossless line with perfect end-conductors, the pulses propagate back and forth forever. In reality, the kinetic energy of the relativistic current flowing along the guide's magnetic field is lost in synchrotron radiation. Any disturbance on a transmission line, such as an arc discharge or an interruption of steady-state conditions, results in initiation of travelling waves, which propagate towards the ends of the line, where they may be reflected and modified, attenuated and distorted by any losses until they die out. Field-aligned current pulses propagate at high latitudes along the dipole magnetic field. Two regions of high density

plasma terminate this magnetospheric

transmission line: plasma near the

pulsar surface, and plasma at the disk.

The transmission line may also contain

a double layer. This structure forms a

toroid and the relativistic current pulses

propagate within the toroid waveguide.

The pulsar's magnetospheric transmission

line can be modeled by two current-

conducting boundaries that represent the

inward and outward field-aligned currents.

The line is terminated by two conductors -

the pulsar surface and the disc. A voltage

pulse is launched from the pulsar surface.

This ends up being reflected back, which

changes its polarity. In both simulations and

experiments carried out by Peratt and Healy,

they saw both single and double pulse profiles.

When they included the effects of plasma

flowing between the current boundaries,

some important modifications were observed.

As the electric field propagates along the line,

electrons accelerate away from the boundary.

Due to the intense magnetic field

associated with the current pulse, they

are constrained to flow along the $\mathbf{E} \times \mathbf{B}$

drift, rather than across the line.

This means that the entire line acts as a continuous source of low level radiation and noise.

All pulsars show this background radiation.

Whether the radiated pulse has a single or double pulse profile, will depend on the extent of the radiation region at the pulsar surface.

If the radiating current is confined to a shallow region instead of an extended region, a single pulse profile will replace the double profile.

This effect is actually frequency dependent.

Lower frequencies are associated with fields that are extended in the emission region and are more likely to show pulse structure.

The source of the radiation energy is not contained within the pulsar, but may instead derive from either the pulsar's interaction with its environment, or by energy delivered by an external circuit.

This means that pulsars do not have to be composed of neutrons. They are simply no different than a normal star.

What has changed is its electrical environment causing a resonance in the circuit, which creates the pulses.

In the distant past, this star might have
suffered a catastrophic short circuit.
So violent is the discharge, that it is
not only creating heavy elements in the process,
but also explodes the entire surface double layer.
With nothing to hold back the charges,
the majority of the material that made
up the star races outwards in an explosion.
In some cases, a remnant remains after this process.
The electrical power input continues
to drive the magnetospheric circuit to
produce the characteristic pulsar emissions. No
neutrons, no spinning beams, simply a star that has
changed its electrical environment, causing a
resonance in its circuit which creates the pulses.

[Music]

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
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For nearly half a century, the chief
principals of The Thunderbolts Project
have been presenting a scientific case for
relatively recent celestial catastrophes
in the inner solar system,
within human memory.

These events were
recorded in the myths
and storytelling of ancient
man in prehistory.

The dramas reverberating through generations
and shaping the earliest civilizations.

The catastrophes were
electromagnetic in nature.

Planets seen in the earthly
sky discharging electrically,
the Thunderbolts of the gods.

But what about more recent
disasters in the AD time periods?

Disasters that also may have
been triggered by fundamentally

electromagnetic phenomena

in the solar system.

In recent episodes, Thunderbolts

colleague Peter Mungo Jupp

has explored the voluminous evidence

for the electrical nature of comets.

As Jupp has noted,

it is an unlikely coincidence that

mankind viewed comets for millennia

as harbingers of

doom and destruction.

In modern times, we witnessed the spectacular

influence of a comet on a planet

in Shoemaker-Levy 9's close

encounter with Jupiter.

In this episode, Jupp offers

the provocative conjecture

that such an encounter between our

own planet and a cometary intruder

may have caused an AD disaster that caused the

death of tens of millions of human beings,

the so-called plague

of Justinian.

Thomas Short, writing in the 18th

century, chronicled the many calamities

that had decimated mankind

over the last 4,000 years.

Earthquakes, plagues, pestilence,
incredibly overwhelming floods.

But as you read through

this curious book

you were intrigued by the number of
comets associated with these dramas
unmatched in modern history.

In the early century of the
present era, the Romans at one time
counted 50 comets
in their skies.

This is unheard of today. With the skies
over Rome at the end of a bloody era,
that only in recent centuries
has become stabilized,
can there be bones of
truth in this mythology?

They're invariably connected
to the major disasters
and up until the 1800's mankind
held a fear of comets.

What happened?

Then the age of reason struck and incredibly,
the number of highly visible comets shrunk.

Has something happened?

Eventually, by the end of the 20th century, it became scientific dogma the Comets were dusty snowballs.

How incredibly wrong this early scientific theory has been proven by modern science and its observation of comets!

So we've seen the dramatic effects comets can have on at least Jupiter and the Sun.

But what about the planets and particularly Earth?

Have comets in the past had dramatic effects on Earth?

And this is where we come to plague, war, flood, earthquakes, pestilence and famine.

Has in fact the cosmos; in the form of comets, the Sun, planets in disturbed motion, all the outer reaches of the universe; affected Earth and caused chaos?

Has in fact this occurred on the Earth?

Have comets caused the demise of civilizations?

Claude Schaeffer documented at least six destructions of civilizations prior to the Christian era

spanning at least 2,000 years.

But did later lower scale calamities
also affect civilizations?

I suspect yes.

So now let's go the first of
these more recent deadly events.

1500 years ago, a pungent plague
nearly exterminated mankind.

The Emperor Justinian from Constantinople
gave his name to this empire wrecker.

Thomas Short wrote, from 560 AD
a plague raged for 52 years
the like of which has
never been seen before.

Conventional wisdom maintains
this war by plague
began in Ethiopia and was carried by
ship-borne rats to Europe and beyond.

And we don't forget with our new
knowledge of bacteria and viruses
being carried by vectors
far above the earth,
this theory of deployment
has been questioned.

Our pertinent scrutiny ask not only
what caused this exterminating plague

with its incredible and
unmatched virulence
but whether some parallel catastrophic
events had a similar foundational driver.

How Deadly was the
Justinian Plague?

It was totally
chaotic in nature.

It's struck in many different seasons
with its virulence and invasiveness
change from city to city
and amongst every age group and gender
it was ruthlessly indiscriminate
and even if you survived,
no immunity was guaranteed
upon the next episode.

Death was usually within three
days from multiple causes,
buboes and high fever,
carbuncles and suicidal madness.

But quick and immediate death.

The mortality rate was horrific
when compared to modern experiences
of plague or any other pathology.

Short says, for instance, than in ancient
Constantinople, that's Istanbul,

10,000 people died a day

when the plague struck.

Placing this dreadful scourge aside

and examining parallel events,

we find some remarkable

coincidences.

During this plague period, no less than

9 highly visible comets were seen.

Weird, blood-colored flashing skies

and strangely multiple suns

often accompanied

this scenario.

Also associated were 10 incredibly

destructive earthquake storms,

for instance Antioch

200,000 dead,

and 7 worldwide mega famines.

Accompanying this were totally

chaotic and unseasonal weather

with cataclysmic inundations

by water, wind and temperatures.

Now this stage, I emphasize,

these famines and other dramas

were not normal occurrences.

For instance on several occasion, Short

notes, the famines were so devastating

that women horrifically ate or
sold their own children to survive.

In the widespread earthquakes
whole towns were swallowed up
and lakes formed and cities burned.

Was this perhaps from methane seepage
or massive lightning storms plasmoids?

Are these parallel
events associated?

The possibility of an Electro-universe
connection should be considered.

For instance, what drives
the virulence of bacteria?

Stimulation of growth and degradation
by ions, neutrons, electrons
and the spectrum of electromagnetic
radiation are claimed from various sources.

That's what place do not only solar events
have to play in bacterial invasiveness
but possibly of mankind's
classically dreaded Comet.

Comets, although they travel fairly
well-defined elliptical orbits,
are virtually
undecoded phenomena.

Some passed by the Sun

harmlessly, some disintegrate
and break into many sections,
such as Shoemaker-Levy 9
when it collided with Jupiter.
Others grazed by the Sun
with little known effects. Whereas occasionally
some bury themselves into Sun
and appear to translate to coronal
mass ejections on the opposite side.

The factors governing this seemingly, but
probably not, chaotic behavior is a mystery.

Have we come to understand
they are negatively charged,
somewhat like a mobile z-pinch?

They must therefore interrelate
to other electrets.

But the methodology of this
behavior is merely speculation
and certainly Shorts' novels
show anecdotal evidence
and suggest just this
inferred behavior
of these 9 spectacular comets that
occurred during the Justinian plague.

Now equally we're satisfied
that earthquakes

are shaped in some way

by electrical phenomena.

It's always been a puzzle to where

do an earthquake comes from.

The energy comes from the stored

electric charge within the earth.

If a discharge takes place

beneath the earth

then you must get effects on

the surface that are felt

and the earthquake is

one such consequence.

- Right, so it's just like thunder

- Underground, yes

Finally, weather is more and more being

seen as an electrical phenomena,

certainly by EU advocates.

In addition, chaos theory maintains that

outside attractors establish a new harmonic.

These constantly adjusting perhaps radically

adjusting electromagnetic influences

are the central cause of heavily

chaotic unceasing and extreme weather

such as floods.

This in turn causes dramatic

famine and drought.

From all these possibly related events

Short quotes, "two-thirds of all people died."

This is a summary from one of his

primary sources, The Chronicle Magdeburg.

This Justinian plague was preceded often by the

appearance of several suns at the same time.

Other times, the Sun was quite darkened.

A comet appeared a whole year together

adding forth its beams like swords.

The heavens seemed all the flame

and several other medias fell.

Nowadays we automatically dismiss

this evidence from a bygone era

as fanciful, exaggerated

and primitive.

But there's bigger questions

here. Could these cosmic dramas

that influence weather

also be driving plagues,

locusts, inundations, earthquakes

and the very wars of mankind.

And the big unanswered question, comets.

Historically, always feared

in man's history of legends.

If a comet can hit

Jupiter, Shoemaker-Levy 9,

or a comet can cause the
Sun to have a massive CME,
could not they too be involved
in this cosmic drama
that affects weather,
plague and earthquakes.
Unanswered questions
needing more investigation.

[Music]

Star clusters are large groups of stars.

Globular clusters are tightly bound together and can consist of hundreds of millions of stars.

Open clusters are more loosely clustered groups of stars, generally containing as little as only a few hundred stars.

The Hyades is our nearest open star cluster - it is located about 153 light years away from the Sun.

It is roughly spherical in shape and consists of hundreds of stars that appear to be of a similar type, age, and composition and they all have the same proper motion through space.

You can observe this cluster by looking at the Taurus constellation, where the brightest star forms a V-shape along with a still brighter Alpha Tauri star.

Alpha Tauri is actually not part of this cluster. It just sits in the line-of-sight of the cluster.

Astronomers estimate that the age of the Hyades Cluster is about 625 million years. The core of the cluster has a radius of nearly 9 lightyears. The stars in this cluster are more enriched in the heavier elements than our Sun and the other stars in our neighborhood.

This puts these stars in a different stellar group to our Sun. Their age, metallicity and proper motions coincide with those of the larger and more distant Beehive Cluster, which is situated about 600 lightyears away from Earth.

In a new study, astronomers think an invisible force is tearing apart the Hyades Cluster.

They think that the culprit for this may well be a dark matter substructure.

This would contain the mass of 10 million suns and yet be totally invisible to us. Using the data from ESA's Gaia satellite, they were able to create a new map of the Hyades Cluster. In this data they identified a massive bump in this cluster. They believe that the gravitational forces that target the cluster, have, over the eons, sculpted two structures known as tidal tails, that sweep out in front and behind the central hub of stars.

They believe that something is pulling apart one of these tails. Scientists initially produced a simulation of the cluster in order to attempt to predict the current positions and velocities of the stars over time. When they then compared this to the actual data from Gaia, a discrepancy appeared. The

trailing tail in the real data had

far fewer stars compared to their model.

In order to explain this, they postulated

a close encounter with a massive galactic lump.

The problem was that this would need to

be incredibly massive and yet there was no trace

of it. Their solution was to suggest that it was

being caused by dark matter, the invisible force

that all too often is used to explain phenomena

that don't match their models.

Let's just take a little step back here.

The first question to ponder on is that of the tidal

tails. We see these on different scales. Stellar

tidal tails are thought to form as a

result of the rotation of the star

cluster around the galactic center. As the

center of the clusters are highly populated,

some stars can gain enough velocity to escape

the cluster. These escapees will tend to leave via

two points, but continue to orbit the cluster.

Over time the cluster becomes more smeared

out over these points. It should

be noted that we have not

actually observed this happening. We only

see the various states of these clusters.

Do we see these tails elsewhere? Yes, we

see many of these examples in galaxies.

These are thought to be galaxies

that are in the process of merging.

As one passes close enough to the other,

it disrupts the stars in the outer area

and smears them out creating a tail.

But do we know that these galaxies are

actually in the process of merging?

Well, the short answer is no.

it is inferred from what they observe in the still

images. Halton Arp had a very different view of

these so-called mergers. His view

was that new matter was being

created in the center of galaxies and pushed

outwards. This could form lumps of gas which might

turn into quasars that would continue to move

away, and would eventually form a companion galaxy.

He felt that these so-called

mergers were in fact the opposite.

A prime example of this is Arp 105. This is

considered to be a merger of two galaxies,

when in fact the obvious conclusion is

that of a proto-galaxy being ejected

jet-like, from an active elliptical galaxy.

Exactly opposite this is the counter-jet,

a magnificent straight plume, punching

through a disrupted spiral. Very close to this ejector galaxy, we also find the telltale signs of a high redshift quasar.

When you examine the redshift of most of the companions around this galaxy, they were all positively red-shifted with respect to the dominant galaxy.

If these companions were falling in or orbiting the dominant galaxy, you would expect to find as many relatively positive, as minus velocities. The fact that they were not, clearly indicated they were all moving away from the central dominant galaxy.

In other words, they had been ejected. Another example that is worth considering is ESO 161 IG 24. Here, a galaxy seems to have developed a clustering of material along its arms, possibly showing this ejection process can also follow out along the arms.

And this is probably a more classical image showing these tidal arms.

So what is the difference between this galaxy and a barred spiral galaxy then?

Essentially they both have arms protruding, one just has longer ones. Astronomers will tell you that the bars form when stellar

orbits in a spiral galaxy become unstable and deviate from a circular path. These grow over time and are eventually locked into place making a bar. In the Electric Universe, these spiral arms are formed by filaments that twist their way back to the central plasmoid, which powers the galaxy. This will form a loop-back much further out. In the case of the tidal arm in this galaxy, are we not just looking at an arm where the filaments in the arm have been pulled much further outwards?

Returning to the star cluster, the first obvious point to discuss is the shape of the whole cluster. It is interpreted as a central cluster with two tidal tails. If we examine this structure, you might see something a little different.

If we ignore the idea that this was originally a spherical cluster, and instead focus on the shape, we see something rather more obvious.

The stars are all located within a narrow band that twists towards the center, and then flows out on the opposite side. We also know that these stars are of a similar composition and of the same proper motions as the Beehive

Cluster. Is it possible these two are connected along a stellar filament? Could the reason we see such a high density of stars around this point, be due to the formation of a pinching in this area, leading to an instability in the filament, causing the shape we see and also the much higher number of stars in this area?

The difference between one side and the other, would be accounted for by the pinching being less restrictive on one side, compared to the other.

We know that open clusters are confined to the galactic plane and are almost always found within the spiral arms. This is exactly where we would expect to see filament structures. One other example of an open cluster is the Pleiades, which we have previously speculated sits at the center of the filament we are also part of.

and passes up through the galactic plane, creating the structure we see, called the local chimney. This we speculated was created in a massive pinching effect.

So the open clusters therefore show us an area that has experienced an intense pinching effect, causing

the rapid formation of many stars
in a very confined area. Could these clusters,
instead help us to map out some of these
larger filament structures running all
along the spiral arms of the galaxy?

[Music]

Welcome to Space News from
the Electric Universe,
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A new scientific paper
provides stunning confirmation
of one of the most
striking predictions
of the Electric Universe/
catastrophist hypothesis.

The paper, published
in the journal Icarus,
reports that the water in
Saturn's moons and in its rings
is remarkably similar to
water on our own planet,
a completely unexpected finding
for planetary scientists.

The team of scientists made the
discovery by remotely measuring
the isotopic ratios of water and carbon
dioxide in the Saturnian system.

As reported by the
Phys.org the findings

"...mean we need to change models of

the formation of the Solar System

because the new results are in
conflict with existing models.

Models for the formation

of the Solar System

indicate that the

deuterium/hydrogen ratio

should be much higher in the

colder outer solar system

than in the hotter inner

system where the Earth formed.

Deuterium is more abundant

in cold molecular clouds.

Some models predict the

deuterium hydrogen ratio

should be 10 times higher for the

Saturn system than on Earth.

But the new measurements show this is not

the case for Saturn's rings and satellites

except Saturn's moon Phoebe.

Those who follow this

series understand

this is only the latest in a seemingly

endless string of 'surprises'

for the standard model of our solar

system's formation and history.

Discovery continues to offer no support at all to the widely accepted nebular hypothesis which states that planets formed from accretion in a nebular cloud that collapsed gravitationally billions of years ago.

However, as unexpected as the connection between Saturn and our own planet is for planetary scientists, this connection was in fact explicitly predicted by one of the great scientific heretics of the 20th century.

Nearly 3/4 of a century ago, Dr. Immanuel Velikovsky proposed that within human memory, a period of chaos reigned in the inner solar system.

In this scenario, one of the migrating planets was Saturn.

And it was Velikovsky's seemingly outrageous thesis that the water in Earth's oceans came from the gas giant.

In part one of this two-part presentation,

physicist Wal Thornhill outlines the
incredible and ongoing predictive success
of the Electric Universe/
catastrophist paradigm.

There has been a flood of
scientific reports recently,
supporting the Electric Universe model
and confirming its predictions.

But the most spectacular example of
predictive success occurred on December 3rd
when it was reported in phys.org
that the water in Saturn's rings and
satellites is like that on Earth!

Astonishingly, the water has the
same signature isotopic ratios
of deuterium to hydrogen or
heavy water to normal water.

It happened that the founder of mythohistorical
cosmology, Dr. Immanuel Velikovsky,
made the shocking claim based
on his research in the 1940's
that Earth's water
came from Saturn.

Of course, a single success is open to
the charge that it was a lucky guess,
no matter how well-documented

the research,
but Velikovsky went on to be the
only scholar before the Space Age
to successfully predict the extreme
surface temperature of Venus,
the remnant magnetism
of Moon rocks,
radio noises from Jupiter and many
other remarkable discoveries.
His thesis uncovered a period
within mythic human memory
of awe-inspiring chaos
in the planetary system
involving electrical discharges between
planets during close encounters,
the mythic thunderbolts
of the planetary gods.
The ancients were adamant, as
Heraclitus around 500 BC put it,
"...it is the thunderbolt
that steers the universe."
It was no earthly spark;
it took the strange involutioned
corkscrew form of plasmoids
and was associated with stones or meteorites
falling from the sky, and global devastation.

It was Velikovsky who first threw down
the gauntlet to modern astronomers
to recognize
electricity in space.

They refused to pick it up and instead behaved
like the Inquisition against Galileo.

It seems, an unstable solar system
was against their religion.

To squash growing interest in his ideas
on campuses in America in the 70's,
the American Association for the
Advancement of Science, known as the AAAS,
organized the thinly disguised
ambush in San Francisco in 1974.

It became a rallying cry for dissident scholars
to attend the first international symposium
on Velikovsky and the recent
history of the solar system
in Hamilton Ontario later that
year where, incidentally,
I met Velikovsky and David
Talbott for the first time.

But nothing has changed in the following
decades despite the Space-Age discovery
that magnetism exists
throughout the universe.

It shows that astrophysics
is in the wrong hands
and should be passed to
electrical engineers.

Velikovsky's best-selling book 'Worlds
in Collision' published in 1950,
was the inspiration for
a number of scholars
which has lately resulted in a
truly interdisciplinary cosmology
based on human history and the electrical
nature of matter and matter interactions
including the forces of
magnetism and gravity.

The Electric Universe was developed in an effort
to explain the remarkable research results
of those inspired by Velikovsky's forensic
technique of investigating mythic history,
in particular the works of David
Talbot and Edward Cardona
concerning the worship and central
role of Saturn as our original Sun.

Electric Universe cosmology reestablishes
the successful classical physics
of the 18th and 19th centuries
and its extraordinary successful

space-age predictions
contrast markedly with the lack of
predictive success for the last century
of the purely
theoretical approach
which adopts mathematical
concepts and ideals
without regard for the principles of physics
or basic standards and definitions.

A classic case of the
'cart before the horse.'

The recent discovery of
the isotopic likeness
between the water of
Saturn's rings and the Earth
is documented in
the Icarus paper

'Isotopic Ratios of Saturn's
Rings and Satellites:
Implications for the Origin
of Water and Phoebe'.

The simplest interpretation
is that the long-held model of the
formation of the solar system is invalid.

The Phys.org reports,
"By developing a new method

for measuring isotopic ratios
of water and carbon
dioxide remotely,
scientists have found that the water
in Saturn's rings and satellites
is unexpectedly like
water on the Earth...

Adding a neutron to one hydrogen
atom, (that) then called deuterium,
increases the mass of a water molecule by
about 5%, in other words - heavy water,
and that small change results
in isotopic differences
in the formation of a
planet, moon or comet,
and changes the evaporation
of water after formation.

The deuterium to hydrogen ratio is a
fingerprint of the formation conditions,
including temperature and
evolution over time.

Evaporating water enriches deuterium
in the remaining surface.

Models for the formation of
the solar system indicate
that the deuterium to hydrogen

ratio should be much higher
in the colder outer Solar System than in the
hotter inner system where the Earth formed."

Planetary scientists faced a fundamental
problem to explain the presence of our oceans.

The hydrogen and oxygen required
would have been swept out of the
inner solar system by the early Sun.

So, they resorted to an ad hoc story
that countless comet collisions
from a hypothetical invisible cloud
of comets enclosing the solar system
deposited the Earth's
water eons ago.

This new discovery
discounts that hypothesis.

A simple hypothesis will connect
Saturn's rings' material with the Earth.

True the deuterium to hydrogen ratio is a
fingerprint of the water formation conditions
and it is more straightforward to
not assume evolution of the ratio
and to suggest that it is a fingerprint
of the origin of the water on Earth.

Given the success of Velikovsky's remarkable
prediction based on documented evidence,

we cannot simply assume the Earth
formed in the inner solar system.
This latest evidence clearly supports
Velikovsky's mytho-historical cosmology
which identifies a close association
between Saturn and the Earth
within human experience.

That means the comforting belief the Earth
has been circling the Sun like it does today
largely undisturbed for
billions of years,
has been as great an impediment
to scientific progress
as the centuries-long and
even more comforting belief
in a primordially
Earth-centered universe.

Of course, too shockingly
unexpected and related discovery
supporting an earlier
scientific claim,
raises the odds enormously
in favor of a hypothesis.

This was true of Immanuel
Velikovsky's later claim in 1950,
of the extreme surface

heat of Venus,
when everyone else believed
it will be similar to Earth
because the two planets are twins
according to conventional thinking.
But the gravitational model of the
formation of the solar system, eons ago,
has been shown to be fictional
now that we have discovered thousands of
exoplanetary systems that don't match it.
It persists only because it is the
foundation of our uniformitarian belief
in a safe, clockwork
solar system.

It is merely a soothing bedtime
story about the history of Earth
and our misunderstood and
forgotten ancestors.

De Santillana and von Dechend in
Hamlet's Mill, described our period as
'The Darwinian Period'

Where "the simple idea of evolution, which it
is no longer thought necessary to examine,
spreads like a tent over all those ages that
lead from primitivism into civilization.

Gradually, we are told, step by step,

men produced the arts-and-crafts,
this and that, until they emerged
into the light of history.

Those soporific words 'gradually' and
'step by step' repeated incessantly,
are aimed at covering an ignorance
which is both vast and surprising.

One should like to

inquire; which steps;

But then one is lulled, overwhelmed and
stupefied by the gradualness of it all,
which is at best a platitude,
only good for pacifying the mind,
since no one is willing to imagine that
civilization appeared in a thunderclap.

The use of the word 'thunderclap'
is remarkably appropriate.

And that is the crux

of the problem,

for Velikovsky's proposal

of a red-hot cometary Venus

as a motivation for the

sudden rise of civilization

challenged that comforting

Darwinian belief.

The result was a modern equivalent

to medieval book burning.

The textbook publisher Macmillan was
threatened by latter-day astronomer priests
who boasted they had not read the
book because it was obviously wrong;
it didn't obey Newton's laws;
and stopped the publication
of a best-seller.

Specialism and an instinctive
desire for celestial law and order
rendered them blind to the forensic mythohistorical
evidence Velikovsky had drawn together
to understand the creation
stories globally,
referred to almost unimaginably spectacular
and terrifying behavior of the planets.

Velikovsky claimed it was the origin
of our instinctive doomsday fear.

Creation originally referred to the
phases of the celestial spectacle
and not to the universe.

That makes sense.

Modern cosmologists bit off
more than they could chew
and they suppose they had to compete
with a universal creation story

that doesn't make sense.

So what does Venus got to do
with the water in Saturn's rings
and satellites being found
like that on Earth?

The answer lies in the inspiration generated
among a remarkable group of scholars
by Velikovsky's well-documented thesis that
early humanity witnessed Venus's birth
and early appearance as
the archetypal comet.

He wrote,

"In former times the planets played a decidedly
more important role in the imagination of peoples,
to which fact their
religions give testimony.

True, Sun and Moon were also
numbered among the planet gods,
but usually they were not
the most important ones.

Their enumeration among the seven planets
sometimes startles the modern scholar
because these two luminaries are so much
more conspicuous than the other planets.

The dominance of Saturn, Jupiter, Venus and
Mars must startle us even more as long

as we do not know what was displayed on the
celestial scene a few thousand years ago.

The mythologies of all peoples concern
themselves with the birth only of Venus,
not with that of
Jupiter, Mars or Saturn.

Venus experienced in quick succession its
birth and expulsion under violent conditions;
an existence as a comet on an ellipse
which approached the Sun closely;
two encounters with the Earth accompanied by
discharges of potentials between these two bodies
[that is, thunderbolts of
the planetary gods]...

Of course, as a pioneer,
Velikovsky made errors,
chief among them was his placement of
planetary chaos within historical times.

The events he describes were memories
at the times the pyramids were built
as evidenced by the
Pyramid Texts.

The plasma forms seen in the sky were chiseled
into rock in the form of petroglyphs.

It seems reasonable to suggest that
echoes of the prehistoric catastrophes

reverberated down
into historical times
and catalyzed descriptions in terms
of the remembered doomsday events.

As to the first cause of
havoc in the solar system,
Velikovsky made this
astounding intuitive leap.

"Some dark star, like Jupiter or
Saturn, may be in the path of the Sun
and may be attracted to the
system and cause havoc in it."

But of course
astronomers were right.

This mytho-historical
reconstruction was unique
and could not be explained
by the physics then or now.

With no experience of the events
of the myth-making epoch,
the questions never occurred.

It has taken lifelong dedication
by a number of scholars
with the courage to
pursue Velikovsky's leads
in the face of indifference

and hostility,
to understand his errors and to produce a
surprisingly detailed sequence of events
that demanded scientific
explanations.

It resulted in a truly interdisciplinary
Electric Universe cosmology
with profound scientific and cultural
significance for our future.

As evidence, in June 2004, just prior to
the Cassini spacecraft arriving at Saturn,
I published 'Cassini's
Homecoming'
which was to show again the
explanatory and predictive power
of this multidisciplinary
cosmology.

I wrote,
"...a scenario follows that is so alien to
any conventional theory of Saturn's history
that it should be easily tested against
information gained from the Cassini mission.
It shows striking connections between many
seemingly unrelated facts about certain planets."
It's an epic story
and it involves us.

In our next episode, Thornhill will outline the successful predictions he offered in 2004 prior to the Cassini-Huygens mission to Saturn.

Predictions based in part on the mytho-historical reconstruction which has revealed the incredible yet forgotten role that Saturn played in the myth-making epoch in prehistory.

I actually changed the title a little bit it says was the Big Bang a fizzle in reality I don't think the Big Bang ever happens so the the real question is is the Big Bang Theory of fizzle modern cosmologists would have us believe that thirteen point seven five billion years ago a spot of infinite density and infinite temperature and infinitely small for some inexplicable reason exploded in an event now known as the Big Bang one way to put it is that in the beginning there was nothing and then nothing exploded now scientists have spent a lot of time working on this big thing Big Bang Theory and they've taken it down to an incredible amount of detail and here's a short extract I'll just read this from Wikipedia I hope you don't fall asleep on me approximately ten are approximately one trillionth of a trillionth of a trillionth of a second after the Big Bang happened and we got into the expansion phase of the Big Bang a phase transition caused a cosmic

inflation during which the universe grew exponentially after this inflation stopped the universe consisted of quark gluon plasma as well as all the other elementary particles now I don't know about you when I first was introduced to this theory I was flabbergasted who in the world has the hubris to think that they can ascertain what happened in the first trillionth of a trillionth of a second of an event that occurred 13.75 billion years ago now there are cosmologists that have spent their entire career lecturing on this subject writing books about the subject teaching their students grading their grades deciding whether or not they're going to advance in their careers based on whether or not they support this subject and billions have been spent on machines to try to figure out whether the theory is correct we built the Large Hadron Collider we have incredible telescopes that have been put up and we have space probes then they're just trying to earn out the

last few minor

little details about this theory here's

a graph here's a graph showing part of

the progression and you can it's kind of

hard to read but up here we start at 10

to the minus 43 seconds on up to the 10

to the minus 10 seconds finally at about

300,000 years we actually start creating

atoms

complete atoms and then we get into

about a thousand million years after

this occurred we start getting into

galaxies there's a lot of different

charts and things you can find on this

theory and they get there's there's a

wide variety of theories actually out

there but I gotta say that as a person

who was very interested in science and

wanted to study science as a child I was

a little bit jaded by the whole thing

and I started thinking that maybe

there's a better career so I'm much I'm

much different than a lot of the

presenters here I don't have a degree in

physics I haven't written any books and

after trying school three different

times I never really made it through but
I've read hundreds of books I have
enough credit hours to get several
degrees but what happened was and when I
was a kid

this is my story as I found out about
Immanuel Velikovsky and and I know a lot
of people here kind of got their start
into this this direction with Immanuel
Velikovsky and he taught me several
things one thing is that science the
scientists and they're out there that
are publishing all these these documents
really may not know everything I also
learned that in order to derive a
complete theory about everything you
have to include everything so you can't
ignore what the religions and the myths
and the geologists and the
archaeologists are saying if you're
going to create a theory describing the
creation of the universe

so a full understanding requires that we
take into account everything that we've
learned i also learned from Velikovsky
that if you're going to come out with a

new theory or something that opposes the
the mainstream thought it's not going to
be accepted easily and in fact Belikov
ski was vilified for what he wrote
refuse to read his work or even consider
it and the Velikovsky affair where they
talk about science not being able to
accept his theory there's actually a
bigger story than what Velikovsky
himself wrote in high school I was asked
to do a report on a fiction book and I
told my teacher I thought that was a
waste of time and I asked her if I could
do a autobiography on I signed instead
and she go ahead went ahead and let me
do it and there was a quote in there and
it said that when Arthur Stanley
Eddington was asked how it feels to be
one of the only three people who
understand relativity he answered who's
the third now I'm a farm boy from
Colorado and I read this and I thought
how in the world will I ever be able to
contribute to that that line of thought
so instead I figured that maybe I should
get into something a little more real

and I thought maybe designing toasters would be a lot more rewarding than studying quantum mechanics or black holes so I got a job in the semiconductor industry as an electrical engineer and I ended up working a lot with statistical analysis of data trying to find patterns automatically in semiconductors there's a massive amount of data and a lot of it never gets looked at so I created programs that would try to find here you see in the middle the pattern that shows up I also got a chance to look into plasma edge equipment and plasma is used extensively in semiconductor manufacturing to create the integrated circuits that are in our phones and our TVs and everything else and here's an example of a plasma edge equipment it was kind of fun I got to change gasp gasps compositions temperatures RF power and just play around with it I spent hundreds of hours looking into these and when I looked up and saw the twin jet nebula it became apparent to me that this is not an

exploding supernova this is a plasma
formation I now do contract work working
with highly sophisticated websites that
are data and media intensive so if
anyone needs something like that just
give me a call that
but I very clearly remember though about
five years ago when I was reading on the
internet and discovered the electric
universe theory and this brought it all
back to me this brought back the joy of
science and exploration it was no longer
the science of the advanced mathematics
that no one else can understand instead
it brought it back to the the science
that creates this modern world it's the
electromagnetism that we know about in
our motors and generators and
oscillators transmitters receivers all
the things that have created our modern
world are incorporated into the electric
universe theory it's no longer it's
something that is only the the gods of
the mathematics or the high-end
mathematic people that can understand
even a mere mortal like myself could

understand this and I like to talk I
like a microphone it's fun to get up in
front of a group so I started talking
about the electric universe and I'm as a
member of Toastmasters I had to give
weekly presentations and and I started
kind of branching out and doing service
groups like the rotary group and Lions
group and I belonged to a couple
spiritual groups and there they're all
excited about this and so I started
giving presentations and I kind of
boiled this down oh this will be an
oversimplification but I boiled down the
the two major ideas I see that are wrong
with with cosmology today and into two
concepts and one of them is is that
gravity is the primary force that shapes
the universe and electricity plays no
role now there's a bunch of
presentations on this you're gonna hear
about them from other people these are
kind of some of the ideas that have
fallen out of that and I'm really not
going to cover this any farther but
there's another idea which I felt never

really was covered adequately in these
in these conferences and that's the idea
that redshift can be used to measure
velocity and therefore can be used to
measure distance so when you hear that a
galaxy or a quasar or some object has
been found that's a hundred million
light years away this is the Met that
they're using to measure that and so
some of the ideas that fall out of that
is that the universe started with the
Big Bang

that's because we believe that the
universe is expanding and if it's
expanding then and at some point it must
have all been back together at one point
so there was a start to the universe and
it's been expanding ever since after the
Big Bang and then they discovered that
the rate of expansion appears to be
increasing and if the rate of expansion
is increasing something an anti gravity
like force is pushing the universe apart
and they called this dark energy and
then another conjecture that kind of is
predicated all of this is that matter is

the same across the universe and this means that a proton weighs the same here in our galaxy as it doesn't another galaxy as it does anywhere else now I don't know anyone that's ever sampled another galaxy and actually measured a proton and one of these other galaxies but this is a very strong underpinning to this whole story of redshift so you might ask what is redshift all back back in 1842 a gentleman named Christian Doppler took a train a flatbed and put a band on it and ran it by some observers and they would listen to it and they all had perfect pitch I guess and they would listen to the change in pitch and the idea is with with sound is that when a train goes by you hear a triangle you don't actually need the band you can forget the band but no train goes by you hear it it goes and it drops in pitch or another idea is a car when you hear a car go by it goes whereas you never hear a car go free so there's a drop in pitch and the same thing happens with light light is just

another example of something vibrating
and up here in this first picture if you
imagine that this galaxy here is
stationary and we are on the earth
looking at it and we see an absorption
line so there's a dark spot that shows
up in the spectrum and in this case
we'll just put it in the middle because
that's a good way to do this example
in this case we have a galaxy that's
moving away from us and that effectively
lengthens out this wave a
little bit and that causes the light to
shift a little to the red there's a
little bit slower frequency light
likewise if you have an object moving
towards us then it's going to shift
a little bit to the blue now as it turns
out almost every object we see outside
of our galaxy is shifted red there are
virtually there are very very few
objects that are blue shifted or moving
towards us and that's why we believe in
the expanding universe this came about
with Milton Humason back in 1927
discovered that these remote galaxies

were red shifted and then George Lemaitre and I probably dis clobbered that was a Belgian priest and he actually proposed this Big Bang Theory and then finally in 1929 Edwin Hubble who the Hubble telescopes named after proposed Hubble's law and and there's really two parts to the law and that's all objects in deep space are red shifted and that's not quiet there are a couple that are blue shifted but then also from that he determined that this redshift is proportional to their distance to earth so once again when you hear about objects that are a hundred million light years away that is coming from this idea of redshift Carl Sagan actually in cosmos in chapter 10 quoted and and I had to cut out a bunch of what he wrote because Carl Sagan can really talk a lot I'm not sure he says a lot sometimes

but the main point is is that Halton ARP has found enigmatic and disturbing cases where a galaxy and a quasar that are an apparent physical Association have very

different redshifts and if this is the case if a object is the quasars are supposed to be at the very edge of the Gallic or the universe there they're so far away there are 12 billion light-years away according to conventional cosmology and if for some reason you can see a relationship with an alleged nearby object then something's wrong with the whole idea of a redshift and this is actually I should clarify as recessional red ship or a redshift of an object moving away or away from us or towards us there are other types of redshift there is gravitational redshift there is thought to be we'll get into a third one here in a second with ARP but at the end it says our if ARP is right the exotic mechanisms proposed to explain the energy of these distant quasars would prove unnecessary now these quasars are allegedly at the edge of the universe and yet we can still see them and if we can see them they must be incredibly powerful and it was brought

up last night about a quasar that was thought to be 12 billion light years of promise and the the web says that it's 20 billion times the size of our Sun has that has a mass of 20 billion times that of our Sun and they're thought to be this water cloud around it of a hundred and forty trillion times that of the Earth's oceans and it emanates the energy I thought this was incredible anime emanates the energy equivalent of a hundred trillion of our Suns now this all comes from the idea that it's 12 billion light years away if it happens to be much much much closer than suddenly this could be just a normal object it doesn't have to be anything dissing credible because quasar thought quasars are thought to be the most luminous most powerful and energetic energetic objects known in the universe and that then this brings us to the whole point of this this presentation is Halton ARP went to school in Harvard and then got his PhD at Caltech and he actually did some work

for Hubble in his early career looking

for Novas

he worked at Mount Wilson in Mount

Palomar as a staff astronomer so he

wasn't a cosmologists sitting at a

supercomputer doing simulations he

actually looked through telescopes and

he created the ARP Atlas superior galaxy

showing 333 galaxies that he thought

didn't fit the model that most people

believed in he wrote several other books

about redshift and a lot of this

presentation is taken from this book

here seen read so what's his evidence

and there's a lot of different evidence

I just have a couple of them up here the

main ones here but one of the main

pieces of evidence is that he has found

pairs of quasars on opposite sides of

nearby galaxies and once again the

quasars are far away the galaxies are

very close how is it that these quasars

could be related to this this closeby

galaxy here's an example missus I see

1767 it's called a cipher galaxy a

Seyfert galaxies is known to emit lots

of x-rays and radio waves and they found these two quasars right next to it now what's odd about this is that these numbers here this point six one six and point six six and nine are our indicators of the redshift and if it's a positive number that means that it's redshifted is moving away from us if it's a negative number it's blue shifted and moving towards us and these two red shifts are extremely close and the probability of finding two quasars opposite a central galaxy with an extremely close redshift is very very low and I don't remember the exact numbers on this but I know he quotes numbers one and ten thousand one in a hundred thousand for some of these different examples I'll show you so the conventional astronomy said well yeah but you know it's almost impossible to win the lottery too but people win the lottery and they're right so maybe there's other proof now I actually thought this was about quasars as it turns out these are

clusters

of galaxies showing the same type of effect if you look this is the redshift of this item is 0.55 and the redshift of this item is 0.59 and the redshift of the central item is point 0 1 4 so once again we have two objects and opposite sides of a central in this case a pair of galaxies but it shows another example where there is a galaxy in the middle of two other objects in this case other clusters of stars here's a third example we have these two central galaxies here in the middle and 474 and n-470 and opposite it we have two quasars we have one with a redshift of 0.672 and a fairly close redshift to 0.675 now it's starting get looking little odd that we keep seeing this exact relationship so if you would imagine that the central galaxies here now is a blue house we'll go back to the lottery analogy we have a blue house in the middle and we have twin daughters living on each side of the house now how often are you going to find that the lottery winner always

lives in a blue house and has twin daughters living on each side here we have another example of NGC 2639 the two quasars have redshifts of 0.307 and point 3 to 5 so we have yet another family that's lucky here here we have another example with the m95 in the middle it has 2 quasars on each side of 0.2 0.3 3 and point 0 3 6 but now one thing I haven't brought up is that not only are these galaxies or these quasars found as pairs on opposite sides of a central galaxy but they are found on the minor axis of that central galaxy and this is usually plotted as Halton ARP when you read his information there was a surprise when he would you'd be hoping of course that he'd find that but it happens again and again and again here's a little bit different picture we have and I a lot of items by the way in space are named after Halton ARP he was a very famous astronomer at one point he was rated as being one of the top 20 astronomers in the world and then he started saying the redshift the theory

of redshift was incorrect
then he was dropped off the chart but
here we see two items again with the
redshift of 1.25 and one point two six
very very close redshifts bound opposite
this central galaxy art 220 so you know
the individual charts are to me
convincing enough but since I did a lot
of work and semiconductors looking at
statistics this chart I don't see how
anyone can refuse this chart and it
shows the relationship of the brightness
of different quasars and the brightness
of a Seyfert galaxies and the
correlation is astounding this is a 1 in
10,000,000 chance
according to Halton ARP that this is
accidental and to me he has some other
charts showing the same type of
information and and of course the way
the conventional scientists answered
this was by not looking at it so then he
started realizing well maybe there's a
little more going on here than just
quasars and he started looking around
and he found many many examples where we

have a central galaxy the central
galaxies minor axis is plotted here and
we see all these quasars or some of mark
quasars but I think in this case they
are and you find out that they're fairly
well aligned along this central axis not
only that but the closest object this
one has a redshift of 2.1 one point four
point eight three point six nine I
should have bought my glasses 0.33 so as
you go farther and farther away from the
central galaxy it turns out the red
shifts go off and drop off and become
less and less and his conclusion from
this is is that we have a central galaxy
here in the middle and it these central
galaxies are actually ejecting these
quasars generally in pairs not all the
time but for the most part in pairs and
so the quasar starts out with a very
high redshift when it's immediately at
the point of ejection and as it proceeds
outwards the redshift drops off lower
and lower and lower it reaches a point
where the gravity of the central
galaxies begins to pull it back and it

starts to come back into the central galaxy and at that point it has a redshift very close to that of the central galaxy he believes that the at this point of ejection when the quasars are ejected they actually have no mass so this gets back to the assumption we had earlier where protons throughout the universe weigh the same regardless where they are in his theory they are very different and they actually started out with a mass of zero which makes it very easy for them to eject and due to the fact they have a mass of zero that's what is causing the redshift and his term for this was intrinsic redshift instead of the recessional redshift that Edwin Hubble talked about well this extended even further it kind of got to the point a lot of people say that Halton ARP cherry-picked is in his evidence and that he was looking for these specific examples where there were blue houses with twins living on each side and they won the lottery and but it really got to

a point where people would say well I found a pair of x-ray sources or I found a pair of quasars or I found a pair of in this case galaxy clusters and halton Arbuckle ah well then that's looking between them and and find the cipher galaxy in the middle and this so I think the instead of him cherry-picking the data it's almost like the data picked him so this is one type of evidence and there's a lot of examples if you read through his book intrinsic redshift you'll find dozens and dozens more and I'm sure that he actually found many many more examples than that but what's another type of evidence is that he actually found visible connections between alleged nearby galaxies and far away quasars and an example of this is Markarian 205 you see at the bottom now this and it's associated with this galaxy NGC for three one nine and the inn for three one nine has a redshift of point zero zero six which means it's not hardly red shifted at all whereas Markarian has 10.0 seven this is a

significant difference they should be
very very far too far apart and distance
from us but there's this luminous bridge
that apparently connects them he's found
these luminous bridges visible he's also
found them an x-ray and they are now
finding these loom
bridges in gamma-rays but the idea is is
that well this is just a coincidence
we're not really seeing what we think we
see and what does it all mean
one redshift is not the the recessional
redshift is not an indicator of velocity
but it's really an indicator of age
second all quasars are not super bright
incredibly energetic objects they're
very close the third one is really
really don't know the age of the
universe we don't know if it started we
don't know if it ended and we will
probably never know we don't know the
distance too many extra galactic objects
and we do really can't see as far as we
think we think we're seeing 12 billion
light years out we may only be seen into
our local neighborhood the Big Bang

didn't happen quasars are actually young
galaxies and there could be in expelled
and there's also if you look at some of
those equations he would say the general
relativity is no longer needed to
explain the galaxy and he really doesn't
talk about the electric universe a lot
in his writings but I know that at the
end he pretty much embraced that this
probably explains a lot of his ideas and
he's often being called the modern
Galileo because Galileo looked through a
telescope and kind of got in trouble
with the orthodoxy of the church hall
NART looked through a telescope and got
in trouble with the orthodoxy of modern
cosmology both of them said we aren't
the center of the universe and we're not
the focal point which I really didn't
get into that proof but in the end
though Galileo went out and I would say
that in the end Halton ARP also went out
and he will get the last laugh thank you

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

Scientists on Earth are
again being reminded
of the awesome power of
dust storms on Mars.

The first stirrings of what has become
a globe-encompassing phenomenon
began on June 17th
when a dust storm touched down
on the famous Gale Crater.

For several decades such remarkably
energetic Martian storms
have posed enigmas that
meteorologists have yet to resolve.

Mars's atmosphere is only slightly more
than 1/2 of 1% as dense as Earth's
yet Mars has towering
dust tornadoes
some the size of Mount Everest
and global dust storms that dwarf anything
ever witnessed on our own planet.

In such a tenuous atmosphere,

how is dust removed from the soil
and accelerated into massive clouds
circling the planet up to 40
miles or more above the surface?

What holds the dust aloft?

What accelerates the winds and dust across
the near vacuum of Mars's upper atmosphere
to speeds greater than
250 miles per hour?

NASA scientists first witnessed
such an awesome event in 1971
when Mariner 9 became the first
space probe to orbit Mars.

In the subsequent
nearly half century,
mainstream planetary science
has shown little progress
in deciphering the
many mysteries
these and many others strange natural
events on the red planet present.

For many years, The Thunderbolts
Project has offered detailed analysis
on the role of electricity
in our solar system
and its connection to planetary

atmospheric and weather phenomena.

This analysis has
made many predictions
which continue to receive
stunning confirmation.

To understand the global
Martian dust storms
it's first necessary to explore
the undeniable electrical nature
of another type of dramatic
dust raising event,
a Martian dust devil.

The so-called dust devils
on Mars are truly alien
when compared to dust
devils on our own planet.

These monstrous formations are typically
kilometers high and hundreds of metres wide
or approximately ten times
larger than any earthly tornado.

The tremendous electric fields
associated with the phenomena
have been acknowledged by
NASA for well over a decade.

In 2005, the Space Agency issued
a news release which declared,

"When humans visit Mars,
they'll have to watch out for
towering electrified dust devils."

Unfortunately, mainstream planetary
scientists can only theorize
that the electric fields are ultimately caused
by the mechanical energy of air convection.

The NASA release states,

"Dust devils get their charge from grains of
sand and dust rubbing together in the whirlwind.

When certain pairs of unlike
materials rub together,
one material gives up
some of its electrons
(negative charges) to
the other material...

Smaller dust particles
tend to charge negative
taking away electrons from
the larger sand grains."

And here we see a fundamental
confusion of cause and effect.

As physicist Wal

Thornhill wrote in 2004,

"...in an electrified universe charge is
already separated on the macroscopic scale

and the movement of air in a dust devil
is an effect of charge recombination,
not a cause of
charge separation."

With such low
atmospheric pressure
how does one account for the dust
particles leaving the surface?

For decades, the Electric
Universe community
has developed experimental research
on electrostatic dust transport
which can provide great
insights into everything
from the collimated jet
seen exploding from comets
to the dust storms on
Mars and other worlds.

In 2001 Thornhill wrote,
"When I was doing experiments on
electric discharges to a clay surface
there was an electric wind effect
that would blow away all of the dust
and loose particles from the surface
before any arcing took place.

When the diffuse

discharge is big enough

it will rotate causing

a tornado effect.

We have seen but not recognized

electric winds on Mars.

Mars has no counterpart

of thunderclouds

to provide a convenient path to

ground for electrical differences

between the ionosphere

and the planet.

As a result more diffuse and

very tall discharges must occur,

giving rise to an

electrical vortex

that manifests by the material rays from

the surface into the thin atmosphere."

In June of 2001 the greatest dust

storm ever witnessed on Mars began

and did not start to subside

for a full 4 months.

In 2005 the Thunderbolts.info website

published a Picture Of the Day article

that made two completely unconventional

predictions about such dust storms.

As noted in the 2007 article

'Martian Dust Devils —

Prediction Confirmed'

taking a pointer from

Wallace Thornhill

we asserted that the global dust

storm that engulfed the planet Mars

in August and September of 2001 involved

a packed assembly of dust devils

carrying great volumes of Martian

dust into billowing clouds.

Since publication of that TPOD,

a review of dust storm images from the

Mars Global Surveyor and from THEMIS

together with the systematic study

of related phenomena on Mars

has confirmed that our

statement was accurate

and yet it is also clear that the concept

of compact "dust devil congregations"

could only appear absurd

to conventional schools.

In standard theory an atmospheric vortex

requires a vastly larger circulation of wind,

a condition that precludes

what seems clearly to be seen

in edge-on pictures of

"storm fronts" on Mars.

This image shows

apparent vortices,

a word that would not be

used by NASA scientists

rising into billowing clouds from the margins of

the south polar ice cap in the Martian summer.

The caption accompanying

the release reads,

"Like billowing smoke

from a brush fire,

clouds of dust are seen streaming off the

edge of the Martian south polar cap."

The same 2005 Thunderbolts article

summarized the electrical cause

of the massive Martian

dust storms as follows,

"Since Mars has no thunderstorms to

'charge up its ionosphere',

it should present a good case

study of the Electric Universe.

The electrical model predicts that the

Martian ionosphere is indeed charged,

and it posits no isolated

dynamo to 'separate charge'.

On Mars, electrical effects will reach

directly from the ionosphere to the surface
without the ameliorating leakage via
storm clouds that we see on Earth.

Unlike radiant
energy from the Sun,
electrical energy can accumulate in the
planetary capacitor for some time,
with the potential for
planet altering events
when the atmosphere
finally breaks down
and massive discharge
activity is initiated...

At the same time the electric currents
flowing in the Martian ionosphere
will drive the high-speed winds
in the upper atmosphere."

The article then offered a second
extremely radical prediction
about global Martian
dust storms. It stated,

"There is also another aspect to the
interplanetary circuitry affecting Mars.

The greatest storm on Mars in 2001 occurred
when the planet was nearing perihelion
and was the closest it had been

to Earth in about 12 years.

At that time it was also being 'tickled'
by the Earth's plasma sheath,
establishing a temporary electrical
connection between Earth and Mars
for the transfer of charge.

It seems that Mars responded with an
outburst of atmospheric discharges,
these taking the form of
monstrous dust devils
- or more accurately,
electrical tornados."

Today as massive dust storms are
again encircling the Red Planet
science headlines have announced
another crucial fact about Mars
though no one outside of the
Electric Universe community
appears to have noticed
the connection.

Just as in 2001, today Mars is again
approaching perihelic opposition
and by late July it will make its
closest approach to Earth in 15 years.

One such convergence of circumstances
could be considered coincidence

but a second instance
demands closer examination.

Of course the Electric Universe also
predicts that dramatic solar activity
in the form of coronal
mass ejections
can provoke electrical
discharges from celestial bodies
that move within the
Sun's electrical domain
including comets
and even planets.

Such a display was in fact
seen on Mars in recent years
to planetary scientists'
complete bafflement.

In March of 2012
amateur astronomers spotted enormous
plumes jetting from the Martian surface.

The plumes were more
than 250 km high
and several hundreds of
kilometers in length.

As the lead author of a scientific
paper on the discovery stated,

"At about 250 km, the division between the

atmosphere and outer space is very thin,
so the reported plumes are
extremely unexpected."

In 2016, scientists using data
from the Mars Express spacecraft
discovered something
equally unexpected.

Immediately before the
plume was first spotted

Mars appeared to be hit by
a coronal mass ejection.

David Andrews of the Swedish
Institute of Space Physics stated,

"It's very surprising that was affecting Mars
right before the plume was first observed."

The implications of electrical
phenomena are obvious
even to mainstream scientists.

A New Scientist report of
the discovery stated,

"One possibility is that plasma could
be interacting with ice grains or dust
lower down in the atmosphere and electrically
charging them, boosting them higher,
but it's not clear how the
effect would be big."

It must also be
noted that in 2012
just days before scientists
noted that baffling plumes,
Mars was again at opposition
and at the time was at its closest
proximity to Earth in over two years.
As we've noted several times,
it's been known for many years that when the
Earth's magnetotail passes over the moon
it causes electrostatic dust storms
and visible electrical discharges.
As noted by NASA
scientist Tim Stubbs,
"Earth's magnetotail extends well
beyond the orbit of the moon
and, once a month, the
moon orbits through it.
This can have consequences ranging from lunar
'dust storms' to electrostatic discharges."
It is a poignant commentary
on institutional science
that decade after decade
of similar discoveries
continue to provoke only
surprise and perplexity.

Yet the surprises are only met with
ad-hoc amendments to existing theories
rather than the development
of promising alternatives.

Alternatives which have been
waiting for many decades
in the fields of plasma physics
and electrical engineering.

Planets are "organisms" that interact
with their plasma environments
in incredibly dynamic ways.

A fact which only confirms that
we live in an electrically alive
and connected universe.

[Music]

Well, about a week or so ago at a NASA press conference, the investigators who are in charge of the Parker Solar Probe described their new findings from the first flybys of that probe. Now as far as I have been able to find out, the probe has made about three closer and closer passages to the Sun and it will continue to do that for several years and hopefully, if it doesn't burn up, it'll continue to do that.

But in any event, the NASA press conference included the statement, which is sort of typical of them, quote, "This is the first time we've been able to fly a spacecraft into the atmosphere of a star." I said that last time too and I commented on that kind of statement, it all depends on what you call the atmosphere of a star. What is the Sun's atmosphere.

Well, the Sun's local plasma extends out to the end of the heliosphere which ends in what we call the heliopause, and that's several times the distance out of Pluto. So, by definition, any probe or satellite that gets out of Earth's atmosphere

is in the Sun's atmosphere, if you realize the Sun's atmosphere goes out that far. But actually the proper question is how close to the Sun's photospheric surface will the Parker probe get? Will it get into the Sun's corona? Will it get below the corona? No, certainly not. It will not get below the corona. Nothing in the foreseeable future will ever get through that kind of temperature. But NASA says that the probe will in 2025 get within a distance of four million miles. Okay, I think as I said last time, that four million miles is about nine solar radii. That is, if you take a picture of the Sun during the full solar eclipse and see the corona there, if you look and scale the distance let's say from the center of the Sun to the edge of the black dot, the shadow of the moon in front of the Sun, that's of course the solar radius. And so, if you measure out 10 times that distance, that's where 'closest approach' of the Parker probe will get. It used to be said that the farthest out that the corona extends is about five solar radii. So I said last time, and I still think it, that the Parker probe was not going

to get even close to the outermost regions of the corona. But recently NASA says no, no, the corona extends out to something like five million miles: 12 solar radii. And so, depending on, I guess, the feelings of the Sun at the moment, how far it extends its corona, it may touch the outer reaches of the corona. But they're assuming it's going to.

The press release goes on to say that the present data that they're getting back quote, "...hints at the likely birthplace of dynamic solar winds, which bathe our entire solar system in energy." And that's certainly true. They continue to say, "It describes startling reversals (that is to say switchbacks) in the Sun's magnetic fields. It detects dust in the solar wind and it shows that solar winds spin."

And they say of course in their airy frivolous language, "...it spins like children riding on a playground carousel."

Anyway, if you can get through that, whenever you hear about things spinning, just quietly think about the fact that force-free currents are collections of

counter-rotating spinning magnetic field
and current pathways. I submit
and I have submitted for a long
while, that they're about the only natural
phenomena that do consist of concentric
counter-rotating cylinders, that do
indeed spin, or at least a twist. In one of
our last Space News segments, we discussed
reports that the Voyager probes have observed
unexpected rotation of the magnetic
field through which it is traveling. That
is the Voyagers, they're out at the heliopause
and my comment at that time says that wow,
that's fantastic because that would
fit like a hand into a glove with our
Juergens' Electric Sun model. And that
would say that, yes they have left the
heliosphere out through the heliopause, but it still
hasn't left the giant Birkeland current that feeds
this whole solar system and feeds our
Sun, still seeing the rotating magnetic
fields within that Birkeland current.

To get back to the present though, and
the present report, I feel it's very
likely that the pointed tops of the
so-called coronal caps, regions where

the arrays of plasma that are leaving up through the corona, instead of diverging from a central point, i.e. the Sun, after they leave, they seem to at certain places at least, come back together again and form a triangular or at least a conical kind of a cap. But anyway, a long time EU member, a good friend of ours, Chris Reeve apparently asked the question, isn't it possible that these switchbacks are simply the probe moving through the counter-flowing Birkeland current cylinders of each filament? And when I saw that, I said hurrah, thank you Chris. Yes, it absolutely is, of course, yes. It's quite likely that the coronal caps, those pointed hat shapes we observe in the outer regions of the corona, are exactly where Birkeland currents form. Those Birkeland currents extend out to places like the north poles of the planets. So, Birkeland currents would explain the spinning and the reversal of direction of magnetic fields that the Parker Solar Probe observes and that the investigators have found so typically surprising. Why are there all sorts of different

elements? You know manganese, calcium, iron sulfur, oxygen you name it, all the other elements, in addition to the hydrogen and helium that their model says has to be there. But their model of nuclear fusion does not produce manganese, calcium, oxygen, sulfur and all the raft of other elements.

And so, where does it come from?

In deeper outer cosmic space there are novae explosions. Suns explode and they pepper the universe with (and Scott adds parenthetically, fairy dust) that sprinkles throughout the galaxies and intergalactic space and that's how all these other kinds of elements that the Sun doesn't generate, that's how they get on the Sun. It's like a snow storm and they come in from deeper outer space. Now, if you believe that, I got a bridge that connects Manhattan and Brooklyn that I would be very willing to sell you. Alfven and all the earlier plasma physicists were well aware that most plasmas are what are called dusty plasmas. And that means that they contain neutrals.

A fully ionized plasma is very rare.

They say that the outer regions of the coronas of our Sun and probably other stars, are fully ionized plasma. But 99% of most plasmas are not fully ionized.

In fact, Hannes Alfvén was quoted as saying if the plasma was more than ten percent ionized it could be considered a fully ionized plasma, because the forces between the ions and electrons that were there, are so much stronger than the gravitation between the neutrals, that the neutrals and the gravitational effects just don't count.

So, that's a long-winded way of saying, sure, plasmas are dusty, that's where the dust comes from. It comes from within the Sun.

As the ions and the electrons come blasting out of the Sun, they bring neutrals with them and that's where it came from. I don't think you have to depend on asteroids melting near the Sun to explain that.

In describing the switchbacks, or magnetic reversals, the Parker Probe is seeing, the press release stated, quote

"These reversals happen at a high rate of occurrence. That high rate is surprising. In fact

the nature of these structures remains unknown.”

Well, we can help them with that, I think.

But anyway, we know that the Parker Probe

is traveling at a speed of approximately

430,000 miles an hour. Now, that's fast.

In fact it's 190 kilometers per second.

And so in in a couple of minutes the

probe travels about 15,000 kilometers.

That distance could very well be the

thickness of one of the layers in the

Birkeland current which would be the

cause of those magnetic reversals

as the probe goes through the

Birkeland current. The press release also

announced that close to the, Sun the

solar wind seems to get sped up by powerful

“rogue waves” quote, unquote, that move

through the magnetic field. The quote

from the press release states quote,

“We'd suddenly see a spike in the flow

where in just a couple of seconds the

solar wind would start flowing at 300,000

miles an hour faster. That's about

134 kilometers per second increase in the

speed of the solar wind that they're observing.

And if the velocity of the wind is about

400 kilometers a second, the press release said they were doubling the speed - it's not quite doubling. Also, they said there are jets of plasma in these streamers. Well, I maintain the increases in the solar wind speed may indeed be caused by double layers.

Now in the in the past our viewers have seen this image that I've included here, of what a double layer looks like. So just to refresh for the viewer. There are three plots there. The top graph is the voltage that we would measure as a function of radius distance out from the Sun. So you can see that the voltage is dropping rather precipitously from point c to d, to e.

And that results in the middle plot which is the electric field that is produced by that sharp drop in voltage.

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

positive direction. So, the bottom plot
there is the plot of the charge distribution
that would be there to cause what those other
two plots look like. That's from
Maxwell's equations, but
if we look at the charge distribution there,
you can see that there are two spherical shells.
One of positive ions and then
right on top of that a shell of
negative charges, mostly probably electrons,
and that's why it's called a double layer.
The plus and the minus layer are right there
together. And there are two different spherical
shells in that double layer: the inner half
is positive and the outer half is negative,
and in between, in the center of that double
layer is an extremely strong electric field.
Now that electric field, if it's strong
enough, can actually rip apart any charged
intruder into the double layer. So the
SAFIRE experiment that everybody has
been hearing about and that's worked out so
well for us, that experiment produced an image
of a whole series of these double layers
surrounding the anode, the Sun.
And the most powerful one is right there

above, or actually on the surface of the anode.

And that's completely consistent with Juergen's Electric Sun model, because that's the photosphere. That's where the sunspots all happen and in that double layer there's where all sorts of things occur. And then, as you go out from that layer, outward from the Sun, the double layers get dimmer and weaker.

You can see them finally disappear, off in the distance. We don't see any of those double layers around the Sun with our eyes or with telescopes now, simply because if they're there, they're in the dark mode of plasma operation.

They're in the same mode of plasma operation that surrounds the north pole of the Earth, and it's the dark mode, we don't see that either unless of course there's an aurora at which time the plasma jumps into the glow mode as it did in that photograph that Monty (Childs) so kindly sent us.

But normally it's not visible, it's a dark mode plasma and so are those double layers around the Sun.

Also, things are happening very

quickly these days. In a new paper entitled, "Probing the energetic particle environment near the Sun," the authors seem to acknowledge that magnetic reconnection can't actually explain some of the effects they're observing. I was waiting, predicting that we would hear about magnetic reconnection, but I'm very pleased that they have essentially written that off, at least in this paper. They said instead, "We find a variety of energetic particle events accelerated both locally and remotely, including by co-rotating interaction regions, and impulsive events driven by acceleration near the Sun and an event related to a coronal mass ejection." Unquote. So they use the word co-rotating and I wonder if by using the word co-rotating did they actually mean counter rotating? Nothing more was said and so we'll have to wait to see what they have discovered. But they've discovered, everything that they have discovered is certainly explainable by Birkeland currents. Also, incidentally, regarding the question of how all those other elements get onto the face of the Sun, that we discussed earlier,

one of the most important results of the SAFIRE team, was their discovery that in their electrical plasma discharge (and remember that was in a hydrogen atmosphere just like the Sun is hydrogen), the transmutation of elements occurs. That's the kind of process that the old prehistoric alchemists were looking for. They wanted to change lead into gold or something like that. Well, actually SAFIRE has done it, in microscopic amounts, but they've done it. So that in a plasma discharge, hydrogen apparently can give birth to a long list of other elements. Not just one, that were not there before the discharge started. So that may well be how those other elements got onto the Sun and get out of the Sun, as we speak. And the point is fairy dust has nothing to do with it.

[Music]

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

Today, physicist Wal Thornhill
concludes his three-part presentation
on the early science results from NASA's
Juno mission to the gas giant Jupiter.

As previously noted, like countless
other recent space discoveries,
the mission findings are challenging, not
only long-held assumptions about Jupiter,
but also consensus theories
of planet and star formation
and the history of
our solar system.

On the question of Jupiter's internal
structure and composition,
Thornhill offered the provocative
thesis that Jupiter is hollow.

In this episode Thornhill presents his
predictions for forthcoming Juno revelations,
including the mystery of what lies
beneath the planet's Great Red Spot.

We begin with some further

explanation of electrogravity.

Of course, the idea of a hollow Earth
with an inner surface like a geode,
is a formidable challenge to our entrenched
belief that the earth has a dense core.

It's a belief that can only
be overcome by explanation,
by demonstration and by willingness
to consider the evidence.

Consider for a moment that the
electrogravity model presented here
applies equally to
any spinning object,
where the heavy nuclei in each atom
are offset radially from the spin axis
to form tiny radial
electric dipoles.

This is the simple reason why inertial
mass is equivalent to gravitational mass.

The centrifugal force is not
a fictitious or pseudo force,
it's identical to gravity.

It's the reason why a spinning Space
Station, like the one famously modeled
in Stanley Kubrick's landmark film,
"A Space Odyssey", produces its own gravity.

This raises the question how someone in
the space station knows they are spinning.

Only by looking out of a window
and seeing the stars sweep past.

The so-called fixed stars are the reference
standard for all motion in the electric universe,
because the electric force of gravity
connects all matter in the universe,
practically in real time.

That's why gyros are used
for inertial navigation,
because they tend to lock
themselves gravitationally
to the matter in the
rest of the universe.

Think about it.

In a universe of countless negatively polarized
stars and planets repelling each other,
a gyro has a positively
polarized rim
which is attracted to all
of those celestial bodies.

Sadly, those who have demonstrated what
seemed to be anti-gravity effects of gyros,
have not had any useful understanding
of gravity from physicists

to explain what
they were observing.

Most significant was Professor
Eric Laithwaite's 1974-75
Royal Institution's
Christmas lecture,
finally posted online in December
2013, which I recommend watching.

As for willingness to
consider eyewitness evidence,
scientists at the Royal
Institution behaved predictably
by refusing to broadcast the
remarkable lecture on the grounds
as the Royal Institution
website says and I quote,
"Laithwaite appears to have used various
engineering approximations in his calculations
on the behavior of gyroscopes.

And when told by professional mathematicians
that once the calculations were done rigorously
there was no discrepancy,
he refused to believe them."

These are the same
professional mathematicians
who can't define mass or

energy in terms of matter
and have no sensible model of
the real nature of gravity.

Laithwaite was only one
of three people since 1945
to deliver more than one series of the
Royal Institution's Christmas lectures.

His first series was the first to be
televised on the new BBC-2 channel.

Back to Jupiter's
origin and composition.

Decades ago the plasma cosmologists and
Nobel prize-winning plasma physicist
Hannes Alfvén predicted that stars would be
formed along Birkeland current filaments
inside molecular clouds.

He famously said, "Gravitational systems are
the ashes of former electrical systems."

Infrared Space Telescopes
have recently confirmed this,
but no acknowledgment has been
forthcoming from settled astrophysics
because of their taboo
against electricity in space.

The electric universe simply adds that both
stars and planets are formed in the same event.

The cosmic lightning
characteristically snakes about
and is observed to toss the newly
formed bodies out laterally.

But collisions are avoided
by repulsive gravity.

The thousands of crazy exoplanetary
systems are simply explained
by the inward gravitational pressure
of all other bodies in the universe
against a repulsive gravitational
force of the nearest dominant body.

Hot Jupiters, orbiting their
star closely, is not a puzzle.

When we get rid of the gravitational
accretion and merger by collision myth.

On the question of the
composition of Jupiter,
plasma physicists have shown
that Birkeland currents
draw the heavy elements towards
the centers of celestial bodies
and the gases form their atmospheres,
with hydrogen and helium outermost.

So, the composition of Jupiter can't
be assessed from its atmosphere.

Jupiter is not mostly
hydrogen and helium.

All of the issues raised, mean Jupiter is
a solid shell, composed of heavy elements.

It will have structure, both on its
external and internal surfaces.

Jupiter is not as Scott said of
the simplistic standard model,
"boring and uniform inside."

Anywhere you look will
not look the same.

So let's return to
Nasa's teleconference.

Scott Bolton, Juno principal
investigator said,
"There are motions deep inside Jupiter
that people hadn't anticipated
and the gravity field
is consistent with that.

What we were really
looking for was a core,
whether there was a
compact core or no core,
and instead what we found was
that it looks really fuzzy."

"There may be a core there and it may be

very big and it may be partially dissolved...

that came as a big surprise

to us, that there was no core.

These mysteries extended to
our magnetic field experiment."

Jack Connerney, Juno deputy
principal investigator, said

"On Earth the compass doesn't deviate
much from the north-south direction.

On Jupiter the magnetic field was
both stronger than we expected
where we expected

it to be strong

and it was weaker

than we expected

where we expected it to be weak.

"There are small spatial variations which
indicate we may be very close to the source.

So it may be above the metallic hydrogen and may
operate in the molecular hydrogen envelope."

The electrogravity model

of hollow celestial objects

removes any idea of planetary magnetic
fields being generated by internal dynamos.

That hypothesis has never been able
to successfully model the complexity

and variety of planetary magnetic fields found in the solar system.

It doesn't work for the Sun either.

As Faraday found, magnetic fields are intimately associated with electric currents, but electro-gravity is also associated with magnetism.

Both forces have the same origin in the distortion of protons and electrons.

The earth shows a connection between the two forces which requires a fundamental reinterpretation.

The simplest explanation for a dipole magnetic field aligned roughly with the axis of rotation of a planet, is that the planet carries a surface charge which constitutes a current.

This was considered for the origin of the earth's field but it was rejected because the electric current of 10^9 amperes required, seemed too high because the charge it implied would generate a tremendously strong

electric field at the earth's surface

which doesn't exist.

However, there is a clear air electric

field of about 100 volts per meter.

The problem with this argument is that

to measure voltage requires a reference

and the earth or ground is

considered our reference voltage.

And it is clear that the earth

has plenty of electrons

to carry the return current

of our Power Networks.

But the fundamental error comes from

the belief that stars and planets

can be considered electrically

neutral in space plasma.

This has been proven incorrect

in the case of the Sun,

where numerous electrical

double layers or plasma sheaths

have been found in the

interplanetary plasma

that reduce the electric

field between them.

The earth has plasma sheaths in the ionosphere

and magnetosphere which do the same thing.

So the 100 volts per meter
measured in the lower atmosphere
doesn't give a true picture
of the charge on the earth.

Venus's lack of a magnetic field
could be down to its ultra-slow rotation,
but it leaves Uranus' and Neptune's oddly
offset magnetic fields unanswered.

It seems more probable that the
cool solid shells of planets
retain some of their
nascent magnetic fields,
when the ambient field of their
birthing Birkeland current was at its peak.

Planetary rotation can
also be understood
as an imprint of the rotating
Birkeland current filament.

The slow retrograde
rotation of Venus,
its heat and lack
of a magnetic field,
argues for a different,
recent birth.

The global myths of Venus as the
archetypal comet, match this idea

and introduce an alternative birth process
for smaller rocky planets and moons
by a process of electro-gravitic
expulsion from a much larger body.

This proposal makes sense of the large
numbers of satellites of the gas giants
and the spectacular
icy rings of Saturn
which are of very recent origin.

Finally a word about
Jupiter's Great Red Spot.

Its continued presence for centuries is another
argument for a solid body beneath the clouds.

It's giant tornadic form is that of a
continuous electrical discharge vortex
from an elevated surface feature
acting like a lightning rod,
which could be the birth scar
of one of Jupiter's moons.

The Juno spacecraft is due to
observe the Great Red Spot closely
on its next close
encounter with Jupiter
where I expect even greater gravitational
and electromagnetic anomalies
to be found associated

with the spot.

For continuous updates on Space

News from the Electric Universe,

stay tuned to

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the Electric Universe,
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In Part 3 of this
four-part presentation,
physicist Eugene Bagashov
continues his analysis
of the New Horizons mission
to the dwarf planet Pluto.

In the Plutonian system, one of the great
surprises for planetary scientists
was a Chandra Observatory's
detection of X-rays from Pluto.

This is only one of several
phenomena at the planet
that sometimes draw the
analogy of Pluto to a comet.

In the Electric Universe Theory, as
developed by physicist Wal Thornhill,
any body on a significantly
elliptical orbit
can display comet-like
characteristics.

Today, Eugene Bagashov offers

his own thoughts on this
and other surprises from Pluto,
including the mysterious behavior
of the Plutonian atmosphere.

Eugene Bagashov: In one of the
previous Space News episodes on Pluto,
I've mentioned the various
atmospheric anomalies
that have been detected at this dwarf
planet by New Horizon spacecraft.

Those include, for example,
the low atmospheric pressure
and at the same time the unexpectedly
high location of haze layers.

And in the paper called "The Atmosphere
of Pluto as Observed by New Horizons"
that came out in March of 2016,
there are reports of some new
misconceptions being observed.

For example, it is said
that the upper atmosphere,
approximately 200
kilometers and above,
is much colder and much more
compact than the models indicate.

So, the authors have supposed there should

be some "cooling agent" present there.

Yet, they acknowledge the complete lack of evidence for such a presence.

And it seems that the nitrogen escape into space is also a few orders of magnitude less than was previously thought, actually around 10,000-times less.

Such a huge mistake clearly means there is something wrong.

Basically, the model that is being used doesn't seem to work.

The temperature near the surface, on the other hand, was determined to be somewhat higher than it should be, around 45 Kelvin.

The models seem to indicate that, at the given atmospheric pressure, the nitrogen ice will be in equilibrium with the atmosphere only at around 37 Kelvin.

So, the atmosphere near the surface is 8 degrees too hot, if one might use this word for Pluto conditions at all.

It's too hot for the nitrogen

ice to just sit there.

So, the scientists have supposed that the surface might possibly be covered with some other less volatile material.

Yet, as I've noted in previous parts of his review, we clearly see nitrogen spectral signature on the surface.

The mentioned paper also reports of an identification of at least 20 haze layers in the Pluto's atmosphere, separated by distances of the order of tens of kilometers.

The authors propose gravitational wave-like displacement as the physical reason for the observed layering.

It is thought that the process might be initially driven by sublimation and the interaction of weak Pluto winds with the orographic features such as mountains.

The proposed wind speeds are around

one or two meters per second.

But from the EU perspective,

such layered structure

makes one think about

plasma behavior,

which is not at all far-fetched,

given their apparent lack of

any significant protection

from ionization by solar particles

and galactic cosmic rays.

In my opinion, it is entirely possible

that the electromagnetic effects

might be somehow ruining the models

that are used by the New Horizons team

to infer the temperature, pressure,

and other relevant parameters.

Another evidence for this comes from the

recent paper quite straightforwardly titled

"The Puzzling Detection of

X-rays from Pluto by Chandra."

Chandra is a well-known

space X-ray observatory.

Once in 2014 and on three

occasions in 2015,

it has been devoting its time

to the Pluto observations

in support of the New

Horizons mission.

As a result of approximately two

days of total observation time,

it has detected eight photons in the energy

range from 300 to 600 electron volts

while none has been detected in the

range of 600 to 1000 electron volts.

The detected events

seem to be genuine,

that is, not related to background

sources or the instrument noise.

And they all come from the square box

with the side of 100 Pluto radii

centered on the planet itself.

Unfortunately, the instrument resolution

couldn't allow for any more details.

So, they have to originate

from somewhere in the system.

And maybe eight photons in two

days doesn't sound like much.

But considering how

far away we are,

if the same flux is going

in every direction,

we get a pretty impressive 200 megawatts

of X-ray power flux leaving Pluto.

This is about 1,000-times weaker than the total power of Earth auroras during a decent geomagnetic storm.

The question, however, is where do these X-ray photons come from?

The authors of the paper rule out the possibility of auroras on Pluto since it is supposed not to have any significant magnetic field.

Another possibility is scattering of solar X-rays but the spectrum is different and the power is up to 1,000-times too high.

So, the last option that the authors propose is the so-called "solar wind charge exchange."

Basically, this means that the solar wind ions strip away electrons from the atmospheric atoms, and those electrons settle in the solar wind atoms, making the neutral or less ionized,

at the same time emitting a photon
in this case in X-ray energy range.

Very roughly speaking, it is the
transport of negative charge
from the atmosphere
to the solar wind,
which sounds pretty much
like an electric current.

Anyway, the interesting
part is that this process
will be more or less consistent
in terms of spectrum,
still is thought to be too weak to
provide the needed number of events.

The author state that one needs around
40 times more solar wind hitting Pluto
than should be available at
this distance from the Sun.

I quote: "The solar wind must be
somehow significantly focused
and enhanced within 60,000 km of
Pluto for this mechanism to work."

Do we know any means of focusing
positively charged particles?

Well, the most simple and straightforward
answer would be with the electric field.

If you suppose that Pluto
bears the negative charge
with respect to the solar wind
coming from the inner heliosphere,
it would indeed tend to focus it, almost
like an electric lens, so to speak.

It might as well happened that
the charge would be big enough
to accumulate the wind
from a very big area.

Thus generating the
needed number of events.

What is interesting is that
the solar wind density,
registered by SWAP instrument
at the time of the fly-by,
was actually around five-times
bigger than expected.

It was thought to be a result of the recent
passage of coronal mass ejection shockwave
but might at least partly be caused by the
mentioned focusing of the solar wind.

One of the arguments against the
electric comet idea, by the way,
is that the solar wind
density is too low

to produce the observed

amount of water in comets.

But very simple calculations show

that it might be easily compensated

by taking into account the

negative charge of comet nuclei,

which we know is present and the

charge needed is very reasonable.

For example, for the maximum of

[Comet] 67P water emissions,

my calculations gave the charge of

the order of only tens of coulombs.

Of course, here I've neglected Debye

screening and other complex plasma effects,

which might be very important but the

core idea seems not at all impossible.

So, it seems the specific electromagnetic

effects might be responsible

for the X-ray emissions on Pluto as

well as the other mentioned anomalies.

I'd like to mention that

the comparison of Pluto

with comets and 67P in particular

is not too far-fetched.

The X-rays detected by

the Chandra telescope

are in the energetic range of
a few hundred electron volts,
which obviously would correspond
to the electrons being accelerated
by the electric field of a few
hundred volts potential difference,
somewhere in the
Pluto environment.

And interestingly enough,
the Rosetta probe,
upon the arrival in the
vicinity of the Comet 67P,
have detected a mono-energetic beam of
singly-negatively charged dust particles
with energy of a few
hundred electron volts.

The fact that those particles
had almost the same energy
means they also most likely were
accelerated by the electric field,
and not were the result of some
thermal processes or whatever.

So, it seems that in general this
kind of electric potential scale,
a few hundred volts, might be
characteristic of the interaction

of very small bodies with

interplanetary plasma.

Another occasion of very similar

negative beam detection

is the Saturn's moon Hyperion, zapping the

Cassini probe during its flyby in 2005.

There the potential difference was

of the same scale, around 200 volts.

Stay tuned for Part 4

For continuous updates on Space

News from the Electric Universe,

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[Music]

Comet 29P is one of the largest known comets at about 37 miles or 60 kilometers. It is part of a group of comets called the Centaurs. These comets orbit between Saturn and Jupiter.

What you might not realize is that this comet is the second most active body in the solar system after Jupiter's mighty moon Io.

Why this comet is erupting has scientists baffled.

Given this, it is perhaps even more strange that most observations of Comet 29P have come from amateur astronomers.

One of the problems with Comet 29P is that its eruptions have been unpredictable, meaning getting telescope time to do the systematic monitoring has been quite difficult.

Amateur astronomers do not have these limitations. They can bring out their telescopes whenever required and can observe whenever they choose. On the 25th of September the patient dedication of an amateur group of astronomers was rewarded in the most unexpected way.

They were located across the globe in Utah, Scotland, France and Tenerife.

When they trained their telescope on the comet, they spotted several sequential eruptions. There were four obvious ones and then a fifth one at the end. After less than two days the brightness of the comet had increased 250 times. The series of outbursts generated a bright nebulous coma. The amateur astronomers then alerted other amateur and professional astronomers. Since the outburst was so unusual, a group based at six US universities were able to obtain time on the Hubble Space Telescope. This would have been the first time that they would be able to catch the aftermath of such a big outburst. The previous observations had been much smaller outbursts. Unfortunately, the Hubble Space Telescope experienced a technical glitch on the 25th of October and went into safe mode one day before it was supposed to observe the comet. They were hoping to be able to observe if any fragments were ejected by the comet, possibly forming a new comet on a different trajectory. The fact is that astronomers know very little about Comet 29P and its strange behavior. They don't understand why it suddenly increased its activity now. Their

concept is that these are balls of ice and dust.

The activity of comets is therefore related to the heat from the Sun.

As it moves closer, more material is vaporized, leading to greater activity and this is where Comet 29P presents a headache for those scientists.

As its orbit is circular, meaning its distance from the Sun barely changes.

This would therefore mean that it should not show any rapid changes in activity at all.

And yet, it is the second most active body in the solar system.

So, how do they attempt to explain this then?

They assume that the comet has a slow rotation rate and has one side that is more volatile than the other.

So when this faces the Sun, it becomes more active. In their theory comets, asteroids and meteorites, all have a common origin which is way outside the solar system.

And yet we find many comets that seem to be associated with large gas giants.

Professor Vsekhsviatskii, director of the Kiev observatory and head of the faculty of astronomy of the University of Kiev, had concluded

from his studies of comets that celestial mechanics, the distribution and statistics of cometary orbits, and consideration of the kinematics of the cometary system, leave no doubt whatsoever that all comets, and therefore the products of their decay, were formed inside the solar system and were formed a little later than the planets were.

The existence of the family of short-period comets of Jupiter, Saturn Uranus and Neptune and the peculiarities of their motion and nature, their chemistry, their close association with Jupiter prior to the discovery, demonstrates a recent origin of comets.

As Fred Whipple wrote in his book, "The Mystery of Comets," a plot of the orbits of short period comets, projected on the plane of Jupiter's orbit, show a remarkable clustering. The ring of the aphelion curve outlines Jupiter's orbit beautifully. The conclusion has been clear for more than a century.

Jupiter's huge attractive mass has somehow collected two-thirds of all

the short-period comets into a family.

When voyager discovered that Jupiter had a faint ring system, it turned out that professor Vsekhsviatskii had predicted the ring's existence as early as 1960 in a science journal. And the passage from this paper is as follows, "The existence of active ejection processes in Jupiter's system demonstrated by cometary astronomy, gives grounds for assuming that Jupiter is encircled by comet and meteorite material in the form of a ring similar to the rings of Saturn." It will sadly come as no surprise that his name is totally absent from any scientific literature relating to comets and planetary rings.

Electrical stressing events can cause the ejection of bodies from large gas giants.

The Electric Universe concept is that comets are nothing more than asteroids which have a different potential to their surroundings.

These objects spend most of their time at the extreme edge of the solar system, which has a different charge potential to the inner part.

When they approach the Sun, a charge imbalance develops between the nucleus and the high voltage and charge density near

the Sun. As the electrical stresses start to grow, discharge takes place and a plasma sheath develops which appears as the coma and tail.

The observed jets are the electric arc discharge which will cause electrical machining to the surface of the comet. This excavated material is accelerated along the jets into space.

But this comet does not have the same elliptical orbit, so how would this work?

If we inspect the orbit of Comet 29P, we can see that although it is largely circular, it is inclined to the ecliptic which is where the majority of the planets orbit around the Sun. Would this allow Comet 29P to gain a charge imbalance to the Sun?

If this were the only factor, we would find the discharges only occurring after it had reached its highest point and returned closer to the ecliptic, and this is not what we find. If we look at the average flare rate of the comet, it seems to happen roughly every 57 days.

With a range between 52 and 60 days.

When we examine the rotation of the Sun, this takes 24 days to rotate at the equator and about 35 days at the pole. So does this 57 day average correspond

to a double rotation of the Sun?

Could the Sun's heliospheric current sheet be responsible for triggering short-lived outbreaks on the comet?

Could the rotation of active hotspots on the Sun periodically cause coronal ejections to be thrown out at higher latitudes which then head out towards the comet?

This sudden change in the charge could then trigger the larger events on the surface of the comet. One other interesting coincidence is the alignment of the planets during the highest and lowest points of activity on the comet.

If we look at April 2019, this is a predicted low point for the comet and we see that there are no planets aligned with it.

October 2019 is a predicted high point, and we see Earth is aligned. May 2020 is a low, again no planets are aligned.

Then November 2020 is a high and we see both Mars and Earth are aligned.

June 2021 was a low and once more no planets were aligned. Then finally

December 2021 was predicted to be a high and we see Venus and Earth aligned.

This data uses the average light curve from

the comet over a prolonged period of time,
and in some cases we can see that the flaring
events occur before the actual peak of the curve.

So the most recent was predicted to
occur in December, but the flare actually
occurred in late September. Is this mere
coincidence or is this an additional trigger?

[Music]

[Music]

is it possible to identify the events
that shape the surface of the planet
Mars
a planet of vast but unrecognized
landscapes Vista after Vista eluding
every attempt to explain them scientists
labor to solve the mysteries through
textbook theory but if as we have
claimed the cause was electrical they
will never get the expected answers many
details of a new interpretation come
from laboratory experiments with
electric discharge but how far can this
new interpretation take us toward an
understanding of Marjan history
one advantage of the electrical
perspective is that it's every
implication can be tested against
massive layers of evidence now available
including wide-ranging experiments with
electric arcs if as we've proposed Mars
was immersed in hemispheric discharged
the planet can be viewed as a laboratory
in space for testing the electrical
hypothesis as seen in lightning displays

electric arcs exhibit dendritic branching of Lichtenberg patterns these look very much like the dendritic erosion created by flowing water and electric arcs exploding across a surface can produce sinuous channels that also resemble fluid erosion but there are differences an electric discharge to a solid surface electron pathways frequently create dark spotting or chains of craters running along the channel floors are closed by the presence of crater concentrations in relation to surface channels offers a fundamental test of the electrical hypothesis

[Music]

[Music]

in electric experiments we also see coronal streamers radiating perpendicularly from the primary discharge channel both the cratering and the coronal discharge are keys to a new understanding of the margins surface

[Music]

in electric arcs cut the great channels

on Mars

[Music]

Nergal Valles is some three miles or
more in width and 250 miles in length
yes it did look like a dry riverbed when
first seen by the Mariner 9 mission in
1972 but the original confidence of
planetary scientists soon gave way to
doubts bent a contradiction
a river can take many twists and turns
along its path but its tributaries will
not look like the blunt alcoves of
Nergal Valles margin channels exhibit
the predictable features of an electric
scar rotating cylindrical arcs
sputtering along the primary discharge
path produced scalloping of the channel
walls with sharp angular projections
that are inconsistent with fluid flow
the same process left overlapping
craters and alcoves that make no sense
in terms of familiar erosional patterns

[Music]

we see virtually identical craters
alcoves and sharply cut stubby gouges
along the needy Valles

[Music]

numerous other margin drills underscore
the same enigma and the unanswered
questions grow year by year

[Music]

planetary scientists identify depression
such as these as collapsed lava tubes
lava tubes form as flowing molten rock
cools and hardens at its surface
insulating the lava below so it
continues to flow in a tube that
eventually empties when an empty lava
tube collapses the result will be an
entrance to a lava tube cave a good
example is Barker's cave in Australia so
a cave entrance is the first thing to
look for on Mars the second thing to
look for is a rubble field created by a
collapsing roof and a third thing to
look for is abundant outflow since the
emptying of a lava tube requires an
outflow region
but in reviewing innumerable instances
of claimed lava tube collapse on Mars we
find no cave entrance no rubble field
from a collapsed roof and no outflow the

depression stand alone with literally
nothing to support the theoretical
interpretation like any fluid lava flow
follows topographical relief always
running downhill the channel seen here
change direction randomly in apparent
disregard for topography they make
90-degree turns unrelated to surface
gradients and they also cross over each
other with no disturbance of either
these depressions cannot be collapsed
lava tubes look what are they
what you see here is not the planet Mars
it is a surface affected by a very high
voltage but micro amp current creating a
complex of gouges and craters again in
electrical terms craters and channels
are inseparable companions in responding
to the mysterious channels and
depressions on Mars many planetary
scientists thought they saw spreading
and fracturing and indeed evidence of
fracturing is present on Mars as seen
here here there are no associated
creators or creator chains and the
nature of the stresses acting on the

surface is an open question planetary scientists think in the same terms when considering the region of a verneist caulis they identify the channels as cracks or fractures but why the concentrations of craters and crater chains a rotating electric arc traveling across the surface can alternately sputter forward to produce linear chains of creators or advance on a continuous path to cut channels as if by a router with uniform depth and parallel sides a question of crater formation on rocky planets and moons must be reopened the impact explanation would mean it's only necessary to count craters in order to calculate the age of a surface but electric discharge on a hemispheric scale could quickly create a surface that looks a billion years old

- those counting craters plasma

scientist dr. CJ ransom of Venus at laboratories conducted a series of experiments with electric arcs electric discharge produced surface cratering patterns closely resembling those

observed on planets and moons even the surface darkening in central bumps or mounds of so many craters on Mars were present in the laboratory experiment electric arcs can also produce cratering patterns that could never be produced by impact complex terracing of crater floors and crater walls are a common effect of a rotating electric arc or discharged streamer across the surface of Mars we observe countless examples of exotic terracing impact Theory was never able to resolve the mysteries so-called bull's-eye craters with a central crater inside a larger crater are surprisingly common on Mars but this be a rare accident that explanation is reduced to absurdity when two such craters are seen side-by-side in fact several bullseye craters appear within the same region of Mars but an ionized discharge path of lightning does allow for subsequent discharge along the same path the bullseye crater is a logical extension of the electric model and when it comes to improbable events side by side these

two craters with central Peaks each
terminating in another crater will
certainly never be explained by impact
impacts do not create hexagonal craters
but look closely at this region of Mars
and you'll see several hexagons an
observed form taken by rotating plasma
as seen in the planet Saturn's
electrified polar hexagon in an extended
discharge systematic cratering pitting
or etching can be the norm that's why in
industrial applications electric
discharge machining can achieve
exceptionally dependable results the
microscopic pitting of electric
discharge can give a consistent depth
and a remarkably smooth surface despite
the fact that the surface is entirely
constituted of craters or pits the same
effect can be observed on seemingly
smooth surfaces in the northern
hemisphere of Mars surfaces that have
been excavated miles deep

[Music]

but look more closely with the help of
recent high-rise images and smooth

surfaces are revealed to be nothing more
than fields of small densely packed
craters

[Music]

the baffling crater field seen here like
so many others on Mars is a perfect
counterpart to an electrically machined
surface

[Music]

Welcome to Space News
from the Electric Universe
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[Host, Michael] Today, we offer a
brief introduction to a fundamental
theoretical difference between
traditional solar physics and astronomy,
and the physics of
plasma cosmology.

On the Sun, we're told the
magnetic field lines move,
or merge, and frequently
break and "reconnect".

This process is called
magnetic reconnection,
a mechanism that many solar physicists
claimed to be responsible for
enormous energetic outbursts from
the Sun, such as solar flares.

We are told the magnetic reconnection
in Earth's magnetosphere
is one of the causes
of Earth's aurora.

And, astronomers now envision the process

in the magnetospheres of many planets.

However, the 20th century's

most distinguished plasma physicist,

Nobel laureate Hannes Alfvén, admonished

astronomers to drop the concept

of "magnetic reconnection" since the

language confuses cause-and-effect.

Alfvén stated, "Of course there can be

no magnetic merging energy transfer.

Despite ... this we have witnessed

at the same time an enormously

voluminous formalism building up based

on this obviously erroneous concept".

Thunderbolts colleague Dr.

Jeremy Dunning Davies explores

the plasma cosmology alternative

to the reconnection concept.

[Jeremy] The subject is

magnetic reconnection.

Now, in very simple terms from what is

written, it seems that as far as magnetic

reconnection is concerned, one is required

to believe that enormous quantities

of energy are produced by magnetic lines

of force breaking, and then reconnecting.

Now, undoubtedly there is some physical

process occurring which produces
the enormous quantities of energy
observed in the situations concerned.

But, this explanation, at
least in its simplest form,
cannot possibly be valid since, crucially,
lines of force are simply not real.
They're not physical entities.

Now in astrophysics, the idea of
magnetic reconnection is used to explain
some huge surges of energy in
what, for example, solar flares.

This point needs to be considered now,
in the light of what I've just said.

But, it might be noted that, when
you take separate magnetic fields
and they come together and combine
into a single field, the strength of
that resulting field will be enhanced
at some points, and weakened at others.

The overall result might be
expected to be a completely new
pattern of lines of force due to
the totally new magnetic field,
brought about by the natural
merging of the original fields.

Again, there's no breaking
of lines of force,
merely the natural emergence of a new
pattern due to the said merging.

As for the enormous quantities of energy
produced in some physical occurrences,
such as solar flares, it seems to me,
far more likely that the true explanation
is to be found within the realms of
plasma cosmology/plasma physics,
whichever you like to call it.

Now, most of the experiments
associated with plasmas
are performed in normal-sized
laboratories, here on the Earth.

And, there's no real reason to suppose
the results of such experiments
extrapolate to the cosmic scale
but, we've got to start somewhere.

And, it seems that the field of plasma
research does offer many good clues
to help in the search for the real explanation
of such phenomena, as solar flares.

Now, this is seen quite rapidly
by examining the contents
of Anthony Peratt's book,

'Physics of the Plasma Universe'.

In this volume (Chapter 5 of this volume, specifically), one reads of double layers and their properties; and in Section 5.5 of that very chapter, which deals with the basic properties of these double layers, one reads of the phenomenon of exploding double layers.

Now interestingly, this is a topic discussed also in Alfvén and Arrhenius book, 'Evolution of the Solar System'.

And, in that book on page 250 and I'll quote specifically from it.

They say, "If a current flows through an electrostatic double layer (which is often produced by the current itself), the layer may cut off the current.

This means that the voltage over the double layer may reach any value necessary to break the circuit (in the laboratory, this could be 10^6 V; in a solar flare, it might be even of the order of 10^{10} V).

The plasma, however, explodes and

a high-vacuum region is produced.

Now, all this information,

specifically in Peratt's book,

relating to double layers would seem to

indicate a more physically realistic

explanation of some cosmological

phenomena, such as solar flares.

Indeed, as far as solar flares are

concerned, they are discussed specifically

in Section 5.6.2 of

Anthony Peratt's Book.

Now, bearing in mind the total

physical illogicality of the notion

of magnetic reconnection,

together with the realization

that a physically acceptable alternative

is there for all to see and examine,

it is difficult to see how the presently

accepted position can remain tenable,

and accepted, as yet another piece

of scientific conventional wisdom.

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Welcome to Space News from
the Electric Universe,
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A new investigation into the wind
patterns in Earth's upper atmosphere may
provide critical insight into our
planet's electrical environment, and its
relationship to the Sun.

In countless past episodes,
retired professor of
electrical engineering Dr. Donald Scott
has outlined his mathematical modeling
of a Birkeland current structure, and its
visual identification as counterrotating cylinders.

Recently, Dr. Scott invited
members of the Electric Universe
community to begin tracking our planet's
wind patterns, which can be viewed in
real-time through the website
seen on your screen.

In his own investigation, Dr. Scott
has made what may be an important
discovery -- an apparent periodicity to the counter
-rotational patterns seen at our planet's poles.

In this episode, Dr. Scott explains the potential significance of this discovery for the Electric Universe model of the Sun, and its connection to Earth.

Back on May 10th of this year, I did a Space News and there was a sort of put my toe into this area of earth.nullschool.net site, and the major point, I think that I was trying to make there is, that it seems to me that if you can, as you can with nullschool, look at various levels, you know, in the various altitudes in the atmosphere of Earth and you can see very clearly that the outer reaches of Earth's atmosphere are very ordered, they are quite circular most of the time and, as contrasted to, if you go down farther into the atmosphere, those patterns get all chaotic and messed up and the winds... to me the conclusion is obvious that the Earth masses disrupt those beautiful circular patterns. And so I think that's the evidence of the fact that the structure of those

circling flows are created by the incoming Birkeland currents that have those nice concentric circular forms to them and the further down you get, the more disrupted it gets; it's kind of like watching the crash of an airplane into a mountain, I mean, it's very nice before it hits.

So anyway, that was my main point in that first Space News.

But then, when I looked at it and I looked, as I always do, at some of the comments that were made, there was a commenter, his name, he put that his name is Dr. BH, so hello to Dr. BH whoever he is!

And he asked, he said, do these patterns change as the seasons and the dominant hemispheres align with the Sun, can you show a connection this way?

And I began to think, I said yeah, hey that sounds, that's a good question!

So I got to wondering whether there might be some periodicity, maybe yearly periodicity in the general form of those high-altitude wind circulations.

Of course, most people realize,

when they're asked what causes the seasons, the answer is not that the summer is caused by the Earth being closer to the Sun than it is in the winter.

Anyhow, what is the cause?

Well, we, most people realize the Earth's rotational axis is fixed in inertial space, that is to say, the axis of Earth always points in one direction.

Of course, walk out at night and look up, it's our old friend Polaris, the North Star or the pole star, and so as the Earth travels around in this path around the Sun, it doesn't look at the Sun or away from the Sun, it looks directly at Polaris and it keeps looking at Polaris, every minute of every day of every hour of every year.

When Earth gets to the point in its orbit where its axis of rotation is pointing the North Pole away from the Sun, that's the Northern Hemisphere's winter solstice, that's what causes the winter and the summer.

So anyhow, with those facts in mind, I figured a priori before I looked at

nullschool again,
that in December there might be a strong,
inward directed Birkeland current from
the Sun entering Earth's South Pole, because
the South Pole is pointed more toward the Sun.

Well anyway, to make a long story
short, that isn't what happens.

Nothing remotely even akin to that
was observed, at least by me, when I
looked at the earth.nullschool.net site.

What I did see, during the height of the
Northern Hemisphere summer, that is
aphelion, Earth farthest from the Sun,
current enters into both the North and
the South Poles, generally.

Now you know how I discovered

that, I took my

finger, it's the old right-

hand rule, you put

your fingers in the direction of the

wind flow, the current flow, and then

your thumb is going to be pointed in the

direction of the, assuming that our

theory is right, in the direction of the

Birkeland current that causes that rotation.

And then, during the Northern

Hemisphere winter, that is perihelion, the Earth is closest to the Sun, the North Pole is pointed away from the Sun, the South Pole is directed toward the Sun, and what do you observe, you observe that current is directed out of both the North and the South Poles.

So it's strictly not what your intuition, at least not what my intuition tells me what happened.

Well anyway, if you look at that table you can see that overall, what happens is that in those, those four lines in that table, and if you look at the third and fourth columns there, the northern hemisphere current and the southern hemisphere current, you can see that in the summer in the northern hemisphere, that is to say the second row within that table, the current is in, both at the North Pole and at the South Pole.

And the last line in the table, when it's winter in the north and of course, we're closest to the Sun, the northern hemisphere current is out and the southern hemisphere current is out.

So you've got this really strange, sort
of, in out, in out, out, in out, in,
sort of arrangement,
and what's the punchline,
what's the bottom line?
And my conclusion is, that if
you look at the second row
and the last row, you can see that in the
summer in the north, which is the winter
in the south, the current is going in at
both poles; and in the winter in the
north and the summer being in the south,
current is going out of both poles.
So there's a seasonal year-long cycle, in
which these flows completely
reverse, and it's at those solstices.
So let me summarize, I've written it down,
let me read what I've written.
From December through February,
the southern hemisphere
summer, the North Pole is pointed away
from the Sun, Earth is nearest the Sun,
it's at perihelion, and what I'm talking
about is row four of the table, the
Birkeland current is directed
out of both hemispheres.

If you look at figure one, that is,
the Birkeland current is directed
out of both hemispheres, strong at the
North Pole, figure one, and weak at the
South Pole, figure two.

Incidentally, that figure one,
the strong currents, are
something well over 300-350 km/h,
that's moving.

The weak currents are more like
50 kilometers per hour.

Now I see it's strong at the North Pole
in Figure 1, and weak at the South Pole,
and you can see what I mean.

Anyway, both currents being out,
the Earth is losing
positive charge during that season, the
Earth is like a capacitor, if you have
current flowing out every hole
in the north and in the
south is going out, well, clearly, the
Earth is losing positive charge.

If the Earth is, at that time, closest to the
Sun, that says that according to EU
Theory, that that would be a position of
relatively higher voltage, we are closer

to the Sun, higher voltage, the Sun is very strongly positively charged.

Therefore, we ought to be collecting some positive charge from the surrounding plasma, through which Earth is moving.

I'm just talking about this plasma ocean that we float in.

Now, if you put in there the Birkeland currents that I'm talking about, those seem to have the opposite effect.

If the Earth is losing charge and the Birkeland current is directed out of both hemispheres and it's strong at the northern pole, that is, look at Figure one, you can see that the rotation is quite strong, and weaker at the South Pole, that's figure two, but still directed out of both hemispheres at that point, and that's what's important, and so the effect of this newly observed Birkeland current mechanism appears to provide a means through which the Earth may dump such added positive charge over this part of the year.

So if it's normally collecting it
from the ocean of plasma
through which it's floating,
and that Birkeland current is connected
to the North Pole and the South Pole,
and the charge is flowing out, it's sort
of a Birkeland current is sort of
neutralizing the pick-up of the
charge that is happening.

Anyway, for the three months
of the year at the South
hemisphere winter, that is the South Pole
pointed away from the Sun, Earth is
farthest from the Sun, it's at aphelion,
I'm talking about row two of the table,
the circulation pattern indicates that
Birkeland currents simultaneously enter
down into Earth at both the North
and the South Poles.

Now, if you look at figure three,
you'll see that that
entering in is pretty weak at the North
Pole but quite strong at the South Pole.
So Earth effectively gains positive
charge during this season but it's
farthest from the Sun, and so therefore

Earth ought to be losing charge, but the action of the Birkeland current apparently counters any such loss of charge.

So the essence of it all is that yes, there is a yearly periodicity during which everything completely reverses direction, and it acts in a very complex way, as we can see.

The question is, is the Earth at aphelion, that is far away, or perihelion, close in, and I think this fits with Wal's idea with which I again firmly agree, that the Sun's electric field creates a higher voltage region near the Sun and a lower voltage region farther out.

But, so we understand a little bit, but this is a rich, I think, and complicated area that's open for research that nobody seems to have discovered, yet.

[Music]

To understand more of the predictive analytics of the Doherty set and how it applies to the Electric Universe model, I will now proceed to show off 10 real-world applications and examples of magneto-hydrodynamic currents, flows and patterns.

But first, I will simplify our understanding of what exactly the Doherty set is.

The set is simply the next iteration of the fruit-of-life and flower-of-life sequences that so many of us are already familiar with. The flower-of-life is an ancient motif found all over in temples and other holy places throughout the world.

This concept is very important, but if you just take it one step further and take the fruit-of-life seen here and rotate it on top of itself, one layer after another layer, using the inverse square Bessel function as a parameter, it constructs the Doherty set.

We will get more into this later in this episode when we explore Theodohertian roots.

So that's how you construct the Doherty set.

It's all one over r , just as Don Scott reiterated so eloquently in his latest video. Perhaps this geometry

provides the rotation and origin of spin, as Birkeland
Currents that professor Don Scott just hypothesized
as well. It certainly does make sense that this
emergent dynamic geometry is fundamental
in the construction of Birkeland Currents.

Since this show is all about magnetohydrodynamic
flows, let's define what magnetohydrodynamics is.

Magnetohydrodynamics is the study of the flow
of electrically conducting fluids in the presence of
magnetic fields. Models in which plasma is treated
as a perfectly conducting fluid, are the most
successful models for describing the equilibrium and
large scale stability properties of magnetized plasmas.

Examples of such magnetofluids include plasmas, liquid
metals, salt water and electrolytes, among others.

We will probably get deeper into these
flows in other episodes, but for now we
will begin with a simple water droplet in acoustic
levitation. Have a look-see how each of the
harmonics fit nested within the framework of the
Doherty set, even as the frequency increases.

These shapes are natural 3D cymatics. Now, let's
imagine these shapes moving through tunnels.

Not just any tunnels, but tunnels in space,
connected directly to the universal electric circuit.

These plasma tubes, or currents, do indeed

exist and are called helicon waves. Waves exist,
and oftentimes make up the geometry of
the entire structure of the current or flow.

Helicon waves are what we see as the
auroras and yes, they have a sound.

The literal sounds of the heavens.

So when we're viewing the auroras,
just know that they are literally 3D cymatics,
which brings us to the next type of current,

Birkeland Currents. Intricate
geometric patterns persist in
and along Gaussian Bessel filaments or Birkeland
filaments. Like, for example, look at Saturn's north
pole. This hexagonal geometry was created
by, and persist due to Birkeland Currents
coming from the Electric Sun.

Look at the similarities all the way
down to the petals that propel the counter
rotation. Let's bring it back down to Earth and
talk about the geometry of lightning.

Now we would assume that this wave-
nested-within-wave behavior that
is indicative of Birkeland Currents,
would have a fundamental geometry that
would allow it to efficiently distribute
charge and that this caduceus-like

braiding would work all the way down
into the filament of lightning and indeed,
it does. In a paper written by Wayne Burn
titled "Polygonal Crater Formation
By Electrical Discharges", he shows
that charge flows through lightning
in hexagonal tubes, or sheaths,
each layer in counter-rotation.

This is similar to all the other flows
that we've talked about thus far.

Evidence of this geometry of polygonal
cratering can be found all over
the planets, including the moon.

This process is also known as "electrical
scarrification". Further proof of this geometrical
process of charge and charge separation
can be found in Theodohertian roots.

Theodohertian roots are extremely easy to
understand, and just like the water droplet, they
increase the [number] of sides,
incrementally along with the harmonics.

First, charge neutrality seeks edges as
we just saw in lightning. Knowing that,
we begin using regular polygons. Then
we nest the polygons equally inside
each other, giving us the inverse

triangular, inverse square,

inverse hexagonal, etc. geometries.

We then bound, or circumscribe the

polygons, and this is what gives us the Bessel

function. Each one of these Bessel functions is

unique, just like our fingerprints,

and atomic uniqueness. From there,

we iteratively repeat the Bessel function,

cascading outward from the initial Bessel function.

It is this projective geometric

construction that forms the filament.

This is how to build the Doherty set and the first

principal geometries of Birkeland Current formation.

It is all cavitating. Along these filaments,

constructive and destructive wave interference also

occurs, which is largely responsible for the reality

we experience. Destructive interference is when two

waves traveling in the same direction, are aligned

at the crest of one wave and the trough of the other.

The waves cancel out. Constructive interference

is when two waves traveling in the same direction,

overlap and their crests combine to produce a

larger wave. For the next flow we have vortices,

chirality and cavitation. First, observe

our polar vortices and the magnetosphere.

Now, observe the “vortexture” of the Doherty

set overlaid. It's literally like a “vorchestra”.

The “vorchestra” can be thought of like the fascia - the sheath of stringy connective tissue that surrounds every part of your body.

It's electric and moves all of our thoughts through our body, along this entire organ, at the speed of light. But this “vorchestra” is on all scales, connecting everything in the cosmos.

Another term for this is also the “cosmic connectome”.

We can see the electromagnetic field creates the form, and the shape has power. The chirality of the vortex spinning clockwise or counterclockwise, is another electromagnetic force, often controlled by the Coriolis effect. These vortices form on all scales, from the galactic to the cavitation of microspires. For this next example, we will combine a few of the previously mentioned flows.

In 2016, researchers discovered a new type of fire - blue whirls. Blue whirls are a swirling flame phenomenon that evolves from a chaotic fire whirl and burns with nearly soot-free combustion.

Supercomputer simulations have revealed the flame structure and flow structure of the blue whirl.

At this point, I had already been sketching this

shape for years, and I knew of its importance in the grand scheme of things. So in 2017, I published a paper exposing the taxonomy of opposed spiral vortices of the blue whirl to be composed of a set of six opposed spiral vortices.

In 2019, a paper published by Cornell University shows that the vortexes of the blue whirl are composed of three different flames. And so we're getting somewhere with the predictive power of the set. Speaking of prediction, this geometry predicts that the base of Birkeland Currents or how a Birkeland Current nests and stacks on the poles, is similar to the shape of a blue whirl.

This heterodyning, phase-conjugate stacking reminds me of something else. Phase conjugation is multiples of the Golden Mean.

Surprisingly, another current that this shape shows up in, is in Elon Musk's SpaceX Raptor engine test. This particular shape is indicative of minimal energy configurations and also shows up prominently in lens flares, as well. A kink instability is a current-driven plasma instability, characterized by transverse displacements of a plasma column's cross-section from its center of mass, without

any change in the characteristics of the plasma.

So basically, it's extremely similar to the braiding of the caduceus, as seen here in the Doherty set. This is the first 10 concatenations.

Concatenations are just a series of interconnected things or events.

Currently, there is an unknown amount of pairing and nesting of different sizes of kink instability on all scales.

There's so much work that still needs to be done on mapping out the infinite amount of toroidal node, helical, coaxial coils.

And I stress that I say toroidal node, because the helical filaments are centered by nested [tori] and these nested [tori] are also the repeating cosmic Bessel function that any source star gives off.

For this last example, we have branching systems - roots trees, distribution of matter in the universe, Lichtenberg flow, or dendritic arborization.

It's been called many different things.

This shape takes place in many living things throughout the Universe. It's one of the shapes that remind us that everything is electric. Our synaptic brain activity, our veins, our organs and even the hypothesized dark matter that is

actually a Birkeland polyphase web.

So many things take on this beautiful shape in nature. Lichtenberg flows are often a sign of living systems, or a vestige that living systems were once there. All in all, cosmology is gorgeous and filled with myriad flows. And once again, it is self-evident that the Doherty set and the EU model itself, provide a framework to help us understand the intricate dynamic geometries of magnetohydrodynamics on all scales, from the micro to the macro.

[Music]

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

On this series, we reported
on the increasing frequency
with which astrophysical
literature acknowledge a fact
which was long verboten
in the space sciences.

The existence of electric currents that
flow through the so-called vacuum of space.

At the vastest cosmic scales, many
astrophysicists now recognize the
"fundamentally electromagnetic
structure" of the stupendous jets
hundreds of thousands of light years long
emanating from active galactic nuclei.

At a much smaller scale, in our own
neighborhood in the solar system,
electric current systems are known to
link the gas giants Jupiter and Saturn
with their respective moons.

And on our own planet, in recent
years with improved technology

has come ever finer evidence of
tremendous electric currents
that are connected to
previously unknown phenomena.

In 2017, we reported on the discovery
of so-called supersonic plasma jets
high in the Earth's atmosphere
which reach temperatures
approaching 10,000 degrees Celsius.

A Phys.org report described the
surprising discovery as follows,

"The theory that there are
huge electric currents,
powered by solar wind and guided through
the ionosphere by Earth's magnetic field,
was postulated more than a century ago by
Norwegian scientist Kristian Birkeland...

While much is known about
these current systems,
recent observations...have revealed that they
are associated with large electrical fields."

Nevertheless, antiquated
notions of charge neutrality
and disconnected bodies in empty space
continue to dominate the space sciences.

In this episode, our guest Richard Moore

explores the role of electric currents
called Birkeland currents throughout
our electric solar system.

We're on the verge of a paradigm
shift in cosmology
and it's being pursued
by the scientists
that are putting together something
called the Electric Universe model.

And it's really rather unique
kind of collaboration going on,
kind of ironic collaboration,
where the EU scientists
are pursuing the theory
and doing experiments that can
be done in the laboratory.

And then meanwhile, the
mainstream cosmologists
who completely dismiss the model
or even ignore it entirely,
ironically they are helping develop the
EU model with all of their space probes
because every
single space probe
is, turns out to be confirming,
verifying the EU model

and even though that's happening
the mainstream still doesn't
recognize what they're doing.

So it's a very interesting kind of ironic
collaboration between pioneers on the one hand
and the mainstream people who don't
realize quite what's going on.

So it all started, I think, with
Kristian Birkeland way back in 1908.

Combination of experiments and
going out and observing the Aurora,
he came up with the theory
that the Auroras are caused by the
electric current from the Sun.

This was completely rejected
by the mainstream cosmologists
primarily by a man named Sidney Chapman who
really dismissed and attacked the whole idea
because the mainstream people didn't
believe that currents can flow through
what they thought
was empty space.

But then, in 2007, just
about a century later,
the THEMIS satellites found evidence
of what they called magnetic ropes

connecting the Earth's upper atmosphere
directly to the Sun.

In other words, they were confirming
Kristian Birkeland's original theory.

So what they did, they described
it as thirty kilovolt battery in the space
creating flux rope pumps
into the upper atmosphere.

Even though it was confirming
Birkeland's theories,
they didn't really quite see it as
currents, they saw it as magnetic ropes.

Now, the reason that the
current comes in at the poles
is because of the
Earth's magnetic field.

As the current comes
out from the Sun,
it's focused in by the
magnetic field into the poles.

These currents that come
from the Sun to the Earth,
the mainstream calls
that the solar wind
as if it was something blown away
from the Sun by kinetic forces.

They aren't really recognizing
that it's an electrical gradient
which is causing the current to flow
out to the Earth and other planets.

So now let's take a look at the
structure of the Birkeland current.

As a current flows through
plasma, it creates its own magnetic field
which contains itself, forces it to be
focused into these rope-like currents.

And in 2016, one of these
space probes found
that these rope-like
currents go into Saturn.

So it's showing that the currents go
all the way through the solar system
reaching even the outer planets,
just as they do with the Earth.

So again, mainstream cosmologists ignorant
of the properties of Birkeland currents
attribute this rope shape to an imaginary
thing they call magnetic reconnection.

In fact, in this image we can
see that there's a gradient
with the Sun being more positive and the
outer shell of the heliosphere more negative

so that there's this gradient
that forces electrons toward the Sun
and positive ions
away from the Sun.

So what they call a wind is
actually an electrical gradient
which is what causes these
currents to come out from the Sun.

And then, another probe, we
can see in this NASA study,
they found that there's a
flow of electrical energy
that goes by every moon, every
planet, every asteroid and comet,
are all influenced in one way
or another by these currents
which the mainstream
continues to call - a wind.

Now, let's look a little closer at
what a Birkeland current is like.

Each one of the
strands of the rope,
as we can see in this image and
looking at a cross-section,
it's made of concentric cylinders of current
that rotate in alternate directions

and we can actually, again, with
the help of mainstream probes,
we can see this counter rotation,
we can see it happening in
the Aurora on the Earth.

And then we can also see it in the
poles of Jupiter, Saturn and Neptune.

Clearly, these are all caused
by the same phenomenon,
these counter-rotating
Birkeland currents.

Now, in the case of
a planet like Mars,
where they don't have a
strong magnetic field,
in this image we can see that the aurora can
happen over the entire surface of the planet.

Since it's not focused
into the poles,
the current can come in
toward the planet itself
and we can see an aurora
over the entire surface.

Similarly, on Mars, because there's not a magnetic
field to constrain the currents to the poles,
we can have streams of currents

coming right down to the surface
and creating huge tornadoes,
electrical tornadoes that are many, many
times the size of any that occur on earth.

Now, let's move on now
to the effect on comets.

A comet is moving rapidly, you know,
it has a very exaggerated elliptical orbit,
so that it's coming rapidly from the
negatively charged part of the solar system
toward the more
positively charged part.

And that causes the
comet to discharge
creating a tail that points in the
direction of the electrical field.

According to the EU model then,
the only difference between an
asteroid and a comet is the orbit.

It's not that there's any
difference in what they're made of,
it's just because a comet has an
exaggerated orbit and it discharges
whereas the asteroids, which are
comparatively circular in their orbit,
they don't discharge.

So, the mainstream has this theory
that comets are dusty snowballs
and they say the tail is due to
the sublimation of water.

However, when space probes have
actually reached a comet,
as we can see in this image, they can see
they're just rocky bodies, like asteroids.

They're not at all
dirty snowballs.

So, once again, the mainstream is confirming
and verifying with their probes
what the Electric Universe
has said all along.

As Arthur Schopenhauer said,
"All truth passes
through three stages.

First, it is ridiculed.

Second, it is violently opposed
and then third, it is accepted
as being self-evident.

Now, where we are right now is that the
EU model is being ridiculed and ignored.
It hasn't quite been violently
opposed yet because
it hasn't been acknowledged enough in

the mainstream to even be seen as a threat
but we can see by the trends that are
happening with these discoveries
that can't go on much longer.

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

On this series, we have
presented evidence
for a dramatically new way of
viewing all celestial bodies.

In an Electric Universe, nowhere
can one find a "island" in space.

Across vast cosmic distances,
electric currents flow through
the conductive medium of plasma
electromagnetically pinching gas and
dust to form stars and planets.

In our last episode, we focused
on the electrical circuitry
in our own celestial neighborhood
in the inner solar system
connecting the Sun to all the
planets including the Earth.

Today we shift our focus
to the outer solar system,
for the tremendous electrified environments
of the gas giants Saturn and Jupiter

are the seventh of ten reasons

why the universe is electric.

Charged Planets in the

Outer Solar System

The NASA missions Juno and Cassini

to Jupiter and Saturn, respectively,

have provided data that could shake

planetary science to its core.

The discoveries dramatically highlight

the failures of standard theory

versus the successful predictions

of the Electric Universe.

We begin an exploration

of the Juno discoveries

which, in the words of

NASA investigators,

have proved that scientists' fundamental

ideas about the Jovian atmosphere were

— "totally wrong." —

One of the greatest surprises the

team first reported was that

Jupiter's magnetic field, which was already

thought to be tremendously powerful,

is twice as strong as

previously believed.

The turbulent Jovian atmosphere

has also proved "mind-boggling"
with rapidly changing
cyclones at the planet's poles
proving far more dramatic and "weird"
than investigators had imagined.

As Juno principal investigator
Scott Bolton stated,
"Had someone shown me a picture
of the pole just 10 years ago,
I never would have
guessed it was Jupiter."

Scientists' estimates of the planet's internal
structure have proved equally troubling.

Scott Bolton states in a January
10, 2018, article on space.com,
"Our ideas were totally wrong
about the interior structure,
about the atmosphere, [and]
even about the magnetosphere."

The article continues,
"Astronomers believed that Jupiter had
either a very small and dense core,
or perhaps no core at all.

But data from Juno revealed
that Jupiter has an enormous,
'fuzzy' core that might

be partially dissolved.

This discrepancy between scientists' expectations and the data suggests that there's a lot we still don't know about giant gas planets, Bolton explained."

A critical clue to the missing theoretical foundations for investigators is found in the following statement from the space.com report,

"Strangely, auroras on Jupiter seem to be powered by a mysterious physical force that astronomers haven't been able to identify.

According to the mathematical calculations, Jupiter's auroras should be about 10 to 30 times more energetic than Earth's, but Jupiter has seen auroras that are hundreds of times stronger for no apparent reason."

Scientists had long proposed that a kind of localized charge separation produced Jupiter's X-ray auroras in the planet's interaction with so-called volcanic plumes from its moons.

That perspective was summarized as follows

by NASA investigator Randy Gladstone,

"...the volcanic moon Io...

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 'charged exchange reaction'

produces intense X-ray auroras."

And here we see perhaps the fundamental

source of countless surprises

for space scientists at all

scales throughout the cosmos,

the belief that no celestial object

can have a net electrical charge.

But this antiquated

perspective is now refuted.

As reported in an October, 2017 Science

blog by author Emily Underwood,
entitled 'Can Large Electric Fields
Power Jupiter's X-ray Auroras?'

"The data revealed particle signatures
of parallel electrical fields
over the poles of Jupiter that forced
electrons near the poles upward,
away from the planet,
while protons and other ions moved
downward into the atmosphere.

This massive electric potential —
upward of a million electron volts —
provides a possible explanation of where
the X-ray auroras get their energy,
according to the authors."

It's always been the

Electric Universe position

that the tremendously
powerful Jovian auroras,
the weird and turbulent
polar storms

and the planet's tremendously

powerful magnetic field

are all ultimately induced by electrical

Birkeland currents from the Sun

focused at the planet's poles.

As noted many times
on this series,
in recent years, retired professor of
electrical engineering, Dr. Donald Scott,
has developed a mathematical modeling
of the structure of a Birkeland current
identified visually as
counter-rotating cylinders
clearly seen in the earthly auroras and
dramatically at the poles of both, Saturn
and is seen on your screen
in the at least 15 counter rotating
cylinders at the North Pole of Jupiter.

A law of physics, consistently
stated on this series,
is that electric currents and only
electric currents produce magnetic fields.

Neither the Earth's nor any
planet's magnetic field
is produced through
an internal dynamo
and all of the Juno data
clearly supports this claim.

Mission scientists acknowledged
that all of the models
which imagined a dynamo deep within

the planet, have been refuted.

As reported by Newscientist.com,

"(A) shock is that Jupiter's

huge magnetic field

is even stronger and much

more irregular than expected.

The irregularity of the field so far

is a sign that the dynamo driving it

may originate higher up

in Jupiter's interior,

perhaps from a layer

of metallic hydrogen."

Scott Bolton stated,

"I didn't expect all the

theories to be wrong,

but there's motion going on in the

planet we did not anticipate."

But the "wrongness" of all the standard theoretical

predictions has not forced investigators

to consider what Electric Universe

proponents have always argued,

that the source of

Jupiter's magnetic field

does not come from

inside the planet at all

but rather it is induced

by Birkeland currents

whose signature is clearly

seen at the planet's poles.

It has also been the prediction

of the Electric Universe

that a far more immense electrical

circuitry exists in the Jovian system,

connecting the gas giant to its moons, than

standard astronomy has ever envisioned.

It's critical to note that according

to recent scientific research

by the Cassini mission at Saturn,

the spacecraft's magnetometer

had only been able to detect about

5% of the electric currents

in the so-called plumes of the

Saturnian moon Enceladus.

According to data from

Cassini's Langmuir probe,

the electric currents may, in

fact, exceed 10 million amps.

Likewise, the electric current

system at Jupiter is the real cause

of the dramatic electrical discharges

seen on the Jovian moon Io,

which astronomers have long erroneously

identified as "volcanic plumes".

But the notion that the so-called plumes are produced by cryovolcanism has been repeatedly refuted by discovery.

One of the most surprising features of the so-called plumes was their filamentary structure.

The official Wikipedia page on the Tvashtar Paterae region on Io, states that the more than 300 kilometer high "plume" displays "an as yet unexplained filamentary structure".

But as we've outlined many times, this statement is factually incorrect.

As early as 1979, the renowned astrophysicist Thomas Gold proposed that the so-called volcanism on Io is actually high-energy electrical discharge activity.

Nine years later, plasma physicist Dr. Anthony Peratt and co-author Alex Dessler wrote in their scientific paper that the best analog for Io's

so-called plumes is the plasma gun,
a mechanism that produces the
distinct filamentary structure
that is never present
in volcanic plumes.

In 1996, prior to the arrival
of the Galileo probe at Io,
physicist Wal Thornhill made a
series of predictions including,

- the so-called plumes would be found
to move across the surface of the moon
- the "vents" of the plumes would be vastly
hotter than the expected temperatures of lava
- and - the plumes are in fact the
jets of moving cathode arcs
eroding the periphery
of the dark areas
that planetary geologists
had 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 the heat of a recent lava flow.

All 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 was focused on the edges of the so-called lava lakes though the rest of these dark fields are comparatively cold.

In fact, the expected volcanic vents were not found.

Inspiring further astonishment, the "volcanic plumes" emit ultraviolet light which is unthinkable under normal conditions of volcanic venting but which, of course, is characteristic of an electric arc.

Nevertheless, space scientists today still insist that Io is the most volcanically active body in the solar system.

The cryovolcanism or ice volcanoes that scientists envision, is produced by Jupiter "gravitationally needing the moon" to induce tidal heating

producing volcanic eruptions.

However, in 2013, scientific

reports revealed

that Io's so-called volcanoes

are in the "wrong locations"

according to the predictions of

every existing tidal heating model.

As noted in a 2013

Huffington Post report,

"Io's major volcanic activity is

concentrated 30 to 60 degrees farther east

than models of its internal

heat profile predict,

suggesting that the exotic,

volcanic Jupiter moon

is even more mysterious than

researchers had previously thought."

As noted by the lead author of a paper

Christopher Hamilton, the findings,

"...can't be reconciled with any existing

solid-body tidal heating model."

As mentioned, the Saturnian moon

Enceladus displays filamentary jets

similar to the electrical

discharges seen on Io.

Planetary scientists interpret these

explosive features at Enceladus's South Pole
as "ice geysers and plumes"
produced by cryovolcanism.

But it's critical to remember that before the Cassini
team discovered the features more than a decade ago,
scientists had expected the
moon to be geologically dead
and the last place they expected such
activity was the moon's South Pole.

As reported by space.com,
"The finding flipped everything scientists
knew about Enceladus on its head,
because what should have been a dead
moon appeared to be geologically active
and what was supposed to be the moon's coldest
region turned out to be its warmest."

As in the electrical circuitry
of the Jovian system
where the electrical footprints of the
moons have been seen in Jupiter's aurora,
the electric currents
connecting Saturn and Enceladus
are now recognized by
planetary scientists.

And like the tidal
heating models for Io,

new discoveries have only
proved increasingly problematic
for the theory of so-called
cryovolcanism on Enceladus.

In 2016, scientists
were amazed to discover
that when jets of dust and
water vapor explode into space
when Enceladus is at its
farthest from Saturn,
the amount of gas accompanying the
outbursts is anomalously low.

As summarized by [space.com](https://www.space.com),
"The researchers expected
quite a lot more gas expelled
at the far part of Enceladus's orbit,
to help explain the outpouring of dust,
but they found that gas output had
bumped up by just 20 percent,
far less than expected."

The team had focused on a
specific collimated jet
that was part of a
large water plume.

The leader of the studies
said of the findings,

"We had thought the amount of
water vapor in the overall plume,
across the whole
south polar area,
was being strongly affected
by tidal forces from Saturn.

Instead, we find that the small-scale
jets are what's changing."

Hypothetical cryovolcanoes, resulted
from tidal forces, are not necessary
to explain the stupendous filamentary
structures on Enceladus and Io.

More than a sufficient basis exists to finally
consider the electrical interpretation.

As we focus our attention
on the gas giant Saturn
and the stunning data from
NASA's Cassini mission,
we again see numerous opportunities to test
the predictions of the Electric Universe
versus those of standard theory.

In fact for over a decade, data
from the Cassini spacecraft
has confirmed many
of these predictions
all of which were completely

unexpected in standard reasoning.

In 2005, Wal Thornhill published his analysis of scientists' discovery of a "warm polar vortex" at Saturn's South Pole.

He also offered an explicit prediction, "The Electric Universe also predicts, experimentum crucis, that both poles should be hot, not one hot and the other cold."

In 2008, the Cassini spacecraft confirmed the astonishing prediction.

Astonishing because the freezing cold North Pole had been deprived of sunlight for more than 12 years.

The author of a paper on the discovery stated, "We didn't expect it to have a hot spot at the north."

From the electrical perspective, it is not coincidental that the hot spot is located "smack dab" in the center of the north polar vortex.

Like the planet Venus' polar vortexes,

Saturn's north polar hotspot
and the vortex structure
in which it is located
is created by a flow of electric current
along magnetic field lines to the pole.

In fact, the Sun's electromagnetic
relationship with Saturn
is also a stunning
recent revelation.

In 2016, scientists reported their first ever
observation of so-called magnetic ropes
traversing the vast distance
between the Sun and the gas giant.

The lead author of a paper in the Geophysical
Research Letters says of the finding,
"Contrary to previous ideas
about Saturn's magnetosphere
being unlike its
terrestrial counterpart,
these findings reveal that Saturn at times
behaves and interacts with the Sun
in much the same way as Earth."

But how can the fluid dynamics
that NASA envisions, explain
"rope-like structures" that
twist and change dynamically

and extend the nearly 900 million miles from the Sun to Saturn?

The so-called magnetic ropes are in fact twisted filamentary pathways traversed by electrically charged particles.

Again, the signature of Birkeland currents, counter-rotating cylinders, are clearly seen here at the North Pole of Saturn.

Like the Juno data from Jupiter, the Cassini mission must force a dramatic reconsideration of the real cause of Saturn's magnetic field.

Again, the findings do not fit with the predictions based on the belief that the magnetic field is generated by an internal dynamo deep within the planet.

A major surprise is that Saturn's magnetic field appears to have no discernable tilt.

As reported by Imperial College London,

"Based on data collected by

Cassini's magnetometer instrument,
Saturn's magnetic field appears
to be surprisingly well aligned
with the planet's rotation axis.
Previously, mission scientists
thought that 0.06 degrees
would be the lower limit of tilt that could
generate the observed magnetic field.

However, the results show that the
tilt may be much less than this.

Scientists currently think that planetary
magnetic fields require some degree of tilt
in order to sustain currents flowing through
the liquid metal deep inside the planets.

With no tilt, the currents would eventually
subside and the field would disappear."

Professor Michelle

Dougherty stated,

"The tilt seems to be much smaller
than we had previously estimated
and quite challenging
to explain."

Additionally, the Cassini mission
provides the opportunity
to test the electrical model
of the Saturnian rings

whose earliest origins trace
to the experimental work
of Norwegian explorer and
scientist Kristian Birkeland.

Well over a century ago, Birkeland's
famous magnetized terrella
simulated the earthly aurora's.
Revolutionary research, that standard
astronomy largely dismissed,
until Birkeland was finally validated
more than half a century after his death.

The terrella experiments also
produced intriguing rings
which led Birkeland to systematically
simulate the rings of Saturn.

He found that the rings
could be easily reproduced
simply by changing the polarity
of the electrical discharge.

And now, a Langmuir probe
onboard the Cassini spacecraft,
has made yet another unexpected
discovery for mission scientists.

A strong electrical chemical coupling
between Saturn's atmosphere and its rings.

As described on spacedaily.com

on December 12, 2017,

"The upper atmosphere

of Saturn is charged

and consists primarily of

hydrogen and hydrogen ions...

Strong variations in density indicate that the

electrically charged part of Saturn's atmosphere

(the so called ionosphere)

has a strong coupling to the visible rings

that consist primarily of ice particles.

The ice particles are also

electrically charged."

The principal investigator of

the Langmuir probe data stated,

"The first results

are surprising...

It is as though the small

ice particles in the D-ring

suck up electrons

from the ionosphere.

As a result of the coupling, electrical

flows of gas to and from the rings

along the magnetic field of Saturn cause

the greatest variations in density."

Like Jupiter, the tremendously electrified

Saturnian environment is undeniable.

Many planetary scientists
had long proposed
that Saturn's rings are
billions of years old,
perhaps even forming with Saturn itself in
the conjectured infancy of the solar system.

But in August of this year, the
Cassini team attempted to estimate
the mass of the rings in order
to guess the rings age.

The idea is that a great
mass would be required
for the rings to withstand erosion
from collisions over time.

However, as noted in a BBC report,
"...it is looking like the
opposite may actually be true
- that their mass is less
than previously estimated.

If confirmed it points to the Rings
being the remnants of some object
that has broken apart around
Saturn in the recent past."

Cassini project scientist
Linda Spilker stated,

"...if the rings

are less massive

they won't have had the mass to survive

the micro-meteoroid bombardment

that we estimate to have happened

since the formation of the planet.

So, we're heading in the direction of the rings

being perhaps 100 million years old or so,

which is quite young compared to

the age of the solar system."

But the chief principals of The

Thunderbolts Project have offered

a radically different recent history

of Saturn and all of the solar system.

A history that includes an understanding

of the electrical nature of stars

and the electrical expulsion and

capture of planets and moons.

In this thesis, it is not possible to

calculate the density of celestial bodies

by estimating their mass using

Newton's law of gravity.

In the electrical model of stars,

one cannot classify stars and gas giant

planets based on their calculated mass.

Stars are an electrical

discharge phenomenon

and their electrical environment determines
their mass, appearance and classification.

Our chief principals have proposed
the provocative hypothesis
that in the relatively recent past Saturn
was an independent brown dwarf star
with its own family of close
orbiting small planets
and with its ephemeral rings
being recently ejected
within the last tens
of thousands of years.

This thesis was summarized
by Wal Thornhill as follows,

"As a small star approaching the Sun, Saturn
flickered like a faulty electric light
when the two stellar magnetospheres
or plasma sheaths touched.

Saturn's electrical power was usurped by the
Sun and its appearance changed dramatically.

Such rapid variability in the
appearance of stars is well documented.

Before dimming forever, Saturn would
have flared up to relieve the stresses
caused by the sudden change
in electrical environment.

Saturn's present low
internal electrical stress,
as indicated by its low apparent
mass, suggests ejection activity.
But even so, the core of the electric
star has not completely cooled —
Saturn still radiates more than twice
the heat it receives from the Sun.
And we have a simple explanation for the origin
of Saturn's mysterious short-lived rings."

Of course, neither recent
solar system instability
nor the electrical capture
of celestial bodies
are concepts that planetary
scientists have ever entertained.

But the failures of the standard model of
our solar system's formation and history
are dramatically underscored
with countless discoveries
of seemingly baffling
exoplanetary systems.

In fact, in recent years, astronomers
have more and more routinely
described our own solar system
as exceptionally strange.

Recently, this problem has been affirmed by an international team of scientists who have discovered that exoplanets that orbit the same parent stars, are "like peas in a pod".

The research published in the astronomical journal focused on close to 1,000 planets in over 350 multi-planet systems.

A Phys.org report summarizes the findings as follows, "...the team found two surprising patterns.

They found that exoplanets tend to be the same sizes as their neighbors.

If one planet is small, the next planet around that same star is very likely to be small as well,

and if one planet is big, the next is likely to be big.

They also found that planets orbiting the same star tend to have a regular orbital spacing."

The lead author of

the research stated,

"The planets in the system tend to be the same size and regularly spaced, like peas in a pod.

These patterns would not occur if the planet sizes or spacings were drawn at random."

Of course, this is in stark contrast to our solar system where the planets are in the words of physicist Wal Thornhill a "fruit salad".

This discrepancy has led astronomers to increasingly entertain dramatic changes to our solar system since its formation.

The phys.org report states, "...in our solar system, the inner planets have surprisingly large spacing and diverse sizes.

Abundant evidence in the solar system suggests that Jupiter and Saturn disrupted our system's early structure, resulting in the four widely-spaced terrestrial planets we have today."

Yet institutional science remains unready to entertain a dramatic disruption of our solar system that

occurred much more recently,
perhaps even within human memory.
But what basis remains for continued
faith in the 4.5 billion year old story
of our solar system's
formation and evolution?

A story that has led
to endless surprises
and intractable problems
for planetary scientists.

It is past time for scientists to wipe
the proverbial drawing board clean
to allow discovery to illuminate
an increasingly self-evident fact
that our world, our solar system
and our universe is electric.

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

We have created this
special Top 10 series
to highlight the most compelling evidences
for the dominant role of electromagnetism
at all scales
throughout the cosmos.

Thanks to ever finer
technological data
the existence of electric currents
traveling through space is now undeniable
and is more and more routinely acknowledged
by astronomers and astrophysicists.

Yet the ramifications of this
revelation have been slow
in affecting any meaningful change
in consensus scientific theory.

A major obstacle is
a lingering belief
that science discovery has
emphatically contradicted
that celestial objects cannot

have any net charge separation.

It is then not a coincidence that objects
in space (are) behaving like charged bodies
from the mysterious
collimated jets of comets
to the spectacular sprites and elves
seen on our own planet's upper atmosphere,
to the catastrophic electrical discharges
focused on stars producing supernova explosions,
to extra-galactic jets traveling at nearly the
speed of light over a million light years or more.

Today, we will explore why the high-energy
electrical scarring of bodies in our solar system
is the 8th of ten reasons why
the universe is electric.

The Electrical Scarring of Planets and Moons

The myth of a solar system
that has remained unchanged
since its hypothetical formation
4.5 billion years ago, has now crumbled.

As we've reported in many
episodes in recent years,
the standard theory of planets and
stars forming in a nebular cloud
from gravitational

collapse and accretion

finds no support in the thousands of
exoplanetary systems discovered to date.

As astronomer Gregory Laughlin

told the journal Nature in 2014;

using our solar

system as a model has,

"...led to no success in

extrapolating what's out there."

So different as our solar

system seems to be

that astronomers now increasingly entertain

the notion of planetary migration.

As noted in a recent

phys.org report,

"...in our solar system the inner planets have

surprisingly large spacing and diverse sizes.

Abundant evidence in the

solar system suggests

that Jupiter and Saturn disrupted

our system's early structure,

resulting in the four widely-spaced

terrestrial planets we have today."

Some astronomers

today now suggest

that these gas giants acted

as so-called wrecking balls
migrating toward the inner solar system
destroying an early generation of planets
and robbing the planet Mars
of its lighter elements.

The gas giants may have indeed
acted as "wrecking balls"
though not through mechanical
collisions and tidal forces,
but rather through bodies of different
potentials discharging electrically.

As we will see,
the experimentally proven ability of
high-energy electrical discharges
to produce craters, and countless
other planetary features,
offers an entirely new
perspective on planetary science
and the solar system's history.

The Moon

The most heavily studied rocky body in
the solar system outside of the earth
is of course the moon.

When the first space probes
returned images of the moon
they revealed a surface heavily

pockmarked with craters
and riddled with long sinuous
channels called rills.

Scientists seeking to
interpret these features
were constrained by the
traditional geologic toolkit.

The "debate" over the lunar craters only
included two possible causative agents,
volcanism or impact.

Eventually, a consensus was
reached that meteoritic impacts
were the primary source
of the lunar craters.

The moon and some other bodies in the
solar system are so heavily cratered
that astronomers invented a violent
epoch called 'The Late Heavy Bombardment'
a hypothetical period when
disproportionate numbers of asteroids
supposedly collided with planets
in the inner solar system.

One reason for the hypothesis is
that isotopic dating of moon rocks
seems to imply that the so-called
impacts that caused rocks to melt

appear to have happened over a relatively short period of time.

But like countless other discoveries, the simultaneous appearance of many lunar craters is consistent with the electric discharge hypothesis.

Far from popular consideration, well before the first man walked on the moon, the amateur astronomer Brian J. Ford published his laboratory experiments suggesting that craters on the moon were carved by cosmic lightning bolts.

In the cited experiments Ford used a spark machining apparatus to reproduce in miniature some of the most puzzling lunar features including craters with central peaks, small craters preferentially perched on the high rims of larger craters and craters strung out in long chains.

Ford also observed that the ratio of large to small craters on the moon matched the ratio seen

in electrical arcing.

The craters we observe on the moon emphasize the need for radically new theoretical pathways in planetary science.

One mystery that the impact hypothesis will never explain is the extreme circularity of the vast majority of lunar craters.

Experiments with impacts have long shown that in order to produce a highly circular crater, an object typically must strike the surface from directly above.

The aforementioned Brian Ford noted that over 90% of circular craters on the moon could not have been produced by sideswiping impacts.

As on other rocky bodies, we see countless cleanly cut craters with no ejecta on the crater floors.

Electrical engineer Ralph Juergens, an early proponent of electrical planetary scarring wrote of this phenomenon,

"Explaining a crater

floor of bare,
once molten rock in terms of the conventional
impact theory is a little difficult.

One must resort to ad-hoc theorizing
to the effect that something,
perhaps the shock of the
postulated impact explosion,
melted a considerable volume
of rock at some depth,
and that following the explosion
this material welled up to
engulf the crater floor
and flow around obstructions
encountered there;
otherwise, debris from the explosion itself
could be expected to clutter the crater floor.

Impact theory offers no reason, however,
to expect such a sequence of events,
and nothing in terrestrial experience with
crater producing explosions supports the idea.

Though an electric discharge might
be thought of as taking place
in a very brief span of time,
an interplanetary discharge
must surely be an event
of greater duration than

an impact explosion;
the long-distance flow
of current would persist
beyond the instant of any
initial touchdown explosion,
and ejecta that chance to fall
back into the crater thus produced
could be swept away
or melted in place."

Juergens also published a
groundbreaking analysis
of the sinuous rills
on the lunar surface.

A sinuous rill is a
long winding valley
usually with steep walls and
often emerging from a crater
which could be found on
the moon at many scales.

Prior to the Apollo missions, astronomers'
early hypotheses suggested that the rills
were "cracks" on the
moon's surface.

Later guesses included
flowing water
until scientists settled on

flowing lava as the agent.

Today, the accepted theory is
that the moon's sinuous rills
were created either by lava
flowing across the surface
or beneath the ground
to form a "lava tube"
portions of which
eventually collapsed.

Juergens compared the respective point-by-point
requirements of various competing theories
versus the actual observed
characteristics of the rills.

Unlike planetary scientists,
Juergens included among the possible
agents high-energy electrical discharge.

On every evidentiary point
the electrical discharge hypothesis
is either permissible or predictable
and unlike every
competing hypothesis
in not a single instance does the
evidence preclude electrical discharge
as the cause of the rilles.

Even prior to Juergens'
investigation,

several scientists had noted that
flowing liquids, whether water or lava,
could not have caused the observed
features of the lunar rilles,
including the strings of
craters along the rilles' floors.

These points are dramatically emphasized when
we examine the moon's famous Hadley rille.

Today, planetary scientists agree that
the rille is a "collapsed lava tube".

However, the rille does not match the required
characteristics of lava tubes on numerous points.

Most importantly, the collapsed areas of a
lava tube will be rubble-filled depressions.

High-resolution images of the rille
revealed no rubble and no collapse tubes.

It is simply an empty,

sharply cut channel

which matches the expected characteristics
of a "electrical breakdown channel".

Perhaps the greatest problem for the
volcanic hypothesis of lunar rilles
is their tremendous length.

On our own planet, the longest lava
tube reaches only 65 kilometers.

That is about half the length of

Hadley Rille which is 130 kilometers.

However, the exact

opposite should be true.

On Earth, the atmosphere is insulating,

allowing lava to retain its heat.

In the "vacuum of space" heat will

be much more rapidly radiated away.

On our own planet, as lava flows over

distances no more than tens of kilometers,

the cooling at the surface

causes a "roof" to form.

It may then continue to flow

as a tube beneath the surface.

That is the only way the lava tubes

can achieve even their modest lengths.

Consider then the most prominent

lunar rille called Schroter's Valley;

185 kilometers long and

up to 10 kilometers wide

with its depth at points

reaching up to 1,300 meters.

Flowing lava, eating away surface

material to cut a deep channel

would have to show up somewhere.

We should see either breaches in the deep

walls or evidence of abundant outflow.

Instead, the channel simply
dwindles until it disappears.

Curiously, the flow of rills on the moon and
other worlds isn't limited to downhill
like lava and water
carved channels on Earth.

All fluid erosion theories
for Schroter's Valley
have chosen to ignore that the apparent mouth
of the "stream" is on high ground
and the narrowest part of the
channel is on low ground.

We also note that within Schroter's valley
is a much more narrow, secondary rill
whose defining feature is
a chain of small craters.

As we turn our attention from the moon
to the planets in the inner solar system,
we will see emphatically demonstrated the
failures of standard geological theory
to explain the most dramatic
features on planetary surfaces.

Venus

Many years before the first space probe returned
images of the surface of the planet Venus,
one of the 20th century's great

scientific heretics Immanuel Velikovsky

made several outrageous

claims about Venus.

Velikovsky proposed that just

a few thousand years ago

Venus appeared in the earthly

sky as a terrifying comet.

In stark contrast,

many astronomers,

including the originator of the dirty

snowball hypothesis of comets, Fred Whipple

had proposed that the surface of Venus might

be mostly or entirely covered with oceans.

So the discovery of Venus'

super hot temperatures,

an average surface temperature

of 863 degrees Fahrenheit,

was one of the great surprises

of the early Space Age.

Another surprise is the amazingly

"young appearance" of Venus's surface.

Venus shows an astonishing lack

of so-called impact craters

which most planetary scientists today

believe is due to a "resurfacing process"

that must have

removed the craters,
most likely a recent volcanic overturning
of the entire Venusian crust.

The most striking features on Venus are
the vast networks of filamentary scars
or what experimentalists with electrical
discharge recognize as "Lichtenberg patterns".

In the Electric Universe Theory
some rocky planets are born in the same
glowing electric filaments as stars
which are seen strung like beads on
the necklace in molecular clouds.

Others are born by electrical
fissioning of larger bodies
in the process of adjusting to a suddenly
changing electrical environment.

If Venus was once an
earth-threatening comet
as ancient testimony from around
the world universally claims,
it must have had an eccentric orbit
that brought it close to the earth.

Electrical discharging would
have heated the crust
and created the filamentary scars
stretching across the planet's surface.

Of course, it has long
been shown experimentally
that lightning occurring
in a high-pressure gas
causes this kind of
"Lichtenberg pattern".

At low atmospheric pressures cratering
is more common as seen on the moon
and the planet Mercury.

Intriguingly, in 2013
science reports
described the Venusian ionosphere's
interactions with the solar wind
as being more typical of
a comet than a planet
and like a comet, Venus has a vast tail that
stretches up to millions of kilometers,
sometimes touching the
Earth's magnetosphere.

The planet's super
hot temperatures,
its mysterious super rotation,
and it's extraordinarily
powerful lightning
are all expected in the Electric Universe
reconstruction of Venus's recent cometary origins.

As we continue, we will see overwhelming
evidence for the cataclysmic events
'The Thunderbolts of the Gods'
that ravaged the planets
in the inner solar system.

Mars

Prior to the Space Age, most
astronomers had expected Mars
to be a long geologically
dead and barren rock in space.
But beginning with the arrival
of the first space probes,
the surface features of the Red Planet have
provided endless surprises for planetary scientists.

Mars today is a world with
spectacular weather events
including tremendous wind and dust storms
that sometimes engulf the entire planet.

But nothing we observe today,
accounts for the remarkable and
often bizarre Martian geology,
including features that speak
to events more violent
than anything that has ever
occurred on our own planet.

The most dramatic features on Mars

provide all of the clues to these events.

The stupendous Valles Marineris is a chasm that stretches for 4,000 kilometers long and up to seven kilometers in depth.

For comparison, even though Mars is only about half the size of Earth, Valles Marineris is the length of about 5 Grand Canyons.

It was the aforementioned Ralph Juergens who proposed in the 1970's that Valles Marineris was a vast scar, carved by an interplanetary lightning bolt.

In fact, as we've reported in a 2015 Space News, the hypothesis of the electrical origin of Valles Marineris has been tested experimentally.

In a collaboration between the late Michael Steinbacher and engineer Billy Yelverton, the experiment attempted to simulate the conditions that might have been present when the trench was formed with dust being dropped from a reservoir above a discharge table as seen on your screen.

The feature that consistently appeared greatly resembled Valles Marineris.

The two also noticed a pattern that physicist Wal Thornhill had previously noted in a 2003 article entitled 'Spiral Galaxies and Grand Canyons'.

Valles Marineris' s-shape reproduced in the electrical discharge experiments strongly resembles the form of a barred spiral galaxy.

As Thornhill wrote in 2003, "The connection lies in the fact that galaxies are the largest visible electric discharge phenomenon in the Universe."

Of course, as we've detailed many times, this notion has extraordinary experimental support as demonstrated in the images on your screen of the plasma experiments by Dr. Anthony Peratt and Winston Bostick, respectively.

In the feature-length documentary film — The Lightning-Scarred Planet Mars —

detailed analysis was offered
of countless Martian features
that find ideal analogs
in electrical discharge.

One such example is the
towering Olympus Mons,
a nearly 22 kilometer high
so-called shield volcano
and the tallest mountain of any
planet in the solar system.

As noted in the film, the shield
volcano interpretation of Olympus Mons
presents far more
enigmas than answers.

The defining feature of any shield
volcano is a gentle extrusion of fluid
or low viscosity lava.

Shield volcanoes on Earth
do not present a scarp
whereas the scarp of Olympus Mons
towers at nearly 4 miles high.

A NASA report acknowledges
this problem as follows,

"The scarp is of
unknown origins..."

"The steep cliff around

Olympus Mons is peculiar
and not characteristic of
terrestrial shield volcanoes."

But perhaps most
significant of all
is the blanket of incredibly fine
filamentary ridges and ravines
within the terrain
of Olympus Mons.

In fact, the continued discovery of
perplexing dendritic patterns on Mars
is a key prediction of the
electrical scarring hypothesis.

A pristine example was
discovered in 2017
when an image was released of the terrain
within the 10 kilometres Zunil Crater on Mars.

Planetary scientists insist that the
crater was produced by an impact.

They have no real explanation for
the raised dendritic features
associated with secondary
craters within the crater.

NASA's attempt to explain
the image reads as follows,

"Secondary craters form from rocks ejected

at high speed from the primary crater,
which then impact the ground
at sufficiently high speed
to make huge numbers of much smaller
craters over a large region...

In this scene, however,
the secondary crater ejecta has an
unusual raised relief appearance
like bas-relief sculpture."

The best guess NASA can offer is
that the so-called impact crater
has been mysteriously
weathered over eons of time.

But experimental research
within the EU community
provides much more
promising possibilities.

One such experiment performed by
the aforementioned Billy Yelverton
produced raised dendritic ridges simply
by applying intense vibrations to soil.

Consider also this experiment performed
by YouTube user Dai fly-fish
subjecting aluminum foil
to electrical discharge
and consider also the side-by-side comparison

of highly mysterious so-called Martian spiders
and an electrical discharge
experiment performed by Zane Parker.

As we've said before, the Martian
environment is a "laboratory in space"
for testing the concepts of
Electric Universe Geology.

As we've detailed many times,
more than a decade ago

Dr. C.J. Ransom performed the
only experiments to date
that have reproduced the
Martian blueberries,

tiny spherules that appear by the
trillions embedded in the Martian soil
and the same spherical forms are seen in
giant mysterious domes inside of craters,
a continuing puzzle for
planetary scientists.

A great testimony to the electrical
catastrophes that ravaged Mars
is the more than six
miles of crustal depth
which was mysteriously removed from
the Martian northern hemisphere.

Where did all this material go?

A clue is found in the completely unexpected discovery of Martian meteorites on Earth.

Initially, planetary scientists treated the discovery with great skepticism since they did not expect that the escaped material could reach the necessary velocities to bring it to Earth.

The massive electrical excavation of Mars could have also been the source of the mysterious asteroids that share Mars's orbit, called Trojans.

In fact a scientific paper published in 2017 proposed that the asteroids are the remains of a decimated mini planet since they are composed of olivine and other distinctly planetary minerals.

Planetary scientists also imagined violent collisions as the likely source of the Martian moons Phobos and Deimos.

As described in a Space.com report, "A large impact or smashing into the Red Planet

could have sent pieces
flying into the air,
where gravity may have
drawn them together.

An existing moon might
have also been destroyed
creating the rubble that later
formed Phobos and Deimos."

As we look closer at Mars's Phobos
collisions and gravitational accretion,
the only theoretical mechanisms
available for planetary scientists
prove totally inadequate to
explain what we actually see.

Like countless
other rocky bodies,
we see dramatic parallel
channels and crater chains
features not expected at all
from mechanical collisions.

But as we've illustrated
dozens of times,
they are routinely produced in
experiments with electrical discharge
and the most dramatic feature on
Phobos, the astonishing Stickney crater,

underscores a puzzle that is repeated
on countless bodies in the solar system.
The crater is 9 kilometers across, nearly
half the diameter of Phobos itself.
How could any impact capable of producing such
a massive crater fail to shatter the moon?

A similarly improbably huge crater is
seen here on the Saturnian moon, Tethys.

The moon is only 1,000
kilometers in diameter
and yet its giant hexagonal crater is
an incredible 450 kilometers across.
As reported by Universetoday.com,
"...Whatever struck Tethys in the distant past
probably should have shattered it into pieces
...but didn't."

On the famous asteroid Vesta,
the largest so-called impact crater is
an astounding 475 kilometers across.

The diameter of the asteroid
is only 525 kilometres.

Craters much too massive to have been
produced by mechanical collisions
is just one of many enigmas resolved
by the electrical scarring hypothesis.

In the companion

piece to this video
called 'The Craters are Electric'
we outlined numerous types of craters
seen on every type of solid body
that are routinely produced by
electrical discharge in the laboratory
including weird hexagonal
or square craters,
so-called bull's-eye craters,
craters with flat floors
and pinched-up rims,
the extreme circularity
of craters,
and the complete anomaly of smaller craters
appearing on the rims of larger craters.
If we apply these explanations to the
massively cratered surfaces of airless worlds,
as seen on our moon,
on the planet Mercury,
on the dwarf planet Ceres,
and in the outer solar system on the
respective moons of the gas giants,
we find a simple resolution
to endless mysteries
that the impact hypothesis
has never explained.

As the Electric Universe Geology community
continues its inevitable growth,
the closer humankind comes to a reconstruction
of an essential chapter of our history.

A chapter of a drama not
written in science textbooks
yet indelibly imprinted in
every arena of human culture.

A drama waiting
to be remembered.

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

In Part 1 of his presentation,
Australian archaeologist Peter Jupp
began outlining his case for the sudden
fossilization of organisms on Earth.

As Peter explained, many
examples exist of life forms
that were not fossilized
over geologic ages
but rather through the instantaneous
process of petrification.

But what natural mechanism
could achieve this?

As Peter will explain
in greater detail
at the forthcoming Thunderbolts
Conference in Phoenix Arizona,
the answer lies in decades
of laboratory research
into high energy
plasma discharges.

Peter Jupp: Let's go on now, you've

got a similar case study here
with the Jurassic
coast ammonites.

These marine creatures
of all sizes, you know,
they're up to about ten
foot across, they're huge.

They're meant to be from the Jurassic age
but that's another debate altogether.

Now they were buried instantaneously,
they look up at you along this beach,
and you can see them clearly,
the image will illustrate this.

And when you cut them up and slice them,
you can see the intricate details.

Every little piece of
function across the cut.

They weren't destroyed,
they were something,
if there was molten rock, surely
it would have burned them up.

Is there a possibility that
water actually, they're in,
immersed in the water and some
strange geological happening,

I suspect a plasma discharge, converted

that water to calcium carbonate?

Now that's pure speculation so where else could we get some evidence that something like this transmutation of elements might be occurring?

One of the very interesting possibilities here is plasmoid research.

Now if your, certain electrodes are placed in solutions, and electrodes are damaged, you get actually transmutation of elements.

Now, there's new elements created but the electric current flow also forces many plasmoids to emerge from the electrodes.

And some, quite curiously, look like comets, miniature comets, pouring off it and they're creating new elements.

Is this a possibility, is this cold fusion as we call it, cold plasma fusion, possibly responsible on a massive scale and as Wal Thornhill is always quoting, electrical phenomena are scalable.

If some major plasmoid

occurs, or plasma discharge,
is that possibly responsible for that something
turning water into calcium carbonate?

For instance, large plasmoids
from volcanoes and earthquakes,
both electromagnetic phenomena, but the
plasmoid's ability to create new elements
whilst emitting light is an area of still
pioneering stage of our understanding.

What further sort of
evidence we have?

Well, I talked to professor
Richard Firestone from Berkeley,
he is one of the preeminent
isotope physicists in America,
he runs the Berkeley laboratories there, he
has recently retired from Berkeley actually,
but he studied the Carolina
Bays, for instance.

He was studying the
production of nano-diamonds
that are curiously found in the
Carolina Bays, plus many other elements.

He is not sure what
caused the Carolina Bays
but certainly the number of

elements is just staggering.

They are a marker.

Richard Firestone discovered without fail,
these depressions, the Carolina Bays,
which were mimicked in Alaska and
the Deccan Traps and in Australia,
contain large concentrations of nanodiamonds
and other exclusive chemical signatures,
for instance: iridium, helium 3,
fullerenes, that's buckyballs,
carbon, glass, hollow spherules,
and magnetic particles.

Could an electrical discharge or
an emerging plasmoid instability
possibly create these diamonds?

Perhaps another interesting conclusion
is consideration of related phenomena,
comes from the Calabrian
earthquakes in the 16th century.

The earthquake formed perfectly round
shallow holes just like the Carolina Bays.

Is an electrical
discharge involved?

As Rick Firestone
notes, importantly,
the Carolina Bays accompany and bank

along huge Lichtenberg river systems.

If you've seen the film from space you can see these Lichtenberg systems spreading across the land over many miles and all along them are the Carolina Bays, these shallow depressions, they're obviously associated with their formation.

Was this another massive electrical discharge?

It's a great possibility.

So there's many things to come I'd want to go into more detail, in the lecture that I'll be giving later in this year, in Phoenix Arizona, but more detail about particularly the ammonites, which are fascinating, stir me, certainly about Dr. Larry Agenbroad at the great site in South Dakota, the La Brea Tar Pits and perhaps some of the other ones, such is the nano-diamond formation in the Kimberley.

So, I'll look forward to expanding on some of these details would give more facts when we get back together.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

You've all heard all sorts of mention in the last couple of days and you will continue to hear mention of this thing called the Birkeland Current. And all of you, to a lesser or greater degree, have some idea about what is meant by that term. What I'd like to do is to give you some results that I've developed over the last year to try to nail down some of the properties of Birkeland Currents. There are some well-known properties of Birkeland Currents that I think most of you will know.

In no particular order, the definition of it, it's the flow of electrical charge in space. So, that means there is an electrical current. The flow of charge - how many Coulombs pass up an observation point - in one second, constitutes the amperage of that current. Currents create magnetic fields. In other words, if you have a Birkeland Current, if you have a current, you will have a magnetic field. And if you have a magnetic field, you better remember that there's a current there that made it. Some astronomers lack that insight, I guess. One example of a Birkeland Current is the one that connects the Sun to the Earth,

that powers up the Aurora Borealis and the Aurora Australis. And the man who discovered that fact, was Christian Birkeland, after whom those flows are named. He was dogged for years by a man whose name was Sydney Chapman, an astronomer who claimed that Birkeland was crazy. Obviously there could be no flow of current - of charge - through space. It would all dissipate. At first they said, well, space is an insulator, you can't get current through an insulator. Then they changed their mind and said, oh no, no, no, space is a perfect conductor. Well you can't have it both ways. Actually, the latter is closer to the truth. Space contains plasma and plasma is a very good, not perfect, but very good conductor. And so, when charge flows in a plasma, it has certain properties. There's a picture of what those Birkeland Currents look like. They come from the Sun and they drop down into that cone at the north pole and the south pole of the magnetosphere. Typical properties of Birkeland currents: They twist; they often come in pairs; they produce helical magnetic fields - we'll talk some about that. In fact, we'll talk a lot about that in the next half hour. Sometimes they're called 'vortices'; they form filaments in sunspot

penumbras. You've probably seen those. There's a picture of what they look like. On the right is a single Birkeland Current - you can see the twist. In the left-hand picture, when it's magnified, you can see they do very often come in pairs. They're very straight, typically. They can curve and twist too, but they are straight and that's a mystery. If you have a fire hose and you spray a fire hose, if I had one in my hand, I don't think I could hit somebody sitting in the back row of the room. The thing would dissipate. These things, contrary to Sydney Chapman, do not dissipate. And the question is why, and I hope to answer that this morning. They connect stars in strings. A number of years ago, you've probably heard somebody say, "Gee, it looks like those stars form in strings." Astronomers say, "No, no that's an optical illusion, they don't form in strings." Yes, they do form in strings and those strings are Birkeland Currents. The Birkeland Currents also connect galaxies. Just a couple of weeks ago, I think Wal mentioned this the other day, there was an announcement in Science Digest that astronomers - Australian astronomers, coupled with some [astronomers] here - have discovered that galaxies do indeed

form on strings, which is a big reversal.

Anyway, I developed over the last year a method for taking a close look at what the magnetic field is - what it looks like, the structure of it, around the Birkeland Current. Let's just assume, in your mind's eye for a second, in space you've got this bunch of charges that are flowing along. What will happen? I've just said they'll make a magnetic field. Sure, but what will the shape of that field be, and what will the properties of that that whole operation look like? I've discovered, because of the results of this work, that the magnetic force fields that surround Birkeland Currents reach out vastly - and I can't overemphasize that word too much - vastly farther into space than previously thought. The magnetic fields that the Birkeland Currents create, wrap around them, similar to the bindings of Roman fasces.

You know the fascist business? You can take a bunch of sticks and wrap it up and it's much stronger with the wrapping than the individual sticks would be. I searched the internet for a picture of a Roman fasces and that's the best one I can come up with. Clearly, that winding goes around in one

direction, but in reality - maybe not on that picture -
it also wraps around, going back from left to right and
right to left. I'll talk more about that
in a second. What is a minimum energy
field? Somebody mentioned that the other day.
In nature, stuff tends to seek a minimum energy.
Water runs downhill. Perfume spreads out - will
diffuse - right up uncorking the perfume bottle. In
a few minutes the people in the back of
the room would smell the perfume. People
in the front row would smell it first, and after a while,
if I left it open long enough, there would be a level
concentration of perfume throughout the room.
And so, stuff just tends to shrink away. If you
push on it, it'll move away to avoid the
push. And it's a natural thing. Lightning
follows whatever path seems to lead downward
to a lower voltage. Planets. One of the primary
claims of the Electric Universe is that the
separation of the planets is due to a push-pull, back
and forth, a jockeying. Many people don't
realize that the planet Venus has a long tail.
That tail carries electric charge and
it just flicks the outer regions of our
magnetosphere as Venus passes
between us and the Sun. And if

we get too close, our theory is that it is a push.

On Earth electricity goes wherever you lead it.

The wire goes like that, that's the way the current

is going to go. Provided, of course, you put a

voltage at one end and a lower voltage

at the other end, so that the charge can

flow downhill to a minimum energy. In space

however, it goes wherever it wants to, because

there are no wires. So that lightning,

that charge moving through space, (in this

case through our atmosphere) is following

a path that it wants to, to get from a

higher voltage to a lower voltage, why doesn't it go

in a straight line? Well, because it meets up with all

sorts of stuff in the atmosphere. Little

regions, clouds of charge, changes in

humidity, maybe a cloud or something here

or there. It is going as it senses downhill, just

the way water would ripple down

over the surface of a mountainside.

And of course, if you really get out in

space, it does go where it wants to,

as long as you leave it alone, as long

as you don't put any rocks in its path.

As long as you don't put a magnetic field there

that will disturb the direction of that flow.

That's the jet from the M87 [galaxy].

And that jet is several hundred light years long. See how well it's collimated. It's a heck of a lot better than your garden hose.

So the question is why is it collimated?

Why does it stick together like that?

Well, there's one thing that even that jet from M87 senses and that is the Lorentz force.

There's a current there, right? And if there's a current, you know there's a magnetic field.

Well, if a current crosses over a magnetic field, you get what's called the Lorentz force.

This is as complicated as the talk gets. So, don't sweat. If you point your red arrow in the direction of the current flow and it crosses a magnetic field, that's the direction of the blue arrow. And you point your fingers in the direction of the red arrow, and then move your fingers toward the direction of the blue arrow. So, we start with the current and then move toward the magnetic field. Your thumb is going to be in the direction of the force that those charges are going to experience. In other words, in this

situation, the charge which is flowing from left to right will start to curl up. That's how cyclotrons work. You know the things go around in a circle and the radius is called the Larmor radius.

Well, anyway that's the only force that charge moving in free space - if you leave it alone - will suffer. It'll feel that Lorentz force.

I realized that - and I didn't invent that idea, I just realized it - and then I found in Tony Peratt's book an equation that says if you want to have a cosmic Birkeland Current at a minimum energy, suffering no forces, the way to get the Lorentz force to zero, is to have that Birkeland Current look like this. And out comes this big equation. Now if you're a mathematician - and I am surely not - then you can visualize what that structure has to be. Well, I looked at that equation for a long time and as I say this talk is a non-mathematical talk, but...

[Quoted link is invalid] ... you can see the paper and you can wallow around in the mathematics as much as you want to.

What I did was when I got that equation, I plugged it into a computer and did an iterative solution, almost exactly the

same as Dr. Wolf was talking about,
in the generation of fractals. You get the
equation, pick a number, stick it in and
see what you get. And take that number
and stick it back in the equation and see what
that produces. And eventually you get this trail.

Well, I didn't generate anything as
wild as a fractal, but I did come up
with a solution. I will show you the
solution in a second. But the purpose was
to get an equation which would result in a
Birkeland curve, that is free. Left alone.

Leave it on its own devices, what will it look like?

To understand this, we have to talk a
little bit about cylindrical coordinates.

Is there anybody who doesn't have any
idea what a cylindrical coordinate is?

Cartesian coordinates are the x , y and z
in there. You see the x , y and z ?

z is the vertical axis. x is coming out
at you, and y is going from left to right.

We want to specify the position of a
point like this guy up here. You can
specify: it's this far in the x -axis,
this far in the y -axis and this far in the z -axis.

That's the point. Cylindrical coordinates is the same

thing, except instead of the x- and y-axes (you still use the same Z-axis), but instead of x and y, you replace x and y by, at what angle are you from the center of this cylinder, from this pipe? And how far out are you? So, think about a Birkeland Current. Think about an oil pipeline or a water pipeline. It doesn't make any difference where z is particularly, because it's all the same. Things don't change in a cylinder. It doesn't even depend on where you are in theta, because it's symmetrical. It doesn't make any difference where you're at the three o'clock position, the six o'clock position, where you are. The radius, oh yes, that makes a big difference. How far you are out from the center of the thing. That is critical. So, I'm trying to plot the magnitude and the direction of the magnetic field, and that's this B vector. The B Vector has two components, one in the direction of the flow - z, and one in the wrap-around direction, the theta direction. So, if you can come up with a solution that will enable you to tell

what $B(z)$ is and what $B(\theta)$ is,
how strong they are for any given
radius you are out from the center of
this thing, then you can predict and plot
what the magnetic field is going to look like.

OK, now hold on to your seats because
there's the answer. It may not make much
sense looking at it, but let me see if I can
explain what I'm talking about. The black line
is the strength - it starts off there at 1 - of
the axial magnetic field, $B(z)$. That's how
strong the field is along the axis of the flow.

The red component is the strength
of the wraparound field $[B(\theta)]$.

The horizontal axis here is not time.

Please, it's not time. It's the radius, the
radial distance you are out from the center of this flow.

So, can you begin to see what's going to happen?

Right at zero, or as close to the vertical
axis as we can get, the wraparound - the red -
there is no wraparound field. It's
all parallel; the magnetic field is
exactly in the same direction as the current.

And then, as you begin to come away from -
that is increase the radius - that axial field
component.... Of course you know the sum

of the two vectors $B(z)$ and $B(\theta)$ is the B that we're looking for. So, what's the sum of two component vectors? Well, it's the square root of the sum of the squares, right? Well, that's the light blue curve.

So, the light blue curve, the cyan curve, is the total strength of the magnetic field as a function of how far you come out from the center of a Birkeland Current.

And other than maybe a couple of little ripples at the close-in, small values of r , it comes down pretty well, decaying like any decaying exponential right?

Well, no not like any decaying exponential.

The purple curve is one over the square root of r .

Most people will say OK. If you know what we are so proud of in the Electrical

Universe and that is we're always saying to the astronomers that gravity goes down as one over r squared, and the magnetic field from a wire carrying a current goes down as only $1/r$. That's a much less rapid decay.

$1/r$ is much less rapid than one over r squared.

This goes down as one over the square root of r .

So, this stuff reaches out into space much farther than we had heretofore thought, because there are no wires up there. We don't get any $1/r$ decay. We

get a one over the square root of r decay,
which means this stuff has a much
wider effect than we had ever sensed
before. Also, if you think about it, try to
visualize in your mind's eye what's going to happen
as you go out to higher values of r . First, the
axial strength is getting weaker and the
red curve is building up to a maximum.
That maximum occurs almost (not
during the first cycle but the other
cycles) - it's almost exact - the maximum
of the curlicue kind of the curling around
field occurs when the axial field component
is zero. So, what that means is, just look at these
11 plots. Just look at step number 1.
Think of yourself as you're above this
Birkeland Current that's in the cylinder.
The cyan-colored arrows are the
direction of the field. The whole field,
because there is no wrap-around.
And then, as you come to step number 2,
that's a little farther away from the
axis of the flow, and you can see that the
curl-around field begins to contribute. The
axial field gets weaker and the
whole thing begins to tilt. And so,

this magnetic field begins to wrap

like a fasce around the current.

In step number 3 you see that the

wrap-around field is stronger yet.

The white arrows in each of these successive

diagrams [are a repeat of the previous one]

and so each successive diagram is

one layer higher, away from the

center of this flow. The white field shows

what is happening just below the blue field.

Eventually, when you get to somewhere out here

between 4 and 5, you can see that the white

arrows are really zero. Notice there is no

axial magnetic field. It's all wrap- around.

It's just as though you took tape and

just wrapped it around that pipe.

And then, as you go farther and farther

away, the axial field actually reverses

direction, begins to come back at you and so

the curl is down. And then... when you get to

number 6, the axial field has reversed and is just

against you. Again, what's going on between 6 and 7?

Well,... at 6 the wraparound field is zero

and at 7 it's beginning to wrap the other way.

So, first of all it wraps this way. Then it goes back

down that way. Perhaps some of you have seen that

diagram that was published by one of our EU heroes, Hannes Alfven. You can see that the red arrow is right near the center of the flow, and (what should I say) the pitch of it is not very high at all. Then the farther out you get, like you go to the blue arrow then the pitch is less. It's a finer thread, if you will. And then finally out to the green arrow, well that's out there somewhere between my diagram 3 and 4. The axial field is zero and the thing just goes around. That's fine as it goes. As far as it goes, Alfven was right. He just didn't go far enough, because the next radius out, bigger than the green circles there, would produce something like the blue, except with a wider radius. And instead of going up, it would come down. Let me give you an analogy. The perfume bottle when I opened it, would go to all corners of the room. It would spread out in all dimensions. This is also a minimum-energy field and that means that this magnetic field is going to wrap around the current, every possible way it can. And so it isn't just going to go clockwise and then stop. It's going to go clockwise and then counterclockwise, and come back down again. So,

the question is, well so what?

Well, here's the comparison of the field

strengths. The yellow curve is one

over the square root of r . The purple

curve is the wire's magnetic field

which is $1/r$, and if you look at a

couple of different radial distances,

there my observation number 2 says

that the Birkeland Current magnetic field

is 32 times stronger than gravity at $r=10$.

And it's even 3.2 times stronger than the previous EU

estimate which [was based on] the magnetic field in a wire.

But there aren't any wires out there,

So, therefore it spreads out even farther.

The Lorentz force compresses matter at

various radial fields, I don't know how

much longer I got here, but let me just try to

give you what I think is the most important thing.

Here's a picture that looks like a bullseye,

as you're looking down a Birkeland Current.

[Pay attention to the thin little

black circles with numbers. The numbers

at the various radius distances correlate with the

numbers that you see in the field strength figure below].

For example at about 31. That's a

place where the axial strength is zero.

So what you've got is simply the wraparound magnetic field, the red is at a maximum, and so there's what I've tried to draw there at 31, you can see that's a strong wraparound current. If you come out to radius 73, you can see that again, you're at a point where the wraparound field is very strong. The axial field is zero and so what you got is the thing goes around the other way.

Okay, so what? Well, consider yourself as a positive charge and you're heading down the highway here. You are going to either intercept, depending on how far your path is, whether you're right at the center or whether you're a little bit farther out from the center of this flow, are you in the right hand lane or the high-speed lane, you're going to encounter either this (at that point) downward magnetic field, or, if you're out here, you'll encounter an upward magnetic field. You see it? Well, now think about the Lorentz force. If you're at radius 31, you're going that way, the magnetic field is down, and so you've got a force pushing you in toward the center. Remember the Lorentz force:

you put your fingers in the direction
of the flow of a current charge,
then change them into the direction of
the magnetic field and your thumb tells
you what the push is going to be. So you've got current
going in at radius 31. You've got a magnetic field
downward. So, in, down, the force is in. So any charge
around the radius 31 is going to be squeezed into
the middle. Is that good? Yes, it's good
because in the middle you've got a very strong
axial [magnetic field]. The black line is at a maximum.
You got a strong field going that way.
Then you have nothing in any other
direction. And when the current
wants to go in the same direction
as the field, it's a super highway.
So, that's why these Birkeland
Currents work so well, right in that first
little area. What about the rest of it? Well, you can
spend some time doing this kind of stuff, but for
example at radius 75, look at 75.
The z- field is zero and you got a counter-
rotating magnetic field and so what happens?
You're heading into the board. You're a plus charge.
and you put your fingers in the direction of your
flow, and then you look at the magnetic field: it's up.

Okay, your fingers are there, go up, out. So, any charge that's flowing around radius 73, is going to be expelled outward from the flow. And so, every time you come to one of these reversals, you're going to be pushed either in or out.

And that's what I've done. I've tried to mark in the pink as where the charges end up. Okay. I hope it's clear. If you look at this long enough, it becomes clear, I guess... Pick anything, like pick 136.

What's going on here? Well, at 136 you look along over here someplace that's right there, that says that the wraparound field is zero and the axial field is negative. So, at 136 there is no wraparound field. It's zero, and this magnetic field is coming at you. Doesn't that defeat the purpose? You don't want any current flowing back, you want current going that way.

Well, you notice there's no charge carriers there. Because at 136, they're either pushed that way into this, sort of first shell, or they're pushed outward to that shell.

So, regions like 51 and 136 radius, out here is another one at 220, it's sort of like a super highway. But there's no cars on the highway.

There's no charge carriers there.

I hope I've shown that at certain places,
at certain radii, it's easy for current
to flow, and other places it's hard for
current to flow and certainly because of
the counter-rotating wraparound field,
charges will tend to form in these
layers. So, these layers are concentric
cylinders. This is the same sort of
result that Marklund came up with, with Marklund
convection. If any of you are familiar with that.
Marklund, a Swedish scientist/engineer I think,
developed almost the same thing except his
mechanism is predicated on the idea that you've got
a variety, a spectrum of different types of elements,
and he found that what goes to the center are the
easily ionizable elements. To me it's very counter-
intuitive. Iron and stuff like that are
easy to ionize, so you'll find iron and
the heavy elements in the middle.
And one of the hardest elements
of all (which seems absolutely nuts to me, but
it is true) to ionize is hydrogen. And hydrogen
is on the outside. So, that's Marklund convection.
He's got the same result as this. That is there are
concentric cylinders and there's a
selectivity as to what kind of elements

you're going to find in which layer. And that's great. My result is independent of what you've got there. In other words, this will happen no matter what the stuff is that's flowing. It could be just protons, it could be electrons. If all you have is electrons, everything I said, just reverse it. It goes the other way, it's no problem. But the same kind of selectivity the same kind of forming these concentric layers will occur. Well, is this true? Well there's a famous picture of Saturn's north pole. It's also the famous hexagon in the middle. You see the little one right in the middle and my results here do not predict that hexagon. I wish they did, but they don't. But they do predict those circles. Here's a Birkeland Current coming down into Jupiter's north pole. Same sort of thing. there are concentric circles. That's where the charge hits. That's where the charge is concentrated. And the wrapping around, by the way, I don't have any slide to show it but the the way this crazy 'going this way and then back that way' it's wrapped like a Roman soldier. In World War I the soldiers wore patisse, wrapped around their leg. I think they only wrapped them in one direction.

But if you wrap them all the way down
and then come wrapping them about the
other way and then back down the other
way, you got a real wrap. And that's a real
reason, in my mind, that the whole thing
hangs together, and doesn't dissipate.
Here's a picture from Tony Peratt's lab.
That's a dense plasma focus device
and you can see the circularity of it. You can
almost see this circle going one way and then going
the other way. Here's a picture that
C.J. Ransom and Mel Acheson can be
proud of. They made that one in CJ's lab. And
again that's the result of a high amperage current.
Probably, CJ if he's here, can tell you
what the surface, the substrate is.
But you can see, it forms a bullseye.
And the strongest one is of course
that one right in the middle. So, that's
because of the properties, I think we've
identified here as the properties of a Birkeland
Current. We, Wal, me, a few other of us
nuts, are convinced that what you're
looking at there is a Birkeland Current.
A Birkeland Current that's undergoing a z-pinch,
and you can see, I think very obviously,

that the Birkeland Current consists of concentric cylinders. You can see the outside too certainly. And the center one I think that that, and that, are double layers in a central stream of current. Whether the current's going all one way or all the other, we've talked for hours on this and we still can't figure it out. But I would say if that is indeed a Birkeland Current, all the currents going one way on the outer sheath, whether it goes in the opposite direction in the center, I don't know. But certainly, it can go whichever way it wants to because in the center, the magnetic field is lined up with the flow of charge, no matter which way it's going. And so it goes for free. It's a super highway. Anyway, that Planetary Nebula M2-9 that's not Messier. Somebody else quoted Walt Whitman, so I didn't want to be left in the lurch. And after all this lecture of numbers and all this he says he looked up in perfect silence at the stars. You have to look. And I submit that's one of the primary rules of the Electric Universe. That is, let your eyes tell you and that is a concentrically-made sheet of current.

Again, just looking downstream, that's

what you see in a Birkeland Current.

And there's that picture of Saturn. I submit that's

pretty darn good evidence. Anyway, thanks.

[Applause]

[Music]

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

New scientific reports are again
confirming the electrical nature
of one of the most mysterious
phenomena in the cosmos — the comet.

For more than a decade
scientists have puzzled over the
spectacular display of Comet McNaught.

In the winter of 2007, the object
dazzled observers on Earth
when it became the brightest
comet in over 40 years
and the second
brightest since 1935.

The more scientists have
learned about Comet McNaught,
the more it has confounded
conventional comet theory.

In 2007, as the comet
was passing near Mars,
the Ulysses spacecraft made the
completely unexpected discovery

that the solar wind velocity
dramatically decelerated
as it encountered the
comet's ion tail.

At that distance from the Sun the solar
wind is typically about 700 km/sec,
but inside the ion tail of the
comet it was only 350 km/sec.

Space science professor Michael
Combi said of the discovery,
"This was very surprising to me.

Way past the orbit of Mars, the solar wind
felt a disturbance of this little comet.

It will be a serious challenge for us
theoreticians and computer modelers
to figure out the physics."

And today, scientists continuing to study comet
McNaught have reported another discovery
that stunningly confirms
the electric comet theory,
that is that the material in the comet's
dust tail is "electrically charged".

The team was attempting to learn
about the extraordinary dust tail,
specifically the structured
bands of dust or striations

which did not disperse

in the "vacuum of space"

but stretched for over 100

million miles behind the comet.

Previously, the great comet of 1744 was said to

have presented the same mystery in its time

when it produced six tails which

were observed from Earth.

Today, almost three

centuries later,

scientists utilizing a new

image processing technique

are able to study the formation of the

striations in McNaught's dust tail.

What they have found was

completely unexpected.

Planetary scientist Oliver Price who developed

the technique said of the investigation,

"My supervisor and I noticed weird goings-on

in the images of these striations,

a disruption in the

otherwise clean lines.

I set out to investigate what might have

happened to create this weird effect."

As reported on phys.org, these

so-called weird effects were,

"Located at the heliospheric current sheet,
a boundary where the magnetic orientation,
or polarity, of the electrified
solar wind changes directions.

This puzzled scientists because while
they have long known the comet's ion tail
is affected by the solar wind,
they had never seen the solar
wind impact dust tails before."

"Dust in McNaught's tail — roughly
the size of cigarette smoke —
is too heavy, the scientists thought,
for the solar wind to push around."

This electrical interaction between
the heliospheric current sheet
and the comet's dust tail is summarized
by planetary scientist Geraint Jones,

"It's like the striation's feathers are
ruffled when it crosses the current sheet.

If you picture a wing with lots of
feathers, as the wing crosses the sheet,
lighter ends of the feathers
get bent out of shape.

For us, this is strong evidence that
the dust is electrically charged,
and that the solar wind is affecting

the motion of that dust."

The Phys.org report concludes

of the team's findings,

"... it was a surprise for

them to see the solar wind

affect larger dust grains

like those in McNaught's tail--

about 100 times bigger than the dust seen

ejected from around Jupiter and Saturn--

because they're that much heavier

for the solar wind to push around."

It has always been the Electric Universe

position that most comet activity

is the result of the comet moving through

regions of changing electric potential.

The reason comet activity tends to

increase as it moves closer to the Sun

is not due to sublimation of

invisible hypothetical water ice.

Indeed, every comet nucleus imaged to

date has appeared rocky and desiccated.

Comets spend most of their time in the

farther reaches of the solar system

where plasma charge density

is low. The comet moves slowly

and its charge will normally easily

come into balance with that region.

But as it approaches the Sun,
the nucleus moves at a furious speed through
regions of increasing charge density
and varying electrical characteristics.

The comet's surface charge and internal
polarization developed in deep space
respond to the new environment
by forming cathode jets
and a visible plasma
sheath or coma.

The jets flare up and the comet may
shed and grow anew several tails.

In fact, the negative charge
in Comet McNaught's ion tail
would have attracted
solar wind protons,
the obvious explanation for the deceleration
of the solar wind as it met the comet.

Comets can also suddenly brighten
when moving away from the Sun
or even explode when moving through any sudden
dramatic change of electrical potential
such as when encountering a CME from the
Sun or even the magnetosphere of a planet.

In fact, on two occasions

in modern times,
when astronomers have been able to anticipate
a comet's close encounter with a planet,
Shoemaker Levy 9 at Jupiter in 1994
and Siding Spring at Mars in 2014,
the electromagnetic effects produced by
the encounters were vastly more energetic
than anything comet scientists
had thought possible.

Comet jets may be the clearest example of
electrical discharge we've observed on a comet.

Standard comet theory has failed
completely to predict or explain
the actual form and behaviors of the
collimated jets of dust and gas
seen exploding off of comets.

This problem confronted scientists
on NASA's Stardust mission
when its spacecraft
approached the comet Wild 2.

An official NASA report describes
the conundrum as follows,

"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."

An obvious problem is, the comparison of
comet jets to the blasts of a garden hose
is completely inappropriate.

In the so called vacuum of space,
what mechanism collimates the jets
causing them to not disperse as
comet scientists had predicted?

An ad hoc theory some comet
scientists have proposed
is that so-called apertures or
nozzles on the comet nucleus
act as the "hose" through which the
jet passes preventing its dispersal.

However, such features
remain elusive.

This is acknowledged in the
2012 scientific paper

'Cometary Jet Collimation
Without Physical Confinement'
which 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 revealed 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."

In stark contrast, more than a century ago, one of the pioneers of electrical experimentalism, the Norwegian physicist Kristian Birkeland

successfully emulated cometary jets
from a cathode in a vacuum tube.

Birkeland wrote,

"From a cathode of graphite there
came long, steady pencils of light,
which greatly resembled the so-called
eruptions or jets in comets."

And today, the experimental approach
to the Electric Universe continues,
as we see in this home experiment by
Thunderbolts colleague Jacob Gable
who stunningly emulates
cometary jets of gas and dust
through simple electrical discharge
in a makeshift vacuum chamber.

The comet remains one of the most significant
celestial objects for scientific investigation
and it remains one of
the clearest evidences
that we live in an
Electric Universe.

The Electric Universe

The Electric Universe

-- Predictions & Surprises --

The space sciences today face

a quandary that won't go away.

Why have the greatest discoveries

come as a shock to astronomers?

Since the beginning

of the space age,

these surprises have occurred

at all scales of observation,

from remote galaxies down to our

own neighborhood in the Milky Way,

where planets and

moons circle the Sun.

We've seen this story a

hundred times and more

as new data sent theorists

back to the drawing board.

Contrast this quandary to the

record of the Electric Universe.

This new paradigm is in its

early phase of emergence

but its core prediction

is crystal clear.

When we examine energetic events

in space, we will always find
electromagnetic intensities far beyond the
ability of prior theory to explain them.

The impressive record of this
prediction arises from a singular fact:
that electricity, not just gravity,
is highly active across the cosmos.

Science advances through the
predictive ability of new ideas.

Ideas that connect observed facts
to causes that can be named.

Things already known and
things yet to be discovered
become predictable when seen in
the light of a new interpretation.

And so, the Electric Universe
predicts and explains
the spectacular jets emitted
from galactic cores,

the remarkable hourglass
forms of stellar nebulae,
and the acceleration of the solar
wind out past the planets.

Dozens of surprises follow logically and
inescapably from the proposed cause
but this is something you

have to see for yourself.

The great discoveries are no
longer surprises as year by year
the space sciences look more and
more like the Electric Universe.

The Electric Universe

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standard geology tells us that
incremental processes over eons of time
have shaped our planet's surface
weathering erosion and plate tectonics
are the primary processes that
geologists believe have defined our
planet's visible features as planetary
scientists have explored our own Moon
and other heavily cratered bodies they
have considered collisional impacts in
volcanism as the possible cause of the
craters leaving countless anomalies
unresolved however overwhelming evidence
suggests that other processes not
included in geology textbooks have left
their indelible Mark upon the Earth and
other
planets a growing field of scientists
and independent investigators are
exploring the geological effects of high
energy electrical discharges in a
relatively recent Epoch of planetary
instability a key figure in this field
is Michael Steinbacher a professional
photographer who has studied the
geological formations in the American

southwest Michael is scheduled to speak
at the forthcoming conference EU 2015
Paths of Discovery taking place June
25th to 29th in Phoenix Arizona today
Michael offers a brief introduction and
overview of his talk where he will
present a photographic illustration of
the electric Universe catastrophist
Model A Link to Michael's YouTube
channel can be found in the description
box of this video

my talk is basically going to be on the
pestop geology model fortunately for for
all of us we have Billy Elton doing
experiments showing what happens when
you have Dusty
plasma and electromagnetic events taking
place he's making what looks like
mountains sometimes there're circular
formation sometimes they look like
galaxies at my request he did an
experiment using a Channel of water
with an electromagnetic event of anode
and a cathode on either side and he
released Dolomite and clay from
above and it did what I had hoped it

would do it prevented accumulation it
didn't erode a canyon it prevented
accumulation where the water was flowing
and in between the two anode and cathode
electrodes material seemed to accumulate
prefer ually and it seemed to be wet as
if water was being pulled up or Wicked
somehow being involved with the process
and it made something similar to the
Grand Canyon and he's repeated it and it
has scalloped edges at times so it
really looks like what you see in the
field it's very confirming I think of
the model that I'm
proposing Dolomite is is a wonderful
mineral it it has all sorts of problems
if you want to explain it having been
created on the earth in the quantities
required for what you find in the
mountains and and and associated with
oil uh it just doesn't form unless the
ocean is boiling and full of uric acid
urine which is not very
likely on the other hand NASA was
shocked when they went through the tail
of Haley's Comet and collected dust they

found 7% Dolomite and they think it's understated they also found Limestone they've also found everything required to explain pretty much the entire geologic column in Comet dust and not just one Comet but they're all sharing these anomalies hydrocarbons and Dolomite Limestone and things that really shouldn't be there things that people thought required water and this Dolomite seems to have fallen from the sky as described by our ancestors and it seems to have been at the very end end of these catastrophic processes because in many instances it's the very tops of the mountain the Dolan lights of the Alps there these beautiful Cliffs and you have a Windward and a leeward side at the very top of the Alps there's Dolomite all through Nevada west of Las Vegas the tops of the mountains and it's layered with the shell Dolomite shell Dolomite shell as if it's being sort of ionically I think by twisting a beating heart and then the other fascinating thing about it is that it's

reported that that oil rained from the
sky for days and nights by our ancestors
again I witness

accounts and Dolomite is where most of
the oil that's been recovered prior to
fracking has come from because it's
Taurus so the oil in Saudi Arabia and
Texas and California and all over the
world prior to fracking the vast
majority except for tar Sands and things
like that has come from Dolomite
formations because of porosity and if you
put a pipe in it you can suck it out as
opposed to Shell which is a solid rock
so it fits nicely with the hydrocarbons
that are available from comets according
to NASA and the Dolomite that's
available from comets and it's all laid
out in nature in the geologic column and
it's where we get our oil from for the
longest time I kept looking for
electrically excavated canyons and I
didn't really see them I was seeing what
appeared to be fluvial things that got
smaller as they went uphill and stopped
before they got to a ridge and then

started on the other side of the ridge
back down again repeating what was on
the previous side so it looks like it's
a water event and then I stumbled on
Zion Canyon which I had been to before
but looking at Google Maps I noticed
things that just weren't right and you
can see that it's completely different
than the Fluval excavations flu
drainages it's electrical and I have a
YouTube explaining all of this and then
that opens up all these other doors
because you can see what the electric
process does and how it changes the
color of the formations and then you can
use this as a marker and look all over
the place and see where electrical
removal has taken place so it took six
and a half years but finally I found
what appeared to be
electrical excavation
that stand out that really ripped much
of the Southwest at the very end of the
process you can see that all the other
layers have been deposited so that this
process creating these electrical tants

is the very end and it seems to create
molten dust which downwind seems to
create assault layers at the very top of
the formations again the very end of the
process so it took a long time but I
found electrical removal on Earth it
seems to be a a no-brainer there's just
no way that water could explain these
formations was no water available and
they go through high points they don't
stop at high points like something flui
so yeah Zion Canyon is kind of the
Rosetta Stone of electrical excavation
to the planet
Earth
[Music]

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

The novelist Robertson

Davies once stated,

“The eye sees only what the mind
is prepared to comprehend.”

In the 21st century, scientists on
Earth are observing and gathering data
in unprecedented detail on the remotest
phenomena in the physical Universe.

Of course, as those who have
followed this series are aware,
what they actually find is routinely
very different than what they expect.

And what is the source
of these surprises?

Probably more than any physical science
on Earth, in astrophysics and astronomy,
where the essential tool is not
a microscope but a telescope,
data can be interpreted
a number of ways.

In the sciences, as in life,

invalid interpretations begin
with erroneous assumptions.

In the 20th century's space sciences,
one such assumption was that electric
charges and currents cannot exist
in the so-called vacuum of space.

An intriguing insight into
common beliefs on the subject
can be found in the discussions
of some popular websites.

On the website Quora.com, the question
is posed in the form of the query,
“Does lightning exist in space?”

The most viewed response
attempts to answer as follows:

“There is no lightning in space.

Lightning is the result of ionization
of air into a channel of plasma
caused by strong electric field
(in this context between
a cloud and the ground).

There is no air in space and
nothing to get ionized.

Strong electric field would produce nothing
in space and there would be no lightning.”

The notion that nothing exists in space

to become ionized is of course laughable.

Astrophysical plasmas,

or “ionized gases”,

have been a subject of intense scientific and laboratory investigations for nearly a century.

And even the notion of so-called space

lightning at the vastest cosmic scales

has more recently been appearing

in astrophysical literature.

In 2011, radio astronomers reported their measurement of the electric current

in a nearly 150,000 light

years long extragalactic jet.

As reported in the New

Scientist article,

“Universe’s highest

electric current found”:

“A COSMIC jet 2 billion light-years away is

carrying the highest electric current ever seen:

10^{18} amps, equivalent to a

trillion bolts of lightning.”

As we’ve reported recently, new papers

in peer-reviewed astrophysical journals

propose that powerful electric

currents flow in extra-galactic jets

and that the jets themselves are

“fundamentally electromagnetic structures.”

However, if you

follow science media,

it’s likely that you’ve

not noticed any attempt

to contextualize the development

as significant for astrophysics.

One person who has noticed this disconnect

is Thunderbolts colleague Chris Reeve,

who has spent many years documenting the

online discourse on scientific controversies,

including the occasional

“skeptical” polemics

against the Electric Universe

and Plasma Cosmology.

Recently, Chris published a commentary

exploring why the recognition

of vast, cosmic electric currents

has apparently yet to register

either with science journalists

or most online commentators.

Chris’s initial comments were presented in

an item posted by a Slashdot.org editor,

entitled, “Can Electricity Travel

Through Space on Astrophysical Jets?”.

An October 2017 paper titled "Electric Currents

along Astrophysical Jets" reports that

"Several researchers have

reported direct evidence

for large-scale electric currents

along astrophysical jets."

A review of the citations at the end of

that paper and others would seem to suggest

that one of the great Internet science

debates has finally been settled:

Electricity does indeed travel through

space over vast cosmic distances.

What has been interesting to watch

about this unexpected development

is that science journalists have so far not

explicitly reported this as a shift in theory,

and commenters on sites like phys.org appear

to deny that any change has even occurred:

"The jets have been shown not

to be electric currents,

the energy and the physics involved

are certainly not electromagnetic."

This comment completely

rejecting these new findings

was highly rated by

other phys.org readers,

suggesting that the failure to explicitly

report this as a change, in theory,
has left this controversial topic
in a highly confused state.”

With Chris’s permission, we now
present his full commentary,
outlining the history
of the controversy.

I've been engaging people on these
topics for around 12 years now.

In fact, it was some peculiar interactions I observed
here on Slashdot back in 2007 [slashdot.org]
which greatly stimulated
my interest in this topic.

The idea that electricity
flows through space
is largely the brainchild
of Hannes Alfvén,
who earned the Nobel for his
creation of magnetohydrodynamics
(the math which models cosmic
plasmas using fluid equations).

What has not been particularly emphasized
by scientists or the science journalists
is that Alfvén realized
towards the end of his career
that the widespread application of MHD

in astrophysics was a huge mistake.

And he used the opportunity of his

1970 Nobel acceptance speech for MHD

to explain to the

astrophysical community

why they should not be using

MHD to model cosmic plasmas.

The exact history of what happened

is difficult to track down,

and I've never seen it fully

told in an academic setting

— which is really quite extraordinary,

in a history of science sense.

Quoting The Plasma Universe of

Hannes Alfvén, by David Talbott:

"Alfvén's interest in magnetic fields laid

the foundations of today's MHD theory,

a theory widely employed

by astrophysicists.

In the original

formulations of the theory,

Alfvén spoke of magnetic fields

being 'frozen' into neutral plasma,

and the magnetohydrodynamic equations

he formulated implied that

the electric currents that create magnetic

fields could be effectively ignored.

Hence, the plasma activity on the Sun and in more remote space could be analyzed without reference to any larger domain of electric currents or electric circuits ..."

To this notion, astronomers were readily attracted, and for a time they thought they had an ally in the brilliant electrical engineer.

Although his 'fundamental work and discoveries in magnetohydrodynamics led to his Nobel Prize in 1970, the background to this occasion is paradoxical.'

Through much of the 19th and 20th century, most astronomers and cosmologists had assumed the 'vacuum' of space would not permit electric currents.

Later, when it was discovered that all of space is a sea of electrically conductive plasma, the theorists reversed their position, asserting that any charge separation

would be immediately neutralized.

Here they found what they were looking for
in Alfvén's frozen-in magnetic fields
and in his magnetohydrodynamic
equations.

Electric currents could then be viewed as
strictly localized and temporary phenomena
— needed just long enough
to create a magnetic field,
to magnetize plasma, a
virtually 'perfect' conductor.

The underlying idea was that space could
have been magnetized in primordial times
or in early stages of stellar
and galactic evolution,
all under the control of higher-order
kinetics and gravitational dynamics.

All large-scale events in space could still be
explained in terms of disconnected islands,
and it would only be necessary
to look inside the 'islands'
to discover localized
electromagnetic events
— no larger electric currents
or circuitry required.

In this view, popularly held today,

we live in a 'magnetic universe'

(the title of several recent books and articles), but not an electric universe.

The point was stated bluntly by the eminent solar physicist Eugene Parker, "No significant electric field can arise in the frame of reference of the moving plasma."

But the critical

turn in this story,

the part almost never told within the community of astronomers and astrophysicists, is that Alfvén came to realize he had been mistaken.

Ironically — and to his credit —

Alfvén used the occasion of his acceptance speech for the Nobel Prize to plead with scientists to ignore his earlier work.

Magnetic fields, he said, are only part of the story.

The electric currents that create magnetic fields must not be overlooked, and attempts to model space plasma in the absence of electric currents will set astronomy and astrophysics on a course toward crisis.

In accord with Alfvén's observations,
American physicist, professor Alex Dessler,
former editor of the journal
Geophysical Research Letters,
notes that he himself had originally
fallen in with an academic crowd
that believed electric fields could not exist
in the highly conducting plasma of space.

He stated,

'My degree of shock and surprise
in finding Alfvén right
and his critics wrong can
hardly be described.'

In retrospect, it seems clear that Alfvén
considered his early theoretical assumption
of frozen-in magnetic fields
to be his greatest mistake,
a mistake perpetuated first and
foremost by mathematicians
attracted to Alfvén's
magnetohydrodynamic equations.

Alfvén came to recognize that
real plasma behavior is too
'complicated and awkward' for
the tastes of mathematicians.

It is a subject "...not at all suited

for mathematically elegant theories."

It requires hands-on attention to
plasma dynamics in the laboratory.

Sadly, he said, the

plasma universe became

"...the playground of theoreticians who
have never seen a plasma in a laboratory.

Many of them still

believe in formulae

which we know from laboratory
experiments to be wrong."

Again and again, Alfvén

reiterated the point:

the underlying assumptions

of cosmologists today,

"...are developed with the most

sophisticated mathematical methods

and it is only the plasma itself

which does not 'understand'

how beautiful the theories are and

absolutely refuses to obey them."

There exists considerable

confusion on this topic

of electricity through

space over cosmic plasmas,

and it has been extraordinary

to observe that this confusion
is especially pronounced
in the tech community.

I have sought to document this bias
in the tech community (and elsewhere)
against electricity in space
since I first observed it.

Perhaps the most important untold story
is about this mistaken assumption
which formerly dominated
astrophysics and cosmology,
that space is basically empty (as in
there is no interstellar matter).

If you go back and look at what
transpired, we can see that this mistake
played an important part in the
selection of theories and hypotheses.

For example, Hannes Alfvén's 1937
proposal of a galactic magnetic field was
"met with widespread
resistance (if not scorn),
as it directly contradicted
the prevailing wisdom
that a vacuum filled
interstellar space."

A 1963 Popular Science

interview with James Van Allen

points out in big bold letters

at the top of page 76:

'Space' was invented on Earth

before we knew what was out there.

The article explains:

"I found Dr. Van Allen in Boston, at

Massachusetts Institute of Technology,

where he was conferring with

other space scientists.

That evening, over dinner, I asked him about

newly discovered phenomena of 'empty' space.

'Most people still think of space

as a cold, black vacuum,' I said.

'Is it true that scientists shared this

misconception until very recently?'

'Most scientists did think of space

as a barren waste,' he said.

'When we started getting real

information, it was quite a revelation.'

The crucial turning point in our conception

of space, of course, came in 1958

when we finally sent the first

instrumented rockets up.

These probes were pretty quickly

recognized to be radioactive

when they landed

back on the Earth.

This was a big

surprise at the time,

and within just a few years, the

implications were openly discussed

in the introductions to numerous

astrophysical and plasma physics textbooks.

For example:

"Today it is recognized that 99.999% of

all observable matter in the universe

is in the plasma state,

and plasmas are found at temperatures

and densities far exceeding those

that will support matter in

the first three states."

I've documented about 20 examples of

these textbook admissions by now.

Here's another one:

"Plasmas can be divided into two broad

categories: natural and man-made.

It is an interesting fact that most of

the material in the visible universe,

as much as 99% according to some

estimates, is in the plasma state.

This includes the

Sun, most stars,
and a significant fraction
of the interstellar medium.

Thus, plasmas play a major
role in the universe.

Plasma physics is relevant to the
formation of planetary radiation belts,
the development of
sunspots and solar flares,
the acceleration of high-velocity winds that
flow outward from the Sun and other stars,
the generation of radio emissions from
the Sun and other astrophysical objects,
and the acceleration
of cosmic rays."

These more recent admissions by astrophysicists
that electricity can flow through space,
therefore, bear
enormous importance,
for it is today recognized
that of the matter we can see,
it is essentially almost
entirely in the plasma state.

So, if we are modeling
that plasma incorrectly
— as observations of large-scale

electrical jets seem to suggest —

it stands to reason that

certain perplexing mysteries

(like dark matter) are likely to

be explained by this mistake.

Perplexingly, the Slashdot community has

been overtly hostile to this simple notion

that electricity can

flow through space.

Attempts to even just convey

new findings in this area

are either completely ignored

or treated as pseudoscience

even when the announcements appear

in established scientific journals.

For example, here is another

recent effort to inform

the Slashdot community of a very important

vindication for electricity in space:

"The previously

controversial claim that

'astrophysical jets are fundamentally

electromagnetic structures'

is becoming accepted by

some astrophysicists.

A summary of recent publications on the

subject by Don Scott in particular
notes the common presence of counter-rotating
cylinders in black hole jets,
a feature not expected
by conventional models,
yet a hallmark feature
of Birkeland currents
which was mathematically
described in a 2015 paper.

Counter-rotating
cylinders are considered
an important prediction for
the Electric Universe claim
that large-scale electric currents
travel through space over plasmas.

This recent acknowledgment offers additional
vindication for the historical claim
that the history of Birkeland Currents
appears to be mired in politics.

A 2007 Slashdot post titled 'Astronomers
Again Baffled by Solar Observations'
elicited a number of hostile
reactions by Slashdot readers
that the Electric Universe is
obviously a 'crackpot theory',
but what happens if astrophysicists

start to widely acknowledge
that large-scale electric currents
do indeed flow through space?"
It would seem that a mistaken
bias against electricity in space
continues to dominate
conversations to this day,
and will surely continue to
do so for some time to come
but it also increasingly appears that
these convictions are today out of step
with the current claims of
the astrophysical community.

So, in a sense, we now see the
Slashdot community largely unaware
that a huge theoretical
shift has occurred,
and that a lot of ridicule and
dismissals in this community
need to now be re-evaluated in the
light of the recent recognition
that electricity does indeed
travel through space.

If I had to guess at what will happen next,
people will probably start suggesting
— as they tend to do —

that everybody actually already knew

that electricity travels through space.

But, the only way to find out

how people are going to react

is to finally start reporting

on this situation.

This conversation is way

past due at this point.

several thousand years ago events of
beauty and Terror provoked an explosion
of human
imagination this was the myth making
epic of human
history first came the enchanted realm
the theater of venerated gods and
goddesses the gods were
prodigious their Celestial habitat
towered over the world a model for
temples and commemorative monuments on

[Music]

Earth

but the gods grew
capricious one Celestial power
metamorphosed into
another Preposterous creatures never
seen on Earth roamed the
sky

[Music]

the gods turned violent as Heaven itself
fell into
chaos then Celestial Warriors and
monsters appeared to battle in the
heavens wielding weapons of thunder and
fire and

stone our challenge will be to account
for this outpouring of Mythic
content

the eminent psychoanalyst Carl Yung
called these deep patterns the
archetypes he saw them as universal
structures of the unconscious lyed

Beyond rational or scientific

[Music]

explanation yes the myths seem
incomprehensible to us but the
archetypes offer a pathway through the
confusion

they are the points of agreement between
the far-flung
cultures and this agreement rises above
the carnival of confusion and

[Music]

contradiction every major culture
remembered a cosmic Mountain around
which the heavens

[Music]

turned

[Music]

and every culture chronicled the
terrible aspect of the mother

[Music]

goddess were there no common experience
the archetypal agreement would not even
be

[Music]

possible all that is required here is a
willingness to meet the archetypes and
without fear or Prejudice or any
advanced assumptions to hear their

[Music]

message the existence of hundreds of
archetypes is a fact and it is a fact as
well that no archetype speaks for
natural events occurring today not a
single

[Music]

one
at the dawn of civilization all of the
archetypes were already

[Music]

present today we are fascinated by the
Monumental scale of the antique
civilizations
but what were the essential memories
that drove the Monumental culture so

[Applause]

[Music]

obsessively the threads of evidence
traced deep into the prehistoric past a
world barely recognized but not entirely
lost
more than 10,000 years ago prehistoric artists
painted these images on the walls of Las
Cave in France they were realists
with an exceptional eye for

[Music]

detail why these talented artists of the
Stone Age disappeared remains a

[Music]

mystery but the greater mystery is the
Epic that

[Music]

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

[Music]

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 just
a

[Music]

curiosity but widespread patterns must
have an
explanation and other details only
accent the

[Music]

irrationality recently an answer to
these Mysteries came from outside
traditional archaeology from plasma
science and laboratory experiments with
electric
discharge plasma scientist Anthony parat
of Los Alamos Laboratories has shown
that these sck 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 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
Taurus or donut like tubular sheet of
charged particles The Observer sees
through the transparent formation
champagne glass above squashed bell
shaped 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 sron
radiation emitted from the center of the

Taurus

[Music]

the current sheets continually warp as
the electric discharge progresses and
this form is not
uncommon a two-dimensional
representation might look like
this Pratt's work has shown that the
stickman the duckhead version of the
American southwest and variations from
Hawaii to Saudi Arabia is a plasma
discharge formation a subject in which
he is an acknowledged World

[Music]

expert parat 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 cannot be
accidental

welcome to space news from the electric
universe brought to you by the
thunderbolts project at Thunderbolts dot
info in part 1 of this presentation
physicist Eugene Baga Schaaf began his
analysis of the ongoing mysteries
surrounding the first-ever so-called
interstellar asteroid Oh wah-wah
Eugene scrutinized the rather surprising
hypothesis that the object is not
natural but rather a kind of alien
technology that hypothesis arose
primarily from Obama's peculiar
acceleration as it moved away from the
Sun but as Eugene will explain this is
certainly not the first instance that
the velocity of an object in our solar
system has puzzled astronomers only one
of several enigmas Oh mwah mwah presents
based on the limited available data
eugene continues his analysis of this
intriguing celestial traveler
so it seems that so far there is no
clear consensus on the possible sources
of Omar Moore's acceleration nor there
is a consensus on whether this object

should be considered a comet or an asteroid or even an alien spacecraft just to be clear I would like to draw here a baseline a ground zero so to speak representing the actual raw observations to clearly show what is inferred on top of that and to take it with a pinch of salt by default and actually we know really not much firstly we saw a moving dot in the sky only a few pixels across even as observed by the best available telescopes multiple observations from various facilities during few months indicate that this is not some kind of visual artifact but a real celestial body the object also demonstrated somewhat irregular but still periodic changes in brightness the ratio between maximal and minimal optical energy flux being roughly equal to 10 and the period of brightness change being roughly 8 hours and that is pretty much it everything else is speculation so should be critically evaluated and not taken as fact especially I might add with a bit

of humor the things that would be
proposing a bit later in this video and
then the next one by the way the
analysis of the changes in brightness of
Omaha as for example is shown in the
paper the excited spin state of Omaha
could also lead to a conclusion that it
is very Oblates
rather than very oblong so it could as
well be bang cake shaped so to speak
rather than cigar shaped as it is almost
uniformly acknowledged now in the media
and even the research papers this is one
of the reasons why one should be careful
with the infamous artist's impressions
of various objects and processes that
might be depicted totally wrong
depending on the correctness of the
assumptions that they are based on in
previous videos I myself have used the
initial assumption about the probable
oblong shape yet I've clearly stated
that it is a conjecture obtained from
modeling assumptions about the albedo
etc and what is really observed is only
changes in brightness we don't really

know yet and maybe we would never know what the actual shape of the object is the cake shape obviously would be somewhat more consistent with the solar sail scenario that was described in the previous space news video on the topic I should note that there was another piece of observational data that was collected by various facilities and that is the spectrum of the object although with a caveat that since those were mostly earth-based telescopes only visible part of the spectrum was recorded the spectrum seems pretty dull and not too different with respect to the spectra of the small bodies in the solar system some authors have suggested see four examples paper called Omaha is hot imaging spectroscopy in search of meteor activity that the smoothness of Omaha mower spectrum means that it should have been formed in some relatively warm conditions but then again we know that even cometary dust contains high-temperature silicates so that

really doesn't change anything at least
in the EU perspective by the way I'm
really baffled by the fact that none of
the available x-ray telescopes in space
have performed any observations of the
object I personally believe that if
there was some electrical activity on
the surface which is not guaranteed
given all the objects peculiarities yet
still possible then it could have been
detected in the x-ray frequency range
I'll remind the viewer that it is quite
typical for their bodies in the solar
system to demonstrate potential
differences of few hundred volts between
their surfaces or atmospheres and the
ambient solar wind around them such
potential difference was observed at
Saturn's moon Hyperion when it's at the
Cassini space probe with a stream of
electrons accelerated by a potential
difference of about 200 volts the same
negative potential of 200 to 500 volts
was observed by Rosetta space probe at
the comet 67p
and there have been detection of x-rays

from Pluto's atmosphere in the same energy range which I've already reported in the video called Pluto's x-rays baffled scientists at the Thunderbolts project YouTube channel the detection of these x-rays accompanied by the focusing of the solar wind ions at Pluto as if attracted by the electric field in my opinion seems to indicate the negative charge of Pluto's atmosphere with the appropriate potential of about 300 to 600 volts which seems entirely consistent with the previous measurements done at other bodies as well as modeling of the behavior of asteroids and the moons of Mars where it is also suggested that even the solar wind flow itself should cause potential differences of the order of hundreds of volts across the surface so it wouldn't be unexpected if Oh mwah mwah would actually emit in the soft x-ray range with energies of photons of about 3 to 700 electron volts just because of the electric discharging between the surface and the solar wind

plasma yet given the somewhat unique character of this body it would have been even more interesting to see whether that would actually be the case unfortunately since the object cannot be seen any more it is possible that we will never know now I wish to dive deeper into a hypothetical area and discuss some of the ideas I've had in the recent weeks while trying to figure out the peculiar behavior of Omaha in the light of research papers mentioned in the previous video

first of all I should note that the radial acceleration away from the Sun that was supposedly observed while tracking Omaha's position is not very different from the inwards acceleration of the Pioneer ten and eleven probes widely known as the Pioneer anomaly obviously the direction of acceleration is the opposite but the effect is pretty similar and there is only one order of magnitude difference in terms of its intensity if one uses the simple one over R squared law and corrects for the

much farther position of pioneers at the time of the detection of the anomaly now the scientific community for the most part agrees that pioneer anomaly might be explained by the anisotropic heat emission by the probes themselves so supposedly they were decelerated by the infrared photons emitted by themselves roughly in the direction of their motion that is away from the Sun and thus slightly decelerated

it is quite peculiar that the acceleration remained roughly constant even though the heat output from the probes radioisotope thermal and quite significantly to be honest I haven't found any explanation of how this fact fits in the accepted scenario yet I cannot claim that such an explanation does not exist what I can claim is that the same anomaly was also observed at Ulysses and Galileo space probes

although the later assessment seems to have raised doubts about it as some scientists believe that the accuracy of

the measurements of these probes trajectories and velocities was not enough to make a clear conclusion unfortunately it is also not clear whether pioneer anomaly was observed or not for Cassini the two voyagers and New Horizons probes voyagers and Cassini periodically fired their thrusters and changed attitude so it would definitely hide the possible anomalous acceleration signal and New Horizons team comments on this subject are pretty vague and ambiguous so I have not seen any explicit statement about whether they even checked for the possible pioneer anomaly with their probe however one presentation I saw once claimed that New Horizons team simply did not have the money to perform Doppler tracking of the spacecraft and thus no data with enough precision was available in the first place but anyway over the years many different alternative explanations of the Pioneer anomaly appeared such as for example the one proposed by modified Newtonian

dynamics Ormonde developed by Mordecai
Milgram or the one proposed by the
modified inertia theory developed by
Mike McCulloch I would not describe
these in detail I would just note that
the anomaly itself indicates that there
might be something wrong in the way we
understand the behavior of bodies in the
outer solar system that is roughly from
the orbit of Jupiter and beyond
generally speaking perhaps our
misunderstanding of the behavior of
these probes out there is caused by the
inherent extremity of the conditions in
the appropriate areas but the degree of
removal of these probes from the
everyday experience of humankind so that
their motion can no longer be described
by the simple laws that we are quite
satisfied with looking from where we are
I would briefly touch on this subject
again in the next video but right here I
just want to say that maybe Omaha was
unusual acceleration is also caused by
the extreme trajectory it was traveling
along maybe our understanding of the

motion of celestial bodies is already being tested at this kind of motion in this regard I'm very interested if there would appear some anomalous acceleration of a parker solar probe which is going to orbit the Sun faster than any previous spacecraft did before who knows maybe it would also detect some unusual acceleration or something like that now going a bit closer to the electric universe interpretations there is an interesting paper that among other things considers a possible impact of Lorentz force on the motion of spacecraft it is indeed possible that the two pioneers actually have had some electric charge and thus the magnetic fields in interplanetary plasma could have altered their ocean the authors of this paper do not think it would have a big impact since they place the upper limit on the charge of the Pioneer probes on the order of 10^{-10} coulombs it's possible that they underestimate the charge or the magnetic field strength in the interplanetary

medium

I should also note that even the ambient solar wind has an electric field to it the so called motional electric field because it is a flowing magnetized plasma and technically might be considered as a moving conductor in a magnetic field of its own which would create an appropriate electric field through induction and it is not impossible that such a field would also impact the charge space probe in some way obviously the same line of reasoning applies to overarm or another thing that might be of importance is a simple electrostatic attraction or repulsion if an object such as pioneer space probe or omoi has some electric charge and there is a non zero net charge of plasma around it it would be subjected to acceleration by electrostatic forces usually such possibility is ignored because it is considered that the large-scale electric fields in plasma are shielded by the redistribution of charges in plasma itself the so-called

Debye screening it might be the case
that some other mechanism is responsible
for overcoming this screening one idea
that's been circulating in the U
community for quite some time is that
the cosmic plasmas including obviously
the solar wind plasma might have an
array of the so called plasma double
layers embedded into them so that on
large scales the fields might be damped
yet locally there might be observed
layers of positive and negative charges
traveling together something like a
train of capacitors following each other
one by one if you like so in my opinion
it is not impossible that these double
layers with the electric fields
associated with them is what might cause
the accelerations that we observe
aside from pioneer anomaly there is
another known but yet unexplained
phenomenon that I should mention here
and that is so-called flyby anomalies
the matter is very spacecraft have
experienced unexplained accelerations
while performing flyby maneuvers around

the earth and possibly other planets the most recent reported case being the apparent anomaly in Juno motion during its closed approach to Jupiter the additional speed gained during these anomalous events is generally pretty small

of the orders of millimeters or centimeters per second

yet the precision of our measurements allows us to detect this discrepancy and so far there is no consensus about what might be the reason it is not impossible that this could also be explained by spacecraft electric charge that interacts with the magnetosphere of a planet and/or with the electric fields and plasma currents present in it after all both Earth and Jupiter has quite strong dipole or magnetic fields and the studies of the flyby anomalies seem to indicate that it is connected to the asymmetry in the inbound and outbound equatorial angles which might be explained by an asymmetric interaction with the planet's magnetic dipole during

the flyby anyway my point is that perhaps something like that might also be observed in case of Oh mwah mwah now obviously for this object the acceleration was not an event more or less localized in time as with the flyby anomalies but rather continuous but at the same time one might consider all of the heliosphere as being the domain of solar magnetosphere and plasma currents so it is possible that the same effect have manifested itself as a continuous acceleration in this case going into even more hypothetical areas at this point I wouldn't rule out even various shady quasi relativistic effects such as the Woodward effect for example a hypothesized acceleration of bodies due to the energy transfer this effect as far as I know is not yet acknowledged as experimentally proven yet it is not impossible that it would be at some point so perhaps it could also serve as an explanation I have some even more shady idea that the acceleration outwards might be caused by some quasi

centrifugal force due to the rotation of the Sun and thus of the plasma in the heliosphere but that is a vague intuition rather than a coherent theory at this point in general it seems that Omaha moas unusual acceleration if it indeed has one could lead us to reconsider many of the theories of how bodies behave while interacting with cosmic plasmas I believe it is an important matter to be researched in the electric universe done since at the moment there is a definite lack of explanations in the astrophysics community or rather the lack of consistency of these explanations with the observations so it is a good opportunity to propose an alternative explanation and to improve the EU agenda at the same time having a new set of observations available to refine the existing theories

[Music]

Welcome to Space News from the Electric

Universe brought to you by

The Thunderbolts Project at Thunderbolts.info

Today, we begin a series of reports that will

discuss the latest scientific papers on the

European Space Agency's Rosetta mission to Comet 67P.

In addition to countless unresolved puzzles

facing comet scientists, we have

discussed in previous episodes the

problem of the comet's double-lobed

shape, however that particular form of a

comet nucleus is apparently not unique.

Several other of the comets imaged to

date have displayed similar forms.

Multiple asteroids, including this one

imaged on July 25th of this year, have

displayed distinct peanut-like shapes

with a marked narrowing at the body's

neck. And recently, NASA's New Horizons

mission has revealed that the Plutonian

moon Hydra also has a double-lobed form.

Why do so many of these different types of bodies

in the solar system display this particular shape?

The Electric Universe theory states that

comets and asteroids were electrically

excavated from planets and moons in a

relatively recent epoch of planetary instability, as discussed in previous episodes. Plasma scientist Dr. C.J. Ransom produced these familiar double-lobed forms in experiments with electrical discharges to samples of Hematite.

In fact, Comet 67P has revealed countless distinctly planetary features, including wind-streaked rocks, fields of boulders and rubble, mountainous terrain that appears to have been uplifted from a planetary body and even sand dunes. However, as Wal Thornhill explains, the only explanation that Rosetta scientists can offer for the comet's shape is a remarkably improbable low-velocity collision between two comets.

A report by the European Space Agency published on 28 September titled, "How Rosetta's comet got its shape", concluded from some important research published in the journal Nature (the same day) that, "Two comets collided at low speed in the early solar system to give rise to the distinctive rubber duck shape of Comet 67P Churyumov-Gerasimenko". Earlier, there

were two competing ideas: Did two comets merge or did localized erosion of a single object form the neck? Now, scientists have an unambiguous answer to the conundrum. They have shown that the shape arose from a low speed collision between two fully fledged, separately formed comets.

Matteo Massironi - lead author from the University of Padova, Italy, and an associate scientist of the OSIRIS team said, "It is clear from the images that both lobes have an outer envelope of material organized in distinct layers, and we think these extend for several hundred meters below the surface ... This points to the layered envelopes in the comet's head and body forming independently before the two objects merged later", concludes Matteo.

"It must have been a low-speed collision in order to preserve such ordered strata to the depths our data imply". Co-author Bjorn Davidsson added, "In addition, the striking structural similarities between the two lobes imply that despite their initially independent origins, they must have

formed through a similar accretion process.

Layering has also been observed on the surface of other comets during previous flyby missions, suggesting that they also underwent a similar formation history". Holger Sierks, OSIRIS principal investigator at the Max Planck Institute for Solar System Research in Göttingen said, "How the comet got its curious shape has been a major question since we first saw it. Now, thanks to this detailed study, we can say with certainty that it is a 'contact binary'."

So much for the reports, but how exactly do you get two widely separated bodies experiencing similar primordial stratified accretion? And why primordial?

That's simply an assumption, and the mechanism of gravitational accretion has never been shown to work!

Notice also the emphasis on gentle and low-speed collisions. Just how slow does it have to be, so the result is not mutual fragmentation and dispersal?

And how does a collision form a neck between these two lobes?! On top of that, what are

the chances of collision of two tiny
bodies of a few kilometres cross-section
in a volume of space in the outer solar
system that is unimaginably huge! The
explanation requires so many post-hoc and
unlikely conditions that it is
unbelievable. It only passes the critical
faculties because it's a story that is
being repeated and repeated until we no
longer think about it. The Nature paper
refers to the stratified rocky-like
material, seen on the comet's surface
it shows how experts can become blind to
what the untrained eye can plainly see -
that Comet 67P is rocky. The selective
blindness occurs because it destroys a
cherished belief in the centuries old
story of the primordial solar system, but
that story has failed repeatedly. It is
not predictive. Each new discovery is a
surprise - the most recent being Pluto and
it's moon. And now that we have
information from more than 2,000 XO
planetary systems, our solar system seems
like the odd one out. But modern
specialization and fragmentation of

science allows such disconnects to exist, and spread, which must lead to an inevitable crisis. The history of science shows this to be the case with centuries of stagnation followed by sudden breakthroughs and often the breakthroughs have come from outsiders who look at problems with a beginner's mind. Old beliefs die hard. The astronomer, the late Tom Van Flandern, in his 1993 book "Dark Matter, Missing Planets and New Comets" made the comparison between comets, minor planets and asteroids and suggested they are the same basic types of rocky bodies. Comets are dark, reflecting a few percent of sunlight which is not expected for icy bodies. And radar echoes from Comet Encke implied a non-porous, probably rock surface material. An expert in celestial mechanics, Van Flandern is perhaps best known for his exploding planet hypothesis which he proposed as the origin of asteroids and comets and which is supported by showing that the orbits of comets and asteroids could be

understood in terms of an origin in a late explosive event in the asteroid belt. His exploding planet hypothesis is discounted, of course, by the lack of a plausible mechanism to cause a planet to explode. And now, by the onion-skin layering in the two lobes of Comet 67P, which implies formation by accretion rather than fragmentation in an explosion. But his arguments are compelling for a cataclysmic event in the asteroid belt to produce tens of thousands of asteroids and comets. What's most persuasive is, that he's unusual hypothesis predicted stable asteroid satellites, which was surprisingly confirmed. So, what was the explosive event and how did it form peanut-shaped comets and asteroids? The chances of direct collisions of tiny rocks in the vastness of interplanetary space to produce the peanut-shapes are negligible. Multiply that by the odds of the colliding rock sticking together and forming a neck and the chances are about zero. Gravitational capture and tidal

forces do not enhance the odds significantly. The serious nature of this problem was highlighted in July this year when Lance Benner, who leads NASA's Asteroid Radar Research program said that, "Radar imaging has shown that about 15 percent of near-Earth asteroids larger than 600 feet (or 180 metres) ... have this sort of lobed, peanut shape. There must be a process that forms the double-lobe shape naturally."

A clue comes from experiments done by C.J. Ransom using an electric discharge striking Haematite powder to simulate the red Martian surface. The Martian "blueberries" were replicated in color and shape by the laboratory discharges. It was also found that interlocking blueberries are a property of spherules formed during an electric discharge. It may also be significant considering the apparent low density of Comet 67P, that the Haematite spherules were hollow with thick walls. It seems that the catastrophic event required by Van Flandern's research was of an electrical nature. There is a

cosmic electric discharge - an interplanetary thunderbolt - which has been graphically depicted many times in our Space News. Van Flandern, an expert in orbital dynamics, traced his exploding planet event to the asteroid belt beyond Mars. So, it is highly significant that Mars was identified with the cosmic thunderbolt and was reported to have received a scar, visible at the time from Earth, following a battle using this favored weapon of the planetary gods.

The great canyon system of Valles Marineris, which stretches a third of the way around Mars, is that scar.

Almost four billion cubic kilometres of rock and dust was excavated from Mars within the memory of mankind - a great deal of it accelerated into space by gigantic plasma arc.

Meteorites from Mars are still arriving on Earth today, and in 1988, I published a paper arguing that of 17 mysteries associated with common meteorites a plasma arc process could explain all of them. The discharge attracts and heats matter along the discharge axis. Repeated

lightning strokes along the same path
will produce layering of matter
accreted along that discharge axis. The
appearance of that discharge could be
likened to bead lightning - a string of
glowing rocky beads. Matter is also
accelerated along the axis giving a high
probability of forming lobed asteroid
and comet precursors. The spatially and
temporally confined nature of this process
is also ideal for forming stable
asteroid and comet satellites. So, when
Rosetta project scientist Matt Taylor says
of Comet 67P, "This result adds to our
growing knowledge of the comet - how it
formed and it's evolution", he is dead wrong.

The accepted story of the slow formation
and evolution of the solar system over
billions of years is fictional. The story
I have told here is one of chaos and
violence in the solar system within the
last ten thousand years or so. As one
philosopher has written, Newton
on consciously religious, rather than
scientific grounds, gave currency to a
new form of the old belief that the

celestial order is altogether superior
to the terrestrial and cannot, in
particular, be the scene of any catastrophic
change. That belief has not changed much
in 350 years. When researchers are met with
endless surprises in space exploration,
they must be open to re-examining
old beliefs and assumptions -
only then will mankind benefit
fully from their remarkable
space engineering and exploration feats.
For continuous updates on Space News
from the Electric Universe stay tuned to
Thunderbolts.info

Mars in Ancient

Myths and Religion

All right, so we've got the
planet Mars up on the screen
and I think most of
us here know that
the modern name for Mars comes
from the latin, God of War
and so let's take a
peek at him real quick.

Mars was known as a
furious warrior,
as a God who brings pestilence,
as a wolf God,
and as a god of the spring.
So those are probably four
of his primary attributes.

And the leading scholar of Roman
religion is a guy named Georges Dumezil
and his masterwork is called
Archaic Roman Religion
and it's his ideas that kind
of dominate the modern field.

And so, he believes that
Latin religion is based upon
three different structures of society

in early Indo-European culture
and that Mars represents
the warrior class.

So Mars is the God who presides over
the exercise of physical prowess.

He's the god of
warriors and soldiers.

Mircea Eliade, who we've
cited many times,
congratulates Dumézil's showing that only
by deciphering the basic ideological system
underlying the social and
religious institutions
can a particular divine figure, myth
or ritual be correctly understood.

And another leading scholar
calls Dumézil's achievement
among the (most) foremost scholarly
achievements of our time.

And so, Dumézil is without
question a world-class scholar.

The guy was a master of
dozens of languages,
produced countless
books and manuscripts.

He is indeed an imposing figure.

But here is his
ultimate conclusion
that the Latin God Mars
represents the warrior class,
strictly a social metaphor,
and that Mars does not have
a naturalistic aspect.

His area of influence, the place of
his signs is not the atmosphere.

Another leading modern scholar,
after acknowledging that
Dumezil is the top expert,
asks the question
whether a pattern uniting the apparently
incoherent details of Mars's cult
can be discovered.

For a possible guide
to this question
we would turn to leads from
Babylonian astronomical traditions
which obviously predate
Rome by a while.

And so if you look at how Mars is
represented in ancient Babylonian texts;
he's described as a
furious warrior,

as a bringer of pestilence,

and as a wolf star.

Now, that's kind

of a coincidence.

So in one of these

astronomical texts that says,

"Mars is said to bring pestilence or

deaths in an astrological report...

Mars is said to have

caused a fever..."

But this is exactly the way the

Latin God Mars is described

in the very earliest Latin

passages that we have.

So they said, "Mars confers

blessings but is prone to anger.

He sends harvest failures

and cattle plagues."

A very famous Latin ritual

was called the Arvale Carmen

and their Mars is invoked as a wild

and potentially destructive power

who can afflict

crops with disease.

So there's almost a

one-to-one correspondence

between the way the Latin God Mars is
described as an agent of pestilence
and the way the
Babylonian planet is.

So now if we turn to the
Mesopotamian cult of the god Nergal,
who was widely acknowledged
to be the planet Mars,
we find him described
as a raging warrior,
as an agent of pestilence.

He's a raging storm God and
a ruler of the underworld.

So one ancient text
from about 2000 BC
says, "Warrior! Raging storm-tide,
who flattens lands in upheaval.

Warrior! Lord of
the underworld."

He's consistently described
as a furiously raging storm
but a constant adjective is at
the bottom he's called 'hus'
which means the fiery
red, furious or rage.

So we're gonna see this

motif again and again
and in descriptions of these
ancient warriors or warrior gods
they're always going
to be a fiery red
and they're going to be
described as raging.

But of course, the Mesopotamian scholars
have no idea where Nergal comes from either.
He's just a complete mystery.

So this is arguably the top guy
in Sumerian studies and he says,
"To take an absolutely fundamental
question, who or what is Nergal?"

Well, this is an early
description of Nergal.

The vanguard whose
strength is sublime...
whose divine splendor
is sublime in heaven.

Star ever shining.

Sublime of features.

It sounds like they're
describing a star, maybe.

So at the bottom it says,

Nergal warrior of the gods... Who takes

his place in the height of heaven...

Whose features ever

glow in heaven.

I mean, anybody that can read can understand

that they're describing something in heaven.

Whether it's the planet Mars, as

the scribes themselves maintained,

remains open to

question I suppose.

But there can't be any question that

they're describing a celestial power.

So back to Dumezil again.

Here's the way he describes the

warrior god Mars in Latin cult.

"The ambiguous character of Mars, when

he breaks loose on the field of battle,

accounts for the epithet caecus,

blind, given to him by the poets.

At a certain stage of furor he

abandons himself to his nature,

destroying friend

as well as foe."

So this indiscriminate

slaughter associated with Mars

is going to be a recurring theme

and it's found around the world.

So in Arab texts

it just so happens that the planet

Mars was described as the blind one.

And so it says, "They give to Mars the name

Mara-Samya, which means the blind lord,

and they call him blind because

of (its) his extreme violence

and because in his rage he

strikes without regard."

So here you have almost the exact same

description as we found in the Latin God Mars.

This is a recent book talking about

literature and it just says,

"The battle fury of warriors...

is traditionally the quintessential

subject matter of heroic verse.

The wrath or furor (of warrior) of heroic

warriors is, as Milton acknowledges,

the salient theme of both

the Iliad and the Aeneid.

So to take Achilles for example.

This is the top, one of the top scholars

of Greek myth is a guy named Gregory Nagy.

So here's the way he

describes Achilles.

"Achilles himself, in his

climatic moments of rage,
and Bill Mullen will confirm, the
first word in the Iliad is rage,
by the way, describing Achilles.

But it says Achilles himself, in
his climactic moments of rage,
is described as equal to Ares.

Ares is the God of War
but he is also more specifically
the God of martial fury.

In war, a warrior who is
possessed by the God Ares
experiences this kind of martial
fury which is typically bestial.

The Greek word for this martial fury
is lussa, meaning 'wolfish rage'
and of course we know Ares was represented
as a wolf just like the Latin God was.

To experience such a martial
rage is to be beside oneself,
and to be beside oneself is to be
possessed - possessed by Ares."

So there's a recent book
on Germanic warrior types.

It's just a fascinating book
and it discusses these early warrior

societies where young men would,
would drive themselves to ecstatic
prowess and they'd just head off
looking for the nearest war.

And it says, "Warrior styles have much to
offer to our understanding of history.

They tell us how long ago,
when war was still welcome,
fighting men reached the state of ecstasy
that led them to do astounding things.

They lead us into the heart of Vedic, Indian,
Homeric, Celtic and Germanic civilizations,
where fighting prowess was
still the measure of a man."

And again, this is obviously that tradition
went on for many thousands of years.

Here's how Macrobius describes
the Latin God Mars,

"And to the glowing heat by which
the spirit is kindled and roused,
sometimes to anger, sometimes to deeds
of valor, to a temporary madness...

to this property men have
given the name Mars."

Pretty much the exact same description that
George Dumezil gave to the blind warrior.

As those of you will know
who have read my books,
it just turns out that
cultures all around the world
said that they imitated the planet
Mars when they went into battle.
They were trying to incorporate his
rage or to emulate his rage or fury
when they took to
the battlefield.

So this is a quote from the leading ritual
of the Pawnee Indians in North America.

So it says, "This is the way I do when
I am imitating him, the planet Mars,
when I become angry, when
I am imitating him."

Move to South America,
"At times of battle, the planet Mars had to
endow the Toba warriors with fighting spirit."

As a Polynesian god of war
who is known as Maru,
flaming with wrath
and full of anger.

Australian Aborigines,
"The planet Mars is
Bilyara, the eagle...

he was warlike, and much
given to fighting."

Early Indian astronomical texts

as in Asian India,

"Mars has blood-red eyes, is
fickle-minded and given to anger."

Now when you go out tonight and

look at the clear Phoenix skies,

look at the planet Mars and see

if you see an angry planet.

The nature of Mars...

This is Roger Bacon

from the Middle Ages.

"The nature of Mars is fiery... to
excite men to anger, discord, and wars."

And this is the leading scholar on

ancient astrological ideas, Franz Cumont

and in this he points out that

these ideas are basic to language.

"There can perhaps be no more striking proof of

the power and popularity of astrological beliefs

than the influence which they have

exercised over popular language.

All modern idioms

preserve traces of it,

which we can no longer discern

except with difficulty,
survivals of vanished
superstitions.

Do we still remember when we
speak of a martial character,
that it must have been
formed by the planet Mars?

That one of these 'astra', stars, which,
if hostile will cause me a disaster?"

So he's admitting that
the word disaster has,
has a direct relation to stars.

Turning to leading Irish hero.

He's a fascinating character
because he offers just a crystal
clear image of this raging warrior.

And so it says,
so when this guy went into battle he became
distorted with anger and battle fury.

He grew gigantic in size
and, like Mars, he fought indiscriminately,
killing friends and foes,
right and left.

Now the interesting thing about
that Irish hero is he was blind
and all of us will remember the

classic example of the blind warrior

is the biblical Samson.

And how was he described?

Well, he was characterized

by a hot anger.

The red-hot anger.

So Judges describes his

anger being kindled.

Interestingly enough, Samson has been

identified with the planet Mars.

The ancient Celtic

term for Cuchulainn

raging hot anger is

'f' 'e' 'r' 'g' Ferg

and in my opinion that's a cognate word

with the furor belli of the Latin God Mars.

Back to the Irish God again.

It says, when he was undergoing his

furor, he became crimson all over,

shook violently and

assumed a swollen form.

The top Irish scholar of

ancient warriors said that

the key to figuring

out these figures

is that all words for 'hero' expressed

the notions of furor, ardour,
tumescence, which means
swelling, and speed.

The hero, the warrior hero,
is the furious one, possessed of his
own tumultuous and blazing energy.

If you turn back, now again to the cult
of the Mesopotamian star God Nergal
clearly described

as the planet Mars,
one of his epithets describes
him as the sweller

but the word sweller also
means anger and fury.

So you get this image of this giant
planet-god, red, clearly red,
that takes on a massive form when he's
angry and starts causing disasters.

So very early on, this is an
image that Dave and I drew up
or actually simulated it with a computer
with life-size planetary models.

So the polar configuration
is over on the left.

The yellow body is Saturn and the green
body is Venus and the red body is Mars,

just for the sake

of illustration.

And what this shows is that

with just the slightest displacement of Mars

towards the Earth, it grows massive in size.

And so the Polynesian

name for the planet Mars,

interestingly enough, is

'the quick swelling one.'

Again, if you look at

Mars in the sky today,

see if that idea would

ever occur to you

that Mars is a quick

swelling planet or warrior.

So we all know that

the Greek Hercules

was identified with the planet

Mars by the Greeks themselves.

Less known is the fact that Hercules was

identified with the Mesopotamian God Nergal.

Very well-known is the fact that Heracles

served as a young male's role model

as a warrior and as an athlete.

And so again, archaic warriors

everywhere re-enacted in masked dances

the deeds of the
gods and ancestors.

They did so to gain the divine
ecstasy of 'the beginning of time,'
the time of creation.

In battle, when it mattered most
to live in these mythical times,
warriors bodied forth gods and
ancestors by fighting in their style.

They wanted to emulate the gods.

So, according to
this text it says,
the Batavii going to
battle sang of Hercules.

The Spartans did the same thing
when they went into battle
and of course Spartans
were known as being among
the greatest warriors
of the ancient world.

They invoked Hercules, they
wanted to be like Heracles.

It's very well known among Greek scholars
that the Greek Heracles was identified with
the great god of ancient
Tyre, a Phoenician cult

and Melqart in turn was identified with the
Mesopotamian God Nergal of the planet Mars.

So the characteristic rite
described in the Old Testament
about this Phoenician

God Melqart
is that every year he was burnt
to death on a great funeral pyre.

So how did Heracles
meet his end?

He was burnt to death
on a funeral pyre.

And so, Sophocles describes this at
great length in one of his plays.

(But back) so it says,

"At the precise moment
of agonizing death,
a flaming thunderbolt from his
father Zeus strikes Heracles.

He goes up in flames, in a
spectacular explosion of fire."

As he mounted the pyre, we are told in
this tragedy I was just talking about,
came a terrible
outburst of anger.

The bodily pains which he felt, united

with that disease of the heroes,
their fits of rage, which is
never very far from madness."

Interestingly enough, Australian Aboriginal
tradition relates of the planet Mars
that he died in a fire,
that he died on a funeral pyre and
changed into the planet Mars.

It is said that he was burnt to death on a
mountain where he had kindled the fire.

Back to... this is an early Greek vase showing
at the bottom Heracles, his funeral pyre.

At the top he is
flying off to heaven
where he's going to
receive his apotheosis.

And so the top scholar of these
ancient vases, James Boardman says,
"On two of the three Attic vases with the
pyre, Heracles is shown as a young man."

So he's been burnt to death
but now he's rejuvenated.

So it says, "The young Heracles has clearly
been rejuvenated by his experience,"
being burnt.

So this, the early writer Nonnos specifically

describes Heracles as the Phoenix
in a comparison with the Phoenix bird
for regaining his youth in fire.

Turning back to the Latin cult,
one of the most exciting discoveries
of the last hundred years,
was that they found these Etruscan
vases depicting the Latin God Mars
as getting a fiery bath here
at the hands of Minerva.

And again Dumezil and the other guys
discuss all this stuff and they all,
they discuss these
vases and they say,
well it's clear the little
guy is being rejuvenated
but we really don't have an explanation
for why that might be the case.

He's being rejuvenated
by means of fire.

So the first meaning says this means that
Mars is intended to be reborn from death
and a clear description says
he lived to be a 123 years old and he
died two or three times and came back.

So he's a resurrected

God, the Latin God Mars.

The Mesopotamian God was
resurrected as well.

Josephus, the writer on
early Jewish stories,
keeps using the word Egersis
in connection with Heracles
but that word also used, is specifically
used to describe resurrection,
the resurrection.

In ancient Iranian myth there was a
really curious little figure named Batraz
and like Heracles he is burnt
on a giant funeral pyre.

He's again a, one of
these raging warriors
that kills anyone
indiscriminately right and left.

He's the greatest warrior
of the Iranian warriors.

And so it says, this guy will
henceforth live in the sky
from which he will descend in
a blast, in a burst, sorry,
incandescent as at his birth, whenever
some danger or scandal threatens his kin.

And interestingly enough, he descends
from heaven as a furious red ball
periodically descending
to Earth like lightning.

So again, this is an image you're gonna see
again and again that this fiery red star
is going to grow massive, descend
from heaven as a raging form
but in a lightning-like
shape or as a meteor.

So turning back to the
Mesopotamian cult,
the planet Mars is specifically
described as fire falling from the sky.

This Semitic term 'miqit isatu'.

But that same word also means lightning
and it also means the fall of a meteor.

Pliny the Elder said that
these thunderbolts come
from the planet Saturn
and much as the inflammatory
ones come from the planet Mars.

So the planet Mars was clearly associated
with lightning and/or thunderbolts.

Again, the image from yesterday we showed
with Mars descending slightly from Venus,

on the left, and then the one from
today showing it as a massive form...

I think it's easy to see that
if something like this actually
transpired in the skies overhead,
you might think of a massive red ball
or meteor descending from heaven,
causing disaster.

So, earlier we talked about
the Pawnee traditions.

Where they emulated
the fiery warrior,
they clearly called him the planet
Mars as they went into battle.

And yet they claimed that that this guy,
the Pawnee Mars, came from a meteor.

The Latin God Mars.

It was said that on the
first day of the year,
that his shield
fell from heaven.

So at the base of
the screen it says,
"Worship of meteorites was easily
extended to ancient monoliths...

Mars' ancile," the shield, "is

the best known instance."

Back to the Iranian figure that
was burnt to death on the pyre.

He was, an interesting
story told about him
was that he was described
as an abscess.

And so you see this
a lot in the text
that the Martian warrior is described
as a pus-filled little guy, as an ulcer
but often as an abscess.

Interestingly that Semitic word describing
Mars as fire and lightning and meteor,
it also means abscess.

The Mesopotamian God Nergal himself
was known as the pimply one.

But the same word also means
lightning or ecstatic.

Well, this is a current
picture of the planet Mars.

I think it's easy to see
that if this object appeared in
the northern circumpolar heavens,
that you might easily say that that
looks like a pimply formed god.

We noted that the last
characteristic of the Latin God was
that he was the god
of the spring.

Now, that doesn't quite jibe
with the others at first sight.

And yet, Australian
Aboriginal tradition
also remembers the planet Mars
as the god of the spring.

So this little guy was the head
honcho of their warrior societies.

They painted themselves red
as they headed into war
but they said the red star was
seen to be responsible for spring
and he personified sexual
activity and fertility.

Interestingly enough, a very similar
tradition is found in an early Chinese text
where the red star
is associated with the
arrival of spring,
the beginning of the year, the exact
same thing as the Latin God Mars
is associated with the

beginning of the year.

And it's in the

beginning of spring.

So this is my conclusion.

The sacred traditions attached

to the Latin God Mars,

far from reflecting the different class

structures of archaic Indo-European culture,

encode the remembered

history of the planet Mars,

albeit much humanized

and historicized.

A radical rewriting of

history is in order.

We've only just begun.

And I think, if you think about these images

and think about Mars moving close to Earth,

look at the physical

structure of Mars now.

What would you expect?

I mean, Mars looks like a destroyed

planet, a scarred planet.

If it engaged in these catastrophes

well within the memory of man,

would you expect to see

something like that?

Would that help explain why Mars
doesn't have an atmosphere?

Like most other planets.

Why Mars' oceans of water have
apparently been ripped off?

Why rocks from Mars have
been ripped off the planet

and deposited on

the planet Earth?

If Mars participated

in these disasters,

like Dave and I have been talking

about for 30-some years,

what would that tell you about the

likelihood of current life on Mars?

I mean, it'd be pretty tough to imagine

anything other than single celled animals

or primitive, you know, primitive

organisms living up there now.

Certainly, these folks talking about

the pyramids being up on Mars

and Martians invading

us every now and then,

they're pretty unlikely to

be right, I would suggest.

Thank you very much,

I appreciate it.

[Music]

Not so long ago, the whole of North
America across to Siberia and Europe,
were shattered and destroyed in nights of
hell. In a series of deadly catastrophic
events, mammoths together with the
Clovis Indian people were wiped out.
These memories are still retained in cloudy mythology.
What agent of destruction rendered them
extinct? Did it happen just once, or was it a series
of events that determine these mass extinctions?
Siberia, Alaska, Malta. Three mass-slaughter
sites. Sites littered with carcasses
and skeletons. Some are petrified as rocks,
others invaded and buried in limestone.
Some are entombed in bitumen, still
more buried in ice and peat bogs.
Their instantaneous end was horrific.
Some are impeccably preserved, but the
vast bulk are shattered and dismembered by
forces so potent, they are not evident today.
We are naive to these mysterious powers.
The last mass extinction was not so long ago.
Perhaps only three and a half thousand years
ago and it's etched in mankind's mythology.
Let's chase this mystery. There are numerous sites

all over the world that illustrate the spectrum of mass destruction. Larry Agenbroad's charts pinpoint the megafauna sites right across North America. Then spreading right through to Europe, Russia and even into Japan. Here at the La Brea tarpits in Los Angeles. You can see the gases bubbling up through the water and bitumen. Like much of Los Angeles, it is rich in petroleum products. This bituminized area stretches extensively and conceals the bones of not only mammoths, but saber-toothed tigers, short-nosed bears, camels, horses and all extinct. But not only large animals, mice, birds, flora and insects, all preserved within the tar to a depth of 60 feet. The most detailed site is in South Dakota where Dr. Larry Agenbroad invited us over to check his excavation of a limestone bolus on a hilltop. The site is around 100 feet by 120 feet across and some 70 feet deep, and contains a wide variety of extinct animals in this calcium bolus, packed with bones. The bodies have lost most of their collagen and are part of a huge calcium

deposit that is micro-layered to its bottom.

Species include yesterday's camel, short-faced bear, coyote, antelope and altogether some 84 species, most of which are primitive micro-fauna.

Carbon dating of the site places it at around the 26,000-year mark.

I was also intrigued by the minute layering of the calcium in the sinkhole as it progressed through the bottom of the hole.

These layers actually went through the bodies, so could not be caused by slow deposition.

Layering however, can be caused by electrical discharge. Were these forces involved in the destruction at this site?

Larry's explanation of the death of all these species revolved around drowning in this sinkhole as they fed around its edges. This is similar to the explanation of the La Brea tar pits.

However, mythology does not support this theory.

We already discussed with Adrienne Mayor The Mythology of the First American people.

She found it amazing the part that the cosmic thunderbolt played in the destruction of the megafauna. According to legend the creator killed the giants with a cosmic

thunderbolt. She emphasizes this was not the ordinary lightning, but a world shattering event.

The Lakota nation had sent hunting tribes down here for many, many years.

And they had a different interpretation on what had caused the fossilizations of these great beasts.

Here is an excerpt from the Lakota mythology.

"The creator sang the song of destruction and sent down fierce Thunderbirds to wage a great battle against the other humans and the giant animals.

They fought for a very long time because the evil humans and animals had become very powerful.

And neither could gain an advantage.

Finally at the height of the battle, the Thunderbirds sent down their most powerful thunderbolts, all at once."

"The fiery blast shook the entire world, toppling mountain ranges and setting forests and prairies ablaze. The flames leapt up to the sky in all directions, sparing only a few people at the highest peaks. It was so hot that the world's lakes boiled up and dried before their eyes."

"Even the rocks burned red hot and the giant

animals and people burned up where they stood.

A great flood followed and when
the survivors went out they found
bleached bones of the giant animals
in mud and rock all over the world.”

What were these cosmic thunderbolts?

A revolution occurred when plasma physicist
Anthony Peratt discovered a relation-
ship between rock art petroglyphs and
electromagnetic plasma instabilities. These
rock art figures and geometric scribblings
mimicked the images produced
in government laboratories,
whilst the mythology of thunder-
bolts such as Zeus's weapons
reflected these very same formations. These were
mythologically tied to many destructive episodes.

Not only lightning, but earthquakes and other natural
disasters such as comets, creation myths, and plagues.

I strongly suspect that massive discharges
from Peratt's plasma instabilities hold
the key, not only to mass extinctions, but
even species changes after such an event.

I want to discuss the ramifications of
the mass extinction of the megafauna
and the mythological evidence with physicist

Wal Thornhill. As an advocate of the Electrical Universe, he is adamant the plasma instabilities, whatever their origin, were the fundamental cause of these massive upheavals.

I met with him in the grounds of the Australian National University some time ago to discuss the evidence.

(Wal) Once you look at it from a forensic point of view of, for instance, even going back pre-history, you look at petroglyphs, the carvings on rocks, the formations that we see and we think are strange looking stick figures, or maybe aliens, are actually all forms of plasma discharge instabilities. And these are the instabilities we see in laboratories in plasma tubes. That's right and these are the sorts of things that the ancients drew and sculpted when they talked about Jupiter's thunderbolt. And these are actually cut in what and I might add painted by anything from the Australian aboriginals to the South American, North American, all around the world. And this comes down to fine details like the Australian aborigines

have the lightning brothers,
where you have a figure with their arms out
raised like this and their legs spread and
they've got the lightning coming
from the knees and the elbows.
And this is exactly where you'll get the
discharges from, a sharp curve in a
plasma discharge. And of course,
this is backed up by mythology. I'll
be interviewing Adrienne Mayor who's an
expert on let's say early American fossils and
one of the claims of these let's say early
Americans, was the lightning bolts, these things
we're talking about now, it actually destroyed
the megafauna or mammoths, dinosaurs.

And not so long ago, I might add.

Well, particularly in the case of the
dinosaurs, you need far more than just
a simple impact. It requires a global
change in the Earth's gravity and this comes
back to what is gravity? It really isn't
understood. All we've got is an equation which
describes it, and it includes a so-called physical
constant, the universal gravitational constant
which is the most inconstant thing in any textbook.
Every time they measure it, it's different

and it's got people scratching their heads.

But once you understand that gravity itself is a very weak electrical force between all matter, then it all becomes clear. Because if you change the charge with one of these cosmic thunderbolts on the earth or another body, the first thing that changes is the gravity. Right, and so what some of the effects, so let's say we're getting a discharge, we could get a number of things. I mean for instance we're talking about maybe a localized reversal of the magnetic field, we can get according to let's say yourself and Dave Talbott, we can get electrical geological etching of the landscape, such as carving out river valleys and building of mountains, and flattening of mountains. For instance, some of the old literature talks about in these catastrophic events, the land, the hills skip like lambs. Yes, I like that. Literally. Yes, and unfortunately everyone misinterpreted it as metaphor. Well there's so much that seeming metaphor which they certainly weren't saying it was metaphorically as they saw it. Well the very fact that all of these oral

traditions and religious texts that
come down to us over thousands of years,
these were considered to be the most
important message that the ancients
could pass to their descendants.

And what do we do? We misinterpret
them. Yeah and so much of this stuff,
you can see they were living in fear.

I bring up one of the topics. They
used to give human sacrifices to try and control
the planet. Absolutely. It's very hard actually to
even imagine what they were experiencing.

And this is the problem of course, and this is why
we misinterpret these things. It's because it's
beyond our imagination to have a sky that's
riddled with colossal lightning bolts,
millions or billions of times more powerful than
anything we witness today, with puny lightning
sparks. And also, to consider that they
were observing planetary objects in
the sky up close and personal. I mean,
you can understand why people hid
in caves from the sight of the Lord.

I wanted to talk to Rick Firestone from
Berkeley National Laboratories.

He is a nuclear physicist of the first

rank, but he also has an impeccable belief in the validity of mythology and he matches it with his scientific studies.

Rick wrote the table of isotopes which is used by scientific scholars throughout the world.

This is the result of many years of being in charge of Berkeley's revolutionary cyclotron.

Remarkable is the application of both mythology and nuclear physics in his groundbreaking book, *The Cycle of Cosmic Catastrophes*, in which he combines both modalities to unearth the causes of mass destruction.

Rick's interest in archaeology began when he was sent samples from the ancient Ganey Clovis people's site, which was associated with mammoth remains. This location showed radioactivity.

The clovis people's use of stone manufactured spearheads revealed tracks of what he believed were cosmic rays, which seemed to indicate a cosmic cause of their demise.

He replicated these cosmic ray tracks in the very synchrotron laboratory. The site itself looked very strange as if it'd been blasted.

But even more curious, chemical discoveries were afoot. In related mammoth sites, it was

found that the tusks had suffered a shower of metallic spherules containing iron and titanium. In addition was the discovery of minute carbon spherules, a millimeter across and quite large compared to the metallic ones. The carbon spherules were reticular and when cut open revealed millions of nanodiamonds. This was important as they are often seen at an impact site. Was this product the result of high energy discharges? Similar sites were discovered and they lay below a layer called the "Black Mat," a sort of clay- vegetation ensemble. Above or within this mat no Clovis evidence was discovered, and more remarkable, no megafauna remains. This Black Mat was a termination point to recording a mass extinction. To Rick Firestone this was as if the megafauna had been destroyed overnight. An actual example, witnessed by mankind, illustrates precisely the type of destruction and rebirth Earth has undergone in quite recent times. Israel's city of the plains (Strabo claims 13 cities) were hit by just such a cosmic thunderbolt. Sodom and Gomorrah were entirely destroyed, and the Dead Sea depression

some 720 meters below the Mediterranean was created, together with mountain building and hill flattening. The resultant geographical carnage probably extended right along the entire African Rift valley.

Immense electrical discharges rent the air with vast deposits of sulfur (that's brimstone) falling from the skies. Vast transmutation of elements occurred, with vast cliffs of salt (sodium chloride), nitrates and other compounds being created.

Mythology attributes this to the activity of Jupiter, also known as the Zedek, Zeus, and Amon.

Other upheavals in more distant times are attributed to other planets and comets.

In future episodes we will delve into these claims and attempt to place a date on these world-changing events.

[Music]

[Music]

In 1993 Egan Bach wrote a treatise
on the ejection of strange
donut-shaped fireballs from volcanoes.
Historically they're known as gorgons,
but science was unable to explain their curious
formation. As he delved deeper into their unique
structure and properties, it
became apparent their behavior
mimicked most of the sightings of UFO's.
Sixty years ago, Winston Harper Bostick
found that an amorphous mass
of high velocity plasma,
has a natural ability to convert a
large proportion of its kinetic energy
into magnetic energy contained in an
organized toroidal structure. He termed
this structure a "plasmoid." It
has become apparent that these
curious volcanic doughnut ejection
structures are electromagnetic plasmoids.
Bach's book examines in minute detail their bizarre
behavior. Going back to 1956, a milestone in plasma
physics was reached, when Bostick reported
experimental results which showed that plasma,
when created and accelerated to high velocities

by a batten type pulse source, is shaped
by its own magnetic field into
a compact toroidal structure.

Terming this structure a plasmoid,
Bostick was careful to distinguish his
own definition of a plasmoid as a generic
term for all plasma magnetic entities.

Highly structured, from its
definition as an amorphous blob,
he subsequently clarified his definition
as a self-generating shaped body,
and a force-free, minimum free energy
structure, taking the form of a plasma vortex.

According to Bostick, "A rather surprising result
occurs when the source is placed in a vacuum
in an externally applied DC magnetic field
and fired across the field." The plasma
apparently has no difficulty in crossing
the magnetic field, "...it forms an
ever-elongating hollow cylinder as it proceeds
across the magnetic field... Subsequent
investigations were to prove that
the plasma crosses the magnetic field
in a train of paired oppositely
rotating diamagnetic vortices."

Kubes et al. recently demonstrated

a similar conversion effect
in a laboratory Z-pinch. The points of
maximum pinch serve to accelerate
plasma actually away from the zone of
maximum compression. The high-velocity
plasma then forms "...toroidal,
helical and plasmoidal structures
within the dense plasma column
in the lower pressure regions
along the axis." A Z-pinch is apparently
an efficient way of generating the
initial high velocities, which result in
the formation of self-contained plasmoids
by the mechanism which Bostick identified.
The volcanic plasmoidal ejection occurs
at a specific point in any new eruption,
with the plasmoid size varying vastly.
Is this the classic dark-glow-arc stages
of excitation of plasma, signaling the
timing of ejection? For instance, reports
mentioned some only 20 centimeters diameter,
while others cite these plasmoids
at over 100 meters long.
The plasmoid color also varies greatly,
with witnesses up to 100 kilometers from
the volcano, such as mount Redoubt

in Alaska, noting dramatic color shifts.

From brilliant, whitish violet, to bluish,

greenish, gold, orange, and finally to red

and infrared. They fly at a rapid speed,

reportedly at above the speed of a jet plane. But

they seem also to descend and

rise, often in formation or swarms,

and can fly thousands of kilometers from their

origin. They can both attract and repel each

other. So how do these plasmoids

UFO's manifest at eruption time?

The following is quoted on the Redoubt

eruption in Alaska on February the 15th, 1990

by captain Richard Swain some 35

kilometers away. "The top of Redoubt lit

up with an incredibly bright flash. The Cook

Inlet and the mountains behind it lit up in

daytime brightness. A fireball

grew above Redoubt with

huge tongue-like projections -

quite unlike the concentric fireball

of nuclear explosions. Right on the heel of that

fireball an innumerable multitude of fireballs

began to jet in all directions.

They streaked really fast in the two

opposite directions of Homer and

Anchorage. Their speed was such that the eyes had a hard time following the flight. They appeared like tracer bullets, not perfectly round as they disappeared along the inlet, at perhaps three times the speed of a jet plane. Those balls went on for about eight minutes, at first many hundreds, then becoming smaller and fewer as time progressed. At the beginning they were huge and many, but after about ten minutes an abundance of common lightning strikes began in the eruption cloud." Important in the Swain video is Bach's comment.

"The sequence shows two huge discs hovering close to the horizon. They gradually divide into four and then eight and finally sixteen discs, all in intimate linkage! These objects seem all aglow from the inside. They clearly fly northeast along the magnetic meridian and back to the volcano." But by what mechanism are these plasmoid UFO's created?

If we look at the volcano from an Electric Universe interpretation, this may help. The massive

production of molten magma,
steam, and possibly transmutation of elements,
and formation of new compounds, suggests
the possibility that we're dealing
with a high-energy Z-pinch situation.

Now a pinch is the compression
of an electrically conducting
filament by magnetic forces. The conductor
is usually a plasma, but could also be a solid,
or liquid metal. Pinches were the first type
of device used for experiments in controlled
nuclear fusion power. This pinch effect
is the self-constriction of a cylinder
of an electrically conducting plasma.

When an electric current is passed
through a plasma, a magnetic field
is set up that tends to force
the current-carrying particles together.

This force can compress the plasma so
that it is heated, as well as confined.

But such a self-pinched plasma cylinder is
unstable and will quickly develop kinks
or break up into a series of lumps,
resembling a string of sausages, or in
this case plasmoids, ready for ejection
from a volcano or earthquake.

Ejected plasmoids often form cylinders which shear apart, like stacks of coins into flat ellipsoids. By what criteria are we convinced that most UFO sightings are in fact these very plasmoids? Well, firstly they seem to possess an intelligence, and they being heavier than air, they rise and fall to the ground as though being flown.

They seem to fly in the direction of either of the magnetic poles. They can readily change shape, and pulse and blink with rhythms shorter than one second, with light often several colors. This is a ubiquitous property of these plasmoids and this observation is often recorded during UFO sightings. Similarly, the plasma property of developing colored portholes in their equatorial plane, is classic flying saucer mythology.

The normal plasmoid body is a sphere, which often bulges into an ellipsoid with a short or long rotation axis, reflected as a saucer or cigar. They draw closer via an electromagnetic, but actual visible chain link. These bodies often develop a mist which is drawn out during flight to a tail.

Here the visual relationship between comets and images of Matsumoto's mini-plasmoids emitted out of electrodes, but also showing a cometary tail and jets, is interesting.

This seems to link the concept of scalability of electromagnetic characteristics.

Widespread witnesses from over the globe relate how volcanic plasmoids often then detonate after producing this tail.

These plasmoid UFO's are attracted to the Sun, but also other heat sources, such as reported at power stations and jetliner exhausts.

Plasmoids for instance have arrived at different times to heated ducts at power stations.

This would explain reports of pilots being tracked by a UFO. Bach interpreted much of the behavior of these UFO's before the advent of the

Electric Universe hypothesis and before the deeper

understanding of plasma physics from researchers such as Anthony Peratt.

To me this sharpened knowledge of plasma behavior seems to crystallize much of the behaviors

of these plasmoid UFO's. Regardless

Bach's work clearly shows how these entities
mimic the reported behavior of our classic UFO's.

Whilst the Electric Universe

enlightenment explains

much of their seemingly intelligent, yet erratic
behavior, NASA has been slow to embrace plasma
physics and its paramount status in the universe.

It seems that they tend to explain UFO's
as extraterrestrial, when a simpler explanation
exists. Nevertheless, strong evidence suggests
that most UFO sightings
can be clearly explained as
errant plasmoids, or gorgons
as the ancients named them.

Will NASA actually provide
evidence that contradicts Bach?

[Music]

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

A new scientific paper attempts to explain
a mystery at our planet's South Pole.

A team of investigators from
the British Antarctic Survey
discovered a localized area where the Antarctic
Ice Sheet is melting surprisingly quickly.

Using radar, they found that some of the ice
in a 3 km thick layer appears to be missing.

They have proposed that the heat
source causing the melting is
"unusually radioactive rocks"
combined with unusually hot
water from deep underground.

Lead author Dr. Tom Jordan
says of the investigation,
"Our results were
quite unexpected,
as many people thought this region of
Antarctica was made of ancient and cold rocks,
which had little impact
on the ice sheet above.

We show that even in the
ancient continental interior,
the underlying geology can have a
significant impact on the ice.

But a clue to the actual cause of the
anomalous ice melting might be found at the
"surprisingly hot poles of other
planets in our solar system."

As we've pointed out
in countless episodes,
physicist Wal Thornhill made the seemingly
outrageous yet successful prediction
that the freezing cold
North Pole of Saturn,
which had been deprived of
sunlight for more than a decade,
would have a "hot spot" similar to
the one at the planet's South Pole.

In 2007, a surprising warm spot was also
found at the South Pole of Neptune.

The Electric Universe
theory has always stated
that the Sun is primarily
an electrical phenomenon
and electric currents flowing
from the Sun to planets

has implications for many
atmospheric phenomena
including the tremendous
winds of gas giant planets
and also jet streams and
weather patterns on Earth.

In recent years, professor Dr. Donald Scott
has developed a model of the structure
of a type of electric current
called a 'Birkeland current'
which can be identified visually
by its unique counter rotation.

Critically, this counter rotation has
been seen at the poles of Saturn,
Jupiter,
Neptune,
and in our own planet's Auroras.

Of course, the question
is speculative
but we asked Dr. Scott if an
incoming Birkeland current
could be the cause of the anomalous
ice melting at the South Pole.

It's always interesting how relatively
often new "surprising discoveries"
are being made that might be explained

better by the Electric Universe ideas.

Much better than by accepted models

of whatever it is being observed

and I'm just sort of amused by the

way that classic standard scientists

will lurch and grab on

to whatever is nearby

except they never think about looking up

and say gosh, could it be electrical?

And so, using radar to look down through

3 km of ice, the British team found that

some of the ice covered an area that's

twice the size of the City of London.

Now, this is a pretty big

area, pretty big volume.

And that ice appeared to be missing,

there's a big hole in there.

One explanation for the missing

ice, their explanation,

was that there may be a radioactive rock deposit

there that is supplying heat from below.

Now I guess it's certainly possible that

there's a radioactive rock deposit below

where the ice has melted

but the Antarctic ice pack has

been growing in recent years

while the Arctic ice

pack has been shrinking.

So if there's any difference at all

between the Arctic and the Antarctic

then it seems as though the

Antarctic is getting colder and

that makes the melting of this ice

even more anomalous, I guess.

So and the question is,

why is there a region deep down under the

southern growing ice pack that's melting?

Well, after, if you think about it a

minute, we know that the polar regions,

both north and south

of the Earth,

are regions where Birkeland currents

are coming in from the Sun

and they impinge down through

the Earth's magnetosphere.

Several years ago, NASA said that the

amount of current was unexpectedly high,

somewhere around

650,000 amperes.

Now, 650,000 amperes is a lot of, to put

it in the vernacular, a lot of juice.

It's a lot of electric

energy there.

Amperes is not energy but it can produce a great amount of heat.

OK, that's fine but why should that produce more melting at one pole than at the other?

The answer may lie in the fact that the northern Arctic polar region is a layer of ice floating on top of a saltwater ocean.

And salt water is an excellent electrical conductor, that's my main point.

Ice is a good conductor and maybe it's not quite as good as salt water but it's a pretty good conductor.

Well, the difference in the South, in the Antarctic, is that the ice pack is sitting right down a smack on top of a continent of Earth, Earth's material.

There is a continent down there, there's no Southern Ocean.

Instead of where the Arctic Ocean is, there's an Antarctic continent.

And the material that the Earth is made of

is generally not nearly as good an electrical conductor as salt water or ice.

So if you think about what's going on, if you consider the path that maybe a Birkeland current might take as it comes in from the Sun, comes down through the magnetosphere down vertically into the Earth.

And by the way, we've got some very nice video of the counter-rotating currents in the Aurora Borealis that is certainly supporting evidence that indeed that's what's happening so that Birkeland was quite right. Anyway, if that current comes down through the snow and ice and then into Earth and rock.

Now in the North it flows through ice and saltwater.

Now each of these cases we can think of the electrical properties of those two layers through which the current flows.

Well, the current flows through one resistor of, if you think of those as layers as being resistances, and the current and each of

those resistors is the same,
the same amount of currents,
the same amount of amperes.

The two resistors both have
fairly low resistance values
when at the South Pole one of the resistors,
the ice pack, has relatively low resistance.

But the earth and the rock is a
very much higher resistance.

So just to get technical
for a second,
when electrical current flows through
two resistors connected in series,
energy is liberated
in each resistor.

The expression is familiar to many
people who had physics course.

Power equals I^2R .

The I^2R is the amount of electrical power
that's released in the resistor R .

So the current is the
same in both resistors
but the resistance of each of
these resistances is different.

So the amount of heat, and
this is the punchline,

the amount of heat produced
in each of the two resistors
depends linearly on their
resistance values.

So if the current, same
current flows through,
one of the two resistors is the low
resistance and one is a high resistance.

The low resistor will not get very
warm but the high resistance one will.

And so, Birkeland currents have been
passing down into the Earth for millennia.

So is that the cause
of the hotspot?

Maybe, but the thing that makes me think
that maybe it might indeed be correct,
is that there is the difference
between what happens at the two poles
may well be explained by the difference between
the electrical properties of the paths,
the two paths that the polar
Birkeland currents have to take.

At least it seems like a
more reasonable answer to me
than just postulating and groping
around and say, oh my god,

what causes it must be a

radioactive rock down there.

The Sun is the source of all power on Earth.

The SAFIRE Sun generates energy, comparable to the Sun's photosphere.

Imagine being able to tap directly into the Sun for power.

[Music]

The SAFIRE technology was designed and built to replicate the atmosphere of the Sun in a laboratory on Earth, and to test the Electric Sun model.

[Music]

These are the factors we control. These are some of the things the SAFIRE lab is now capable of.

[Music]

[Music]

These are some of our recent discoveries.

[Music]

In our tests and experiments, we have found no disparities with the Electric Sun model.

In fact, all the evidence to date, indicates that electricity is the primal force in the universe.

[Music]

SAFIRE is a nuclear plasma reactor, designed to reproduce the atmosphere of the Sun in a laboratory. A wide array of instruments provides real-time data of the chamber conditions, allowing a level of control not available in most reactors. Optical spectrometers, mass spec and Neutron detectors, bolometers, thermocouples, infrared and UV cameras, 4k digital cameras and patented gimbal-controlled Langmuir probes, which can monitor electrical conditions, while also recording optical and mass spec data.

[Music]

Telemetry can move the Langmuir probes throughout the chamber, accurate within 0.02 millimeters.

[conversation]

All data is sent to the SafCom Control where it is captured and catalogued for later analysis.

[Music]

The SAFIRE team has discovered the key to obtaining and sustaining high energy plasmas. SAFIRE can create, control

contain, and repeat any number of plasma regimes.

The hot plasma self-organizes and develops its own electromagnetic containment field.

[Music]

How does it work?

[Music]

We introduce hydrogen into the chamber.

The anode is a metal alloy. The power going in is electrical. The reaction produces high energy levels, which translate to thermal heat. The heat creates steam to run a turbine, to generate electricity. The hydrogen can be reused. The output is electricity, the majority going to an external grid and the rest routed back to the power input. To date, after the reactions, all measurements and analyses show this to be a clean process, producing no negative radioactive side-effects. In fact, note that nuclear radioactive materials are not required.

[Music]

SAFIRE is mixing elements at the

atomic level. What you are looking at is a patented design that uses atomic hydrogen in a self-organized plasma.

[Music]

The atomic hydrogen interacts with the other elements in the chamber, causing nuclear reactions that are transmuting elements, from one to another.

And these are the elements that SAFIRE produced as a consequence of the nuclear reactions.

What you are looking at here, is an experiment, run over several hours. We were adjusting the chemistry to get different results; the aim being to explore higher energy levels. On this day, the rise in temperature over time was what we were intending, and yet it still exceeded our expectations.

Three separate analyses had been done by experts in computational fluid dynamics.

All three predicted that with 100% input power, we would reach the thermal limit of the chamber, and for three years these predictions had been accurate. But with our new adjustments and using only 7%

input power we very quickly reached the thermal limit.

It was the elemental transmutations that were responsible for the rise in temperature over time, that was almost 14 times what was predicted.

The Tokamak and ITER reactors draw many millions of watts of power, in an attempt to contain collisional plasmas to obtain fusion. At a cost of billions of dollars, huge international projects have been trying to contain plasmas, utilizing vast arrays of superconducting magnets. So far, this has been unsuccessful. Fission reactors split the atom and although they have an efficiency of around 35%, they also produce radioactive waste. This radioactive waste is being buried in the ground, or stored in facilities at enormous expense. None of it is benign; some of it is still deadly, even after a half-life of over a million years. So, how is SAFIRE different?

Self-organizing systems are a natural process occurring throughout nature.

SAFIRE forms its own electromagnetic containment field into a self-organizing, high-energy plasma and unlike fission reactors, SAFIRE is stable, controllable and has no environmentally dangerous or detrimental side effects. It uses hydrogen as the primary catalyst, the most abundant element in the universe.

[Music]

Studies done at MIT have shown that when radioactive waste is exposed to hydrogen isotope nuclei, the decay rate of the radioactive material can be accelerated, even to the point of neutralizing the radioactivity. SAFIRE creates an environment where hydrogen nuclei interact with other elements, creating double layer shells.

Within these shells, electrons, ions and molecules are trapped by powerful electromagnetic fields.

This is where radioactive material would be exposed to the hydrogen nuclei to remediate the radioactivity of that material.

[Music]

SAFIRE can also use radioactive materials as fuel. Elemental transmutation will remediate the radioactive waste back into base elements and render it benign.

[Music]

Right now there are 450 successful nuclear fission plants on the planet. Imagine if they could produce energy without creating radioactive waste.

SAFIRE is an international team which has been collaborating with individuals from Orion Energy, Lockheed Martin, U.S. DoD, Los Alamos, Lawrence Livermore Labs, Space Propulsion Consultants, the University of Toronto and many more.

[Music]

SAFIRE technology is capable of releasing high levels of energy. To convert this energy into usable electrical power, is a relatively straightforward engineering project. Designs have already been initiated for a power generation prototype. Orion Energy will commercialize the

SAFIRE technology into three key markets: 1) clean energy production, 2) heating and 3) remediation of nuclear waste. Each of these markets represents a trillion dollar industry over the next 10 years.

Welcome to Space News from the Electric
Universe brought to you by the
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info

[Music]

Today, physicist Wal Thornhill is joining
us to help us play catch up on a number
of highly significant space science
stories from the last few months. We now
have a wellspring of a half-dozen or so
extremely significant headlines relating
to stars. These are discoveries that
confound or are irreconcilable with the
standard ideas about the very nature of
stars, including how stars form, where
their energy comes from and why they
sometimes explode as supernovae. Now of
course the purpose of this series is not
merely to share space science headlines,
but rather we like to use some of the
most significant discoveries today as an
opportunity to illuminate what the
Electric Universe Theory (EUT) is; what it
actually proposes and how it explains
space discovery. As you know, if you
followed the EU over the last couple of

decades, in many instances some of the most surprising space science "discoveries," (I use that word in quotes) were actually explicitly predicted by the Electric Universe. In fact, the first item we're going to discuss provides a beautiful contrast between the predictions of Standard Theory versus those of the Electric Universe. On February 20th of this year, the European Space Agency issued a press release entitled 'XMM-Newton reveals giant flare from a tiny star.' It states "A star of about eight percent the Sun's mass has been caught emitting an enormous 'super flare' of X-rays - a dramatic high-energy eruption that poses a fundamental problem for astronomers, who did not think it possible on stars that small. The culprit is a kind of star called an L Dwarf. This is a star with so little mass that it is only just above the boundary of actually being a star. If it had any less mass, it would not possess the internal conditions necessary to generate its own energy." Well, that last sentence reveals

an assumption that any star
"generates" its own energy, which
astronomers probably don't even realize
is
an assumption. However, the Electric
Universe has always stated that stars
are formed along, and are ultimately
powered by, external Birkeland currents.
The ESA press release goes on to state
"In a matter of minutes, the tiny star
released more than ten times more energy
of even the most intense flares suffered
by the Sun." Concluding on the real nature
of the conundrum,
the press release states that this type
of star "...has a low surface
temperature for a star... Astronomers did
not think such a low temperature would
be capable of generating enough charged
particles to feed so much energy into
the magnetic field. So the conundrum is:
how a super flare is even possible on
such a star." and the lead author of a
paper on this finding says "That's a good
question.

We just don't know - nobody knows." So Wal,

we've talked about this discovery over the last couple of days and I think you'll agree it's not actually accurate to say that "nobody knows how this type of star would produce such an energetic flare." That's right. For many years, astronomers have been astonished by seemingly powerful outbursts from stars they have considered to be dying or dead and just cooling off and that is, the infrared Red Dwarfs, the L Dwarfs and M Dwarfs and those kinds of stars. And the fundamental problem for astronomers is that they base their theoretical expectations on the thermonuclear model, and the thermonuclear model has the energy developed by the thermonuclear reactions in a core gradually percolating to the surface over hundreds of thousands of years. And the reason for that slow percolation of course is because they have to find some means of reducing the radiation from the thermonuclear bomb at the center of the star, to something which is merely shining in the visible

spectrum and producing heat and light.

Now Red Dwarfs hardly produce any

heat and light; they're more like an

old-fashioned

bar-radiator, electric radiator. Of

course it's rather ironic that that's

precisely the best model for the star,

that it is an electric star under low

power. Anyway, the problem that this last

recorded one presented, is that its

outburst was ten times stronger than the

most powerful outburst from our own Sun,

which is a main-sequence star and is

supposed to be functioning at the peak

of its performance. Once again, we have

this fundamental belief in the idea that

a star is like a campfire in the sky, you

know. It has to fuel itself, it burns

itself up in these thermonuclear

reactions in a hypothetical core. We

don't know anything about what is inside

a star, because to begin with, there is no

physical theory of gravity. And so, the

very idea of the accretion of stars

gravitationally, to form something that

can even produce thermonuclear reactions

in the first place, is merely a complicated story that was invented at a time when nuclear power was first discovered. And Eddington put forward a story which is based on a gravitating ball of hydrogen gas and then assumed that, somehow or another, that could initiate thermonuclear reactions in the core of the star. We are dealing with a plasma, not a neutral gas. The Electric Universe looks at brown dwarf stars not as failed stars at all.

There is no such thing as a failed star.

In the case of the M Dwarfs, I wrote many years ago now, that they are not actually dwarfs in size because all red stars are gigantic.

For instance, Jupiter could quite easily be a brown dwarf star, if it was taken out of the solar system and existed independently. Its entire magnetosphere, which is huge, in fact at opposition it would look the same size as the moon in the sky, if we could actually see it. You can imagine that lit up and it glows red in the case of these

dwarf stars, the energy is therefore being provided to the star from the galaxy itself. Now all red dwarf stars, and all red stars for that matter, are unable to control the light output based on a variable power input. It's only the bright stars that can do that. So, if the power suddenly changes for any reason at all, the red star will change with it, and this is being observed with the red giant Betelgeuse right now, which is puzzling astronomers at the other end of the size scale in stars. That huge star is so big that we are actually able to see the surface, not in great detail but in recent years, the star has been changing in size, and even the redness or the light output from the star varies over its surface, which is what we should expect if it's being powered externally, but not if it's being powered internally. The idea that the energy has to be stored by the star and generated by the star, once again, this view of stars as isolated objects; whereas the Electric Universe model points out the stars are lit.

And all their characteristics are formed by the electric current they're receiving from their environment; and if there's any change in that environment, then the star will be variable in some fashion. Our own Sun for instance, shines steadily both in the visible spectrum and in the radiant heat part of the spectrum, while its power input is changing, as can be seen in the X-rays. In X-rays our Sun is a variable star; it almost winks out at some point in that solar cycle and is quite bright in the maximum part of that cycle. A red star doesn't have that luxury; it doesn't have a bright photosphere which acts like a transistor action on the current. And so the red star, the only thing it can do is to suddenly eject material, charged material, in order to try and establish equilibrium again with its environment. In the case of a red star, since the power is low, that comes out in the form of sudden outbursts. And those outbursts can be as powerful as a bright star, simply by the change in the input

power. It's like a supernova where the circuit is suddenly broken and in that case it's like opening a circuit breaker in an intercontinental transmission line. Energy stored in the magnetic field of that long transmission line is suddenly released at the point where you've opened the switch, in this case a star. Red dwarfs flare, supernovae explode. They're both driven by the same process. Very good. In fact you just very nicely laid the foundations for the next story we'll talk about, which I can tell you has garnered a tremendous amount of behind-the-scenes discussion in the Electric Universe community. Late last year a team of scientists published a paper on the "mysterious disappearance" of a hundred stars, which they uncovered through a comparison of old data and new observations. A hundred stars apparently have literally vanished from the sky. The lead author of a paper on this finding stated, "Unless a star directly collapses into a black hole, there is no known physical process by

which it could physically vanish. The implications of finding such objects extend from traditional astrophysics fields to the more exotic searches for evidence of technologically advanced civilizations." This item has generated some sensational headlines, which speculate that alien technologies could be blocking the stars from view.

Now I'm certainly not someone who is on principle allergic to theoretical discussions of the existence of alien civilizations. But for a number of years my cynical observation has been that astronomers, and certainly popular science media, are more willing to entertain speculations about aliens than they are to give any meaningful attention to the principles of plasma cosmology and the Electric Universe.

Now Wal, it happens that in 2007 you wrote your own peer-reviewed scientific paper on the electrical nature of stars and of supernovas, which was published in the very prestigious IEEE

Transactions on Plasma Science. Why don't

you explain, in your opinion, why alien technologies are not necessary to explain the “disappearance” of these stars. That's right. In the case of electric stars, they can be expected to suddenly disappear if their power is switched off; just like any electric light.

As for the speculation about aliens doing it with something called a Dyson Sphere, which is supposed to encompass the star at some distance and pick up all of the energy that it's radiating, shows that scientists making such a claim have no idea how stars work. Stars pick up their power input, part of it at least, from their environment. So, if you were to build a Dyson Sphere, even if that were possible, you would not have a star any longer. Astronomers categorize stars by their brightness and color on what's known as the Hertzsprung-Russell diagram; but it's not an evolutionary plot over billions of years of a star's progression from youth to old age; it's simply a scatter diagram. But stars, in

the standard theory, are supposed to spend billions of years in more or less the same location on that chart. Yet some have been seen to change their position on their diagram in a few days or weeks. The fact that the overwhelming majority of stars shine so steadily, is unexplained by the thermonuclear model of stars. That hypothetical model is highly unstable, so the night sky should look like the 4th of July. After more than 60 years and countless millions of dollars, scientists have not been able to produce fusion power like the Sun, because their fusion model and consequently their experiments, are highly unstable. The fact that stars shine so steadily was one of the key features that convinced the engineer Monty Childs that the electrical model of stars was one that made sense of the steadily shining stars and could be tested by engineers, and it's based on the transistor current control effect in the photospheric plasma, that maintains steady radiant energy

more than X-rays. The Sun is a variable star. Monty's successful implementation of the SAFIRE experiment proved the model: the experiment is very stable. Astrophysicists don't recognize clear electrical engineering evidence that the Sun exhibits the features of an anode in a low pressure gas discharge. If we find it the smartest way to produce a tiny intense source of light in a searchlight, which is an electric arc equivalent, why would nature do it in any less efficient way? Remembering that stars are infinitesimal specks of dust in the vastness of space. While returning to the subject of stars that go supernova, you have always argued against the belief that type 1a supernovae can be used as "standard candles" which have supposedly affirmed the acceleration of the expansion of the universe. And so along those lines, a recent report on phys.org is extremely telling. It states "The most direct and strongest evidence for the accelerating universe with dark energy is provided by the distance

measurements using type 1a supernovae (SN 1a) for the galaxies at high redshift. This result is based on the assumption that the corrected luminosity of SN 1a through the empirical standardization would not evolve with redshift. New observations and analysis made by a team of astronomers show however that this key assumption is most likely in error." Now the report goes on to say "Other cosmological probes, such as the Cosmic Microwave Background (CMB) and baryonic acoustic oscillations (BAO) ,are also known to provide some indirect and circumstantial evidence for dark energy, but it was recently suggested that cosmic microwave background from the Planck mission, no longer supports the concordance cosmological model which may require new physics." So Wal, very simply, in your opinion, why are astronomers incorrect in their continued belief in the expanding Big Bang universe? The very assumption they make, of course, is incorrect; that the standard or the corrected luminosity of SN 1a,

through the empirical standardization,
would not evolve with redshift. Because
the research of Halton Arp showed that
the redshift does evolve, but not with
distance but with age. As for proposing
new physics, this is the standard
response every time fundamental ideas
are being challenged by observations. But
the Electric Universe has shown that we
were closer to the truth
in cosmology more than a hundred years
ago. What we need is not new physics but
a revisit of old physics.

[Music]

Welcome to Space News from
the Electric Universe,
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Science headlines today show signs that
elements of the Electric Universe paradigm
are becoming
increasingly mainstream.

With leaps in technology and data
have come the definitive refutation
of the notion of an
electrically sterile universe.

But the basic premise of a cosmos
dominated by the gravitational force
remains the backbone
of standard cosmology.

In this episode, Bishop
Nicholas Sykes forecasts
the perhaps inevitable paradigm shift
towards Electric Universe concepts.

This series of videos has claimed that the
existing paradigm of physical science,
accepted and taught in the halls of
academia as barely challengable,
has actually become

unfit for purpose.

If, as we have claimed, the Sun and other stars are actually powered electrically from outside their own cores rather than being powered by nuclear fusion within their cores, this would be a significant instance of the failure of the existing paradigm.

Electric Universe proponents will not think it strange when the time comes for the whole line of dominoes, representing the presently accepted structure of supposedly hard physics together with those other sciences dependent upon it, to come crashing down.

To be sure, such a state of affairs is not altogether new in the world.

In the epilogue to his last book, "The Discarded Image," professor CS Lewis writes about the medieval model of science and its succession by the currently accepted model, in this way:

"The old astronomy was not, in any exact sense, 'refuted' by the telescope.

The scarred surface of the Moon
and the satellites of Jupiter
can, if one wants, be fitted
into a geocentric scheme.

The old scheme... had been tinkered a
good deal to keep up with observations.

How far, by endless tinkerings,
it could have kept up with them
until even now, I do not know.

But the human mind will not endure
such ever-increasing complications
if once it has seen that some simpler
conception can 'save the appearances'.

Neither theological prejudice
nor vested interests
can permanently keep in favor a Model
which is seen to be grossly uneconomical.

The new astronomy triumphed not because
the case for the old became desperate,
but because the new was a better
tool; once this was grasped,
our ingrained conviction that Nature
herself is thrifty did the rest.

When our Model is in
its turn abandoned,
this conviction will no

doubt be at work again."

Electric Universe researchers contend that the EU [Electric Universe] paradigm is far more economical than the currently accepted model, which has been endlessly tinkered with to keep up with observations, but would also, in my view, judge that the entire case for the Standard Model has reached the point of desperation.

Let us now return to the issue of relativity.

Some justifiable excitement appeared in the media over some experimental results that gave the possibility of showing that neutrinos could travel faster than light.

Yet the whole of the theory of relativity is dependent upon light or rather electromagnetic radiation, in which light is a part, being the fastest possible messenger.

Moreover, the theory of relativity has by now become a core principle that informs the working

of the Standard Model.

If relativity falls, then much of what we
thought we learned in the last century
about the physics of the
universe we know no longer.

Inevitably the question arises:

"Is relativity like some banks in
some countries too big to fail?

With what shall it be bailed out so
that academics and their supporters
can again live with some
semblance of normality?

Of course, this is not a
scientific question at all
but it is a question with which
Electric Universe researchers
have become all too familiar,
for not a few years.

Nevertheless, there is an increasing
number of independence of scientists,
who have proved to the satisfaction of many
that the theory of relativity is groundless,
in spite of the awe in which
it is generally held.

I would now like to supply my
two cents worth to that voice.

The celebrated lecturer

Richard Feynman noted:

if the Sun is exploding right now, it
takes 8 minutes before we know about it,
and it cannot possibly
affect us before then.

His reason for that
assertion is the doctrine,
that the fastest message that travels
between the Sun and the Earth
does so at 3×10^8 (300
million) meters per second,
the speed of light
through space.

At that lightspeed, the
Sun, viewed from the Earth,
appears to be where it actually
was some 8 minutes ago
and not where it actually
is when it is being viewed.

However, if the Sun by
its gravitational pull
is causing the Earth to
maintain an orbit around it,
the pull of the Sun on the Earth has
to be from almost exactly where it is

and not from where it was

8 minutes beforehand.

If the pull of the Sun upon the Earth came from

an 8 minutes-back position behind the Sun,

the Earth would be slung out

of orbit in short order.

Moreover for each planet, the

gravitational pull upon it of the Sun

would come from a

different point

— a different virtual Sun, so to speak —

and no coherent solar system of

planets could be maintained.

It follows that there must be a much faster

messenger than light, namely gravity,

that travels between the

Sun and its planets

at a speed that makes the transmission

of light seem like a doddle.

We don't need any experiment

with neutrinos, therefore,

to tell us that something can

travel faster than light.

We just have to take into account all

the observations from which we infer

that the Earth and the other planets have

been moving around the Sun in stable orbits
for an extended period of time.

This requires the "gravitational
message" to be sent from the Sun
and received by the Earth as well as
other planets almost instantaneously.

Einstein's Special Theory of Relativity should,
therefore, have been repealed long ago.

Now, Wal Thornhill has applied this near
instantaneous transmission of force
to the level of the fundamental particles
of matter, such as the electron,
providing the possibility of an electrical
explanation of gravitation at the sub-atomic level.

We will consider this exciting
scenario in future presentations.

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News from the Electric Universe
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Throughout our solar system, on rocky
planets, moons, asteroids, and comets
we see evidence for events never discussed
in standard geological textbooks.

We see carpets of highly circular,
cleanly cut craters and crater chains,
in defiance of the notion of periodic
bombardments shaping these rocky topographies.

We have suggested
that these features
have been carved by high-energy
electrical discharges,
a hypothesis supported by decades
of laboratory experiments.

On our own planet, we also see abundant
evidence for the geological influences
of a kind of cosmic lightning.

In these episodes, we are considering
that the complex processes
in electrical discharges
may help to explain

the extraordinary geology
of the American Southwest.
In the previous Space News,
Thunderbolts contributor Andrew Hall
proposed that a process known
as sputtering discharge
produced the amazing features in
Utah's Canyonlands called the Arches.

Today, Hall presents his case that
the same electrical processes
produced countless of the
spectacular, sharply cut features
seen throughout the
Colorado Plateau.

In Part 1 of
Sputtering Canyons,
we discussed Arches National Monument
and evidence it was formed
by a complex sputtering
discharge process.

That process involved a thermal spiking, barrier
discharge in a layer of wet sandstone.

In Part 2, we'll take a broader look
at some regions on the Colorado Plateau
where similar sputtering
discharge took place.

One of these is Monument Valley.

Monument Valley was formed

by sputtering discharge

that almost completely etched a

layer of the original dome away.

What is left are the lonely pinnacles

and buttes iconic to Western movies.

The reason these pinnacles

and buttes are left standing,

while the same layers of

sandstone etched away around them,

is due to preferential

sputtering.

Preferential sputtering is normally

associated with sputtering an alloyed metal

where one element in the alloy

sputters more efficiently,

eroding away faster than the

other alloy metal.

In Monument Valley, the buttes and pinnacles

left standing were portions of the dome

that resisted sputtering because of

a difference in charge density.

They were like the inefficient

alloy in the metal.

The part of the dome that lifted

away, did so when the wet layer --
the icing in the layer cake --
became a charged,
hot ionized mud.

A sheet of high charge density
developed at the base of the mud
with an attraction
to the clouds above --
and like an electromagnet
picks up a junk car --
the storm's electric field lifted away the
overburden to dissolve in electric winds.

The buttes and pinnacles are remnants that
didn't have the same charge in their wet layer,
so they didn't get pulled
away by the electric field.

The reason is: they were
struck by lightning.

In the dark mode, drifting plasma
current that causes sputtering,
there's always the
potential to spark.

Manufacturers are careful to avoid this
because it will flaw the finished surface,
it leaves imperfections.

The pinnacles and buttes are

these types of imperfections.

They were parts of the dome
where an arc or many arcs struck
and dissipated built-up charge.

It altered the ground charge
beneath the strike zone
so the electric field couldn't
pull the material away.

Therefore, the buttes and pinnacles
were preferentially -- not sputtered.

In the parlance of the
semiconductor industry,
the charge layer was doped by the
presence of water and minerals,
which gave it an
excess of electrons.

When lightning struck, it depleted the
charge and left an excess of "holes,"
or the absence of electrons
which canceled the attractive force
of the sputtering discharge.

The evidence for
this is manifold.

To begin, consider the cap rock
formations and spires found on buttes.

Butte tops aren't flat.

They generally have something like a
step pyramid, dome or pinnacle on top,
which is where lightning
discharge struck most intensely.

Notice in the images
below the pyramidal caps.

The rock below the caps is darkened
significantly more than the adjacent stone.

Not only is there black patina,
but there is also more redness to the
rock itself in streaks below the caps,
with deep vertical fracturing.

The charge depletion from lightning,
and the subsequent recombination of
the most severely depleted
zones beneath where it struck,
heated, shocked and hardened the rock
more in these areas than in others.

The step pyramid structure or
terracing on canyon walls and buttes
is another evidence
of sputtering.

Each sedimentary layer has different
compositions of minerals and moisture,
differentiating the dielectric
property of each layer.

The zone of charge depletion
under lightning strikes
spreads out in a conical
diffusion pattern,
but the cone is
stepped or terraced
because there is a step voltage
across each dielectric layer.

Where there are towering cliffs
with sheer vertical walls,
it's because a monolithic layer
with a consistent dielectric
caused a single
large voltage step.

Where there is very hard rock,
the edges we'll find are
torn in chunky blocks.

The flat, smooth breaks are not the result
of millions of years of erosion of any type --
wind, rain, ice, exfoliation,
or flowing water.

Any of those actions would
have the opposite effect,
roughening the surfaces
and rounding the edges.

These rocks have such smooth, flat faces,

and sharp, angular, undercut edges
because they were broken
by mechanical shearing
as the neighboring rock
was ripped away.

Evidence of shearing is especially
evident on monolithic walls.

Sharp-edged breaks are everywhere,
leaving smooth, flat faces,
hardly roughened, or rounded
by any act of erosion.

Arching fissures are
evidence of spalling,
where the material
tore away in flakes,
cupped upward in the
direction of shear.

The arches often show
concentric creases
where flakes broke away in smaller
sections deeper into the rock.

One can see the same type of
concentric flaking in broken glass.

In some places, the canyon walls
have that look of broken glass
but in others it looks more like the

broken end of a brick of hard cheese.

Perhaps a well-aged Parmesan --

stiff, dry and flaky,

but with a low shear strength.

There is almost always a thin layer

of hardened rock at the interface

between each terrace.

This is where charge accumulated at

the boundary layer of the strata

and the current hardened the charged sheet

of rock more so than the surroundings.

Each dielectric layer spreads

charge to the interface of its layer,

driven by the electric field, to balance

the voltage drop across that layer.

So a charged sheet develops at

the interface of each layer,

and a step voltage

to the next layer,

which creates a surface

tension at the interface,

which makes the

rock hard and dense.

What is sandwiched between is

often loosely consolidated.

Pinnacles in this region, Monument

Valley, occur in two different types.

There are fulgurites, like the
burnt shard of Agathla peak
which are the direct
result of lightning
striking the earth and boiling up the
crust in an electromagnetic blister.

These types of pinnacles were discussed in
Lightning-Scarred Earth, parts 1 and 2.

Sandstone pinnacles are
where lightning struck
and altered the charge
in the rock beneath it,
creating an electrical 'shadow'
to sputtering discharge.

They are literally the
shadow of lightning strikes.

Now, the footprint of a brief
strike, comparatively speaking,
produces a narrow
cone of protection.

How the cone slopes and steps depends
on properties of the rock layers
and the electric field potential,
but more sustained,
or potent striking

begins to diffuse charge
depletion outward from the cone,
forming nodes or star-like
breakouts, formed horizontally.
Still larger accumulations of
strikes diffuse charge further,
and these nodules break out into
'wings' or dikes of charge depleted rock.
The shadow footprint grows
as arcing continues,
elongating charge depleted
zones into wedges
with dikes growing out
the tips and edges.
This is actually the beginning
of a fractal dendrite,
as lightning bombardment soaks
the charge from the ground
diffusing outward in branches and creating
a depleted zone protected from sputtering.
If the process were to continue before the
surrounding sputtered away completely,
the dendrite nodules would grow and branch
in ever smaller fractal repetitions,
like branches of a tree.
As adjacent rock is struck,

the depleted zones connect into networks
of wedges, ridges, and pinnacles.

Generally, the pinnacles and buttes

left on a dome are layered flat,

but in some areas

buttes display a dip,

a slant to their slope,

indicating horizontal winds

influenced the deposition.

Sputtering follows

the voltage gradient,

and so carves away from the lightning

depleted zone in alignment with the strata

because the voltage gradient

follows the dielectric layers,

cutting at 90 degrees

to the dip angle

and leaving a straight-edged, non-

vertical wall like this mountain.

If this mountain were eroded by conventional

notions of wind rain and mass wasting,

the rock would obey gravity

and erode in a vertical wall.

It's in details like this that

prove electrical formation.

What we see in the stepped

pyramids and terraced canyons

is the result of two types of charge

transport in a solid-state matter.

One is called drift ionization caused by

the external electric field of the storm,

and the other is called

diffusion current

caused by differences in charge density

within the material of the dome itself.

Drift current is the flow of charge created

by the external electric field of the storm,

which primarily drives the

ionized region downward,

vertically through the

layers of sandstone.

Drift currents obey Ohm's Law.

Diffusion currents obey Fick's Law,

which is related to Ohm's Law

but accounts for

variations in charge density

that causes ionization to migrate from

a region of high charge concentration

to a region of lower

concentration.

No external electric field is

needed for diffusion current

because the difference in charge concentrations creates a gradient between those regions that results in a local electric field.

And that's what this diffusion responds to.

It's the primary process that migrates charge horizontally -- spreading through each layer of sandstone.

What gets carved away by sputtering leaves distinct scalloped edges in very dry, low conductivity material?

The scalloping is a fractal phenomenon of electrical diffusion that repeats the scallop shape in ever larger scallops.

In wetter environments, it's not as apparent, or it may be totally absent, because water diffuses charge more evenly, which creates smoother, rounder surfaces.

Compelling evidence the scalloped and terraced walls are a result of charge diffusion

is shown in this image, where the
archetype of all fractal shapes emerges --
the Mandelbrot Set.

Although it's not a computer perfect rendition
of the Mandelbrot Set, it's nearly so.

It's a naturally generated fractal based
on the same mathematical relationships
of iterating

three-dimensional motion

that governs electrical charge diffusion
in solid-state electronics.

It appears on this canyon wall
with nodes and vine-hair-like
structures growing outward

in exactly the same formation and
orientation as the Mandelbrot Set does.

The implication is obvious.

The shape of the canyon walls, the
terracing, the fractal repetition of form --

everything known about

applied physics dictates

this is the result of electrical current

diffusion on a continent-scale semiconductor

under the influence of a

gigantic electric field.

The physics is not

only laboratory proven,
it's been used to make every
semiconductor device ever manufactured.

In fact, geophysicists and
even Hollywood CGI artists,
simulate geologic forms like
watersheds and river systems,
canyons and mountains,
using the fractal geometry
of electrical diffusion.

So, what is being described here has
been acknowledged by consensus science.

The scientific conclusion that these landforms
are the result of electrical diffusion
caused by an intense electric
field influencing Earth's crust,
in an event and the manner

Electric Universe theorists
have described since
Immanuel Velikovsky
is scientifically unavoidable.

Yet avoid it they do --
consensus science, that is.

To quote from a Wikipedia
article on diffusion,
"Analytical and numerical models

that solve the diffusion equation
for different initial
and boundary conditions
have been popular for studying a wide
variety of changes to the Earth's surface.

Diffusion has been used extensively in
erosion studies of hillslope retreat,
bluff erosion, fault scarp degradation,
wave-cut terrace/shoreline retreat,
alluvial channel incision, coastal
shelf retreat, and delta progradation.

Although the Earth's surface is not
literally diffusing in many of these cases,
the process of diffusion
effectively mimics
the holistic changes that occur
over decades to millennia."

Let me just repeat
the last sentence.

"Although the Earth's surface is not
literally diffusing in many of these cases,
the process of diffusion
effectively mimics
the holistic changes that occur
over decades to millennia."

So, what they're saying is they

think it's just a coincidence.

Rather than conclude in a

proper scientific fashion

that electrical current diffusion has

a role in shaping the landscape,

they conclude it's just

an amazing coincidence.

One hates to be critical to

hard-working geophysicists

but to have an empirically proven

answer staring you in the face

and ignore it in favor of

a preferred narrative,

is what a politician

does, not a scientist.

The idea that diffusion

"mimics the holistic changes

that occur over decades to

millennia" is really absurd.

Diffusion is caused by charge transport

from higher to lower concentrations.

Conventional erosive forces of water, wind

and ice act on the land from the outside in,

not from the inside out.

Diffusion is an

inside-out process

from the atomic level outward as
charges migrate from atom to atom.

So there are notions
that violate physics
but they call it a
coincidence instead.

Fortunately, in the EU we
like to deal in truths.

So in Part 3, we'll examine a few more
examples of sputtering canyon evidence.

Thank you.

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the Electric Universe,
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A new scientific study has provided a
jolt of surprising data on what was
thought to be the largest and
oldest impact crater on the Moon.

The lunar South Pole Aitken basin is roughly
2,500 kilometers in diameter and 13 kilometers
deep, which makes it one of the largest so-called
impact craters in the entire solar system.

Scientists had theorized that
the basin contain minerals from
the moon's mantle, since a tremendous
kinetic energy from the hypothetical
impact would have pierced the lunar crust
and brought the materials to the surface.

However, a team of scientists studying
data from the Chinese spacecraft
Chang'e 4's rover have found that in
reality, the predominant mineral in the
basin is common in
the lunar soil.

Thus, they have not found the materials

required of such a tremendous impact site.

The co-author of a new scientific study published in the *Geophysical Research Letters*, says of the findings, "We are not seeing the mantle materials at the landing site as expected."

A Phys.org report on the discovery states, "The new study complicates theories about how the oldest, largest crater on the Moon formed, adding to the body of knowledge about the Moon's history... The new study complicates the certainty of earlier findings and points toward a need for continued research on the far side's lunar surface..."

Of course, the complication of scientific theories is inevitable if only one theory is considered.

A striking example of so-called settled science, which was settled prematurely, is the question of how the Moon got its craters.

As we entered the Space Age, the debate among geologists and astronomers had only considered two

hypotheses: impacts and volcanism.

After Apollo astronauts returned

lunar samples to Earth,

analysis revealed a tremendous portion

of the material was composed of shocked

and welded minerals.

Thus, the impact origin of lunar craters became the

consensus scientific theory and remains so today.

But like so much settled science, the dilemma was settled

without the successful resolution of countless anomalies.

Why the Moon is so heavily cratered is itself a

puzzle which still demands a satisfactory answer.

The Moon and some other bodies in

the solar system are so heavily cratered

that astronomers invented a violent

epoch called the late heavy bombardment,

a period when disproportionate numbers

of asteroids supposedly collided with

planets in the

inner solar system.

One reason for the hypothesis is that

isotopic dating of Moon rocks seems to

imply that the so-called impacts caused

rocks to melt over a relatively short time.

But problems with the late heavy

bombardment hypothesis abound, and

mainstream science continues to debate where the impacting bodies could have come from?

Astronomers have long believed that asteroids were the source of the hypothetical bombardment.

However, in 2017, the scientific paper modeling the historical flux of planetary impactors acknowledges that "asteroids were probably not responsible for the late heavy bombardment.

The authors instead call on planetary migration in the early solar system and propose that "Comets and leftovers of the terrestrial planet formation provided additional, and probably dominant source of impacts during early epochs."

Unfortunately, mainstream scientists today seem unaware that a sound scientific foundation exists for an entirely different hypothesis of cratering on the Moon and other rocky bodies.

In fact, in 1965, the amateur astronomer Brian J. Ford published his laboratory experiments suggesting that craters on the Moon were carved by

cosmic lightning bolts.

In the cited experiments, Ford used the spark machining apparatus to reproduce in miniature some of the most puzzling lunar features, including craters with central peaks, small craters preferentially perched on the high rims of larger craters, and craters strung-out in long chains.

He also observed that the ratio of large to small craters on the Moon matched the ratio seen in electrical arcing, and as with craters seen elsewhere in the solar system, Ford remarked on the mystery of their typical extreme circularity.

He noted that over 90% of lunar craters cannot have been produced by side-swiping impacts.

So planetary scientists concluded that the kinetic energy of an impactor must simply be converted into powerful surface explosions.

However, highly circular craters are routinely produced in the industrial process of electrical discharge machining.

Many years before Ford's published

experiments and long before the Apollo missions to the Moon, Dr. Immanuel Velikovsky had made the outrageous prediction that remanent magnetism would be found in the lunar rocks.

Astronomers had completely rejected the idea, since the Moon today has only a very weak magnetic field and is believed to have been geologically dead for a billion years.

But Velikovsky based his prediction on his hypothesis of recent planetary catastrophe, involving interplanetary lightning between celestial bodies.

Of course, like several other outrageous predictions by Velikovsky, it was proven correct.

Velikovsky's colleague, the engineer Ralph Juergens also provided a remarkable analysis which should have been included in the scientific debate on the Moon's history and geological features.

One of the most puzzling features of the Moon is the sinuous rille, which is a long and winding valley, usually with steep walls and often emerging from a crater.

This feature is pervasive on the Moon at dramatically different scales. Prior to the Apollo missions, astronomers' early hypotheses suggested that the rilles were "cracks" on the Moon's surface.

Later guesses included flowing water until scientists settled on flowing lava as the agent.

Today, the accepted theory is that the Moon's sinuous rilles were created either by lava flowing across the surface or beneath the ground to form a "lava tube," portions of which eventually collapsed.

Juergens compared the respective point-by-point requirements of various competing theories, versus the actual observed characteristics of the rilles.

Unlike planetary scientists, Juergens included among the possible agents, high-energy electrical discharge.

On every evidentiary point, the electrical discharge hypothesis is either permissible or predictable, and unlike every competing hypothesis, in not a

single instance does the evidence preclude electrical discharge as the cause of the rilles.

Even prior to Juergens' investigation, several scientists had noted that flowing liquids, whether water or lava, could not have caused the observed features of the lunar rilles, including the strings of craters along the rille's floors.

These points are dramatically emphasized when we examine the Moon's famous Hadley Rille.

Today, planetary scientists agree that the rille is a "collapsed lava tube."

However, the rille does not match the required characteristics of lava tubes on numerous points, most importantly the collapsed areas of a lava tube will be rubble filled depressions.

High-resolution images of the rille reveal no rubble and no collapsed tubes.

It is simply an empty, sharply cut channel which matches the expected characteristics of an electrical

"breakdown channel."

Perhaps the greatest problem for the volcanic hypothesis of lunar rilles is their tremendous length.

On our own planet, the longest lava tube reaches only 65 km.

That is about half the length of Hadley Rille, which is 130 km.

However, the exact opposite should be true.

On Earth, the atmosphere is insulating, allowing lava to retain its heat.

In the near-perfect vacuum of space, heat will be much more rapidly radiated away.

On our planet, as lava flows over distances no more than tens of kilometers, the cooling at the surface causes a roof to form.

It may then continue to flow as a tube beneath the surface.

That is the only way the lava tubes can achieve even their modest lengths.

Consider then the most prominent lunar rille, called Schroeder's Valley, 185 kilometers long and up to 10 kilometers

wide, with its depth at points reaching
up to 1,300 meters.

Flowing lava, eating away surface material
to cut a deep
channel, would have to show up somewhere.

We should see either breaches in the
deep walls or evidence of abundant outflow.

Instead, the channel simply
dwindles until it disappears.

Curiously, the flow of rilles on
the Moon and other
worlds isn't limited to downhill, like
lava and water-carved channels on Earth.

All fluid erosion theories for
Schroeder's Valley have chosen to ignore
that the apparent mouth of the
"stream" is on high ground, and the
narrowest part of the
channel is on low ground.

We also note that within
Schroeder's Valley is a much more narrow
secondary rille whose defining feature is
a chain of small craters.

If the Moon was indeed ravaged by
high-energy electrical
discharge, nothing found in decades of lunar

studies is inconsistent with the hypothesis.

This includes the discovery of glass spherules, chondrules and minerals formed at high temperatures, typically associated with volcanic lightning found in abundance in the lunar soil.

It includes the stunning disparity in cratering between the Moon's far side, which is massively cratered, and the Earth-facing near side, which is far less cratered, and with considerably less crustal thickness, a disparity which calls to mind the equally baffling Martian hemispheric dichotomy, and similar dichotomies seen on many other rocky bodies, and it includes the many types of craters seen throughout the solar system which are difficult or even impossible to explain

through the impact hypothesis.

From the aforementioned puzzle of smaller craters consistently appearing on the rims of larger craters, to crater chains, weird hexagonal craters, and craters with cleanly cut floors free of any ejecta from an explosive impact.

As we've exhaustively outlined for seven years on this series, all of these types of craters are routinely seen in experiments with electrical discharge.

In the early Space Age, the Moon was a symbol of mankind overcoming his physical restriction to Planet Earth, as well as extending the reach of his knowledge of the cosmos.

Yet today, as in all of the theoretical Space Sciences, we see an immense disconnect between popular theory and the revelations of discovery, a disconnect which can only be resolved by willingness to explore entirely new possibilities.

More than half a century has passed since the first footstep on the Moon.

And the possibility still exists for a "giant leap" toward a truer understanding of the Moon's history and origins.

[Music]

In recent years, there have been
unprecedented opportunities to learn
about the nature and origins of one of the
most mysterious celestial objects: the comet.

For nearly three-quarters of a century,
mainstream astronomy has held to the
theory that comets are dirty snowballs,
that is loose aggregates of ice and dust,
that accreted billions of years ago
in the solar system's infancy. It is
believed that comet activity, including
the production of a comet's tail and
coma, is the result of sublimation of
ices and outgassing as a comet moves
close to the Sun. Prior to the earliest
space missions to comets, astronomers
expected the surface of a comet nucleus
to be relatively smooth and covered with
abundant water ice, as illustrated
in this artist's depiction prior to the
mission to comet Halley in 1986.

However, for over 35 years, increasingly
fine close-up images of comet nuclei have revealed
just the opposite: desiccated rocky surfaces with
shockingly complex features, including characteristics

remarkably familiar to planetary geology.

Unbeknownst to most in the general public, as illustrated by the remarkable research of author and historian Hannes Tager, various astronomers, physicists, and natural philosophers began proposing electrical theories for comet activity as early as the 18th century.

In the early 20th century the Norwegian experimentalist Kristian Birkeland, presented a theory of comets based on his experiments with gases in a discharge tube.

He proposed that comets interact with what he called 'corpuscle rays' from the Sun, and the comets become negatively charged and produce explosive cathode jets, causing them to erode. A photograph of these experiments can be seen on your screen.

In the later 20th century, the engineer Ralph Juergens proposed in the 1970s that the Sun was the anode focus of a glow discharge. This simply requires the Sun to be a positively charged body relative to its galactic environment.

In this view, a comet moving toward the Sun from the outer reaches of the solar system, develops a negative charge relative to its environment. Physicist Wal Thornhill,

the chief science advisor to the Thunderbolts

Project, later developed and modified

Juergens model of the Sun and of comets.

An electric comet means that the

assumption of charge neutrality for all

celestial objects, cannot be correct. An assumption

that has guided the space sciences for over a century.

A new scientific investigation provides a remarkable

predictive success for the electric comet theory.

A scientist from the Swedish Institute

of Space Physics, named Sofia Bergman,

has recently published a doctoral thesis

in which she outlines new methods for

observing low-energy ions around the Comet 67P.

In the past, measuring and interpreting the

origins and behaviors of these ions, has proved

extremely difficult. As the author explains,

"A spacecraft interacts with its environment, which

leads to an accumulation of charge on the surface of

the spacecraft. This is problematic for

the measurements of low-energy ions,

since the ions are affected by the

spacecraft before they are detected,

changing both our energy and travel direction."

"We want to know the original properties

of the ions before they were affected by

the spacecraft, which is now possible
with the method that I have developed in my thesis.

The Rosetta spacecraft was equipped with
an ion mass spectrometer and the data
from the technology have been analyzed."

Sofia Bergman describes her findings,
"For the first time, we have now been able
to determine the flow directions of low-
energy ions observed by ICA (the Ion
Composition Analyzer) at Comet 67P/ Churyumov-
Gerasimenko. The results were surprising.

We see a large amount of ions flowing
inward towards the comet nucleus, instead
of outward as we had expected."

As noted in the summary of the thesis,
"The Ion Composition Analyzer of the
Rosetta Plasma Consortium measured
positive ions in the cometary environment with
energies down to just a few electron volts."

The flow of positive ions toward
the comet nucleus is an emphatic
confirmation that the nucleus is negatively
charged. This electrical relationship between a
comet and the solar environment is the
predictive foundation of the Electric Comet model.

Of course, if a negatively charged body

moves suddenly into a more positively charged domain, it will discharge electrically. From the Electric Universe perspective, this is the cause of most comet activity, including the explosive collimated jets which have puzzled astronomers for decades, but which, as mentioned, were replicated by Kristian Birkeland in the early 20th century. It also explains sudden cometary outbursts, and even the explosion of comets, often at remarkably vast distances from the Sun. In recent years, other scientific findings have also affirmed the electrical activities of a negatively charged comet nucleus. Consider scientists' baffling discovery in 2007, that the comet McNaught was somehow able to modulate the solar wind.

Nasa's Ulysses spacecraft encountered the comet when it was passing close to the planet Mars.

Scientists detected that the comet's tail had slowed the solar wind to half its normal speed.

Space science professor Dr. Michael Combi said of the discovery, "This was very surprising to me. Way past the orbit of Mars, the solar wind felt the disturbance of this little comet.

It will be a serious challenge for us theoreticians

and computer modelers to figure out the physics.”

Until recently, astronomers believed that the material in the comet's dust tail would be too heavy for the solar wind to push around. However in 2019, scientists studying images of comet McNaught found surprising effects on the quote ‘weird striations’ in the comet's dust tail, as it crossed the heliospheric current sheet.

This electrical interaction was summarized by planetary scientist Geraint Jones who said, “For us, this is strong evidence that the dust is electrically charged, and that the solar wind is affecting the motion of the dust.”

The model of a negatively-charged comet, moving through regions of different electrical potential, can begin to resolve numerous comet mysteries, including the production of comet X-rays, the collimated jets of comets, and dramatic comet activity which does not rely on the sublimation of abundant water ice which has never been observed on comet nuclei.

And the electrical activity we see on comets, mirrors in many ways the powerful jets seen exploding hundreds of kilometers

off the surfaces of planets and moons,
including the Saturnian moon Enceladus,
Jupiter's moon Io, and even the surface of Mars.

The celestial bodies in our solar system
can no longer be assumed to be
electrically neutral objects. An unavoidable
realization in our Electric Universe.

[Music]

I want to introduce dr. jerry Pollak
from the University of Washington where
he's a professor of bioengineering for
the past 10 years he has been looking at
electrical structures in water as his
presentation last year was extremely
compelling and I I'm hoping that he'll
review some of that territory as he also
brings us some of his new work and and
brings us up to speed on what he's doing
and the implications of his work for the
future so please welcome to the stage
dr. Pollock well thanks thanks David
actually I got a prop here they gave me
some water but but the topic the topic
of the day is not water I love to talk
about water it's so interesting it's so
full of charges and it fits so well with
with the electric universe but I want to
talk about something else today I want
to talk about the Institute for venture
science a few of you may remember I
don't know how many of you are new or
not new and we talked about this last
year at the meeting and this is really a
kind of progress report though I will

start with some rationale for those of
you who were not here because the first
thing you may be wondering is what
what's the Institute for venture science
and what's venture science and why
bother with all this so what I want to
do today the agenda is as follows first
of all is it really true as martin lopez
Cordura says in his recent book that
this is the twilight of the scientific
age I'm not sure how you feel about that
but
okay and and and then the issue of is
there really a chronic decline in
science as we see it compared to say a
hundred years ago with the Einsteins and
the plunks and people like that is the
chronic decline curable and how can the
Institute for ventures science bring a
cure to this this syndrome and I want to
tell you the current status of the
Institute for venture science okay so we
start with an idea an idea that you may
have and the idea is a let's a round
earth idea so you come up with this
brilliant idea that the earth is round

and everybody around you knows for sure
that the earth is flat you think well
you know this is a pretty cool idea and
it's it's awfully important that the
earth is round and the question is if
you if you do this today if you were to
come up with this idea what chance would
you have with this revolutionary idea to
gain some traction again some success
you might think you might think an idea
as compelling as this would would have
attract a lot of interest and perhaps
trigger some kind of revolution but you
know if recent experience is a guide it
doesn't happen that way because we
haven't seen a whole lot of revolutions
in the past 30 or 40 or 50 years
so consider think about the number of
revolutions that we've had since let's
say 1970 or so that's a pretty arbitrary
date now what I'm asking you to think
about is in terms of revolutions we're
talking about a conceptual revolution
we're not talking about technological
revolutions which are supported by
industry and there have been quite a few

of those I mean everything related to the Internet and and such that's not what I'm talking about I'm talking about a conceptual revolution some new idea that has never really been considered before that that changes our outlook of the world and I'm looking at realized revenue

you read in New York Times or even Wall Street Journal it tells you about the new promising drug that has the capacity to cure cancer it has the capacity it's promised but is not realized you hardly ever come they hardly ever come to the realization so what I'm talking about is something like for example the splitting of the atom but that's a conceptual revolution that was 70 years ago another one is this structure of DNA that was 1953 so that was I think 60 61 years ago and it led to all kinds of interesting things about the human genome and such and and and so that that's what I mean by conceptual revolutions a new concept that changed our ability and led to so many new technologies in the future so I

ask you to think for a moment how many
modern conceptual realized revolutions
can you think of I give you 30 seconds
you're having a difficult time yes okay
now I know that some of you can actually
think of one or two I asked this
question to many people and I get a
blank look that's the response I think
there has been one and I'll mention it
later I think only one that I know of
and it's in the medical sciences will
come to that a bit later but you know
the editors of science in their hundred
25th anniversary edition in 2005 decided
to do exactly that
they tracked the revolutions that have
occurred in science from the time of the
Greeks to 2005 and this was done in a
kind of fold-out page that well it was
kind of like a played Playboy fold-out
page except the pictures were less
interesting
you know the picture of Einstein and and
what he did and Max Planck and so on so
I I conducted an exercise I made two
lists

I took the names of people and what they contributed from 2005 back 40 years and I did the same thing a century ago from 1905 back 40 years and this is a sampling of the of the old list now I bet you that everybody in the audience knows every single one or almost every one I took the full list in fact and I gave it to many peoples scientists and non-scientists and almost everybody was able to identify almost everybody on the list no question and then I took the modern list and here's again this is a random sampling from about 15 different people how many of you can identify zero of these people okay something is something is the matter here how come now we're talking about from 1965 right so we're talking extending back half century you know so you might say well some of this stuff you know just takes a lot of time for revolutions to a car you know but since we know that political revolutions can take place overnight practically how come it takes 50 years for this to happen something is is

something is different it really is true
that there are very few revolutions that
have occurred these people actually have
done important things
Kary Mullis for example was involved in
developing the pcr method of amplifying
DNA it was not exactly a conceptual
revolution it was a technological
revolution and another of these
scientists figured out how to culture
stem cells which made possible a lot of
interesting experiments but they're not
really the kinds of the kinds of
discoveries that are comparable to
Einstein or plunk or Curie or what have
you okay so so why why challenge
conventional thinking with revolutionary
ideas aren't we making great progress
we're making huge progress the number of
papers that are published exceed the
number of papers ever published in
history it's a it's amazing how many but
the question is you know what are we
really
what new understanding we do we have
from all of that that knowledge of

course we advance through revolutions
this is just a few examples but the
problem now is that revolutions are
really sparse there's something wrong
something is going on we had lots of
revolutions a hundred years ago but it's
really hard to really hard to identify a
revolution in in the past year so why so
few revolutions well there's no
revolutionary ideas challenge the status
quo and these threaten the the
stakeholders in the prevailing paradigm
and threaten the grant reviewers and you
know what happens when people get
threatened they respond and so most
scientists understand that if you if you
threaten the these stakeholders you have
to be careful and particularly in the
institutions that I deal with all the
time the National Institutes of Health
and the National Science Foundation most
most scientists with revolutionary ideas
keep it secret they don't apply once
they apply they know they won't get the
money and also they develop a reputation
as being the kind of person who you stay

away from so some revolutionary a change
is suppressed as a result I think
largely of the institutions that we have
that fund science is a modern science
made the tree of knowledge may look
something like this but the modern
dwelling place of most science is up
here at the periphery of the of the Tree
of Knowledge this this place is is safe
you don't shake the tree you don't pull
off a big limb and it's non-disruptive
so everybody's happy
you know a lot of papers are being
published the news releases press
releases from every institution show
great progress and real promise for the
future but not many revolutions so the
revolutionary progress comes when a limb
when someone discovers that you know one
of these limbs is not really as sound as
we expect and you prune the limb and and
come up with some brand new growth and
so one example of that that is very
familiar here is the heliocentric solar
system once that happened then
everything changed this was a new a new

limb on the on the tree of knowledge
another one in the medical realm is the
one by Semmelweis who found out that if
you wash your hands before you deliver
babies or conduct surgery the patient is
more likely to survive and of course he
was brushed aside and he died insane
from all the pressure that that was that
was put upon him so the new growth is
really what we're looking for and which
gives you a revolutionary advance it's
kind of like a you know you look at
something and this looks great it's
obviously this is a rectangle but you
know you look at it from another
direction and it's a different reality a
different a fresh perspective teaches
you something different so today this is
the issue we have a huge amount of money
that is put into science if you add up
just in the US the National Institutes
of Health and the National Science
Foundation it's approximately 40 billion
dollars if you add defense and such it's
probably up to hundred billion dollars
just in the u.s. it's a lot of money but

very few revolutions and if you compare that to a hundred years ago almost no money there was some it's that kind of paradox isn't it I'm glad there's some humor in this but something something is wrong here because we got a lot of input but no output a lot of promise but no no real revolutions so why is this the case well I I kind of alluded to it you can think of a few few ideas maybe maybe a scientists are stupider than they were a hundred years ago it could be you know the environment is having some real negative impact on us maybe we're eating the wrong food or the electromagnetic pollution or something so that I guess that that's one idea we hope that the the increase of stupidity is somehow compensated by the larger numbers doing it maybe maybe the problems are harder I don't know but I've seen no evidence that the problems are harder now than then they were a hundred years ago or another another possibility as well everything is

already known therefore you know there's
nothing to know no revolutions to occur
and I know what you folks think about
that so I think that there what I
alluded to before is it's the culture of
science today that is is the culprit
the emphasis the emphasis on
productivity producing lots of papers
competing to get into the prestigious
journals and such and and so it's a
culture where power is really important
that power is given to the experts and
power is given to the vested interests
we need money to do a research the
experts are the ones who decide whether
the revolutionaries get the money or
don't get the money this is not a system
to encourage radical thinking and fresh
ideas so you come up with a fresh idea
and the typical response from the
establishment is something like this you
know you're proposing what
yuck so this is this is the kind of you
know I think many of you have been there
this is this is the kind of response
what I've discovered is that there

actually are plenty of round earth ideas out there I I study water but I've been in several different fields during my my career and I used to think the first field that I entered which was actually cardiac cell electrophysiology I kind of started in biology and I thought I thought they were their prevailing views but there were challenging views out there and nobody took them seriously and I thought this is a problem and then I entered into cell biology and I saw the same problem and then I entered into muscle contraction and I saw the same problem a theory that has been around since 1954 believed by everybody but the evidence is so clearly against it and the people who have evidence against have no ability to make any inroads against the establishment so I came to realize that this is true in numerous fields I think the people around here some of you may believe it's true and the electric universe area but this is endemic it's it's just all over all over science usually what happens is the

response that I've seen among many people is the response to around earth idea and the Flat Earth environment well if the idea isn't good it would have been discovered earlier and everybody would know it's true and blah blah blah and so your idea can't be any good because obviously that hasn't happened the case closed just to give you a couple of ideas of some of the when I think are kind of interesting ideas out there of course the the energy idea tapping energy from the environment starts way back from from Tesla but there was a particular invention that I came across which kind of interesting because it it it capitalizes on the Earth's electric field and it's looks something like this it looks complicated but the principle is really simple if these are balloons way up and they're actually there to suspend a metallic ring and since the electric the electrical potential in the atmosphere is something like a hundred volts per meter you have a potential

difference between this metallic ring
and ground and if you put a motor in
between the potential difference between
here and here is enough to drive that
motor and there were a lot of
electrostatic motors that ran on low
current high voltage many years ago and
are still being developed and can
produce on the order of 75 to 100 watts
of mechanical energy which is you know
pretty pretty substantial and these have
not really seen the light of day and
here's another example this is a lifter
and some of you know about lifters it's
just a u-turn you have one electrode
here this aluminum foil and the and the
other electrode is a wire up at the top
which you can barely see you put a
potential difference of ten thousand
volts between them and this lifts up we
have one in my laboratory it lifts up
easily to a meter is just putting the
potential difference of 10,000 volts
that's all and you get lifting as a
result of that my estimate is that
nobody knows how it works of course we

have some ideas but this is the kind of thing that you'd seem it would seem to demand some development and some understanding but I bet many of you have never heard of these lifters and in the area of health also my favorite is always this one that it's it's a book that's called the doctor who cures cancer and this is Amelia ravit who died about 10 years ago the age of a hundred and he had the reputation of if if someone was really sick and cancer and they were just about gone they go to Ravi ji and Ravi T was able to do this is

a quote from the guy who was the retiring president of the Sloan Kettering Cancer Research Center which is the most perhaps the most distinguished one in in the u.s. in New York and he said that quote on the back I don't know how he does it but people walk in dead and walk out alive

I come into contact with a lot of people who deal with alternative health and I'm amazed by the the by the progress that

these people have made and and the
ability of these people to actually cure
people with cancer who can't be cured by
the standard chemotherapy radiation
surgery that's been used effectively for
50 years just mine or technological
improvements so another area that that
that needs to be dealt with with new
fresh information and fresh ideas so
problems remain unsolved they want the
two I mentioned Plus understanding how
our brains work and Alzheimer's disease
function dysfunction combating global
warming if you believe in it or
establishing that it's not true which
some colleagues I just spoke at NASA
there's a big group of people who are
absolutely certain that there's no
warming this needs to be straightened
out
eliminated starvation and many others
okay so I've given you the background
I've given you the problems and I've
given you some maybe some evidence about
that new book I mentioned that the
decline of the twilight of the

scientific age we're not producing what we used to produce in science so we decided to see if we can do something about it and we decided to put together a foundation that funds promising ideas that challenge conventional thinking now obviously we have no we have no building or no this is just a sort of dream for the future we call it we call it the Institute for venture science or IV s and this institute is a funding a see it funds promising ideas that challenge conventional views and there are a few twists to it and I want to tell you about it that I think make it will make it operate effectively so how will we foster the kind of revolutionary advance that we know is missing now we need it we need it badly to solve our problems so the first is that we invite groundbreaking proposals it doesn't matter what field anybody who has an earth-shaking idea around earth idea and the Flat Earth environment send it to us and we of course put it through a vetting process and I won't go into

detail about the the initial entry we don't want flaky proposals obviously we want substantial ones we asked the Flat Earth people to please tell us what's wrong with this round earth proposal and you can guess how scathing their review is going to be we know that okay so you have the round earth applicant and you have a bunch of Flat Earth people feeding back and saying this is the biggest I ever it but give us some reasons why you think it's not right and so we establish a debate between the two and the people who listen to this debate are outside the field they don't care whether the earth is round they may care but they have no bias as to whether the earth is round or whether the earth is flat they want to listen they want to hear how well this applicant can defend himself against those tigers and lions and and then what happens is we make judgment as to how well they did and how important their subject is it's the product of those two that determines

their score we fund the selected proposals liberally because you know people who venture into the real unknown they need often they need substantial funds and they need to have the confidence that they're going to be funded for some years at least otherwise it's too risky to go into there are human issues that need to be taken into into account now here's the key I haven't told you the real key the real key is next the real key is that we fund multiple groups pursuing the same theme so we get the rounders idea we fund the rounders idea and we try to identify around the world 10 or 12 different groups who also think that the earth might be round but they're using different techniques to to to check it and so what what that does is it creates a critical mass you know it's it's easy it's easy to dismiss one person as a crackpot oh you know stay stay away from that person because their ideas are really weird then you'll never get anywhere but when a dozen groups come to

the the annual meeting of the shape of
the Earth Society and hey what's going
on here there are a dozen groups
reporting that the the earth is round
instead of flat then they have to pay
attention so the single one is dismissed
but the multiplicity is really the
critical factor that can make a
difference and that can bring
revolutions you know if if the round
earth really has the goods within two or
three or four years people will it'll be
obvious that that the evidence for this
is convincing and I think within a few
years there'll be a phase transition a
new way of thinking revolution on the
other hand if the rounder if people
don't really have the evidence and the
earth is flat they don't have to defend
themselves and then we'll know for sure
that the earth is flat but we'll be more
certain of it so either way the
investment is good investment because
both sides are put on the same platform
to debate and then we learn which one is
correct and I think many of these will

lead to two revolutions okay so how do we do this well we have a funding goal and the funding goal is it's sort of arbitrary but we think of an endowment an endowment say on the order of ten billion dollars and from that endowment we could use the interest which at 5% is something like well 500 million dollars now for five hundred million dollars if you think of that each project let's say arbitrarily gets 1 million dollars per year just arbitrarily some need less others may need more that's enough to fund 50 revolutionary ideas time say 10 labs per idea simultaneously now it sounds like a lot of bucks but it's less than one percent of the u.s. annual research budget this annual budget less than one percent and for that we anticipate out of this will come multiple revolutions and the present course has produced almost no revolutions at much higher annual budget so if you think about what happens you get revolutions and from revolutions you get fresh insight about the workings of

the world new solutions to all the problems that plague the world and a bright future and for those who are you know more practically minded think about what revolutions can do every revolution every new concept leads to many new technologies inevitably and economic revitalization and again a bright future so if you think about about the the prospects what what this can bring and think about well how do you get people to donate we're looking for private donors it's very easy to to donate to something like the Gates Foundation which by the way is right around the corner from us this guy was actually the boss of my son when he was young so Bill Gates formed the Gates Foundation and you know if you put in money to the Gates Foundation or other foundations they do good and you all know that Gates Foundation has been making real progress producing vaccines that some of us think are good and others think our not so good and producing sanitary conditions and

toilets and such so so so people are
tempted to donate now what's different
about us is we promise something beyond
that it's a kind of amplification effect
you put in a small amount of money and
you can get potentially huge dividends
out of it I just give you one example so
you know a few few scientists were
playing around with with impurities and
semiconductor materials about 60 70
years ago and that of that came
transistors and diodes and photo diodes
and they'll digital cameras and solar
cells and integrated circuits
microprocessors laptops smartphones
basically everything we do today came
from a discovery of physicists and the
engineers working at the fundamental
level and that's what we're talking
about funding some capsule of an idea
and who knows what that can lead to it's
unpredictable but it can be awfully big
now there are quite a few billionaires
out there some of you know that many of
them signed the Giving Pledge that was
suggested by by Bill Gates which means

that ultimately many many people will be donating a large or substantial amount of various charities many want to give back to society and many want to to leave a legacy they want to be remembered Bill Gates

I would guess wants to be remembered not for being the richest guy in the world but for having founded the Gates

Foundation which did many good things so so that's an idea and of course if someone is willing to donate a couple of billion bucks it's possible that this could be part of the legacy now why can we make this happen well I think we have a we assembled a very interesting and capable

group of people so let me tell you about our advisory panel the people who we ask for advice and they come back and give us advice and I've just read to you to give you some idea of the distinction of these people and Michael Crosby was the executive director of the National Science Board which runs the NSF he also was a vice chancellor of a university

Peter Katonah was the president of the Whitaker Foundation which funds funded bioengineering John Strauss was the CFO of the Howard Hughes Medical Institute and he's been president of four universities I guess they didn't like him so much Alexander Coyne avala was the is is was the rector of Kazan University in Russia that's the third ranked university in all of Russia and was also the head of a large chemical Institute and for those of you interested in homeopathy he has brilliant results now that can explain how this really works Barry Marshall you may not recognize his name Nobel laureate from Western Australia he's a guy who I think was responsible for one of the few revolutions that is finding out that ulcers were not necessarily caused by worrying but by bacteria he had a difficult time of it and maybe you know that eventually he swallowed the bacteria he got an ulcer and they cured himself with an antibiotic and then they gave him a Nobel Prize astonished Petrovic

is a was the rector and just retired
Ljubljana University and a member of the
National Science Board Doug Randall and
Don Miller is a guy who I know in
Seattle and he was chief of
cardiovascular surgery and also a
well-known philosopher of science very
deep understanding of the scientific
processes so that's the advisory panel
and the core group or the executive
staff I think is a group or committed
with complementary skills and you may
know some because there are some people
are floating around here and that James
Ryder who used to be the vice president
of Lockheed Martin and Frank Costanzo
who's around here today
and who's been a senior-level political
adviser and has turned around
many businesses Susan she wrote you know
was an HMO executive and and myself and
and so I think with the devotion of this
executive staff and the advisory panel I
think we have a chance to to make it
happen the website is under construction
and we hope that it will be up and you

can look at it within the next few weeks
that's really our starting point
something that we need in order to
launch realistically the campaign to to
get funded so the Institute for venture
science we're talking about unthinkable
ideas today and received wisdom tomorrow
thank you
you

Welcome to Space News

from the Electric Universe,

brought to you by The Thunderbolts

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In part one of this presentation, our

guest Andrew Hall began the seventh

installment of his Eye

of the Storm series.

A series devoted to exploring some of the most

dramatic and puzzling geological features on planet Earth.

As Andrew has explained, the lifelike emanations of

electrified plasma tell us much about mysterious dendritic

and filamentary geological patterns.

Nor is it coincidental that plasma

filaments find a stunning analog in a global

mythical archetype, that is the sinuous form

and fiery breath of the cosmic dragon.

There are several junctions and other

features along the Colorado and its

tributaries highlighted in the next image.

We're going to explain each feature. But first, some

explanation of what kind of current flows in the earth.

It's alternating current and direct current

both. Alternating current is super-positioned

on a direct current carrier wave. Voltage difference

is relative, with no absolute positive or negative.

This is true of the mineral water, plasma, and solid-state matter that conducts electricity throughout the system, too. It's important to understand because Nature doesn't work with the kind of tidy insulated circuitry and constant voltage, battery-operated predictability that your cell phone uses. AC circuits oscillate in voltage, current and impedance as frequency changes. Everything is dynamic, with feedback and noise adding complexity. But Nature manages to make order from the chaos. The reason is resonance. The beauty of Nature is that it allows malleability in its shape to find the path of least resistance and therefore balance itself out, like water filling a lake. When balance is reached there is resonance. So dragons have rules. They have to play their part in the circuit and the type of circuit they are part of is what defines the rules. The type of circuit the Colorado River follows is called an RLC circuit. An RLC circuit combines the fundamental elements of resistor, inductor and capacitor connected across a voltage supply. Nature has to comply with physics. So, logic leads to choosing an RLC circuit model

since Nature has all three fundamental elements in its makeup. There are parallel and series RLC circuits, and hybrid combinations of those. In the case of the dragon that carved the Colorado River, a parallel circuit is required. The full explanation for why that is will take us into another chapter in Eye of the Storm, but we'll start with discussing the geometry of junctions. The image below highlights nine junctions in green where the Colorado joins its major tributaries. You'll note they all have a distinctive shape.

Power in an RLC is not consumed by line resistance alone, but impedance which has reactive, vector components.

The inductor and capacitor elements of the circuit have reactance, which opposes current flow like a resistor, but occurs 90 degrees out of phase with resistance.

Inductive current is at a vector rotated 90 degrees counterclockwise to the supply line current.

Capacitive current is at a 90 degree rotation clockwise to the line current. The resultant current is not the arithmetic sum of currents, but the vector sum, which produces current at a resultant angle from the original

line current. In a parallel RLC circuit, the voltage across each element remains the same and current gets divided. Current shifts vector in a parallel RLC circuit, which is what we see: the river channel splits in two directions at, or near 180 degrees apart. Keep in mind, rivers flow downhill, but the dragon travels upstream, so a junction is a bifurcation, not a confluence.

This indicates the currents bifurcated because line current went to zero, while capacitive and inductive currents-- the reactive currents-- initiated current flow along the new vectors.

The new vectors are at 180 degrees opposed to each other, with the inductive current angle 90 degrees counter-clockwise from the supply line current, and the capacitive current at 90 degrees clockwise from the supply line current, creating a junction that looks like a "T".

This is precisely what happens when a parallel RLC circuit achieves resonant frequency.

Supply line resistance goes up with frequency.

As resistance goes up, line current is restricted in reactive current increases.

You can visualize reactive current

as leakage from a perforated pipe, where more and more fluid or current escapes through the perforations, shooting out perpendicular to the direction of supply flow if the pressure is allowed to build with resistance inside the pipe. Resonant frequency causes line resistance to go to infinity. Well, it doesn't actually go to infinity, but it goes just as high as it needs to stop the line current. When line current goes to zero, reactive current shoots out like fluid under pressure, perpendicular to the conductor. This is because of Kirchhoff's current law that says the sum of all currents entering a junction is equal to the sum of all currents leaving that junction. Therefore, when resonant frequency is reached, line current cannot overcome resistance and goes to zero. All the current then shoots out as reactive current at vectors 90 degrees from the line current. That is what causes the river to bifurcate in a "T" shape. Reactive power is commonly considered to be stored power in transmission systems. Inductive reactance stores in a magnetic field

and capacitive reactance stores in an electric field. On power grids, we use capacitors and generators to provide these fields to capture the energy and return it to the system.

Nature doesn't have ready-made devices to store energy, so reactive power simply squirts out at new current vectors, it's energy consumed by impedance. Of course reactive power is much more complex than water in a pipe. The comparison is meant to illustrate for those who aren't familiar with the concept.

This isn't the place to review equations, but the basics of RLC circuits and the geometry of reactive power can be found in any circuit fundamentals textbook.

There are a couple of other things to note about the shapes of these junctions.

First they rarely make perfect "T" junctions.

Most reactive discharge appears at less than 90 degree rotation from the line voltage, producing a "Y" shape instead of a "T". This is most likely due to the DC bias in the current. Resonance causes AC line current to go to zero, but not DC.

So the resultant current vectors are the vector sum of the total reactive current with the remaining DC line voltage, producing

a "Y" instead of a "T". The second thing to note is that the inductive current path (the branch rotated counterclockwise, or north in the case of the Colorado River) continues in that direction more or less straight to the next junction, following the north pointing magnetic field. The capacitive current does something completely different, however, and it does this consistently at every "T" junction: it shoots south a short distance and abruptly curls east, back to the original supply line vector.

Capacitive current discharges clockwise, to the south of the line current in a direction 90 degrees from the prevailing electric field in response to a far-field charge buildup. The far-field charge builds in a capacitance response reactance to the charge building in the supply line as frequency rises and chokes off supply line current. But once it discharges, it equalizes charge differentials and the far-field voltage it is responding to, disappears. The current immediately turns back to align with the prevailing electric field - the original supply line current vector. That is why the southern branch always makes an immediate sharp turn

eastward and realigns, at least

briefly, with the supply line current.

This is really important because Nature

following precisely a form expected from

electrical discharge and repeating it over

and over again, is hard to call coincidence.

If we look at the big picture and we

draw lines to represent the prevailing

electric field aligned with the supply line

current, it's easy to see that the Colorado River

and its tributaries, or more precisely,

the dragon that carved the river,

is a discharge that follows the electric field in a

stepwise manner, with resonant reactive surges that

bifurcate into inductive current

branches that moves the discharge

north into the strongest voltage lane which aims it

to the Eye of the Storm in the four corners region

of Northern Arizona and Utah. The electric field is

between the accumulating material on the Colorado

Plateau, and the San Andreas Fault, marked in red

in the image. Why this is will be discussed in the

next few chapters, but it's the reason the Colorado

is a parallel RLC circuit. The capacitive current

branches all make a brief step to the south

and turn abruptly back east to realign with

the prevailing electric field, first
producing the Gila tributary, which I mark in A,
and then the Bill Williams tributary in B
and when it reaches the resonant
RLC discharge at lake Mead, it finally found the
lane of maximum electric field potential mark C,
and thereafter shoots east to the Eye of
the Storm centered at Monument Valley,
carving some amazing canyons
and other features along its way.
In the next chapter of Eye of the
Storm we'll discuss these canyons,
other types of branching, other features and their
likely causes. But before we close this chapter, let's
consider what a dragon looks like.

In myth, references to dragons can
be confusing, because sometimes they boil
the sea, sometimes they ravage the land and
sometimes they take wing. The discharge that
scraped the land in surface conductive arcing,
also created its own weather and
induced following jet stream winds.

Depending on perspective, one might
describe a dragon as a submarine,
serpent, or flying demon. Following jet
stream winds choked with dust, swirling

from cyclone to cyclone, had to look like animate
serpent bodies glowing with internal lightning.

In its early path it scraped the earth's
surface, following surface water laid down by
storm and tsunami. Water is its
conductor. Just as in the atmosphere,
water is the conductor. Like it is in our bodies,
and plants and pretty much all of Nature.

Water is dipolar, and in the field of a
strong electric potential, the polarity
of its molecules align coherently and facilitate
current. It is liquid, so flows through pores and
rocks and soil, providing electrical continuity
across vast stretches of Earth. Earth's crust
is saturated with water, even deserts, but for
the very shallow top layer of sand and mountain.

Water provides the "surface conductance"
for the ground-to-ground discharge.

So that's another rule, the dragon to follow
water. But it doesn't always follow surface
water. The storm that drew forth the Colorado,
the storm over the Colorado plateau was
laying down layer upon layer of
dry sediments, burying lakes,
inland seas in their drainage. The dragon
burrowed into the ground beneath these

dry deposits and followed the water like a tree
root. All along its jagged path, on either side
the land was pummeled. A dense magnetic field
surrounded the current as it pulsed and sparked.
And this drew lightning from the raging plasma
clouds above, inducing a following storm system of
winds, whirlwinds, and mesocyclones that
conflicted with the ambient winds, creating
shockwaves all around. On the ground,
whirlwinds at the maw of the beast sucked tons
of billowing dust to wrap around
the plasma at the core of the arc,
filling its body within the confines of a
magnetic sheath. It formed a lion's mane or
feathered appearance at its head as it drew
in streamers of dust. The arc advanced in
explosive, staccato bangs, jumping from node to
node, connecting dots across the landscape. But
heavy ionic matter moved more slowly,
being either pulled with, or drawn
against the current, as dictated by
charge polarity. These horizontal
whirlwinds might have looked like ultra-
high-speed trains racing across the land.
It likely wore an inner vest of elemental
conductors, and molten silica around a super-heated

plasma core. An outer coat of ragged
dust, drawn to its maw as it advanced,
wrapped tight to its body by ferrous
material caught in the magnetic field.
Shock waves patterned this cloak into
diamond-shaped scales that pulsed with light
and X-rays. It spit lightning and flames in
70-mile arcs, while shockwaves boomed
from its flanks. Sounds just like a dragon,
huh? But why take my word for it?

Listen to an eyewitness account:

"I will not conceal his limbs,
his mighty power as graceful proportions.
Who can remove his outer coat? Who can
approach him with a double bridle?
Who can open the doors of his face, with
his terrible teeth all around? His rows of scales
are his pride; shut up tightly as with a seal;
one is so near another that no air can come
between them. They are joined one to another. They
stick together and cannot be parted.
His sneezings flash forth light;
and his eyes are like the eyelids of the morning.
Out of his mouth go burning lights;
sparks of fire shoot out. Smoke goes out of his
nostrils; as from a boiling pot and burning rushes.

His breath kindles coals, and a
flame goes out of his mouth.

His undersides are like sharp potshards.

He spreads pointed marks in the mire,

he makes the deep boil like a pot. He

makes the sea like a pot of ointment.

He leaves a shining wake behind him;

one would think the deep had white hair.

On Earth there is nothing like him, which is made

without fear. He beholds everything high. He is king

over all the children of pride. That's

Job 41 in the bible folks. And it's not

talking about a fish or a whale.

Leviathan in the bible is a dragon, much

like the other demigods from the

sea in every ancient tradition.

So I committed to Thunderbolts ten

chapters for the Eye of the Storm series.

This is chapter Seven. Chapter Eight will

discuss more about dragons and the rules

they live by. Chapter Nine will delve under

the crust of the earth to see what's there,

and Chapter Ten will summarize

all that we have discussed

and conclude this examination of the Colorado

Plateau. In the end, if you read and comprehend

all ten chapters and study up on circuit theory,
you will have the tool, wisdom that is, to
evaluate your part of the world on your
own. Come join the club. Thank you.

[Music]

The Electric Universe

-- Why Should I Care? --

Many people today are asking,
what has happened to science?

Early in the space age, a
President inspired a nation
to put a man on the moon within
the span of a single decade.

"We choose to go to the moon in
this decade and do the other things..."

But where's that sense
of new frontiers today?

The passion for discovery?

For youngsters, it seems
science has lost its meaning.

Meaning comes from the
things that we value,
and what is the
value of discovery?

How could we lose
interest in that?

We've invited disinterest
in science by our claims
to already know the important
questions and their answers.

Just look at the picture given

in the scientific media.

All the great mysteries

have already been solved.

How the universe began.

How gravity drove everything

across billions of years,

the birth and death of stars,

our Sun emerging from

a gaseous cloud,

planets on predictable

courses for a billion years.

And a thousand other settled

questions, or so we're told.

Well, here's a surprise;

our universe is electric.

It's animated by charged

particles in motion.

The electrically sterile cosmos we

so long imagined does not exist.

The Electric Universe will

re-inspire education and science.

Electricity will open new

pathways of discovery,

a new picture of galaxies, and all the

stars in the sky, our Sun included.

Every organism will

come alive electrically,
and we will begin to remember
the electrical dramas
in the sky above our
early forebears.

Take the time to discover
this for yourself.

A profound scientific
revolution is already underway.

Join in at Thunderbolts.info

Welcome to Space News

from the Electric Universe

brought to you by The Thunderbolts

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Welcome to Space News. This is Andy Hall

and over the course of the past year

I've been presenting a multi-part

series called Eye of the Storm.

In chapter 5, we looked at coronal storms. We

looked at the San Rafael Swell and Capital Reef,

as well as Monument Valley and the San Juan

River basin as sets of dome and crater piers,

produced in the eye of the great primordial

storm that created the Colorado plateau.

The weather that produced these

domes and craters essentially

consisted of a thunderstorm producing updraft

winds, paired with a cyclone producing a

downdraft at its core. Electrically, it

formed a ring current between them,

with its lower half being currents in the

ground. Its upper half consisted of the

mesocyclone and cyclone connected

by a jet stream wind from

updraft to downdraft, forming an arch of condensate.

This loop is what would be under calmer

circumstances the thunderstorm
anvil cloud, a layer of positive charge
forming the top half of the mesocyclone.
But when mesocyclone and cyclone come
together in a turbulent intensely charged
climate, the anvil is swept into a filament that
feeds the downdraft of the cyclone. The
cyclone and mesocyclone then becomes one
circuit. This is how fractals grow. Circuits
connect together and pairings become groupings
and groupings become networks.
And that is what we see on
Jupiter. The Great Red Spot is a
network circuit of coronal storm loops.
We also looked at direct visual
evidence of coronal loops on Jupiter
and they happen to be in almost the
exact same pattern in the Great Red Spot
as the dome and crater appears on the Colorado
Plateau, because the storm systems are fractal
and driven by similar circuitry. Also, like the
ground current loops discussed in chapter 9,
these ring currents had DC input from lightning
and plasma winds and current junctions with ground.
So they could act as op-amps, using the
DC current to amplify the ring current.

That realization was a pretty good egg. But it gets better. The big Easter egg was finding this type of storm system depicted in ancient art. In fact it's depicted on the oldest most controversial and mysterious megalith ever discovered, the Vulture Stone at Gobekli Tepe.

The stone T-pillar depicts arch clouds across the sky, or upper portion of the pillar. Yes, the mysterious Handbag of the Gods. And this is just my theory of course, but the handbag depicts the box-like shape of mesocyclone seen at a distance, with the arch receding from center to behind, where it downdrafts into an unseen cyclone. A distant viewer would only see a squall line of thunderstorms surrounding the cyclone with instead of an anvil cloud, the jet stream to the cyclone arching away just as it's depicted on the pillars. Note the odd figures above the clouds. I believe these represent the type of thunderstorm discharge we call sprites and gnomes. In a coronal storm, plasma discharges from the cloud tops would not be as rare as they are today and not that they are all that rare today.

But in this past environment, they
would have been lit up like Christmas.
Above and below the clouds is space patterned in
triangles, cut across by a thin layer of rectangles.
This represents the triangular pattern of
rarefaction and compression in supersonic winds,
the narrow layer being a faster jet stream or
lenticular layer between conflicting winds,
with interference patterns making
the box-like segregations.

The vulture or thunderbird is a stylized
representation of the Peratt instability,
also known as squatter man, which in rock
art is often depicted with a bird's head.

It would have presaged the storm,
appearing in the sky as an aurora
bringing the portent of doom to
come. The legless birds also depict
aurorae that are fractal repetitions, at least
in partial image of the central plasma column.

Below the birds in the base of the T are depictions
of a wolf, representing the howling wind, a
salamander, representing the
tidal floods and a scorpion,
meaning ground-to-ground discharge,
depicted as a dragon in other myths.

Arrow-headed snakes appear here
and there, representing lightning
or currents. The T-pillar itself represents
Earth in heaven: as above so below.

A popular theory about this stone is that it
actually depicts a comet or meteor strike.
And that's because the bird is holding a ball.
Go figure. I like my interpretation better.

Gobekli Tepe is dated earlier than 9000 BC,
or the time of the Younger Dryas. It is
also when Plato said Atlantis
disappeared. And it correlates well,
all things considered, with the time we recall
as Noah's flood, or Gilgamesh, if you prefer. So,
is this a shrine made by survivors? Or
did it have utility in surviving the storms?

They must have hid underground to survive.
Even if they are in a region of calmer winds,
radiation, lightning and fouled water would have
surely killed them if they were unprotected.

The implication is clear however. At Gobekli
Tepe, as in every ancient myth, there was an
electrical storm the likes of which do not
appear today, caused by some solar system event.

Now the final Easter egg. These handbags are
depicted all over the world in ancient stone work.

The earliest known depictions are in petroglyphs that can't all be dated, but are believed to be from before 9,000 BC.

The following is an example from Australia.

If you read this petroglyph, right to left, like a storyboard, it first shows a small coronal storm on the right, the rightmost handbag apparently forming. Next to it is a larger one, above streamers rising from the ground.

These would be plasma streamers, like what forms in a lightning connection, only visible in glow mode.

Next, the cloud forms something below, while something else rises to meet it. They look like hoops or semi-circles.

These would be plasma clouds, reaching to meet, also visible in glow mode.

And then there's some kind of squiggly figure, after which the clouds appear again.

Never mind the kangaroo. The squiggly figure is the plasma afterglow of a super-sized lightning bolt. What I believe this depicts, is the cloud. The entire mesocyclone of a thunderstorm, collapsed in a Z-pinch, and then reforming. That would be like a

hydrogen bomb going off. But I'm
pretty sure that's what we're seeing.
I wonder if there isn't a large crater
a few miles in front of this rock.

The entire colloquy is represented in stylized
form in the Anunnaki figures in ancient Sumeria;
the handbag and the vine of "pomegranate"
that looks like the Australian squiggly figure.
They are often holding pine cones, and
that's I think represents the supersonic winds
thrusting forward at the head of the storm and
the fractal pattern of rarefaction and compression
they would display. In fact, the entire
figure represents aspects of the storms,
from the bird's head of aurora discharge
to the legs flat-footed on the ground -
one uncovered and billowing muscle, like
the winding up draft to a mesocyclone
and the other covered, unable to
be seen, like the returning airflow
down a cyclone. It's as if the gods - the winged
anthropomorphized aurora that presaged this storm -
are delivering the storm,
presenting handbags of terror,
pine cones of destruction, and
massive thunderbolts of lightning.

It even displays a sense of hierarchy
between heavenly and earthly phenomena,
as in the gods and demigods
endemic to all ancient religions.

I know people will disagree because
everyone has a theory about the "handbags."
Some think they are for a drug stash as if
the ancient gods munched psilocybin all day.

And others say they carried pollen,
but who collects pollen, and why?

It makes more sense to me that these
figures symbolically commemorate
the most Earth-shattering event known to man.

Whether you agree, or not, I want you to understand.
The events I describe are in our history.
They influence us today. We are just
confused by liars and lazy thinkers in our
midst, from academia to media, to politics,
science, to culture, to power. Break the bonds of
the brainwash they feed us and think for yourself.

Do it and you will find answers. Nature
makes itself known. It's up to us
to raise our consciousness to its level.

Once done, truth is self-evident.

At least this is my experience. I have no special
talent I'm just keenly aware of what's around

me and eternally curious as to how it got there. Ask the right questions and nature shows the answer.

I refer to this feedback circuit as God. I present these conclusions for your consideration.

I won't deny other possible answers exist, and we need to consider everything. But there is a bit of urgency in the message I get from all this, which I'm compelled to share. Earth's internal circuits are warming up.

Volcanic and seismic activity is increasing all along plate boundaries that define the sub-surface currents. Weather has become a bit strange and at the same time the Sun is entering a minimum period of energy output. Solar minimums have direct correlation with colder weather on Earth, but also higher seismic activity.

The Earth has to respond to the change in solar energy by releasing some of its stored energy in order to maintain its balance.

A reduction in solar wind means a reduction in energy-induced by Earth's magnetic field.

With less input energy, internal [currents] wane and the magnetic field weakens and expands.

But as the magnetic field expands, it captures
more solar wind, creating an increased induction.
This tug-of-war plays out as Earth
tries to keep pace with the Sun,
but it oscillates Earth's circuitry as currents ebb
and flow creating resistance and heat that has to
release. This happens in the transient phases,
shifting from maximum to minimum and vice versa.
It's the rate of change that matters.
We may see dramatic increase in the
frequency of earthquakes and volcanoes and severe
weather as we go down into the minimum and rise
back out. We are also experiencing a
magnetic pole shift. The magnetic pole shift is
related to changing crustal
currents. I don't know how yet,
but I know there's feedback between
them, because there has to be. It's
physics and it is happening. If
there is one thing that should be
evident from reading Eye of the Storm,
it's that Earth is an electric circuit
driven by whatever is in its core.
We don't know what the "core"
is. It's not a spinning ball of iron.
The surface effects we experience

outside of the crust are driven from within as a result of how the core reacts with the solar system. The surface effects are a capacitive reaction to changing energy levels in the core because Earth is a spherical capacitor.

Crustal boundaries surround the Indian Ocean, and above segments of these currents are some of the most active volcanic regions, including the Indonesian islands and Madagascar. They are very active right now.

These are likely the largest currents on Earth and the closest together producing magnetic flux between them. There is already a large gyre in the ocean, deep off the coast of Madagascar circulating between these currents. Does this mean there are catastrophic storms in our future? Damned if I know. Check what the ancients say. All I know is we better get off the dime and understand this Earth as it really is and stop listening to the academics.

Thank you all for reading.

Thank you for gracious comments.

These articles appear on my website thedailyplasma.blog

as well as Thunderbolts.info
and can be accessed by
anyone entirely free. As
people wake up to reality,
please point them to this content.

Thank you very much.

[Music]

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

The picture of the formation,
evolution and death of stars
is changing with
each new discovery.

The Electric Universe theory has offered
predictions for stellar phenomena
that have proved far more successful
than those of gravity-centric cosmology.

Stars do not form in a process
of gravitational collapse
but rather they form from the
electromagnetic pinch effect
along vast filaments of
remarkably constant width.

Stars are not powered by
internal thermonuclear reactions.

Rather, the Sun is a
positively charged electrode
at the focus of incoming
electrical currents.

Stars do not collapse and explode when

they "burn up their nuclear fuel".

Rather, electric stars have
internal charge separation
and can relieve electrical stress by
fissioning or blowing-off charged matter.

In fact, the standard
theory of a supernova
which has never been shown
to work experimentally,
has grown more severely challenged
with each new discovery.

In November of 2017, a paper
published in the journal Nature
reported the observation
of a star that exploded,
somehow survived, then exploded again
more than half a century later.

A phys.org report describes
the discovery as follows,
"The finding,
published by Nature,
completely confounds existing
knowledge of a star's end of life...
somehow this star exploded
more than half a century ago,
survived, and exploded

again in 2014."

A co-author of the

paper stated,

"This supernova breaks everything we
thought we knew about how they work."

In part 1 of this

three-part presentation,

the chief science advisor to The Thunderbolts

Project, physicist Wal Thornhill,

will begin our discussion

on the nature of stars

with an examination of

so-called neutron stars,

hypothetical entities which

were invented in the 1960's

after the unexpected discovery of

pulsing electromagnetic emissions in space.

But as Thornhill explains, like

the standard theory of supernovas,

the hypothetical neutron star is a

questionable proposition at best.

It was argued in a recent Space News, that

bizarre whirling neutron star lighthouses

are not needed to produce rapidly

flashing pulsar signals.

Conventionally, neutron stars are believed

to be the remnants of a supernova explosion

but supernova explosions are said

to be 'not fully understood'!

Which means — keep

sending money.

So, exploding stars are a good place

to begin exploding theories.

Neutrons are only seen to exist

outside an atomic nucleus

for a few minutes before they separate

into an electron and a proton.

So we can't just assume they

can be packed closely together

to form the bulk

of a stable star.

Insisting that neutrons

exist in atomic nuclei,

forces an unconvincing

nuclear model upon us

with positive charges held together

by an ad-hoc strong nuclear force.

There appears to be very

strong statistical evidence

that an atomic nucleus

is made up of protons

in a rapidly revolving

geometric structure

where electrons are in sufficient numbers to occupy, on average, the midpoint between pairs of protons.

The attractive force to the closer electron overcomes the powerful repulsive electric force between pairs of protons.

This greatly simplifies many subjects in atomic and nuclear physics.

So we can forget neutron stars, they don't exist!

It's far simpler and more likely to suggest that a normal stellar body subjected to abnormally high electrical stress, is the source of the steady flashing signals from pulsars.

The disturbing fact is that plasma physicists have shown this both theoretically and experimentally.

The electrical model of stars is real evidence-based science.

Further support for the

electrical model recently came
from the discovery of gamma-ray
flares coming from the Crab Nebula
which encloses a pulsating
supernova remnant
only 6,500 light-years away,
in the constellation Taurus.

In Physical Review Letters of November
the 24th, there appeared a letter titled
'Inductive spikes in the Crab Nebula
- a theory of gamma-ray flares'

by John Kirk and Gwenael

Giacinti. They report:

"The detection of powerful gamma-ray flares
from the Crab Nebula by the AGILE satellite
and the Large Area Telescope

on the Fermi satellite

has provided theorists

with three major puzzles:

How are particles able to
emit synchrotron radiation
well above the ~ 100 MeV
astrophysical 'upper limit?'

What is the geometry and
location of the source,
given that it varies on

a time scale of hours,
whereas the nebula has a
light-crossing time of months?
By which mechanism can such a
small source achieve a power
of only one order of magnitude less
than that of the entire nebula?"

On November 27th, it was reported
in more popular fashion
in the New Scientist
under the banner,
"Mysterious gamma rays in Crab
Nebula traced to pulsar winds".

It says and I quote:

"Waves of charged particles
slamming into gas and dust
may be responsible for unexpected
super-bright flashes in the Crab Nebula
...in 2011 two telescopes observed unusual
short-lived gamma ray bursts in the Crab.

These exceeded 100 MeV,
hundreds of times brighter than
the nebula's normal emissions.

The source of the
flashes was a mystery.

Some suspected it had to do with the

pulsar's magnetic field splitting
or becoming knotted as they move away from
the star and into surrounding material.

Now, new research pins
the gamma ray emissions
on charged particles like
electrons and positrons
that flow from the neutron star at near
light speed, like a constant breeze."

Here we see the blind spot of astrophysicists
toward electrical effects in space.

They can't see beyond explosive winds
slamming into slow-moving matter
and mysterious magnetic fields
which are tied in knots
and magically cut
and reconnected

to somehow produce what are
clearly electrical effects.

What we are not told is that
physicists in the 21st century
have no physical understanding of
the magnetic force, just equations!

Magnetic field lines are a graphic
representation and not a real thing.

Magnetic field lines must always

terminate at a magnetic pole.

They cannot be disconnected and
reconnected in empty space.

The only electrical
reference in the report

is to the gamma ray energy
measured in excess of 100 MeV.

This voltage is easily exceeded
across a cosmic plasma double-layer
which form in a Birkeland current
in a stellar or galactic circuit.

But astrophysicists don't do circuits
in space because they are taught
electricity doesn't
do anything in space.

Back in 1986, the pioneering Nobel Prize
winning plasma cosmologists Hannes Alfvén said,
"Double layers in space should be classified
as a new type of celestial object.

It is tentatively suggested
that x-ray and gamma-ray bursts
may be due to exploding
double layers.

In solar flares, double layers
with voltages of 10 billion Volts
or even more may occur, and

in galactic phenomena,
we may have voltages that are several
orders of magnitude larger."
Alfvén was right, it is
the simple mechanism
behind all of the mysterious
gamma-ray bursts in deep space.
He explains further,
"If the current density is too high, an
exploding double layer may be formed.
This means that in the plasma a
region of high vacuum is produced:
the plasma refuses to
carry any current at all.
At the sudden interruption
of the [circuit]
inductance produces enormous over-
voltages, which may be destructive."
The result is a high-energy flash of
X-rays, gamma rays and cosmic rays.
Here we see the dramatic release
when a circuit breaker opens,
of the electromagnetic energy stored in a
long distance 500,000 volt transmission line.
A voltage pulse across the opening circuit
breaker, rises to millions of Volts

causing a powerful arc

several meters long.

That same voltage pulse in the stellar

circuit accelerates charged particles

to energies capable of generating

the observed gamma-ray flashes.

It shows how a small

source can achieve a power

only one order of magnitude less

than that of the entire nebula.

The astrophysicists' conceptual blind

spot is evident when we look at

the explanation for the gamma-ray

flashes offered by scientists

where they actually describe the

exploding double-layer effect

without recognizing

the electrical cause.

"...new research pins the gamma ray emissions on

charged particles like electrons and positrons

that flow from the neutron star at near

light speed, like a constant breeze.

'We propose that at some moments you

have pockets inside this wind'

where the density of electrons and

positrons drops, says Gwenaël Giacinti

at the Max Planck Institute for Nuclear
Physics in Heidelberg, Germany.

Lines of electromagnetic force
usually maintain a constant current.

When they encounter these lower density
pockets ...that current is disrupted.

Some of the energy in the particles
gets converted into kinetic energy,
causing the electrons and

positrons to accelerate

and smash into the
nebula's gas and dust.

The effect is similar to the behavior
of a circuit containing an inductor.

Should the current in the
circuit suddenly drop,

the inductor — which acts to

smooth out the electric current —

will try to rapidly counteract the loss with
a huge pulse, often resulting in a spark."

The effect is not similar, it is precisely
that of an exploding double layer.

As for the wind with

its pockets and lines

of electromagnetic force

maintaining a constant current,

the concepts are adrift from
any real physical model
involving electricity supplied
by a galactic circuit.

Instead, the Crab Nebula is treated
as an isolated, closed system.

So the descriptive words are
either misleading or meaningless.

Of course, there is no
reference in the paper
to Hannes Alfvén and his 31 year old
explanation for high-energy gamma-ray bursts
based on the tried and tested
physics of electrified plasma.

Stay tuned for part 2

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

Solar System Formation, Quantum

Vibration and Natural Disasters

Good morning everybody!

So today are we talking about

a very interesting topic

of solar system formation, quantum

vibration and natural disaster.

What motivates me into this research is

mainly the topic of natural disaster.

I would like to be

able to predict

when all those major natural

disaster will occur in the future.

And that leads me to understanding the

connections between space weather

and all the climate change and

many other activities on Earth.

And that also leads me to

conducting more intensive research

on how solar activities arise.

And also go all the way into

how the solar system would form.

So hopefully this will be an

interesting topic to discuss

and be beneficial

to everyone here.

So I would like to start
with the term simplicity.

So in order for human
to understand anything
and be able to implement
what they understand,
it starts with really
simple concept such as,
if we understand
how the bird flies
we can actually imitate birds
and build a flying machine.

If we understand the
wheel, how the wheels work,
we create can create a vehicle.

So in this case we want to understand
how natural disasters occur
and we have to use the simple
concept to understand this.

So what means simple?

It means it's simple to be observed.

Anyone can observe
what I observed.

Through all the perceptions
that everyone has.

And also in terms of natural

disaster observation,
it just apply simple
observations such as
rain, floods, tornado formations,
earthquakes, volcanic eruptions.

And these are natural
observations.

There's more artificial observations
that human have come up with.

Such as fluctuation of magnetic fields,
electric fields and all kind of stuff
which are the

secondary observation
that not many people can observe
such change by themselves.

It relies on
scientific instruments.

Same thing for the Sun.

The natural way to
observe the Sun,
well, back like hundreds of years
thousands of years, is (to) sunspots.

And of course, using
really simple instruments,
scientists and astronomers can
generate a sunspot index.

It's called sunspot number.

And that can be highly beneficial to understand the Sun, simple as that.

In addition to a

more complex index

such as solar flares,

geomagnetic storm

or coronal hole, coronal

mass ejections and so forth.

And of course, it has to be simple

to reproduce and verify it.

Just like I have mentioned.

It has to be natural.

Something everyone can do.

It's not too expensive to do it.

So we don't need billions of dollars

to prove something the way it is.

It's just how we see things.

And of course, what we

see is what we get.

It's a direct conclusion based

on direct observations.

We can also conduct physical

experiments just to confirm

that we understand the behavior

of what we tried to observe.

And of course, this is based

on personal experience

that began where, you know,

from our child ages to now.

So in order to work in the right

direction, we need the right perceptions.

And in order to do that I need to rely

on the teaching from great philosophers

and scholars around the world

that's living

today, in this room,

as well as those, you know, that lived

in the past thousands of years.

And they all come to

really the same conclusion

when we want to observe something. That

everything has to happen for a reason.

They have to have

cause and effects.

And of course, how did you

find cause and effects?

In general sense, we use the

term "Dependent origination",

that all things arise in dependence

upon multiple cause and condition.

Not a single one.

For example, I was born.

I cannot be born by myself.

I relied on my

mother and my father.

And of course my father and

my mother cannot be born

if they don't have air, food

and water supplying to them.

So everything depends

on each other.

There's no single isolated island

of anything that's causing something.

So everything is all-conditioned.

And of course we want to study something

and to be pretty much neutral or not biased.

We always, we always see something

in dualities, just like we see a coin.

These always have two sides.

And of course, we see

things the way it is.

Simple to say, but what I mean is,

everything is subject to change.

For example, this

universe. The assumption

that this universe is electrically

neutral is also impermanent.

Same thing for an electrical

bias. It's also impermanent.

There's nothing really constant or
staying the same way without changing.

And of course, since

everything is conditioned,

there's no something dictating
everything ultimately.

So there's no true essence

in what we actually observe

and that, in general sense,

is called concept non-self.

So next...

Okay, so now we go to the

topic of quantum vibration.

The simple concept of this term.

I refer to the minimum amount of physical
entity involved in an interaction.

So in in this case, what we

can do in this universe

is all about changing.

Depending on what we are actually

looking at and pay attention to,

there's always at least two states that

we can define of what we observed.

For example, if we look at charge,

we can see positive charge
and negative charge.

If we want to look
at electricity,
there are electromagnetic
and electrostatic.

You want to study wave,
there's two type of waves. There's
transverse wave and longitude wave.

If you want to look at
(how) matter movements,
it can be perceived as
contractions or expansions
and also can arise from chaos
into order and vice versa.

And this is just some example of what
you can see and perceive in reality.

And all this exists in
all state of matter;
plasma, gas, liquid, and solid.

And of course, all these
properties exist in space
or someone can call this vacuum.

It's an ever-changing
environment.

So next we're going to the main

concept of this presentation.

So I need to get, obtain some guidance
from one (of the) great scholar here,
which is Nikola Tesla.

One of his quotes is, "If you want to
find the secrets of the universe,
(we) think in terms of energy,
frequency and vibration."

And of course, in this conference we refer
energy, want to focus on electrical energy.

So we're going into the, the first experiment
of how we try to create a plasma ball,
okay, using electrical potential.

This is a brute force way
to create a plasma ball
so we can learn and understand how we, how
the plasma behaves as a spherical shape.

So in this case we
have a tube, vacuum tube.

We supply 9 kilo-volts AC power into
the one electrode at the center,
and there's one side on another plate. And
then we start by vacuum the tube out
so we create an easy
condition to produce plasma.

So from here just pay

attention to the video here.

So the power is already
supplied to this tube
and of course, once
the condition is right
you have a plasmasphere created
in the center of the chamber.

So this looks very
much like the Sun.

But of course, the Sun has more
complex behavior than this.

So one I want, the one I want to
show you is, you can see the plume
that's showing up here?

And that's, kind of, similar way that
we observed in this plasma ball.

So the point I'm trying to make here is
that, if you wait a little bit longer,
we want to change the conditions
surrounding this plasma ball
and see how the plasma ball
behave according to this change.

In this case we leak the air,
you can leak the air inside this
plasma ball, this plasma chamber.

And if you wait a little bit more, you'll

notice something change to this sphere.

So right now, it's

not changing yet.

Let's keep observing

a little bit.

Now started to change.

See how activities

start to increase

so that's when we have more massive

gas leaking into the system

(and) so the different plasma

density in the chamber.

And you could also notice the uniform

glow at the edge of the plate.

So from here we go

into conclusion.

This is just not the whole

complete picture of the Sun

but I, the point I try to make here is

that the Sun is not the Sun by itself.

The activity of the Sun was not dictated

from the thing that's come from inside.

But in this case it does have the

outside influence of the activity.

So during, the high vacuum pressure chamber,

it looks like high solar activity.

And there's more filaments like it
because there's more gas inside.
It's more electrical discharge,
activities become more frequent.
And of course, you have more magnetic
fields -- you have more currents.
And this called is solar
maximum, in pinyin,
of course and of course we produce
high X-ray emissions, more frequency
and of course high
number of sunspots.
On the other hand, in doing
the low vacuum pressure,
the plasma will
become more uniform
and it's really similar to the
low solar activity cycles.
And it looks they have less filament-
like electrical discharge activities,
weaker magnetic field, all those
flux lines are less present.
Would be, we can define as a
strong electric activity.
Solar minimum, low X-ray emission.
So of course, in this we find

a low number of sunspots.

So this is going to one of the factors that I actually used for understanding how this plasma density affects the Sun as well as the Earth in general.

So next slide...

Of course, if you want to compare this to the outer edge of the solar system, this is what I believe, something using a really cheap way to generate it.

It looks like a heliopause to me.

I believe, this is very similar to what Ralph Juergens maybe had visualized, maybe.

And he, what he said is the Sun itself is the focus of cosmic electrical discharge.

So we just do just that.

But this is a brute force way to fuse the plasma into the center of the sphere.

And of course, there's more efficient way to do that. It's the resonance system

So now we move through...

going through more factor details of how we can create a system that mimic the Sun through quantum vibrations.

Now, I introduced the terms

frequency and vibration.

And of course to do, to understand this and
maybe hard to do in plasma, plasma medium.

I choose to learn this type of behavior
from the work from dr. Hans Jenny,
which is, what he does is, he made an experiment
on a membrane full of very fine powder.

He put acoustic wave perpendicular

to this mat diaphragme

so it created vibrations

on this diaphragme.

So from here, you start to see that material
started to condense at the center of the things
and you see it looks
spherical, just like the Sun.

And of course, if you zoom inside, you
start to see circulations, convection
that is occurring in
this half-sphere shape.

If you look carefully, you see that
kind of look like nanoflares as well.

And of course, once we
increase the frequency,
the sphere cannot sustain by just
being, remaining static, it starts to spin.

And of course, once
the frequency changes,
there's an alteration in frequency,
you start to see eruptions.

Some chaotic process
going on in the sphere.

It could happen over a short
period of time as well.

And of course, the spin can
change when the frequency changes.

And of course anyone (who) interested
in learning more about this video,
you can find it on YouTube.

So from here, we learn the properties
of what happened in space
using the vibration of sound.

And I will tie this later back to how
the electric properties work later on.

So in this case we look at
internal behavior of this sphere.

We started to observe that
through quantum vibrations,
its arising of the spherical shape with
circulation and convection properties.

And if you look at the Sun,
we see this acting the same way.

We see meridional
circulations inside the Sun.
And of course it has, these things
seem to have explosion and ejection.
It's really similar to
the way the Sun behaves,
that is, having active regions
and coronal mass ejection.
So I believe what happened is
there are some frequencies
that tie into such
activities of the Sun.
And if you look into
external behavior,
we see that the sun spins, just like the
way this spherical ball had rotation.
And of course it produces, it seems like
ejecting mass, just like the Sun does.
And of course, it looks like a
Parker spiral in the larger scale.
And this can be compared to
one of the ALMA telescope
that observed the red giant
star R Sculptoris.
Of course, last but not least, one of the properties
that we can observe is standing wave.

And this is the mode that I
would like to talk about today
and this mode really resembles the
orbital plane of the solar system.
And if you want to look back into
time to other star systems,
you start to see a resonant ring that was
observed in HL Tauri protoplanetary disk.

And of course, we go
into conclusion here.

Observations

Of course, changing vibration frequency
creates various types of activities

That's applied to
objects in space.

Such activity matches with the characteristic
of the Sun and the solar system,
part of it.

And of course, organisation of matters
is resulting of vacuum vibration.

It could be done at
resonant frequency,
so that's how we reinforce the energy
into condensing it into the matter.

You can call that order
arising from chaos.

And of course, energy used to create
and sustain the sphere alone,
ultimately comes from
the surrounding.

And of course, there's two
types of wave patterns
that we can observe from
the previous experiments.

One is a spin which is a spiral wave
and the other is a standing wave.

And I will pay more attention
to the standing wave behavior.

So such standing wave behavior
can be observed by experiment.

Simple experiment
just as this one

which is plasma discharge tube.

So by having vacuum and producing
ejecting high-voltage into the electrodes,
you start to see
columns of plasma.

And that looks pretty much
like a subperiodic structure
when it starts to stabilize.

So now it will become
stabilized in the video.

You start to see a lot of columns just like
we observed in the HL Tauri protoplanetary disc.

So next, we extend this understanding but
it may be a little harder to do in plasma
so we go back to solid
prop, solid model
using soundwave again.

So now we take a look at how we can
create organized system using soundwave.

And this is a, this is experiment called
center, Circular Centered Chladni Plate
which you can check
online as well.

So in this case we have
a plate, a solid plate.

A center of it ties to
the speaker below.

It puts a lot of small particles.

As we change the frequency, those
particles they automatically organize
around the center
of the focus point.

And this looks pretty
much like the Asteroid belt.

So by increasing the frequency,
you start to see

that the matter
or that scattering around this
plate start to be more fine
and create a more defined circle.

Such as the one shown here.

So the more frequency you put
in, the more rings it creates.

So it, for me it looks pretty
much like our solar system.

So we move to the next slide.

More three-dimensional wheel relies on Argonne
National Labs using acoustic levitation.

In this case of course, we see
that, put a spherical foam
and it seems like it's
suspended over the air.

So you see, notice the vibration
that occur in these spheres.

Of course, the sphere will be in the
node where it's the most stable.

And of course, it moves
with frequencies.

So it looks pretty much
like our Solar System.

In our case we want to study about
how the Sun translates power,

transmits power into the Earth.

And of course, if it looks
really similar to these things,
what we should observe is
that, if the Sun vibrates
then the planets will
vibrate. Simple as that.

But what kind of
vibration is this?

We talk, we all talk about
longitude wave for all along.

So I want to continue in
this mode of propagation
so we construct a model of resonant
coupling in the solar system.

We assume the Sun is the
center of solar system
and of course, through
standing wave effects
the Earth's probably in the
third node of vibration.

So we assumed the distance is about
149,600,000 kilometers away
and assume this mode of propagation
travels about speed of light
so that's eight times, 3 times

(eight) 10 to the power of 8 m/s.

So that turns out to be
about 3 mHz of vibration.

So what's important
about this frequency?

If we take a look at the
helioseismic activity,
this is using GOLF instrument.

This instrument is installed in Soho,
so what we measure is the p-mode.

It's acoustic pressure wave of the
Sun at the surface of the Sun.

And at that time the scientists wanted
to look into interior of the Sun
and what they have found
is the resonant frequency of such
mode occurs right around 3 mHz.

And in general terms, few physicists
like to call this "5 minute oscillation".

So,
and of course what
happened on Earth?

It might be really difficult to
detect such frequency vibration.

It has to be excited to a large
event such as earthquake.

So in this case, we look

at the earthquakes.

The great Chilean

earthquake happened in 1960.

And of course, what we observed

is about the same frequency spectrum

occur when the earthquakes occur.

So we have helioseismic monitoring

station spread across the globe

and measuring the, how the Earth is

vibrating according to the stimulation.

And we found one of the fundamental

modes falls between 1 to 5 mHz.

And of course, such

vibration doesn't end here.

It goes into the comet as well.

In comet Hale-Bopp, scientists have

observed interaction of comets

with the surrounding plasma

right around the same frequency.

In this case, the coma will have

the same vibration frequency

around about 3, 2

to 3 mHz.

Actually, it should be like

2 to about 4 mHz

with the center

around this frequency.

So next, if we understand that

how vibrations actually interact,

I mean how the energy interacts, among the

objects in space in the solar system,

we should be able to

construct a model

of energy transmission

based on resonance system.

So it relies on Tesla invention.

One of the power transmission of

his patent, it's filed in May 15, 1900.

So it consist of two spheres, two

balls of spheres, conductive spheres,

inside can be dielectrics.

And of course, it ties to great

spiral, to the pole of this thing.

So we call this the

Sun and the Earth.

And of course, by having a

generator tied to the primary,

start to see, I can, I did a

laboratory experiment on this.

So in this case we

have the generator.

We should see it at the
center of this video here.

I cannot simulate 3
milliHertz vibration

so I use 3 megahertz, about 1
billion times higher in frequency.

50% duty cycle is
in an square wave

and of course, this thing connected to
the primary side of the transformer
which in this case can represent
something coming out from the galactic,
from the galaxy.

Of course, there's a spiral, flat spiral
core connected to the core of the sphere.

And of course one side
goes into the secondary
and go to the pole
of another sphere.

And of course, we tap the
power from the outside core.

And that's go to a LEDs.

In this case I use 6 LEDs.

Please notice the
brightness of the LEDs

because we're gonna do some,

playing some interaction gears.

There's 4 different types of things you can do with the system to modulate the power.

One is to modulate the potential or power of this generator.

Second, see the LEDs when we change the frequency.

Of course this LED doesn't light up.

It's only lit up when it's peaked.

So at resonance.

At 3 megahertz.

At other resonant frequency,

at other frequency

it doesn't match with

this characteristic.

So another way to

modulate the power

is to detune the capacitor which

is the spherical ball here.

I used my hand as

a demonstration.

So when I have a hand or something

that moves approaching this spherical ball,

you see the LEDs start to dim.

So it can modulate the power

of the transmitter side.

For example with this ball, if hand represented
a CME, it passed through the Earth,
you start to see fluctuation
of these LED lights as well.

So this ball can represent
an open plate capacitor.

If you have some
secondary effects,
secondary plate will be
formed automatically in space.

And of course, it can be outer from,
from the external environment.

From all these observations...

So four major approaches to
modulate Earth's electrical environment.

One is to modulate the entire solar
system, galactic generator amplitudes.

Second is to modulate the
galactic generator frequency
and that ties to how, (to) the
variation of 11-year solar cycle.

The third is to change plasma environments
around the local generator sphere,
it's called Sun.

Either through
celestial body passage,

just like how the comet

approaches the Sun...

Of course, we also observed some

heliocentric planetary alignments

seem to have some effects

on solar activities.

As well as other types of

alignments of bodies in space.

And the third, sorry,

the fourth is the change in the plasma

environment in the local receiver sphere

through wave propagations. One

is the longitude and transverse wave

We can also have particles propagation

that modulates the upper atmosphere

such as coronal mass

ejection and solar wind.

And also of course, if there's

a heliocentric alignment,

they have to be

geocentric alignments.

Because the Earth is considered

another resonant cavity

And of course of some significance,

celestial body passage

could affect some electrical

properties around the Earth.

So that's called a local
change in plasma environment.

From here, and this is another
just something I ensure you
that when the comets
approach the Sun,
of course you got
the eruption occur.

So I believe this is something
due to the cavity being detuned
due to the plasma
environment change,
so just like the way I put my
hand close to the spherical ball
so the capacitor is detuned,
the whole circuit is detuned.

So from all
these observations,
now all the properties allow all types
of plasma waves to exist in space
in addition to an electromagnetic
one; which is electrostatic
and of course the thing
that I want to address
is the one that has

no magnetic field.

So for the electromagnetic wave propagation

it's called B, vector B here, is none

for electromagnetics

or light wave.

But for the electrostatics

now, there something exists

that could explain a

lot of phenomenons

which cannot be explained using

conventional understanding

such as Ion acoustic

wave, Plasma oscillation.

And I believe this

exists in space as well.

And I'm going to show you some

evidence of existence of such wave

in terms of, the connection

with natural disaster,

the thing I've been done

in the past 6 years.

First we go to the case study

of the Nepal earthquake,

magnitude of 7.8, occurred on March

21st, sorry March 25th 2015.

During that time, if you

track the sunspot number,
we see that the sunspots
reach 10 weeks local maximum.

On March 19, approximately.

March 20 or 19.

And of course, we observed changing
climates during that time.

Those who live in equator attract, the
temperature during the time is extremely hot.

Near equator, about 24 to 48
hours before the earthquakes.

And those who have
observed such thing,
they know that earthquakes have a strong
ties to sudden change in the weather.

Of course, in the inner epicenter we
see extreme cold and windy condition.

If you ask the Nepal people, before,
right before the earthquakes.

If you look in space,
what we see is a strong coronal mass ejection
occurring between March 20 to March 23rd.

We've got M4 X-ray
flares on March 21st.

And of course, low level
of geomagnetic storm.

If we understand such connection,
that geomagnetic storm can be either ineffective
in terms of understanding the disconnection.

And of course during that time
we observed geocentric alignment
between Earth, Mercury and Mars.

We look into the timelines of
how this natural disaster arise.

We start from April 21st.

We observed non-Earth-directed
coronal mass ejection.

So again, the coronal mass
ejection in this model
is a symptom of a fluctuation
in resonant frequency.

It's happened to be right
at the peak of the sunspot.

So it highlighted in
the arrow area here.

Of course, during a time we have a Nepal
foreshock magnitude of 5.1 earthquakes,
we have a great volcanic
eruption in Chile,
largest eruption in many years,
and of course (we) followed
by another CMEs.

You can see that all these events
happen almost simultaneously.

Just like a travel
at speed of light.

And of course, about 3 days later
we observed the main shock,
earthquake in Nepal magnitude of 7.8.

A 3 days period, it matches with the speed of the
solar wind travel from the Sun to the Earth.

So the next case study is one
of the really famous case.

It's a Japan earthquake between
March 7 to March 11, 2011.

What's special about this case is that if you
look at the sunspot number graph on the top,
you see that's the highest sunspot
number in the last two years.

And it's also not only that.

It rose up rapidly almost exponentially
in the past 30 days.

So this is highly significant
events to pay attention to.

And it reached the
maximum on March 8th.

During March 7, of course, we see
a massive coronal mass ejection

as well as

we see expansion of coronal holes

starting from March 7 through March 10.

If many of us have read

some literature, we also see

ionospheric heating around this time-

frame before the earthquakes in Japan.

Of course, there's a foreshock, happens

almost simultaneously within the day

of the high solar activity

events in terms of sunspots.

You see Japan foreshock

around 7.1 magnitudes

and then about 3 days later you got a

main shock of earthquakes. Magnitude's 9.1.

So again, it matches with the

speed of solar wind.

But again, if we pay attention

only to the direction of CMEs,

some must may have missed such an

opportunity to predict the earthquake.

And the last but not least is if

something happened during the maximum,

there's always something going

to happen during the minimum.

In this case, on December 23rd

between December 23rd 24th, 2004,
sunspot has switch to
10 weeks extreme minimum.

Around December
17 to December 28.

If we look at the
coronal mass ejection,
it became the most extreme and the
most intense on the 23rd of December.

Again, it's not (an)
Earth-directed CME.

And of course, if we looked
into the coronal hole data,
you see a sudden expansion of coronal
holes facing the Earth during that time.

And it started around
the 24th of December.

You zoom into the graph, you see the
same thing, same pattern repeated.

You got CME precursor, global
foreshock occurring on the 23rd
and of course the main shock
followed two and a half days later.

So we've got two effects here.

One is a simultaneous reaction
between the Sun and the Earth,

pretty much approaching
the speed of light,
and the other is the propagation
that takes about 2 to 4 days afterward.

So conclusion here is
that I propose a theory
of quantum vibrations and in
relation to solar system formation.

Such theory may help explain various
characteristics of the Sun and its surrounding space
as well as understanding how the
Earth interacts with the surrounding.

The evidence of quantum vibration can
be found in helio-seismic activities
and geo-seismic activities as well
as in comet interaction with Solar wind.

Of course, it suggests that the longitude wave
is, exists in space in both vacuum and plasma.

And there's an engineer that has
proved that the speed of light,
the longitude wave has
trouble at speed of light
which are going to
be mentioned later
in the next slide.

And of course the earthquake,

I'm talking about a very
strong significant earthquake,
or high frequency earthquake
that happened during one, some days.

It seems to be a direct evidence of
longitude energy vibration in space.

And of in course longitude
power coupling,
strong earthquake can occur without
the presence of geometric storm.

And it solved the mystery of
why we see strong earthquake
when there's no geomagnetic
storm in some cases.

I would like to (give) thanks to
The Thunderbolts Project
for providing me the opportunity
to present this work

and Mitch Battros who's the first person
who made me aware of the connection
through his website --

Natural disaster reports.

Stan Deyo who has done a lot of resonant
vibration connection experiments,
same thing for Nassim Hamein.

Musa Abdullahi, he provides theoretical

verification of longitude wave in space
and you can find his proof,
mathematical proof in his website.

Ben Davison, he provides a great
public outreach to the world
so make the public aware of
the such connection of space weather
and all things that's
changed on Earth.

And of course, the serveral youtubers
who have done a wonderful job in doing,
reporting all the solar activities,
reporting all the Earth changes,
things that's going on
so that everyone's aware that
we are more than just the Earth
and we are all connected to
everything in our solar system
and also our galaxy
and our universe.

And thank you very much
for your attention!

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

at Thunderbolts.info

The myth of an
electrically sterile
universe is dead. Only those who paid
little attention to discovery could
think otherwise. But close attention must
be paid indeed since institutional
science has made no attempt to
contextualize the development as
significant. As we've reported many times,
electric currents in space, long verboten
in the astronomical literature, is now
acknowledged with increasing frequency
at all scales of cosmic investigation.

Scientific papers propose that colossal
electric currents flow through the light
years long jets exploding from active
galactic nuclei. Some radio astronomers
estimate the strength of such an
electric current as comparable to a
trillion bolts of lightning. In our own
solar system the electric currents that
connect the gas giant Saturn and Jupiter

to their respective moons is also now recognized in science literature. However, like the spectacular electromagnetic cosmic jets, space scientists heretofore have always proposed that the electric currents are the result of strange magneto-fluidic processes. Yet rather than affirming these interpretations, finer technological data increasingly challenges standard theory while confirming the Electric Universe prediction of electrical circuitry connecting the bodies in our solar system.

In fact, the Saturnian moon Enceladus displays some of the most dramatic electrical discharge activities seen on rocky bodies in our solar system today.

Well over a decade ago, prior to the arrival of NASA's Cassini spacecraft at Saturn, planetary scientists had expected Enceladus to be "geologically dead".

Instead they found explosive filamentary jets shooting material at tremendous velocities up to hundreds of kilometers from the moon's surface.

Adding to the surprise, the jets were seen at the moon's South Pole, the last place they expected such activity. As reported by space.com in 2005, "The finding flipped everything scientists knew about Enceladus on its head, because what should have been a dead moon appeared to be geologically active and what was supposed to be the moon's coldest region turned out to be its warmest." Astronomer John Spencer said of the discovery, "This is as astonishing as if we'd flown past Earth and found that Antarctica was warmer than the Sahara." Since their discovery, scientists have interpreted the features as so-called 'ice-geysers' which they view as a form of cryovolcanism probably resulting from Saturn's gravitational forces producing tidal heating within the moon. Over a decade ago, Cassini's plasma spectrometer discovered evidence for electric currents in the jets that compose the plumes of water and dust. In recent years, a number of papers have been written on the presence

of negatively charged dust grains in the so-called plumes. Today, scientists studying data from the Cassini spacecraft are reporting that the electrical circuitry connecting Enceladus and Saturn is more "powerful and dynamic than conventional theory had proposed." The NASA press release from July 9, 2018, states, "New research from NASA's Cassini spacecraft's up-close Grand-Finale orbits shows a surprisingly powerful and dynamic interaction of plasma waves moving from Saturn to its rings and its moon Enceladus. The observations show for the first time that the waves travel on magnetic field lines connecting Saturn directly to Enceladus. The field lines are like an electrical circuit between the two bodies, with energy flowing back and forth." Planetary scientist Ali Sulaiman says of the findings, "Enceladus is this little generator going around Saturn, and we know it is a continuous source of energy. Now we find that Saturn responds by launching signals in the

form of plasma waves, through the circuit of magnetic field lines connecting it to Enceladus hundreds of thousands of miles away."

It remains the position of planetary scientists that cryo-volcanic activity on Enceladus releases the spectacular filamentary plumes which then become ionized. However, when we consider the latest scientific data and juxtapose the respective predictions and interpretations of standard theory versus those of the Electric Universe, we see a consistent and stunning victory for the electrical viewpoint. Consider first a scientific paper published earlier this year based on data from the Cassini Langmuir probe which suggests that negatively charged dust grains have previously "blocked the signal of the powerful electric currents in the Enceladus jets." For a number of years Standard Theory has proposed that electrically neutral water molecules are ejected from the moon's surface where UV rays from the Sun and interactions with

plasma in Saturn's magnetosphere strips electrons from the water molecules forming positively charged water ions. In theory, these ions are then free to be "picked up" and merged with co-rotating plasma, supposedly generating an electric current. Cassini scientists had estimated the strength of the jets' electric currents based on disturbances to Cassini's magnetometer instrument. But as noted in the summary of a scientific paper in the Journal of Geophysical Research, "...when Cassini flew through the icy plume, its instruments sent back vastly different readings. According to the craft's Langmuir probe, which measures particle density, there were enough ions present to generate a current of 10 million amps. The magnetometer indicated a current more than 20 times weaker." The authors provide experimental evidence that ions like those in the Enceladus plume are, "attracted and trapped within the sheaths of negatively charged dust grains." They conclude that, "Cassini's Langmuir probe is measuring

the entire ion population (free and trapped ions), while the Cassini magnetometer detects the magnetic perturbations associated with pickup currents from the smaller population of free ions, with this distinction possibly reconciling the ongoing debate in the literature on the ion density in the plume." Simply put, these results are anomalous for the standard "pick up ions model" but they are expected if the surface of Enceladus is being etched by electrical discharge machining. As physicist Wal Thornhill has always proposed, "Electrical discharge machining works by stripping electrons from high points on a surface. In this process on Enceladus, positive ions generated on the surface are heated by electric discharge and electrostatically attracted to follow the electrons into space. This does in fact explain the high loading of positive ions that the Langmuir probe measured. Let us also consider the hypothetical processes that planetary scientists must invoke to try to explain

the explosive plumes generation. Given the icy cold temperatures of the moon at its vast distance, nearly 900 million miles from the Sun, it seems preposterous to suggest that solar warming could produce the plumes. So it's believed that Saturn's gravitational influence produces tidal heating within the moon creating the explosive outbursts.

However, science discovery continues to challenge the tidal heating explanation both for Enceladus as well as for the so-called volcanism on Jupiter's moon Io.

In 2013, scientists reported that the locations of the so-called volcanic plumes on Io are completely incompatible with the moon's internal heat signatures.

The lead author of a study on the finding stated that it "...can't be reconciled with any existing solid body tidal heating models." Likewise, on Enceladus, in 2016 scientists were amazed to discover that when the so-called geysers on the moon are producing the most water and dust the accompanying gas output was anomalously low. As reported

by space.com in 2016, "The researchers expected quite a lot more gas expelled at the far part of Enceladus's orbit, to help explain the outpouring of dust, but they found the gas output had bumped up by just 20%, far less than expected." The leader of the study said of the findings, "We had thought the amount of water vapor in the overall plume, across the whole south polar area, was being strongly affected by tidal forces from Saturn. Instead, we find that the small-scale jets are what's changing." A recent article by Thunderbolts Picture Of the Day managing editor Stephen Smith succinctly summarizes perhaps the most obvious objection to the tidal heating model, "Although the South Pole of Enceladus is warmer than 'it should be' it is still 261 below zero Celsius... So-called 'tidal kneading' from Saturn fails because the theory has no explanation for why the effect is limited to the southern hemisphere." A fundamental challenge to conventional theory is the belief that

celestial bodies cannot carry net electrical charge separation. The Electric Universe however, recognizes charged bodies that are connected via electrical circuits across the vastest cosmic distances. The electrical connection of the sun to the planets is one of the great and ongoing surprises of the Space Age. It is a concept that was proposed well over a century ago by the electrical pioneer Kristian Birkeland, a concept that was confirmed by the discovery of Birkeland currents in the Earth's upper atmosphere which power the earthly Auroras. More recently, over a decade ago, while investigating the Northern Lights, NASA's THEMIS spacecraft made the completely unexpected discovery of so-called magnetic ropes which rapidly form and unravel and are connected to intense auroral displays on Earth. Nearly a decade later, in 2016, scientists reported their first-ever observation of similar magnetic ropes traversing the 880 million miles between

the Sun and Saturn and connecting the two bodies. The lead author of a paper in the Geophysical Research Letters said of the findings, "Contrary to previous ideas about Saturn's magnetosphere being unlike its terrestrial counterpart, these findings reveal that Saturn at times behaves and interacts with the sun in much the same way as Earth." The term 'magnetic ropes' is used to describe twisted filamentary pathways traversed by charged particles. We have suggested many times that such terminology is misleading and inappropriate. The so-called 'magnetic ropes' stretching from the Sun to Saturn are electrical Birkeland currents. The rope-like form is the structure taken by current flow due to the long-range attraction and short-range repulsion between current filaments. As outlined in numerous episodes, in recent years professor Donald Scott has developed an original mathematical modeling of a Birkeland current whose structure is identified visually as counter-rotating

coaxial cylinders of current filaments.

It is then not a coincidence that this counter-rotation is clearly seen at the north poles of both Saturn and Jupiter.

The electrical interaction between Saturn and Enceladus may be comparable to that between a comet and the sun.

Comet jets, like the plumes on Enceladus, are electrical discharge phenomena that heat and eject surface material. In fact, over a decade ago scientists were astonished to discover a

"comet-like chemistry" to the material in the Enceladus plumes. As Cassini investigator Hunter Waite stated, "A completely unexpected surprise is that the chemistry of Enceladus, what's coming out from inside, resembles that of a comet." But like the jets of comets, the matter is coming from the surface and not the interior. It has always been the position of the Electric Universe that water molecules detected in cometary comas is the result of electrochemical processes. A fact which resolves how desiccated rocky comet nuclei can still

produce prodigious amounts of water,
sometimes even at great distances from
the sun. We note again the recent NASA press
release which states, "...plasma waves
travel on magnetic field lines
connecting Saturn directly to Enceladus.

The field lines are like an electrical
circuit between the two bodies, with
energy flowing back and forth." Electric
currents in filamentary jets exploding
from Enceladus's surface, electric circuits
connecting

Saturn and Enceladus, electric currents
over hundreds of millions of miles
connecting Saturn and the sun. Such
dynamic electrical interactions between
the sun, the planets and the planets'
moons were never anticipated in gravity-
centric cosmology but they are only to
be expected in our Electric Universe.

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

In 2014,

astronomers puzzled over the unprecedented discovery of an asteroid with its own ring system. The asteroid Chariklo, which is 250 kilometers in diameter, and orbits between Saturn and Uranus, displays two rings that are said to be similar in nature to those of Saturn. The leader of a 2014 study said of the discovery, "We weren't looking for a ring and didn't think small bodies like Chariklo had them at all, so the discovery -- and the amazing amount of detail we saw in the system -- came as a complete surprise!" Today, scientists performing computer simulations are suggesting that only two possibilities can account for the continued existence of Chariklo's perplexing rings. They say that either the particles, composing the rings, are much smaller than models have predicted or that a hypothetical shepherd satellite around the asteroid

must be gravitationally stabilizing the rings. In fact, the scientists are surprised that the rings haven't already disintegrated since their simulations suggest a much shorter life. A Phys.org report on the team's research states, "...the density of the ring particles must be less than half the density of Chariklo itself. Their results also showed that a striped pattern, known as 'self-gravity wakes,' forms in the inner ring due to interactions between the particles. These self-gravity wakes accelerate the breakup of the ring. The team recalculated the expected lifetime of Chariklo's rings, based on their results, and found it to be only 1 to 100 years, much shorter than previous estimates. This is so short that it's surprising the ring is still there."

Chariklo is a member of a family of asteroids, between the orbits of Saturn and Uranus, called the Centaurs. In the past, the Centaurs have occasionally surprised scientists with their comet-like behaviors and created some

confusion as to their classification as either asteroids or comets. The Electric Universe theory has always stated that the only real difference between comets and asteroids are their respective orbits and both can discharge electrically when moving through regions of changing electric potential. This theory, as proposed by the chief principals of The Thunderbolts Project, also states that comets, asteroids and meteoroids were recently electrically torn from planetary surfaces. The late astronomer Tom Van Flandern proposed his own theory of the birth of comets and asteroids suggesting they are the remains of an exploded planet. Van Flandern argued that the characteristics of the orbits of asteroids, particularly those between Mars and Jupiter in the Asteroid Belt, show all of the features of material having been recently ejected into space. Van Flandern made the seemingly outrageous prediction that asteroids would tend to have natural satellites. It was almost universally

dismissed by astronomers. However, in more recent years, many asteroids have been found to have their own moons. In the case of Chariklo, physicist Wal Thornhill has agreed with the notion that the asteroid likely has shepherd satellites maintaining the rings.

Astronomers have assumed that the material, composing the rings, was removed from the asteroid by a violent collision.

But the kind of fine dust in the rings is not what one would expect from a mechanical collision. Indeed, as reported in this series, in more recent years scientists have increasingly acknowledged electrostatic dust-raising events on both comets and asteroids.

Nevertheless, the cometary behavior of some asteroids continues to pose a great mystery for astronomers. In 2013 the asteroid P/2013 P5 astonished investigators when it suddenly sprouted six comet-like tails, forcing scientists to eventually reclassify the asteroid as a main-belt comet. Researchers suggested that the force of sunlight, hitting the

asteroid, may have caused a mysterious and sudden increase in its spin rate, causing dust material to fly off into space.

It was then suggested that radiation was able to "stretch and confine the removed material into tale-like forms." However, both the machining of the dust from the asteroid and its confinement into comet tails could more easily be explained as electrical discharge phenomena. Chariklo's ring system has led to the reinforcement of the idea that the dust material in the rings might eventually coalesce into a small moon. But the notion, of colliding particles accreting into planetary sized bodies, has never been shown to work. In fact, experiments on earth suggest that collisions will tend to disintegrate material exceeding mere centimeters. Indeed, among the many problems with the collisional theory of the formation of moons; if the satellites in our solar system were formed by collisions, one would

expect to find a neat gradation of their properties. However, the respective satellites of the gas giants Saturn and Jupiter are so different that it seems doubtful they were formed in the same way and by the same body. It is surely telling that the consensus story of the origins and behaviors of asteroids and comets continues to be challenged by science discovery. The evidence simply does not support the notion that these bodies are billions of years old, tracing back to the solar system's infancy. But how many asteroid and comet mysteries will be resolved if scientists will finally entertain a recent catastrophic history of our solar system?

For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

Welcome to the
Electricity of Life,
brought to you by The Thunderbolts
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The connection of the mind to the body
is an arena of constantly growing
scientific investigation.

To an unprecedented degree,
mainstream medicine
today acknowledges that
the mind has a
profound effect on one's
physical well-being.

The mind affects matter,
whether it's the so-called placebo
effect where the mere belief that a
person has taken a particular drug
causes a physical benefit, to the
increasingly evident impact of emotional
stress on physical organisms and
individual cells.

However, as mainstream
science acknowledges, the very nature
and source of the mind
itself remains a mystery.

A remarkable scientist who has explored

the mind-body connection is Dawson Church, the author of dozens of scientific papers as well as the recent book 'Mind to Matter' which suggests vast untapped abilities of the mind to affect healing.

In part one of this two-part interview, we asked Dawson to begin with an introduction to his earlier book entitled 'The Genie in Your Genes' which presents voluminous scientific evidence that thoughts and intentions can trigger one's genes with potentially great consequence to one's health.

Well, I became interested in energy healing at an early age and when I was 15 I joined a spiritual community and began to learn tools like meditation, like energy medicine and in that community I saw some really remarkable rapid healings occur.

But I always thought about energy medicine, energy healing,

as being a very fringe endeavor.

And so, in the 1990s, 1980s it was regarded as being part of complementary and alternative medicine or CAM, C.A.M. and there was no real thought that CAM could ever become part of the medical mainstream.

We knew the medical mainstream involved things like drugs and surgery, interventions by skilled medical professionals and there was no real place for CAM in conventional medicine.

But what we had happen in the late 1990s is, scientists turned their attention to using some other tools developed for diagnosis to looking at altered states of consciousness.

And so we, for example, for the first time found at altered states of consciousness.

And so we, for example, for the first time found people meditating, getting put inside MRIs or having EEGs attached to their heads and actually I was actually reading

things like brain waves
that were the result of consciousness and awareness,
consciousness should
send in energy.

And what we found as we used
these modern methods, was that a
lot was happening that enhanced
the bodies of those kinds of people.

So at a certain point, I moved from
psychological research looking at
anxiety, depression, PTSD,
to biological research.

And around 2008, 2009, I began to
look deep into what was happening inside
the body when people shift their state.

And so I wrote this book *The Genie in
Your Genes* about the epigenetics of
personal change, how when you change your
consciousness, you're literally shifting
gene expression inside your cells and
this is easy to prove.

When I wrote the book, there was
no direct proof of this but
there was lots of indirect proof of this
because for example when you get scared
or startled or frightened your

adrenaline level rises and there is a gene that codes for adrenaline, a gene that codes for cortisol, but when you then go and tell your best friend or your wife or your husband about being scared or startled or frightened, say you had a bad experience at work and you had a high level of cortisol, high level of adrenaline in response to a threat at work.

Now you're telling your spouse about this after you get back from work, and your adrenaline is now rising again.

So there's no direct threat to you at this point, only a shifted awareness, only emotion, only a sense of changing your consciousness, changing your energy to relive that threat, but your body is now taking that imaginary situation as though it was real threat and producing those same stress hormones like cortisol and adrenaline.

So I did the first large-scale randomized controlled trials actually a triple blind

randomized controlled trial published
in the oldest medical journal in the U.S.
and it showed that when you use an
acupressure based technique, EFT, that in
one hour you're literally
bringing the levels of those stress
hormones down far more than talk therapy
or simply resting.

And so that was really a
landmark study showing that
indirectly I was showing that we're
changing the gene expression because we're
changing the byproducts of gene
expression like cortisol and adrenaline.

I then went to study a
step deeper than that and actually
looked at gene expression and with the
conclusion of the human genome project,
we now have tools that allow us to much
less expensively sequence genetic
sequences and actually see what's
happening, which genes are being turned and which
genes are being turned off.

So I worked with a group of
veterans, people mostly
Vietnam veterans, some Iraq veterans,

Afghanistan veterans, and we looked at their levels of gene expression before and after ten sessions of this acupressure based technique EFT.

And we found that their levels of anxiety dropped, depression dropped hugely, their levels of PTSD, their levels of symptoms like flashbacks and nightmares, intrusive thoughts and so on, all of these things dropped dramatically, over 50% over those 10 sessions.

We hit pay dirt, we found that their genes actually were shifting dramatically, several of their genes to do with stress, to do with inflammation, to do with the byproducts of the metabolic signatures of stress were being shifted by this psychological intervention, so now as you change your mind, as you change your awareness, as you change your emotional response, as you use an effective therapy like EFT to get rid of those emotions so you're telling the story of the terrible

experiences in Afghanistan or Iraq or civilian ones like a car crash or a divorce, so now you're telling all those same stories to people but they're no longer laden with emotion and so now your body is no longer getting that epigenetic signal to make those stress hormones.

So those veterans then, after those 10 sessions were telling those stories, remembering those events and they were no longer triggering those stress genes and so that has led to a several other studies like that.

The big take-home message of this was that, as you shift your awareness, as you lower your stress level, you're literally turning genes on and off in your body.

And in the gene, in your genes, I map that whole process from start to finish, how both actual threats cause changes in gene expression and imaginary experiences like meditation.

Meditate for a while and

you shift your gene expression.

Do EFT, you shift gene

expression, do Yoga, do Qigong, take a walk

in nature, any of these things are

literally turning genes on and off and

as we've used these elaborate tools like

MRIs and EEGs to look at how much, we're

finding that the answer is, a huge amount,

that we're not seeing trivial or minor

shifts in gene expression, we're not seeing

trivial or minor shifts

in brainwave activity.

We're seeing major shifts,

radical shifts in the way the brain

processes information based purely on

these energy and consciousness techniques.

So, that work in the 'Gene in

your Genes' made an argument really early

in 2004, but the newer editions now have

many studies showing directly that our

awareness, our consciousness, our energy

level, our way of seeing the world, our

worldview, our mental

picture of reality,

all of these things are

turning genes on and off.

I will leave you with one of the final studies, an amazing study, and it shows the cumulative effect of this which you see in longevity.

So people make a lot of little choices in their lives; should I drink tea or coffee this morning, should I get up on the left or the right side of the bed, and you know, those choices are minor but when those choices are about emotion, when those choices are about spirituality, when those choices are about stress, they may seem minor.

Just that five minutes you spent obsessing about the bad thing, some of the things last week might seem like a trivial thing, but cumulatively over a year and then five and ten and twenty years, they make an enormous difference to your gene expression which shows up in the form of longevity and so this one really stunning study I talked about, shows that optimists, people who think positively, people who have a positive worldview, people

who see others in a positive light,
optimists live on average eight years
longer than pessimists, that's the
cumulative effect of
all that negative thinking.

Think negatively for a moment,
you don't see any big change, think
negatively for a lifetime and you get
eight years less on it, so these are
the profound shifts that these
kinds of emotional states are producing
epigenetically in ourselves.

The scientific evidence that thoughts and
emotions affect one's genes carries
another extraordinary ramification that
genetic changes caused by emotional
trauma might be passed on
to future generations.

That study, showing that
emotional trauma is intergenerational
is stunning, because we always thought
that if a bad thing happened to me well,
it was going to affect me, it might produce
PTSD, it might produce trauma in me, but
how could that really be passed along to
my kids or my grandkids because they're

going to have a fresh set
of genes, going to be
born with these genes that
are unaffected by that.

But in the study of Holocaust
survivors, this is the first big study
done in the late 1990s, they found that
the gene expression patterns of the
children of Holocaust survivors looked
similar to those, mirrored those of actual
Holocaust survivors.

We've now shown in animal studies
with rats and mice that
those kinds of epigenetic tags we passed
along for seven generations so we're now
realizing that stress and trauma is not
something that affects just one
generation of people, that affects people
in a limited way locally.

We're realizing that it affects
them over time and they
then literally pass these epigenetic
molecular markers onto their children
and their grandchildren.

A parallel field of investigation
to the mind-body

connection is the study

of consciousness itself.

We asked Dawson for his thoughts

on the perspective that consciousness

is not generated by nor

confined to the brain.

The old view, the materialist

worldview was

that mind is what's called an

epiphenomenon of complex brains.

And the idea is that originally there were

single-cell organisms, then multi-celled

organisms, then complex organisms as

they got more and more complicated,

they got bigger and bigger brains, more

complex brains and eventually went

throughout this phenomenon called mind.

That's a result of brain activity.

But there's no actual proof for that point

of view and in my book *Mind to Matter*,

I quote many, many neuroscientists, many

many authorities who say, point this out,

who say that there's really no proof,

no empirical proof that mind is the

epiphenomenon of a complex brain.

And what the brain seems to do more accurately is,

it seems to be receiving and transducing information and then manifesting it on a physical level so the brain is much more like a receiver of information than it is like a producer of information.

Just the way someone is listening to this podcast right now and they're listening to it on a device so the words I'm speaking and the words you're speaking and this interaction isn't happening inside of their smartphone and that's the conceit of the materialist worldview, we think that because there's this broadcast coming out of the smartphone well, then the smartphone has to be the source of a broadcast.

We don't realize that the broadcast was coming from a distant location and so there are lots of examples, there's lots of science now behind distant mental effects and the distant phenomenon of consciousness.

And so, what the research does show is that there's far more evidence for the idea of consciousness being something that

permeates the universe, there's something
which I talk about in the very
beginning of Mind to Matter, I talk
about non-local mind and our local minds
are anchored in our local brains.

So if for example I, talk about me, Dawson, I'm
talking about an individual and an
entity that's anchored in a local sense
of self which I associate with my body
and my circumstances
so that's the local me.

But there's far more to me
than the local me.

There's far more me than the
local sense of self and so when
meditators for example enter a deep meditation,
a part of the brain called the parietal
lobe which locates your body in space,
that part of the brain shuts down, the
prefrontal cortex that that constructs
the self, shuts down, there's a massive
drop in the consumption of
oxygen and nutrients by those two parts
of the brain and so people literally
begin to have a non-local sense of self.

They describe a feeling of oneness, they

feel a sense of peace, they feel a sense of connection with the rest of the universe.

In these states of

consciousness, all kinds of non-local phenomena occur so people who are in this non-local space report experiences of precognition, knowing the future what's happening in the future before it happens and there's really, really good evidence for precognition, telepathy.

The EEG is one of the most pervasive instruments used by modern science, the electroencephalograph, and there are thousands of things now that plot our brain waves using EEG.

But when I was writing

Mind to Matter, I became

interested in the guy who invented the EEG, whose name is Hans Berger and he was a German doctor in the late 1800s, early nineteen hundreds and he had, he got his big insight about inventing a device to measure brain waves when he had an experience of non-local reality.

He was actually a German military officer and one day he was on his horse

and he was part of a horse team
towing a huge big field gun in the late
1800s and his horse reared up and threw
him right in the path of this rolling
gun and just as a gun was about to crush
him, his friends managed to stop the
gun and he wasn't crushed.

That night he got a telegram of
his father saying, I've
been concerned about you,
how are you?

And he never got a telegram
from his father before.

It turned that his sister
that day, at the very moment he is, he was
about to be crushed by the gun, she had this
premonition of a terrible thing about to
happen to him and
told the father to send the telegram.

So there are always examples of people, even
in science, Einstein said that all great
scientific discoveries come from these
states in which you're letting go
of the local self and connecting
with a non-local self.

That's where inspiration

comes from, that's what

creativity comes from

and so the brain

is the anchor of that

non-local mind in

local experience and

that's really where

the evidence is pointing.

When I began to write my book

Mind to Matter, I thought I

would find a chain of evidence linking

our thoughts to manifestation in things

but I didn't think I'd find a complete

chain, I think, I thought I would find

that science would reveal a number

of links in that chain and there'd be

some big gaps in the chain as well.

And I was amazed when I got to the end of the

book, that there are no missing links to the chain.

They're all there, they're all

there scientifically and so that was one

big surprise to me in

writing Mind to Matter.

The other was the scale and the

size of some of these phenomena

and in the first chapter I tell the story of

astrophysicist turned TV reporter called Graham Phillips and he has a show in Australia called Catalyst and he'd heard about meditation and the meditational health benefits so he thought well, I should give it a try.

He wasn't a believer, he was a bit of a skeptic but he went into Monash University, a very distinguished university in Australia and he had a complete workup of his physical function and his brain.

So they measured the volume of every single point of his brain and also tested his neurological function.

He then began to practice mindfulness and up in just two weeks he found that his whole way of reacting to stress had changed.

He could feel and see the difference in his behavior.

When he went back to the University after eight weeks, now again this is only two months of practicing meditation and mindfulness, they did this complete battery of tests on him again and they

found that things like his reaction speed, his memory and learning capacity had increased exponentially and a part of the brain that regulates emotions and its job is to regulate emotion across different brain regions, it's called the Dentate gyrus, it's right in the very center of the brain, the center of the hippocampus, the memory learning center of the brain.

The Dentate gyrus spreads out through it, it actually helps different parts of the brain regions coordinate their regulation of emotion.

So in eight weeks, the volume of neural tissue

in Graham Phillips's brain in the Dentate gyrus had increased by 22.8%.

Now, that's an enormous difference, that's more than a fifth growth in that one brain region in less than two months so just a remarkable shift and not just in brain software activity but in brain hardware as well.

And so, what I'm arguing in Mind to Matter, what I'm showing in these studies,

they reveal that our brains
are changing substantially, remarkably,
and quickly in response to consciousness,
when our awareness changes, when we
destress ourselves, when we tap, when we
meditate, when we do all these things
that help us feel better,
those subjective feelings of
well-being translate into objective
changes in measures like the volume of
neural tissue in different
parts of the brain.

So if you've been for
example a kind of a
person who's been angry and stressed and
upset and resentful for a long time,
you've been growing those neural
circuits for a long time and they
get worse and worse and worse.

PTSD, people with PTSD they get worse
over time generally speaking, but if you
fill your mind and heart with love, with
compassion, with kindness, you can make
that choice over and over and over again
as Graham Phillips did, you are then
building up those circuits that have to

do with all of those phenomena and you are a resilient human being, you have this core of resilience that can really help you when times are tough or when you have life setbacks.

So I was intrigued by his case history of how we're literally turning the software of consciousness, of mind, into the hardware of brain.

[Music]

In the early 1920s, Alexander Gurwitsch in Russia was experimentally exploring the idea that all life emits, and is embedded in, a morphogenic field. At one point he took two onions out of the ground careful to preserve their root tips. Because the root tip has the highest rate of mitosis, the cells are dividing fastest at the tip. He pointed the tip of one root at the middle section of a second root. The cells in that middle section of the second root then started to divide much faster. He further experimented with blocking the effect and found that if he put a barrier between the two, he could stop the effect, if the barrier blocked ultraviolet wavelengths of light. Here was the first modern experiment, showing that living cells emit light, and that this light can directly change the behavior of other cells. Today you can verify that your eyes emit light, by purchasing a Hamamatsu photomultiplier and going into a completely dark room and pointing the photomultiplier at your eye. Living systems emit light from ultraviolet to very low frequency

radio waves. Different tissues emit different wavelengths at different times and at varying intensities. Why is this not more obvious?

Well, I would argue that it is, since we've all noticed the light in someone's eyes.

Or have said things like, 'she has a glow about her', or 'you were simply radiant'.

If we would all trust our own experience more, then science could progress much faster.

The amount of light given off by creatures varies quite a bit - from a few photons per second to tens of thousands or hundreds of thousands per second.

That places the intensity in the range of walking in a dense forest at night when things are really dark.

But somehow plenty of nocturnal animals do just fine. What is this bio light doing?

Here are a few examples. Over the winter a seed will not emit any light.

As the rain falls and the temperatures rise, in the quiet darkness of the soil the seeds start emitting light, green light, up to ten thousand photons per second. Another example.

Put someone in a dark room. Shave off a bit of the hair on the scalp, and place a photo detector against the area of the

visual cortex. Take a baseline reading.

Ask the person to imagine a bright light -
the photon count will immediately shoot up.

Your brain gives off more light when you
imagine light. The light emissions from
the entire human body were recorded
periodically over the course of a year.

The entire body brightens in the
summer and is darkest in the winter.

Within a single day the body brightens as the Sun goes
to its zenith, then the body gradually dims, as the day
moves to night. The light emitted from the center
of the body stays the most constant, while the
hands and the head show the most variation.

The colors emitted are centered around
green, but go to blue and yellow.

But the light from the center of the
palms is shifted slightly more to the blue.

Our blood is constantly emitting light.

Blood that had a higher immune response,
in this case carrying more neutrophils,
had a measurably higher photon count.

To our alert biomedical viewers: this is
probably the best area to look for new diagnostic
techniques, as you can be absolutely certain that
the complex rainbow of colors given off by

our blood perfectly reflects the ever-changing physical and emotional state of our organism. Diving into individual cells, biophotons travel from mitochondria through microtubules. When I was in graduate school, it was just observed that microtubules were used by cells as highways to actively transport materials to where they were needed in the cell. And now we know that those tubules are also carrying light.

We've also found that single neurons act as wave guides for visible light photons.

Neurons not only behave as electrical wires, but also act like fiber optic cables.

Light and electricity are really two sides of the same coin, so we probably should have seen that one coming.

In the old picture, any light present in biological systems was just the random thermal energy.

And yes, there's plenty of that. But now we see that specific biological processes are initiated by specific frequencies of light which are emitted at specific times and places.

The biology of light is just as regulated as the biology of molecules.

We're down to the final two experiments.

My runner-up favorite is based upon the fact that when you are in bright light, your brain emits more photons.

Take two people. Place them in the same room along with an antenna which emits a weak oscillating magnetic field. Person

One then stays in the room while

Person Two goes to a second room which is completely dark. Shine a bright light on the first person.

The second person's brain will immediately emit more biophotons.

This only worked if the two people first shared the experience of being in the same oscillating magnetic field. I

read this paper over six months ago and I'm still wondering what it means.

Before looking at my favorite experiment, let's discuss things a little. Light emits light.

In some cases we see the light is doing specific work, such as initiating mitosis.

If humans were nocturnal creatures this would all be obvious, as the luminosities are roughly that of a forest on a moonless night.

We have light shooting out of our eyes; the ground below us is radiant with the ultraviolet light of root mitosis. For those

with a classical bent, you might be saying,

"Plato was right, once again?"

Plato said that in human vision light

goes out from our eyes and blends with

the light coming from objects and the

combination results in what we see. Now

we have proof that our eyes emit light.

To a physicist this was always an

obvious possibility since all receivers

are also transmitters. A radio antenna can send a

signal, or receive the same signal. It has to work

both ways. The rhodopsin molecules in the

retinal cells can absorb visible light. Therefore

they must also be able to emit the same visible light.

Why might the light coming from our eyes

blend with the light coming in? To answer

this, we can look at how the ears work.

Decades ago, it was found that our ears emit

sound. This was shelved as an interesting

oddity, until someone wondered if

there might not be some purpose to it.

They found that the ears emit sound for

the purpose of actively producing signal

canceling and signal enhancement.

Ever wonder how it is in a crowded room

you are capable of focusing in on one

conversation? Even someone else's

conversation, several feet away?

It's the same principle as the noise-

cancelling headphones but several light

years more advanced, as your auditory

system somehow knows where is the voice

you want to hear. How far away is it; how

long does it take for the sound to travel

the distance between your two ears.

And then in real time, as the sounds in

the room keep changing, your eardrums

emit a sound signal that will reduce

everything else and enhance the

particular voice you want to hear.

The same is happening with your vision.

I've not found the research yet,

but it will come along soon enough.

How is the biology of light different

from the biology we learned in school?

One hundred years ago, people did not

much think of biology as a chemical process.

Yet everyone listening to this lecture

was educated inside the biochemistry

paradigm. We were taught that biology is only a

chemical process. What do we mean by biochemistry?

Take the example of a cell needing to

build out some new bits of its machinery,
such as a new ribosome. Ribosomes are
the primary machinery that cells use to
build all the other proteins the cell needs. This
requires raw material, enzymes and an energy source.

Imagine the new ribosome is almost completed
and just a final bit needs to be attached.

The final required bit of protein
is there, hanging around.

The precise enzyme needed for just this
final attachment also happens to be there,
and the ATP molecule is also hanging
around, and then they all come together.

Energy is released from the ATP molecule,
travels through the enzyme and the final
bit of ribosome is added. Biochemistry is great
because biochemists have worked out all the
players in this construction story and a
thousand others, and have measured the
amount of energy needed in each case. Now

let's retell the story adding light and electricity.

What do we mean by 'energy is released' from
the ATP? Electron orbits are broken, rearranged.

This is a change in electric currents.

This change in electric currents emits
light, just as the radio antenna emits

light as the electric current is changed.

This bit of light emitted by the ATP travels through the optical conductor called enzyme, and is used to rearrange electric currents on the almost finished ribosome. Think arc welding.

These changes would look like sparks and rippling rainbows, if we had the eyes to see it.

You cannot have chemical changes without light.

When electric currents change, light is produced.

When light is absorbed, electric currents change. Light and electric currents are two sides of the same coin: they are the energy and the matter corresponding to each other.

To better understand organic life, we need to see it as a hierarchy of worlds within worlds.

A piece of light is not the same as a molecule.

A molecule is not the same as a cell.

A cell is not the same as a human body.

these are all worlds of vastly different sizes and properties. Yet, all these worlds interpenetrate one another and influence each other.

We could not have organic life without cells, or without chemicals, or without light and electricity, nor could cells live without ecosystems, and the whole earth and the Sun.

This hierarchy holds together

because all the levels communicate,
and exchange energy and information. Starting
with the onion, let's step our way down the ladder.
An onion is living. Inside the living onion, the root is
growing. Inside the growing root, cells are dividing.
Inside the dividing cells, loads of
chemical changes are happening.
In those chemical changes are electric
currents, and from those changing electric
currents, ultraviolet light is emitted.
When this ultraviolet light is absorbed
by a second root, this initiates the whole process
in reverse, causing rapidly changing electric
currents, needed for rapid chemical
rearrangements, needed for rapid cell
division, and the root of the second onion begins
to grow. Root cells are both transmitters and
receivers of everything roots are capable of doing.
In general, if there's a problem at any one level,
it affects all the levels. If some-
thing goes wrong with a molecular
process in my cells, I experience that as ill health.
The molecular world makes itself known to a person.
Or the whole person might engage in
unhealthy behavior such as persistent
negative thoughts, or useless fears,

which will inevitably trickle down to
cause disordered molecular activity in some
cells. With this picture of interconnection up
and down the ladder, we now widen
our view and look further up the scale
If a large number of people are engaged
in unhealthy activity, this must work its
way up to cause ill health in whatever
larger groupings exist, be they families
or countries, or even all life on earth taken all
together. Going the other way, if we can imagine it,
if there were something gone wrong at a
planetary level, then this must find its way down
to humanity. Not necessarily to make each
person sick, but certainly cause changing
trends of illness that appear
and disappear across the globe.

Our ladder now stretches from the
entire earth down to individual photons,
and we are ready for my number one favorite
experiment involving the biophotons of DNA.

The lab of Luke Montagnier was studying
radio frequencies emitted by DNA.

In the last of a series of truly
boggling experiments, they placed a
string of DNA into a vial of water and stimulated

the vial with various radio frequencies.

Then filter out the DNA. This leaves just water, but the water is now emitting radio frequencies, which it somehow got from the DNA. Place an antenna around the vial of water and send that signal to a second lab, several miles away. In this other lab, you have a second test tube that contains water and all the individual building blocks of DNA.

Broadcast our signal into the second vial.

In a few hours the original DNA strand will be constructed in the second vial.

Sounds like magic and I guess it is, but it is also experimental data. Water can hold the radio frequency signal, which can be used to rebuild the DNA sequence from raw materials.

I would hope that entire new research labs will be set up to further explore these results.

Luke Montagnier has many admirers and many enemies. As often happens with people who achieve a great deal in life, shortly before his death last year, he had the distinction of being canceled for daring to point out some obvious problems with a novel medical treatment that was being rolled out around the

world. Hence it is possible that anything
connected with him will be erased from future history.

What frequencies worked best in this experiment?

The results were clearest when the
initial strand was energized with 7 Hertz,
14 Hertz, or 28 Hertz radio signals.

Of course, these are the resonant
frequencies of the entire electrical body of
the earth known as the Schumann resonances.

That is worth saying a second time:
the entire electrical body of the earth
vibrates loudest at 7, 14 and 28 Hertz.

These are the same frequencies that
allow DNA in the experiment to best convey
its information through water to rebuild itself.

It is absurd to think this is an accident.

This obvious connection between the
electrical body of the earth and the
DNA in each of us makes me.... quiet.

Like, I sometimes get quiet in church, or
in an overwhelmingly beautiful landscape.

At this point poetry meets experimental science.

The bridge between the two seems long
but is also undeniable. Antennas work both
ways. The entire electrical body of the earth
is both the sender and the receiver of all the

vibrations in all the DNA in all the living creatures.

over all the eons that have unfolded within her. Inside you, are a trillion antennae that are both the senders and receivers of all the love and wisdom contained in the long body of our Mother Earth.

This would be enough, but we're not done yet. In simple physics, the length of an antenna is comparable to the size of the wave it absorbs and emits. The AM radio antenna on your car is one-fourth the size of the AM radio waves that are being sent out from the radio stations.

Since we have already verified experimentally that our DNA is an antenna that both absorbs and emits, we might ask what is the length of our DNA and is there any station broadcasting that wavelength. The DNA in one of your cells unrolls to roughly your own height that's a notable connection an organism the size of a person needs an antenna roughly its own size to adequately send and receive all the information required for an entire life, from conception to death.

But what about the combined length of all the DNA in all your cells? That combined length is the size of our entire solar system. We have within us antennas whose combined length happens to be the right size, to resonate with the entire body of the Sun, the

planets, all the comets, even out to the heliopause.

Who could believe such a thing?

How could there be a connection with the

life of a person in the entire solar system?

Yet the connection must be there,

because the ladder is unbroken. Whether

or not any one of us can knowingly receive

these signals, or is capable of intentionally

broadcasting up to the whole solar system.

It's a good question I dare say

it's a very important question.

[Music]

give a brief hypothesis fundamentally
that the earth has been influenced by
electrical discharge it's not the only
thing that's been influenced by but how
can we quantify that so with that
background I'll have to talk about the
geological effects of running water it's
an important component of our past and
it still is measured today electric
discharges on dielectric media is
something we can do in the lab and as
you've seen in the past few talks
electric discharges are scalable it's a
fundamental aspect of these studies is
that what we do in the lab if we have a
source for it at the Galactic scale or
at the earth scale it can occur and we
can measure it you can't do that with
water that's the only drawback to water
you can only scale it a few orders of
magnitude in the laboratory and the
fractal analysis is a tool with which
we'll use to measure these items so
I'll take you through how I measure some
of these landforms and compared them to
existing electric discharges so really

what is water water flows all over the
earth you can find many pictures of it
we know we can measure it to measure
what it actually does on the earth
electrical discharges however a little
bit different they have fractal patterns
they're somewhat chaotic but also
ordered in their discharge patterns I'll
show a few other pictures from capture
lightning they do a lot of great work
with these Lichtenberg patterns in
polyacrylic type resins and you get
these beautiful dendritic patterns so we
can actually measure these these items
in the lab and we'll talk about that a
little bit more so let's be honest how
many of you flew here right you look
over the earth you see some pretty
perplexing landscapes and now we can
view that on our laptops and we can
measure things on our laptops okay and
and myself as a chemist I'm a chemist
I'm not a geologist but I understand the
concepts behind some geology I was
wondering if the current geological
paradigm was missing something as I flew

over the earth I saw these tremendous dendritic patterns and cratering and mountaintops right next to flood plains and other different topological features so I I was wondering okay we can talk all we want about other mechanisms but if we don't have a quantitative way to measure that no one will hear us so is there a quantitative relationship to various topological aspects of the earth and I believe there is and that's what fractal analysis will tell us I'm from New Jersey northern New Jersey it is more than Newark Airport there are some beautiful regions in New Jersey where I live there are a lot of granite outcrops a lot of very strange log backs that run from the north to the west or north northwest beautiful Lake Region that's about ten square miles there on Google terrain as we back out an order of magnitude we see some interesting aspects to the topology we see our Appalachian Mountains here that run folded patterns supposedly these are

ancient mountains that have been eroded
away but right up butted against them
are dendritic patterns and cavern of
extensive canyons in central
Pennsylvania formed by water presumably
this butts up against the coast which
has been thought to be a floodplain and
there's beautiful Newark down there if
you back out more on the East Coast it
then comes up to the flood plains of the
Mississippi region Ozarks are down here
New Hampshire the Granite State granite
outcrops everywhere fairly high
mountains up there but again the
Appalachians stretch down throughout
Virginia and you have your Chesapeake
Bay there so in terms of scaling when we
back out from our small ten square mile
aspect we see some very unique features
at different scales we've already seen
in the past number of presentations
haven't been that many already that we
we can assume at least for the
hypothesis that the earth was bathed in
equilibration of electrical energy from
sun from the galaxy from other bodies we

don't know that was the past that is an
origins question that is a different
conversation but what we can do is we
can measure what's left over
and we can see if we can draw any
conclusions from that so in that sense
this is a slide borrowed from from wall
if the current is coming in on our
galaxy we are just a very small subset
of this again it goes back to scale
michael Claridge showed that so well
goes back to scale we are just a very
very small speck of dust on one of these
arms and if there is electric current
flowing through these arms it is
reasonable to assume that we've been
influenced by that in the past again
from walls presentation this is just a
local hypothesized environment of the
plasma solar system and where our
incoming charge is coming from from our
plasma pinch currents again look at the
scale the Sun is still but a small speck
on this overall space of things and then
from a size scale from a NASA view our
little blue dot of Earth here we are

very small compared to the Sun so it's reasonable to expect that large changes in the sun's output could influence us dramatically now that we know were tied electrically to it

we know that in recent years 1850s late 1850s a tremendous corona affected telegraph lines blew out many of them if such a corona what happened these days we'd be in loads of trouble but we also have to realize that electrical effects are not the only effect many years of very hard work by very smart people have established certain aspects of fluvial erosion erosion by glaciers it does occur we can't deny that but on what scale what is the order of magnitude of a fluvial erosion versus a massive electric thunderbolt brought about by discharge across the Earth's atmosphere so these discharges do exhibit daya discharges cross dielectrics do exhibit fractal type patterns and what is a fractal many of you might be familiar with a Mandelbrot set it's a very fun whirlwind through YouTube if you zoom in

and it goes and in Peet repeats to
infinity no matter where you increase
your magnification on this set that's a
fractal it is the same as it is near as
it is from far so discharges across
dielectrics a dielectric being some sort
of
later exhibit these kind of fractal
characteristics so again the capture
lightning folks do this Marvis lee this
is a discharge across polycarbonate and
as if you zoom in to infinity you could
theorize down to the single electron
path in these dendritic patterns now
interestingly enough when when fractal
analysis started coming about Mandelbrot
pioneered this in the 70s and the 80s
published a book for fractal shorelines
and shorelines were the first to be
analyzed they did exam it's some sort of
fractal characteristics in this case
it's Chesapeake Bay we see our dendritic
pattern here and also some could be
brought about by flow of the rivers from
rainfall from constant season changes
but what are the main effects how much

of an effect does the fluvial erosion
of a riverbed have versus an electrical
origin can we quantify that so that's
what we'll explore if you go walking
down the street or in a on a muddy path
and it rains the rain is going to fill
in the path it's that simple
we can see that every day so the
hypothesis is what if the earth did
experience these discharges which had a
profound effect on the topology of the
earth but now we're in under the
influence of a quiescent state of rain
snow erosion could these processes that
had already sculpted the earth influence
what we see in the rivers today now we
do know that fluvial erosion happens we
can measure we've seen it in the earth
these are pictures from Alaska where you
see the snowfall actually freezing and
then melting and carving river channels
and then you have what's called fluvial
fan fans towards the bottom as the water
decreases its energy and dissipates as
energy it spreads out so this can be
measured but there are other places

where it does not happen so clearly
especially on Mars when you look at
craters the last electric conference we
had a wonderful tour of the Mars geology
and the big discrepancy here is that
these alluvial fans actually go downhill
so it's the wrong direction this is the
problem so this is the edge of the
Victoria crater so we would expect these
alluvial fans actually increase as your
fluids run down to the bottom of the
crater but that does not happen there
must be another mechanism in place
because it does not account for
flooville creation of these dendritic
patterns floovio patterns we know happen
again Google Earth thank you so you can
increase your magnification this is
Canyon Lake down in Texas they had a
river dam breach or not a river a lake
breach and you can see what happened to
the limestone the surrounding limestone
region you can then pixelate that and
visualize that and do some measurements
on it it's fairly linear go straight
downhill to the river where it feeds

into the river we know it's a flu view
pattern in the same way you can do that
on a Great Mississippi or I'm sorry this
is Mount st. Helens
I'll get the Mississippi another slide
the Mount st. Helens the eruption
happened the pyroclastic flow flowed
down to the near the lowest region you
can also quantify that pixelate it and
look at the flow of where it where it
occurred it also had some side channels
here that I forgot to put in now I get
on to flooville patterns right this is
like our Mossad down in Texas this has
been dammed so this has restricted the
flow of the river
over the course of time and what we see
in stark contrasts to an existing river
flow is the dendritic pattern of
occurring why does this occur because
you're changing the base level the base
level is an important fundamental aspect
of geology that says well water's going
to flow to the lowest level and if
there's an erosive layer there it's
going to eventually wrote it away and

create a new base level if there is a
level there that cannot be eroded away
that will be your base level so my
question is if this is an existing base
level and this is the river how did
these existing dendritic patterns form
if you increase your base level it's
going to fill in to what was already
there but those should have already
flowed from somewhere else into the base
level of the river so it's kind of like
a cat chasing its tail now and we're
trying to figure out how to do
found these factors in the same way you
can look at the Mississippi floodplain
this is a part of the Mississippi River
here in terrain mode and you see
extensive arrays of dendritic channels
especially in the Ozark region rolling
channels we have a rent driven through
Missouri it's just constant constant up
and down the problem here is if these
were all flooville as a result of
flooding they would also have the
similar drainage pattern to a base level
but they do not in the same way of this

had a base level we would see the same dendritic patterns brought about by constant flooding of the Mississippi in the near past and in your past we don't see that these dendritic patterns further do not drain to anywhere they are they're on their own so this begs the question what a brought brought about these dendritic patterns and how can we measure them in the differences between them and the fluvial patterns as I mentioned this concept of base level in reading through some of the basic textbooks on geology written by Tarbuck say if you take an introductory geology course over and over he says running water is a single most important agent sculpting the Earth's land surface that is a constant mantra of current geology and that's to be said because they have come up with hypotheses as to how this water erodes and some models that are validated by experimental research the major factors include your slope your bed your some suspended loads the types of materials your depth your width your

physical barriers and your rainfall
these can all be measured and modeled
this is introducing the concept of
design of experiments you have factors
which you can control or at least
monitor and then you have your responses
including your sedimentation what's
being brought down this slope by
rainfall or some sort of flood that gets
deposited on this new bedrock layer the
river flow the flow rate the erosion
rate how fast this sedimentary layer is
deposited in the new area so all these
factors can be measured and you can come
up with models
this in particulars from the Department
of Agriculture a general technical
report that people can use to measure
stream characteristics and because of
these extensive stream characteristics
and also rivers this applies to rivers
as well but it's not as many character
classifications because it's pretty
difficult to classify larger systems but
uh but you can see that the larger
slopes lead to straighter channels it's

a very fundamental sense lower slopes lead to what's called meandering and stream capture so these guys can capture over here and then you can form other circular regions and that happens all the time along the floodplains and also Delta's where the river runs out to its current oceans and base levels so we have these pictures and we also can study what kind of erosion rates happen with different types of soil of gravel or base material but again it all goes back to a certain base level it all has to eventually flow to the lowest point where it can get to so right now 47 plus streams I think the classification of rivers is around 30 what does that do for us for electrical discharges so now on to discharge is simplified in one slide so the charge build-up here if we have two plates powered by an electrical source we have an electric field that builds up across the dielectric the blue being a dielectric whether it be solid liquid gas eventually it's going to discharge if you get enough charge built

up that's why capacitors eventually
break the charge of cooler rates by
discharging across the path the factors
again we go back to the design of
experiments and monitoring what we know
in the system many things can influence
how this discharges your electrode
materials the type of electric the
potential of electricity there the
surface topology of these two electrodes
surface morphology etc etc small points
will increase the local electric field
there now the response is what do you
get out when this occurs much like a
lightning bolt you get magnetic fields
the current flow you get a full spectrum
of light anywhere from x-rays to visible
light you get heat manifested in heating
up the local surroundings and possible
nuclear interactions if it's strong
enough and you have pinch effects it's a
very very simplified version of
discharges but it enables us to measure
things in the laboratory so we can
monitor our factors we can measure our
responses and build models from them and

because electricity is scalable we can assume that things scale up now a lot of work has been done on fractal analysis of dielectric discharges because this is very important for the wiring cable industry for those who make transformers and power supplies okay so early on you can see as early as 1990 1984 people have been doing work on the fractal dimensions of dielectric discharge and and fundamentally what they found is that they all possess a certain fractal dimension that's characteristic of the material so some of these include this is actually an internet picture of a discharge across a transformer unto the insulator but these are from the papers that I studied from cudon paper where he measured them and he then measured the diode the fractal properties of those items typically they were performed in high voltage discharges across solid plastics or gaseous medium so now it's quiz time some of you have seen this already so don't cheat so I can tell you there are three pictures here that I've

pixelated and turned into a binary
picture to illustrate the scalability of
electricity assuming that the Grand
Canyon was formed by electric discharge
probably not the only thing it was
formed by but let's just for the moment
assume a certain part of it is try to
match each letter with the particular
picture I'll give you a minute here so
we have orders of magnitude scale here
centimeters from a polycarbonate
discharge to meters of a discharge on
cement and then kilometres for the
canyon so everyone got their choices all
right oh I heard some off how many
people got be proud of yourselves how
many people got it right
just free cures all right okay
it's it's not that easy when things are
pixelated and you normalize everything
so what you're doing is you're
normalizing all of your particular
topography only that which you can see
in terms of what was formed by the
discharge and we'll come back to that in
just a moment so you can see here that

scalability is in effect so I thought about how rivers are formed how discharges could affect the surface of the earth and I kind of dug it down to the main effects here so what this is cause it caused a diet this is a cause-and-effect Ishikawa diagram they call it we use this a lot to identify problems in industry or whatever we're working with so on the left here is riverbeds how are they formed well the hypothesis we know they're formed somewhat by fluvial events but they could also be formed by electrical discharges ignore this for the moment technically you're not supposed to have characterization tools in with this diagram but I wanted to share this to run parallel with these so the fluvial factors again the factors that influence the fluvial erosion of rivers include the following you can have age consistent in sufficient rainfall etc you can read through these high slope slope slopes at Cognex dissolve low your suspended load all these factors and

then what I did is I kind of assign
categories color categories to those
that are measurable and testable by what
we can do in the lab or in the field
also red which is not testable it fails
the requirements to be a scientific
study
you cannot repeatably measure it and
also historical accounts because there
are a lot of historical accounts of
certain electrical plasma discharge
phenomenon which we now know so in terms
of the rivers I don't know if this color
is going to show up enough but but
really what I saw and you know we can
talk about this afterwards we disagree
but really tectonics and pre-existing
geology are the assumptions they're not
testable but nearly everything for
fluvial existing rivers can be measured
but you can't measure that which has
happening
past so that automatically eliminates
some aspects of this for electrical
discharge we had a few different items
here either a large solar outbursts or

close earth encounters with various items you could probably come up with some other factors here right but for the most part we now know that there is evidence of current in space right we've talked about that a few times even in the popular press

I shouldn't say popular but academic press there is measurement of electric current and scale Jets for coming from about galaxies so it does occur in space we can now use that as part of our toolbox to say electric current is scaleable we know what happens at the Galactic scale for one component of this jet we obtain for the first time a determination of lactic scale electric current and its direction this is an Astro fixes physics journal okay so that's encouraging so from a factor we know that compositional changes can affect how electric discharge occurs so you can see that all these things add in to electrical discharge making it somewhat of a feasible phenomenon we

have some historical sources from the
ancients and interplanetary distances
being less than they were than presents
I could be debated but but I do believe
we have some historical accounts of that
but anything that's inferred without any
drawing on any references it's inferred
breakdown in the atmosphere Thomas gold
and some others have said that you need
a flux of about greater than twenty
Gauss to have that discharge occur
across the earth so it could have
happened in the past now for
characterization the only things we're
missing here
anything that in terms of that draws on
the past geologic time scales and non
measured or kind of present is key to
the past because we don't know if that
riverbed was flowing as fast as it is
now especially if we can't find the
sediment load that it left over that's
an important aspect
so that's one way we can break down the
problem trying to visualize it as to
what factors are most important

I mentioned measurement methods here so now we're going to get into what I looked at a fractal is a self-similar pattern in other words it's same as a nearer as they are nearer as they are from far very few things are perfectly self similar in nature that means if you increase your magnification all the way they look the same as you back out most of the time they're they're known as self a fine in other words they're scaled by different amounts in certain directions that's more the case with riverbeds but certain at certain of them can be are known to be self similar and there's some separate tests you can do that that I have not done yet now it's interesting in all the research with riverbeds is that it's really only confined river networks that exhibit self-efficacy regular flowing networks of rivers such as a Mississippi and other large river networks do not exhibit that so already we're looking at the landform confounding our analysis of this so the

landform is dictating how the river flows so could we tested this similarity between these measured fractal dimensions of electric discharges and what we know in the lab with landforms that we know on the earth so taking it back to the to the picture think about the picture you can think about any picture here that has a hole and then rain or some sort of flow rate moving in it's going to be captured so measuring the fractal analysis of the earth as I mentioned Mandelbrot did a little bit of this in his book it's a great book I think a trendsetter there he did a lot of analysis of the coasts and now people are taking that into three dimensions and measuring some aspects of geomorphology most recent I came across a paper that I think is very powerful in that it studied ISO lines at varying altitudes and I'll show you what I mean by that in just a moment so basically they're taking fractal dimensions at varying altitudes on the whole Earth's surface because they have data for that

I'll read you a little bit of this the quantitative analysis of natural relief represents an objective form of aiding in the visual interpretation of lands games as studies on coastlines River networks and global topography have shown still an open question is whether it clear relationships between the quantitative properties of landscapes and the dominant geomorphological main wind water that originated them can be established in this contribution we show that the geometry of topographic isolines is an appropriate observable to help disentangle such a relationship I haven't totally disentangle it but they're getting they're really into conclusions though as I found it's kind of surprising a more detailed inspections points to a relationship between the observed features and the geological processes that shape the planetary surface we suggest that the erosive action of a solid or viscous phase the erosion of a flowing liquid phase or its action

through wave breaking and tectonics are geological agents which work towards increasing roughness increasing roughness in the landscape on the other hand agent scalding sediment deposition formation and pronounced smooth slopes or erosion through hydrostatic pressure glacials caused by large masses of liquid or ice represents smoothing agents is able to decrease the characteristic fractal dimension the rougher you are the higher the fractal dimension the smoother you are the lower the fractal dimension the problem I have with this is that they're referring to water doing the same thing that's how I interpret that so typically what they get on a map function of fractal dimension D as you can see that 1.8 from 1 and you can see that mountains obviously are the highest fractal dimension ok drawn by the coastlines which are fairly smooth due to wave action and sediments on the layer and then your Intercontinental I guess sea floors and your trenches they also were

able to resolve I'll go and draw some
Cluj ins from this with the next graph
but really a study of isoline so what
basically what they're doing is they're
measuring a box counting relationship so
the measurement of your fractal
dimension D is a relationship a
logarithmic relationship with the number
of boxes that they can fill into a
certain area that's scaled the scaling
factor being ADA
so on this map of New Jersey okay
another beautiful region the congleton
preserve can fill in an area at a
thousand meters say in height you can
fill in that ISO line with a certain
number of boxes count them you then do
the same thing with a larger box
larger area or the different ISO line a
larger area of a different number of
boxes you can then get a plot so this is
from Baldessari's paper which I just
showed you and you can see that at
different elevations you have an
increasing the level as you increase
your elevation up to about 4,500 meters

that D level is that slope of this line
and interestingly below the C and right
at sea level you have very low fractal
dimensions brought about by flooville
erosion so again the the the fractal
dimension increases with your increasing
height and elevation I think that says
something about the mechanism of how
these mountains were formed so what did
I do in my spare time I took image J
which is a microscopy analysis software
a little bit worthy of a chart here I
apologize but I took the fractal
dimension by the box counting method
typically between 1 and 2 the areas of
each image was between 500 and thousand
miles squared I was able to get a
resolution of about one pixel per 125th
of a mile so you may say okay well these
are three-dimensional figures how can
you project them in the 2d in some of
the electrical studies they said that
hey this is valid as long as this
projection on a 2d plane has D values of
1.7 so the color coded datasets are from
flooville which are blue known

electrical events from the laboratory
and from literature papers and then
unknown structures from terrain mode
captures
the image processing you can accomplish
fairly readily requires a little bit of
footwork to get rid of some of the roads
and whatnot on Google Earth but you you
binary you grayscale it than you binary
it and you get this binary pattern which
you can then do your analysis on but
furthermore I skeletonize it because I
knew we were dealing with different
elevations so the pattern that this
follows right can be of elevation of
about 600 meters from the centre of this
channel up to the side so a way to kind
of normalize your overall patterning and
distribute it to only the branched
pattern is to skeletonize that so you
can do that with your software so
eventually what you're getting is only a
skeletonized pixelated version of only
the pattern and then you can measure
your your box counting Mint through your
box counting method your fractal

dimension so here's a picture of
Mississippi that was talking about
numerous floodplains here can pixelated
binary it you get a D value of 1.3 this
is up in Newfoundland you're getting a
value of about 1.7 even just with the
standard binary image a lightning bolt
again we're projecting this onto a 2d
which is valid again about 1.3 and again
this is limited resolution this is far
away you can't get all the little
dendrites that are coming off this so
that's one aspect that I think the
electrical analysis is missing and now
we can't resolve all those fine
dendrites except with some of the
laboratory tests that I took so a little
bit of statistics here so if you all
remember your students t-test 95%
confidence interval I'm confident that
this is different than that what this is
doing is because I have different values
of population sets it's a different kind
of students t-test so when I did that
with just the straight pixelated version
nothing was different and with the

skeletonized version some differences
that appear namely when you skeletonize
the landforms you don't have that
drastic of a drop in d value as opposed
from your river values
and indeed you get a very big
significant difference with that
skeletonized value because you're
normalizing all the elevation and what
happens here is the effluvia I've all you
decreases to about the same value that
Baldassare found in all the fluvial
erosion studies between 1 and 1.2 your
unknown structures that I measured on
the earth are equivalent to electrical
structures so statistically speaking the
unknowns are more statistically
dissimilar to fluvial events than they
are from electrical events in the
laboratory so really what that
skeletonized value is doing is it's
normalizing the depth ok and we can say
that these structures are self
self-aligned these new values are fairly
high enough to be cell to fine so really
in conclusion the present data set

limited right now only 33 counts i think
i had i'm working on getting more is uh
I think electrical patterns are better
match towards our land forms and the
flooville patterns but we have to
realize that other data includes
flooville erosion because rivers have
been flowing for some time so we have to
account for that we have to know the
systems that we're measuring very well
to account for the fact that some
floovio Rochin may have occurred so it's
consistent with the literature trend
there's a lot to do there always is but
really what do what effects do such
discharges have on in the environment
right I'm interested in shock induced
changes that's something I do all the
time what is what does that do to Rock
and what does that do to populations of
organisms around that if it did occur
could that account for many mysterious
losses of populations of ancient
cultures was that do the temperature and
also radioactive decay that was already
mentioned earlier some profound

implications on geological sciences here
that we have to explore more so again
hopefully that further augment that data
set with more analysis and we'll have a
better picture of what's going on I'd
like to acknowledge a Michael and
Montgomery also for their discussions
got a copy right Google or so we won't
get sued and if anyone wants to contact
me there's my contact information you
happy to take any questions Thanks
you

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

A new picture of the
cosmos is emerging.

A vastly different picture than the one
astronomers have been painting for over a century.

But a picture that was
drawn many decades ago
by specialists in plasma and
the electrical sciences.

In this picture, antiquated notions of
charge neutrality in space have been erased,
replaced with theoretical models which
recognized the pervasive conductive medium
or fifth state of
matter called plasma
through which electric currents
flow throughout the cosmos.

For many decades,
electric currents were,
and in some instances remain,
verboten in the space sciences.

But with improved instrumentation

and ever finer data,
cosmic electric currents at
all scales are now undeniable.
Nevertheless, a strange dilemma is
unfolding in astronomy and astrophysics.
Scientists attempt to explain
electric currents in space
through theoretical models in which
electricity does not cause anything.
But as we will see,
electric currents in space
are not just a curious byproduct of
gravitational and magnetic phenomena.
From the Electric Universe perspective, the
measurement of electric currents in space
is in the inevitable recognition of the electrical
circuitry that connects celestial bodies
across interplanetary, interstellar
and intergalactic space.
It's essential to remember that
electric currents are only visible
when they meet regions
of dust and gas
where one sees the unmistakable filamentary
structure of electrified plasma.
As in the vast star-forming

networks in our own Milky Way.

Measuring the strength of
cosmic electric currents
is of course no easy matter
for scientists on earth
and is even vastly
more challenging
than estimating the strength
of cosmic magnetic fields.

A good recent example can be
found in our own solar system
and scientists' investigation of
the Saturnian moon Enceladus.

As we outlined in a
recent Space News,
prior to the arrival of the Cassini
spacecraft at Saturn over a decade ago,
planetary scientists had expected
Enceladus to be "geologically dead".

Instead, they found explosive
filamentary jets shooting material
at tremendous velocities up to hundreds
of kilometers from the moon's surface.

Adding to the surprise, the jets
were seen at the moon's South Pole,
the last place they

expected such activity.

As reported by

space.com in 2005,

"The finding flipped everything scientists

knew about Enceladus on its head,

because what should have been a dead

moon appeared to be geologically active

and what was supposed to be the moon's coldest

region turned out to be its warmest."

Since their discovery, scientists have interpreted

the features as so-called "ice geysers"

which they view as a form of

cryovolcanism probably resulting

from Saturn's gravitational forces

producing tidal heating within the moon.

In 2008, Cassini's plasma

spectrometer discovered evidence

for electrical currents in the

plumes of water and dust.

In recent years, a number of

papers have been written

on the presence of negatively charged

dust grains in the so-called plumes.

And now, based on data from

the Cassini Langmuir probe,

a new scientific paper is providing evidence

that these dust grains have actually
"blocked the signal" of the powerful
electrical currents in the Enceladus' jets.
For a number of years,
Standard Theory has proposed
that electrically neutral water molecules
are ejected from the moon's surface
where UV rays from the Sun and interactions
with plasma in Saturn's magnetosphere
strips electrons from water molecules
forming positively charged water ions.
In theory, these ions are then
free to be "picked up" and merged
with co-rotating plasma supposedly
generating an electric current.
Cassini scientists had estimated the
strength of the jets' electric currents
based on disturbances to Cassini's
magnetometer instrument.
But as noted in a summary of
the new scientific paper
in the Journal of
Geophysical Research,
"...when Cassini flew
through the icy plume,
its instruments sent back

vastly different readings.

According to the craft's Langmuir probe, which measures particle density, there were enough ions present to generate a current of 10 million amps.

The magnetometer indicated a current more than 20 times weaker."

The authors provide experimental evidence

that ions like those in

the Enceladus plume are,

"...attracted and trapped within the sheaths of negatively charged dust grains."

They conclude that,

"Cassini's Langmuir probe is

measuring the entire ion population

(both free and trapped ions),

while the Cassini magnetometer detects

the magnetic perturbations associated

with pick up currents from the

smaller population of free ions,

with this distinction possibly

reconciling the ongoing debate

in the literature on the

ion density in the plume."

Simply put, the results are anomalous

for the standard "pick up ions model"

but they are expected if

the surface of Enceladus

is being etched by electrical

discharge machining.

As our chief science adviser Wal

Thornhill has always proposed,

electrical discharge machining works by stripping

electrons from high points on a surface.

In this process on Enceladus,

positive ions generated on the surface

are heated by electric discharge

and electrostatically attracted to

follow the electrons into space.

This would in fact explain the

high loading of positive ions

that the Langmuir probe measured.

And as we reported in great

detail in a recent Space News,

the notion that the gravitational influences

of the gas giants Jupiter and Saturn

produces tidal heating at their respective

moons, resulting in cryovolcanism,

has never been more questionable

in light of new discoveries.

As we noted, in 2013,

scientists reported that the locations of the so-called volcanic plumes on Io are completely incompatible with the moon's internal heat signatures.

A finding which, according to lead author Christopher Hamilton, "...can't be reconciled with any existing solid body tidal heating models."

Likewise, on Enceladus in 2016, scientists were amazed to discover that when the so-called geysers on the moon are producing the most water and dust, the accompanying gas output was anomalously low.

As reported by space.com, "The researchers expected quite a lot more gas expelled at the far part of Enceladus's orbit, to help explain the outpouring of dust, but they found the gas output had bumped up by just 20%, far less than expected."

The leader of the study said of the findings, "We had thought the amount of

water vapor in the overall plume,
across the whole
south polar area,
was being strongly affected
by tidal forces from Saturn.

Instead, we find that the small-scaled
jets are what's changing."

Both scientists' new
insights into the strength
of the electric currents
in the Enceladus plumes
and the failure of the tidal heating
models to explain discovery,
are stunning victories for the electrical
interpretation of the phenomenon.

Of course, given scientists'
difficulties in accurately measuring
the electric currents
at Enceladus,
this naturally emphasizes the present
technical and observational constraints
on quantifying the electromagnetic
energies at the vastest cosmic scales.

However, as we've reported
in many recent episodes,
the evidence for cosmic

scale electric currents

is being more and more routinely presented
in mainstream scientific literature.

One of the most spectacular
electromagnetic phenomena in space
is the many light-years long collimated
jets produced at active galactic nuclei.

Today, standard astrophysics offers
no explanation for the phenomena
that does not involve a hypothetical black
hole producing tremendous magnetism.

However, with increasing regularity,
mainstream scientific literature
has proposed that the jets are
composed of powerful electric currents.

From radio astronomers estimating the
current in an extra galactic jet,
supposedly the equivalent of a
trillion bolts of lightning,

to more recent scientific papers
which describe a "battery mechanism"
close to the hypothetical black
hole producing electric currents.

As a recent paper by
Gabuzda et al states,

"...astrophysical jets are fundamentally

electromagnetic structures."

Nevertheless, in every case

astrophysicists can only envision colossal

gravity producing magnetic fields

which are somehow primary in the creation

of the spectacular "cosmic lightning".

A recent Phys.org report

describes new findings

that can only confound the standard

interpretation of so-called black hole jets,

"As matter is broken down

around a black hole,

jets of electrons are launched

by the magnetic field

from either pole of the black hole

at almost the speed of light.

Astronomers have long been

flummoxed by these jets."

But this view is not supported by new

research into the magnetic fields

surrounding a "black hole" that is

believed to be in our own Milky Way,

within a micro quasar in

the constellation Cygnus.

The phys.org report

summarizes the findings,

"The team observed the magnetic field
of a black hole within our own galaxy
from multiple wavelengths
for the first time...

They discovered that magnetic fields are
much weaker than previously understood,
a puzzling finding that calls into question
previous models of black hole components.

The research shows a deep
need for continued studies
on some of the most mysterious
entities in space."

However, the real deep need may be for
astrophysicists to finally consider
actual theoretical alternatives
to the black hole's existence.

As stated many times by
physicist Wal Thornhill,
what these increasingly
problematic discoveries highlight,
is the problem of over
specialization in the sciences.

Far removed from the
spotlight of popular science,
for decades, plasma cosmologists
have presented experimental

evidence that the spectacular
electromagnetic phenomena
that space scientists
attribute to black holes,
is in fact a high-density energy storage
phenomenon demonstrated in laboratories,
called a plasmoid.

In several episodes, we have
briefly described how a plasmoid
is a kind of load in a
galactic electrical circuit
concentrating and storing energy.

When a plasmoid reaches a threshold
density, it will discharge,
usually along a galaxy spin axis,
producing the stupendous galactic
jets whose electric currents
are now increasingly recognized in
mainstream scientific literature.

All astrophysicists who seek an answer
to the mystery of cosmic jets,
should be acquainted with
the experimental research
into the plasmoid's applicability
to cosmic phenomena.

We encourage viewers to consider the

landmark research of the scientific pioneer,
the late physicist and MIT
scientist Winston H. Bostick,
whose experimental
research on the plasmoid
led to the development of the
dense plasma focus device.
Bostick simulated many astrophysical phenomena
through plasma physics experiments
including galaxy formation
and spectacular cosmic jets.
The jets' collimation over
tremendous cosmic distances,
the knotted structure
seen in many jets,
their nearly light
speed velocity,
their emissions of
synchrotron radiation
and now the inferred measurements
of electric currents in the jets,
are all the predictable features
of a discharging galactic plasmoid.
Since the plasmoid's jets are part of
a vastly larger electrical circuit,
this can also resolve an enduring

intractable problem for astrophysicists
which is the mysterious source of the energy
to the most distant parts of the cosmic jets,
sometimes over many hundreds
of thousands of light years.

Occam's razor states, the simplest
explanation is the most likely.

Standard astrophysics tells us that
electric currents in space are the product
of extremely complex and strange
gravitational and magnetic processes.

The Electric Universe states
that electric currents
flow through the conductive
medium of plasma
which composes more than 99%
of the visible universe.

Celestial bodies moving in electrified
environments, are electromagnetically connected
and will discharge electrically when
experiencing dramatic voltage spikes.

As we see on our own planet in the
form of spectacular blue jets,
elves and red sprites above the
clouds reaching toward space.

Electric currents in space

mean only one thing,

we live in an Electric Universe.

Welcome to Space News from
the Electric Universe,
brought to you by The
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A new scientific study is again
reshaping planetary scientists' ideas
about the planet Venus.

An enduring mystery is why the
surface of Venus has so few craters
since it's believed that Venus
is billions of years old
and since astronomers believe
that craters formed from random
impacts over eons of time.

For decades, the consensus
belief has been
that the planet must have
been radically "resurfaced"
thus removing all evidence
of the inevitable impacts.

One theory is that the planet's
surface simply sank for some reason
then was replaced by a
surface with no craters.

However, a recent paper published in

the Journal of Geophysical Research

purportedly falsifies

that hypothesis.

A July 30th article on astronomy.com

describes the research as follows,

"Using numerical models to see how material

in the planet's mantle circulates,

the results found that the

planet couldn't have undergone

what is called mobile

lid convection

- a process where the surface

rapidly sinks into the interior

and is replaced by a fresh,

crater-free surface.

The results will help scientists

understand how Venus evolved

and may even help us understand how the

planet's runaway atmosphere came to be."

The major objections

the research raises

include the absence of a significant

offset between the planet's center of mass

and its actual center,

and Venus's exceptionally

weak magnetic field

since the theorists believe
that mobile lid convection
would leave enough heat in the
planet's core to create a dynamo,
the hypothetical source of our
own planet's magnetic field.

The research thus appears to
favor the conventional theory
that massive volcanism must
continually remove Venus's craters.

However, the author
of the paper states,

"While I think my work more or less
disproves the mobile-lid convection,
I don't think that is the same as
proving the volcanic resurfacing event.

There could be some other mechanism,
possibly even as of yet not discovered.

So I want to leave
the door open."

Indeed, since the dawn
of the Space Age
the planet Venus has
been a proving ground
for competing hypotheses
in planetary science.

From the 1950's to 1970's Venus was at the center of a blazing scientific controversy.

In 1950 in the best-selling

book 'Worlds in Collision'

the scientific heretic Immanuel

Velikovsky proposed that the planet Venus

is a very recent addition

to the inner solar system

and threatened the Earth

as a terrifying comet.

By studying the ancient

accounts of far-flung cultures

Velikovsky constructed a thesis

of celestial catastrophe.

The converging ancient

imagery includes Babylonian,

Aztec, Peruvian and Egyptian

representations of Venus

using the unmistakable language

and symbols for comets.

As we've outlined many times

based on his thesis of Venus's

recent cometary birth

Velikovsky made the

outrageous prediction

that Venus would be found to be

extraordinarily hot and dry.

This was in stark contrast to the predictions of many noted astronomers including the originator of the dirty snowball comet model Fred Whipple who proposed that Venus would be covered with oceans.

Of course, Venus was found to be the hottest planet in the solar system with an average surface temperature of 864 °F

The consensus belief in planetary science today is that Venus's dense, mostly carbon dioxide atmosphere, has caused heating through a runaway greenhouse effect.

However the fatal objections to this hypothesis have never been resolved.

As the astronomer

Victor A. Firsoff noted,

"Earth's seas are

not boiling hot,

despite the total greenhouse effect of water and average sunlight

stronger than at the

ground level of Venus.

Nor is it at all clear how such a condition could have become established."

Physicist Wal Thornhill addressed the issue in a 2003 article on his website holoscience.com

"Venus receives 1.9 times more solar radiation than Earth but its clouds reflect about 80% of that sunlight, so that Venus actually absorbs less solar energy than the Earth...

Even with the maximum greenhouse effect, the effective surface temperature of Venus should be low enough to freeze water.

What is being asked of the 'runaway greenhouse effect' is equivalent to expecting a well-insulated oven to reach a temperature sufficient to melt lead by having only the pilot light switched on!"

In the electrical hypothesis Venus's recent electrical birthing from a gas giant and its recent capture

do explain the stunning absence
of so-called impact craters.

The surface of Venus is covered with
extraordinary networks of filamentary scars.

In Venus's spectacular
near-Earth cometary displays
electrical discharging heated its crust
and produced the filamentary patterns.

As Thornhill notes,
"Lightning occurring in a high-pressure gas
causes this filamentary 'Lichtenberg' pattern.

At low atmospheric pressures, cratering
is more common - as we see on the Moon."

In fact, most of the features that
planetary scientists interpret as
"volcanoes" and ancient lava
flows are electrical scars
which can be uncannily reproduced in
experiments with electrical discharge.

Of course, this can be applied
to so-called volcanic features
throughout the
entire solar system

In our 2017 interview
with Garrett Hill,
he showed the results of applying

electrical discharge to particulate matter.

On your screen the top image is the famous
Martian "shield volcano" Olympus Mons.

The bottom feature was produced
by electrical discharge.

In similar experiments,
we also see stunning formations of
both radial and lateral patterns
which planetary scientists typically attribute
to fluidic processes such as lava flow.

Now consider this
side-by-side comparison
of the electrical discharge features
to the Ovda region on Venus.

Thornhill also proposes that scientists' detection
of sulfur dioxide in Venus's atmosphere
need not necessarily imply
ongoing episodic volcanism.

He writes,

"It is also possible that
another simple nuclear reaction
is taking place at the
surface of Venus,
involving the combination of the two
atoms of oxygen in an oxygen molecule
to form one atom of sulphur.

It is a process occurring today in plain view on Jupiter's moon, Io. In any case, volcanoes are an electric discharge phenomenon so that the discovery of active volcanoes on Venus cannot be used as a distinguishing test for or against the electrical model of Venus."

Institutional science dismissed

Velikovsky's evidentiary case

because it disobeyed

Newton's law of gravity

which has no means of

restoring order from chaos.

But as Thornhill explains,

science today functions with no physical

explanation for the force of gravity

which Newton himself admitted

and Einstein avoided the problem by

discarding the force without explanation.

So what astronomers have are mere

mathematical descriptions of gravity's effects.

In the Electric Universe

as developed by Thornhill,

the 19th century concept of gravity

as an electrodynamic force

between all subatomic particles
in the universe is reinstated.

This thesis proposes that
order in the solar system
was restored by charge
exchange between planets
aided by slower charge exchange
between a planet and the solar wind
in the form of a
cometary discharge.

There can be no question that
Venus's recent cometary origins
resolve countless enduring
mysteries of the planet
including its orbit
which is the most circular of all
the planets in the solar system,
its odd rotation,
its superhot temperature,
its vast cometary tail,
its electrically agitated
super-heavy atmosphere,
its tremendous networks
of filamentary scars,
and its lack of so-called
impact craters.

The comet Venus, first proposed
nearly 3/4 of a century ago,
is a challenge to the very
foundations of planetary science
and the mythical 4.5 billion year
history of our solar system.

It is past time for scientists
to meet this challenge
and to finally seek new answers which
await in our Electric Universe.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts and dot info astronomers today are puzzling over the unexpected brightening of a recently discovered comet on October 20th an observer in Japan noted that the brightness of comet X1 linear was over 100 times greater than astronomers expectations on October 21st astronomers in New Mexico confirmed the surprising outburst other cometary displays have captured the world's attention in recent years in 2007 the periodic comet 17P stunned the science world when it abruptly brightened by a factor of about half a million making its coma temporarily the largest object in the solar system

astronomers attribute these cometary outbursts to the sublimation of ices from solar heating but does this explanation fit with the facts why are we surprised when comets flare up unexpectedly I think the answer lies in the fact that we don't understand comets

it's as simple as that

the story of comets is associated with the story of the formation of the solar system and the story of the formation of the solar system is that once upon a time story dreamt up centuries ago which has merely been patched as new information comes to light you would have expected that close flybys of comets and the capture of material from the tail of a comet would have been sufficient evidence to make people consider some other alternative ideas but this hasn't happened so we continue to be surprised by comets now comets in the electrical model flare up simply because they are suddenly caused to discharge either by a sudden change in their environment brought about by charged particles from the Sun suddenly arriving or by a gradual change in voltage as the comet approaches the Sun or receipts from the Sun and that voltage is impressed across the interior of the comet because the comet in effect acts a bit like a capacitor and if you

over stress a capacitor it explodes they can quite dangerous this is why capacitors have a voltage rating on them so this gives a very simple explanation for these flaring x' and so on of comets but it also explains why just recently an asteroid produced a coma and a tail as it swung around the Sun and asteroids are not supposed to produce cometary displays and the question there was how do you machine all this head you get this dust to come off the comet there's no good answer to that in the standard theory because that relies on evaporating sublimating ices and so on buried out of sight inside the comet nucleus I say out of sight because when you look at comets from images sent back by spacecraft flybys and so on beginning with Halle you see a surface which is extremely dark darker than soot there's no sign of ices generally there are some white spots but the question is what are those white spots they don't necessarily mean ices and you also see sculptured

surfaces now if a body is just evaporating in sunlight you would expect to see an object that looks a bit like a melting ice cream or you would expect to see material coming off it in a cloud. Cometologists also struggle to explain the highly collimated jets of material that sometimes explode from cometary surfaces. What is seen from comets: thin filamentary jets and there's some good examples which are shown here now. To get gases to expand in a filament requires a very finely machined nozzle so the suggestion that material is being shot from beneath the surface by expanding gases doesn't make much sense. The standard explanation for these jets is that material is being sublimated, turned from solid ice to a gas beneath the surface. It punches a hole in the surface and then emerges as a jet, but these jets should be misshapen. Instead of that we see highly collimated jets, ones that are obviously under the control of some external force to maintain their integrity over vast

distances none of this fits any explanation involving just heat and an icy substance

in the sunlight why is it assumed that the material that is sublimating from comets according to theory is water ice the answer is the hydroxyl radical it's an oxygen atom in a hydrogen atom are found in the comas of comets now the standard explanation for that is of course that the ultraviolet light from the Sun which is quite intense breaks up the water molecules into its constituent parts one of which is the hydroxyl radical the O H however ultraviolet light will split water up into positive ions it strips and electrons often leaves positively charged parts of the water molecule behind but some of the earliest observations of comet nuclei showed that very close to the comet nucleus and this was found at comet Halley there is an abundance about a hundred times anything that was expected of negative ions now negative ions are produced in an electric discharge from a

cathode surface and this is what's been discovered cathode Jets also create highly collimated filaments all of these things fit the observations none of the standard theory fits the observations an opportunity to test the explicit predictions of the electric comet Theory came in 2005 with NASA's Deep Impact mission to comet Tempel 1 the test of a new hypothesis is successful prediction the more unexpected the better using the electrical model of cometary activity I predicted almost 4 years in advance that is when it was announced that the Deep Impact mission to comet Tempel 1 would produce two flashes a small flash before impact as the nucleus discharged to the projectile rather like the spark sometimes as you reach for a metal doorknob amongst other things I also predicted an unexpectedly energetic flash to follow the impact I wrote back then the energetic effects of the encounter should exceed that of a simple physical impact in the same way that was seen with Comet shoemaker-levy 9 at

Jupiter after the event nasa expert

Peter Schultz suggested that the initial flash indicates a layered structure for the comet and I quote my guess is there was soft layering on top the impact that went down and finally got in contact with Isis

this ad-hoc hypothesis of unbelievably fragile outer layers is now treated as an observational fact a confirmation in the words of deep impact investigator Michael Ahern notably however the impact released very little water

however when temple one was revisited by the Stardust spacecraft on February 15 2011 the expected crater showed no sign of deep penetration the crater was almost indiscernible as if the impactor had hit solid rock or partially

vaporized before impact once again the ad hoc explanations were weak by quote stuff went up and came back down and I quote again the crater partly healed itself presumably by some magical effect but a hard surface might have been anticipated both from the Comets

appearance and much earlier evidence from radar returns from comet Encke II that implies a non-porous probably rock surface material this gets down to the fact that comets show a sculptured surface the puzzling erosion of an escarpment on comet Tempel 1 is simply explained by the tendency of a cathode spark machining to initiate on a sharp edge and electrically edge or sputter extremely fine material progressively back from the edge the extreme fineness of Comet dust was first remarked upon following the encounters with comet Halley because it wasn't expected of interstellar dust grains

I suggest that the unexplained white spots which are observed to a favour such locations are active cathode arcs and there's prior evidence for this suggestion the prediction was made based on the electric universe that the outburst would be much more intense than would be expected from a purely mechanical impact and the discharge was so intense that the expected images that

would be sent back of the comet crater
just did an event rating these
detectives were overloaded they just
could not film the surface of the comet
after the event the electrical model
says that if you introduce an object
which is at a completely different
charged state to the comet itself then
you will get an electrical outburst so
there was a large amount of electrical
energy involved also a few splatter
highly conductive copper vaporized
copper
near a charged object than the other
jets that happen to be on the surface of
that object at the time will suddenly
concentrate in the area of high
conductivity so I also predicted that
the jets would move the ones that
existed before and that was also borne
out for continuous updates on space news
from the electric universe stay tuned to
Thunderbolts dot info

in the course of the Rosetta mission to comet 67p the electric comet hypothesis will face many scientific tests and the tests can be continually reviewed as Rosetta reports now to long-delayed see the light of day the core concepts of the electric comet involved two levels of evidence one relating to the look and behavior of a comet as we observe it the other relating to a comet's origins we've emphasized the electrical behavior due to a comet's motion through regions of different charge in the plasma domain of the Sun Comet origins on the other hand require a good deal more than observation in our own time the electric comet requires us to look back in time to an epoch of planetary catastrophe avoiding this would only mean losing the opportunity to understand what a comet really is this includes the connection of comets to our own planet and to the most awe-inspiring and terrifying events in human history both levels of evidence are strongly fortified by laboratory experiments and it's these experiments

that help us to unify present
observation of comets with the
extraordinary ancient descriptions of
these bodies we understand that this
subject will bring discomfort to many
the idea of planetary catastrophe and
geologically recent times will never fit
comfortably with the overarching
assumption of theoretical science today
we call that assumption the uniformity
principle the idea that we can
understand the past through things we
see occurring now as today so before in
contrast the electric comet idea forces
us to consult the astronomical testimony
of our early forebears we're independent
accounts told with different words and
different symbols and in
different parts of the world convey a
story of planetary catastrophe glimpses
of that story are told in the
documentary symbols of an alien sky and
a second episode the Lightning scarred
planet Mars consider the latter
documentary and you'll understand why we
see the red planet as the first and most

logical candidate to investigate on the matter of comets borne and planetary catastrophe the ancient astronomical traditions direct our attention to the red planet as the source of fire and stone hurled by a cosmic warrior God a thousand different traditions present this warrior figure in ways unique to each culture but one feature in particular consistently stands out the identification of this warrior archetype with the planet Mars we've said this many times don't believe in coincidence the subject here is a global human experience whose logical implications can be tested down to innumerable details in this way consistent human testimony will give us the answer to the question how were comets born the electrical investigation has been underway for decades and the converging lines of inquiry bring us face to face with the planet Mars massive evidence points directly to the excavation of surface material and bedrock from the planet comets are recent additions to

the solar system they were born in
events remembered around the world as we
intend to show clearly and definitively
the planet Mars was immersed in electric
discharge removing material up to
several miles deep and REE sculpting the
entire Martian surface with no regional
exceptions yes the claim is outrageous
but in the end everyone concerned with
the truth of the matter will be required
to look at the full range of facts as
evidence that means across all of the
disciplines that hold potential answers
as we continue to review the rosetta
mission will not lose sight of the human
story reminding us why comets were
anciently feared around the world as
symbols of planetary catastrophe

Rosetta Mission Update

Jets of Comet 67P — Failed "Explanations" Continue

It seems that the puzzle of cometary jets continues to haunt comet science.

The mystery has been stated and restated for decades.

But it's possible that a resolution is now within reach through the Rosetta mission to comet 67P Churyumov-Gerasimenko.

As a comet moves into the inner solar system, surface activity creates a cloud of gas and dust to form a roughly spherical coma.

With a closer look, we see radial jets erupting from the surface at remarkable velocities to feed gas and dust into the coma.

What is acting on the surface to create the jets?

And what is holding the accelerated gas and dust in its collimated form, a persistently narrow and filamentary structure in the vacuum of interplanetary space.

Rosetta investigators have calculated the speed of the 67P jets at their source.

They give the figure as

700 meters per second.

That means gas and dust departing the comet nucleus at a speed of 7,5 football fields in one second.

Theorists have offered an explanation of a comet's jets.

Uneven warming of an irregular surface creates pockets of sublimating gases beneath the surface.

These pockets of gas become the reservoirs of geyser-like activity.

"Gas and dust bursts forth like a geyser...

An area below the surface warms up and punches through the surface with explosive force due to its gas content.

In comets, the emerging gas carries a stream of dust along with it."

But the theory offered cannot be reconciled with data now in hand.

The speed of 67P's jets is significantly greater than the speed of gas escaping through a small hole in a high-pressure gas line.

But the shallow surface layer of dry dust on 67P, offers nothing like the resistance necessary to build up such pressure.

And if the jets do indeed point to subsurface pockets of gas breaking through a dusty surface, it seems quite clear that the signature of such activity would be readily apparent.

An energy curve suggestive of an explosive release of gas pressure.

And an explosive expansion and dissipation of the released gas across a short distance in the vacuum of space.

And of course, we would also expect immediate exposure of the supposedly sublimating ice beneath the dry surface.

Do we see any sign of these expected signatures of jet chambers below the surface?

It's fair to say that to date nothing
of the sort has been observed.
And yet, the creation of comet jets, the
acceleration away from the nucleus
and the structure maintained
across vast distances,
must have a reasonable
explanation
even if we have to look beyond
standard theory to find it.

It was just a few years ago that the
spectacular jets of comet Hartley 2
placed a huge exclamation point
on the need for new perspectives.

Powerful jets were seen not just
from the sunlit side of the comet
but from the region in shadow
and the persistent energies of
the jets offered no support
for the standard idea of
exploding pockets of gas.

All we've actually seen at
the source of comet jets,
is evidence of electrical
activity on the surface,
extending valleys by eroding

away cliffs, mesas and ridges.

We saw this on comet Tempel 1

where such activity had eroded

a mesa cliff some 35 meters.

Considering the simplicity of the

standard model of cometary jet activity,

one wonders why no experimental

verification has ever been produced.

One of the simplest experiments conceivable

would simply use a laboratory vacuum chamber,

place into the chamber the ideal

concoction of ice and dust

just to see if remote warming would produce

anything like the jet activity imagined.

We unhesitatingly predict that when the

obvious required experiment is performed,

it will leave every comet investigator

in a state of profound disillusionment.

Cometary jets are not

driven by thermodynamics.

They are electrical phenomena naturally

occurring in the transaction

between a charged body, a comet, and

the electric field of the Sun.

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

How old and how stable
is our solar system?

On this question astronomers have
grown more uncertain year by year.

The actual history of the planets could be a
far cry from anything we learned in school.

Here's our reporter Cameron Mercer,
with excerpts from his conversation
with the electrical
theorist Wal Thornhill.

We have always lived in a
very interesting solar system,
however, we've never been able to
pin down just how interesting it is.

First it was entirely special,
with no equal anywhere else
then, a century ago, sentiment gradually
shifted and people started to understand
our solar system as
a common occurrence.

There were bound to be other

solar systems out there,
just like ours,
waiting to be found.

Less than two decades ago
we started making our first
observations of other solar systems
and the more we find the
stranger our seems to be.

The solar system has actually
been described as weird,
when compared to planetary
systems around nearby stars.

We seem to have the gas giants
much further away from the Sun
then similar planets are
around nearby stars.

Around nearby stars those giant planets
orbit very closely to their star
and the answer to this problem is
another ad hoc addition to the theories
of how the solar system
formed and that is that
the giant planets were not form where
we see them now they must have migrated
because all the exoplanets that
we've discovered are large planets

even larger than Jupiter
orbiting their central star
in days or even
hours in some cases.

So, those systems of planets
are quite different
to anything that we see
in our own solar system.

This raises the issue of how
exactly did our solar system form
and why are our gas giants
so far from the Sun?

As straightforward a
question as this seems
this is actually proven
very difficult to answer.

Astronomers quickly learned that the
general theory of solar system formation
couldn't work for our
own solar system
since it postulates that planets form
in more or less their current orbits.

Uranus and Neptune are far out, too far
out to a form where they are today.

So, in 2005 some French astronomers
came up with a brilliant idea.

What if the planets
orbits could move?
Maybe then, they could migrate
from some earlier state
to the improbable arrangement
that we see now.

This idea had been entirely
untested, until recently.

In 2005, Nature magazine
published a paper,
which has become known as the Nice
paper, because it came from France,
and that paper was trying to find
the early stage of the solar system
and finding that nothing worked for Uranus
and Neptune, the outermost gas giants.

The gas giants simply couldn't
have formed at a great distance,
because it takes far too much
time for them to have accreted
from a cloud of dust and gas.

So, the Nice model
was proposed
which supposes the gas giants formed in
close where they are more likely to form.

Now, this recent paper is the first

simulation of the Nice model

and it's tried to simulate

changes which could produce

Uranus and Neptune at

their present distances

and also Jupiter and Saturn in their

present far-flung orbits from the Sun.

The simulations of the Nice model show

that Uranus and Neptune remain a problem,

we still cannot make a planetary system that

looks like our solar system theoretically.

David Nesvony, of the Colorado

Southwest Research Institute,

ran over 6,000 simulations

of the Nice model

in his searching for a viable

early stage of the solar system.

He had 4 target

criteria that, if met

would qualify the simulation as a

potential early state the solar system.

In only 2.5% of cases were they able to

satisfy just the first 2 criteria out of 4.

This is a huge problem for the current

theory of solar system formation,

it means the early solar system

could not look like it does now,
with Neptune and Uranus
in the outer reaches.

The paper concludes with the formation of
Uranus and Neptune, the outermost gas giants,
and say that it's just long-standing
problem in planetary science
and the paper finishes with 'future work
will be needed to address these issues'.

Astronomers are heading down the
right path, starting first with
a theory of static formation which hadn't
the slightest to performing our system
they proceeded to then
consider planetary migration.

David Nesvony took this yet a step further
and considered planetary ejection
in which case he found his chances of
producing our current solar system
increased almost tenfold
over the Nice model.

It seemed certain that the solar system
required rearrangement of the planets
to explain their present
placing and characteristics.

The Nice model wasn't enough, just rearranging

planets, so the next thing was ejection,
but that also
hasn't been enough.

Did something more dramatic occurred to
produce the solar system we see today?

In all the theoretical
work that has taken place,
we have assumed that all of the matter that's
in the solar system right now began their.

No one, except in the very early
days, considered capture of objects
from beyond the solar system.

There was good reason
for this, to do so
the object coming into the
solar system has to lose energy
and gravity doesn't offer any
simple way of doing that.

In the Electric Universe, there is
electrical exchange which can take place
and captures very much more likely
than it is in the gravitational model.

So, the very fact that we do have
gas giants like Neptune and Uranus
at distances from the Sun where
they could not have accreted

suggests that they

were captured.

Not only that, the motion of Pluto and some

of the outer moons do suggest capture,

rather than having

been formed in place.

For continuous updates on Space

News from the Electric Universe

stay tuned to

Thunderbolts.info

[conversation]

.

I hear people talking about “we have disruptive technology.” Our position on it is, maybe a little more gentle, in the sense that technology doesn't have to destroy economies. We don't believe they should. We believe that they should be transformative, to how people migrate, or progress from one level to the other. Disruptive technologies - well, they just don't typically work very well. So transformative technology works like nature itself. It considers all the factors: functional, economic, environmental, social and political. It doesn't produce toxic waste, antithetical to life. It doesn't attempt to bankrupt an existing system, or put humans out of work. Why would you want to bankrupt your customer? It's transformative, it transforms it doesn't trash.

[Music]

Montgomery Childs and his wife,
Tracy are on their way to Baltimore.

Monty is going to deliver his third presentation to the Electric Universe group.

[Music]

For two years, he has been developing a way to test the Electric Sun model.

[Music]

In my professional life, one of the things I do, is diagnose systems and make them stable. Stable systems are often the consequence of a stable process.

[Music]

There are billions of stars in our galaxy. For as long as we have been watching them, their luminosity, spectral nature, and thermal characteristics have remained relatively constant.

Statistically, it points to a very stable system. A supernova, or a pulsar, is so rare an event, as to be considered an outlier, and not that relevant in the overall equation.

[Music]

In industry, if you have something as statistically stable as the stars appear to be, this suggests a relatively simple process.

And we have a tool
for studying process.

[Music]

In January of 2012, David
Talbot invited Monty Childs to
give a presentation at the Electric
Universe conference in Las Vegas. Monty
introduced Design Of Experiments (DOE)
as a methodology for testing the Electric
Universe model. Of the 300
people in the audience, few
had heard of the concept
of Design Of Experiments.
But one person, Scott Mainwaring, became
very intrigued. "...SAFIRE, Stellar
Atmospheric Function in Regulation
Experiment. So what we want to do, is we
want to validate the
EU model, as it relates
to the Sun..." At the next
conference, in 2013,
Monty suggested a number of experiments
that might be done to test the Electric
Universe model, by focusing on the Sun.
The Electric Universe group asked him to
write up a formal proposal for a

project designed to do exactly that.

[Music]

I can't imagine, how you could ever test
the thermonuclear fusion model of the Sun.

To my knowledge, we've never been
able to replicate sustained nuclear
fusion on Earth. But the

Electric Sun model is different.

Electricity is something we've been
experimenting with for centuries. And
electricity, in the form of plasma even
though the word "plasma" is relatively
recent, we've been aware of this
phenomenon for over a century and a half.

Two years of research, has led me to the
conclusion that the Electric Sun model
might be boiled down to
a fundamental process:

charged plasma, affecting matter of a
different electrical potential.

Now charged plasma, matter,
and electrical potential;

these are things that can be
experimented with in a lab.

Scott Mainwaring gave me a paper
written in 1879 by Sir William Crookes.

[Music]

Michael Faraday was 24 years old, when he coined the phrase “radiant matter” to describe, what he believed was the fourth state of matter. Sixty years later, Sir William Crookes was one of the first to truly experiment with this fourth state of matter.

[Music]

He placed rubies in a vacuum tube, filled with a rarefied gas.

There was an anode at one end, a cathode at the other.

He introduced sufficient voltage to ignite the radiant matter. The rubies started glowing red. Crookes talked about radiant matter and phosphorescence.

The radiant matter is now called “plasma”.

I read Crookes work and studied the photographs and work of Kristian Birkeland, created between 1896 and 1913.

[Music]

In his “terrella” experiments, Birkeland used an electrified globe in a vacuum chamber.

The images he produced, are remarkably similar to modern photographs of the Sun.

Robert Quinn and Ralph Fiorito, produced

similar images in 1967, while attempting to generate plasma stability.

[Music]

[Music]

The Electric Universe people had already seen a similarity between Birkeland's terrella and the interaction between the Earth and the Sun. I suspect the underlying process is, charged plasma, affecting matter of a different electrical potential. I'm wondering, if it might actually be the process that makes stars shine. Possibility, feasibility, viability and capability; and that doesn't just apply to whether or not we can replicate the phenomena in a laboratory experiment, but it also means, the means by which we measure, are they capable? No theoretical models, no extrapolations, no interpolations, no mathematical adjustments of the data. Do we have a ruler that we can actually all agree on that's a standard.

At the Albuquerque conference in 2013, Monty Childs presents a detailed

proposal for how to proceed with the tests.

“...and if the experiment is feasible.

So all these things have to be addressed

right upfront, before we even start

spending a nickel.” “...it means that we

have the ability to modify or adjust its

potential relative to its environment.”

Okay. You're saying yes. These guys may

want to go to a megawatt or something, and

then do you might null the whole show...”

Key people from the Electric Universe

group offer questions and suggestions.

“...I can take a look at the chamber

design and its boundary conditions...” Then

give it their support. Bruce

Mainwaring and Scott Mainwaring,

of the Mainwaring Archive

Foundation, agree to finance the project

under the auspices of the International

Science Foundation. It will be called the

Stellar Atmospheric Function In

Regulation Experiment,

the SAFIRE project. The aim of

SAFIRE is to explore the electrical

nature of the Sun's environment and by

implication, the processes involved in

the functioning of stars. "... it's going to go from hydrogen here, mixing with iron, to helium and it's going to be a series of pretty..." Over the next six months, I spent a lot of time on the phone with a number of the Electric Universe people.

"... ten trillion degrees like..." Bit by bit, I could see a potential team slowly taking shape. Monty and Tracy Childs arrive in Baltimore.

The Natural Philosophy Alliance is holding their 20th annual conference at the University of Maryland, College Park. They have invited the Electric Universe group to contribute presentations. "...and asked ourselves now the question that has never been asked in 70 years of solar physics, is the Sun truly an island in space. With no electrical connection to billions of stars and the sea of plasma that constitutes the Milky Way..." "...what we want to do is capture in real time, not just a qualitative..." Monty offers a summary of the SAFIRE project.

"...see if we can pick up any ion acceleration occurring just outside the

sheath..." Given that the Electric Universe hypothesis is challenging current conventional theory, "... so you can imagine electron temperatures of 10 million..."

I was expecting a bit of resistance at the NPA. But NPA people didn't seem at all intimidated by what we were proposing to do. Quite the contrary.

"...over 40 kilowatts so get fusion..."

I found them very helpful and very encouraging. "...you'll have these charges, yeah..."

[Music]

"....so can transformative technology work on future itself..... it considers all the factors, functional, economic environmental, social, and political. It doesn't produce toxic waste, antithetical to life. It doesn't attempt to bankrupt an existing system, or put humans out of work. Why would you want to bankrupt your customer? ... it's transformative, it transforms, it doesn't trash..." These are some of the capabilities of the SAFIRE Lab. I won't list them out loud; this is just to give you an idea of the potential of the lab,

and we keep adding to the list. To be pragmatic in the real world, we had to select a few to take forward into commercial applications. Here are the capabilities we have chosen - A fully functioning plasma laboratory for experiments - An energy generating reactor for producing clean energy - An energy generating reactor for remediating nuclear waste.

[Music]

in the next eight to ten minutes i want
to preview the presentation i'll give on
the opening night of the eu 2014
conference in albuquerque march 20th to
24th

the electric discharge formation you see
here rising above easter island was
originally outlined to me by plasma
scientist tony peratt in 2002

at the time he was the leader in his
field heading up projects at los alamos
laboratories

but let's start with just one question
has the sky changed completely in recent
millennia

today's theorists in the physical
sciences and in the study of the human
past are addicted to projecting our sky
onto the ancient landscape as today so
before

in our investigation this uniformity
principle will never work

here's a brief video sequence
highlighting the reason why

it happened just a few thousand years
ago

when we lived in the presence of the
gods
powers ruled the celestial theater in
the lost age of gods and wonders
planets gathered in close congregation
as if alive
engaging each other electrically
but then the gods grew violent and they
went to war
driving human witnesses to take shelter
in caves and rocky enclosures
humans left to remember
to remember the powers of the gods
formations and cosmic events
not to be forgotten
and so the question
if anything like the event suggested
here did indeed occur
how could we know
my own inspiration on this question came
from emmanuel velikovsky one of the most
controversial theorists of the 20th
century
i published a 10 issue series on
velikovsky in the early 1970s
transforming a local student journal

into a popular international journal and
leading directly to a highly publicized
debate between velikovsky and astronomer
carl sagan in 1974

we know now that velikovsky was wrong on
many details but what about the deepest
questions that he raised he found in
ancient testimony the undeniable echoes
of planetary catastrophe making clear
that the modern idea of billion-year
stable planetary motions cannot be
correct

and the centerpiece of his argument was
evidence repeated around the world that
the planet venus approached the earth as
a devastating and frightful comet

it's indeed ironic to find a reliable
footing in this field we have no choice
but to plunge into the origins of
ancient myths and symbols and magical
practices

that's because this is where we find
hundreds of converging human memories
globally fitted together like the pieces
of a jigsaw puzzle

the world altering fall of heavenly

bodies

the dying god and the dark clouds of

ensuing chaos

the universal goddess venus including

her frightful or terrible aspect

the cosmic warrior mars

and the warriors defeat of the

improbable dragon who imprisoned the

goddess figure or threatened to destroy

the world

the celestial serpent

whose own body came to form the steps of

a cosmic stairway or tower of heaven

and of course the story of a former

stationary sun or central luminary of

the sky why did the world's first

astronomers name this primeval power as

the planet saturn

saturn a planetary god said to have

presided over a lost paradise and

identified as the primeval son the

central son the true son or best son

ruling before the present age

but enigmatically this exemplary power

was also the displaced god and the

devourer of his own children exiled to

remote realms

it's all truly a ludicrous fabrication

unless we've misunderstood our past

completely such that we can neither

comprehend nor explain the stunning

convergence of ancient testimony

i had the privilege in 1972 have seen an

outline of velikovsky's claim

unpublished at the time that the planet

saturn was originally seen as an immense

sphere in the sky in close connection to

earth

for me that claim cried out for

exploration and it led directly to my

own life's work and to publication of my

book the saturn myth in 1980 when the

publisher double date was the largest

publisher in the world

as the reconstruction stands today it

goes far beyond velikovsky's claims

it encompasses virtually all of the

archetypal themes of the ancient world

just consider the global image of

so-called sun wheels

this form has nothing to do with our sun

today

carved on stone everywhere it was
central to all ancient cultures but what
did it signify
all lines of evidence point to a dynamic
and evolving configuration of planets
planets that are named close to the
earth and immense in the ancient sky
when we place the configuration in
three-dimensional space the demands of
perspective are extraordinary
then we must take into account the
respective sizes of the bodies the
relative motions systematic changes in
the number and appearance of discharge
streamers
and the shifting position of earth as
these changes occurred
seen in three dimensions it's not even
possible to just make up explanations
whatever provoked the ancient images
they are historical fact irrespective of
any modern interpretation
and the facts include the stunning
astronomical identification of saturn as
the ancient sun definitive patterns
stand out above the carnival of later

forgetfulness localization fragmentation
and cultural invention
the bedrock of fact will not allow for
mere guesses at things
beneath the carnival of cultural
confusion lies a global substructure of
human memory
the archetypes the points of agreement
this is why my own convergence with wal
thornhill in the mid-90s was so
important to us he was just beginning to
emerge as the premier spokesman for the
electric universe when he stepped
forward to support the reconstruction in
electrical terms
then came the convergence with the
leading plasma scientist tony peratt in
2000 a convergence that forever changed
his life and my own
spectacular forms in the sky i had
reconstructed were suddenly illuminated
by tony's expertise
the turning point came instantly when i
sent one prehistoric pictograph to him
from cayenneta arizona he immediately
recognized what could have no other

explanation

in fact the research team at los alamos
had named this highest energy discharge
form after him a parat instability
what i did not know at the time was that
this form in the laboratory collapsed
into another more commonly recorded form
in the ancient world what tony came to
call the squatter man

then a series of mysteries fell into
place in terms of a known discharge
sequence including the mythic chain of
arrows over which i'd puzzled for years
the stairway or ladder of heaven
and the eye mask or allied goddess all
finding clarity and well-documented
electric discharge forms in the plasma
laboratory

i'm hoping that these bearish glimpses
of a very large story will attract you
to the upcoming thunderbolts project
conference

in the course of this event i'll show
much of the content scheduled for
episodes four and five of symbols of an
alien sky

and if you've not seen the original
episode the full documentary is
available on the thunderbolts project
youtube channel
hoping to see you in albuquerque
you

[Music]

This is a short talk about yet another
"here we go again" moment, when I came
across an article in Scientific American from March
2018, entitled, The Sun is Spitting Out Strange
Patterns of Gamma Rays - and No One Knows Why.
I did not know much about the subject,
but I silently made a bet with myself
that 1) The existing theory of gamma
rays from the Sun would be based upon gravity and
random motions, 2) The new improved data would
completely contradict the predictions of that gravity
model, 3) The article would bring in dark matter
and a few quotes to the effect of "we are
completely surprised by what we are
seeing, maybe there's new physics here,"
and 4) Of course nothing would be said
about a possible electrical explanation. This
was admittedly a somewhat cynical wager,
yet I did win the bet on all four accounts.
I reviewed Don Scott and Hannes
Alfven models of the Sun's electrical
connections to its larger environment
and I had some discussions with Wal
Thornhill about the gamma-ray data.
The Sun puts out very few gamma rays. It seems there

are very few gamma rays in the entire universe,
at least in comparison to the number
of photons that we see with our eyes.
Gamma rays are a type of light which is
very, very energetic, billions of times
more energetic than the photons
of light that power photosynthesis
and average biological processes. The
recent papers from 2018 and 2019
summarize ten years of gamma ray data
from the Sun taken by the Fermi
Telescope. Let's see how well the
Standard Model prediction stacks up
against the published data. I made a little chart
- on the left are the basic questions and then the
Standard Model and the data. How
many gamma rays would we expect to
see from the Sun? The Standard Model
predicts a certain number that would be
observed, the data shows we see anywhere
from 10 to 100 times more than was
predicted, based upon the energies.
Where should we see the gamma rays come
from? The Standard Model says that
the rays should come from the Sunspot
regions. What do we see? Well, the rays

come from the entire disk, and also from around the Sun and also from above the poles of the Sun. What distribution of energies would we expect? The Standard Model says that the spectrum should be smooth, and weighted with very few high energy gamma rays. The data shows far too many high energy rays, and a clear gap in the 40 to 50 giga electron volt range. When during the solar cycle would we expect to see the gamma rays?

Standard Model says there should be more gamma rays during solar maximum when there's more sunspots. The data shows just the opposite. And would we see gamma rays from solar flares? The Standard Model says no, and the data says yes.

To quote a few of the authors and reviewers, Brian Fields, a particle astrophysicist from University of Illinois says, "It's amazing that we were so spectacularly wrong about something we should understand really well: the Sun." Tim Linden a particle astrophysicist at Ohio State who helped analyze the data said, "The forty to fifty giga electron volt dip just defies all logic." And Mehr Un Nisa at Michigan State University said, "Analysis of nine years of data collected by Fermi-LAT

from the Sun revealed a very bright steady emission of gamma rays at energies above 100 GeV that contradicted all theoretical expectations.”

What is this standard cosmology model that is so spectacularly incorrect?

It is a model built upon isolation and random destruction. This model says that our Sun, like every star, is energetically isolated from all other stars.

It says that stars like ours cannot produce any gamma rays of their own from their surface, and hence any observed gamma rays coming from the Sun must be coming from somewhere else.

In this model, if the Sun cannot make its own gamma rays then where can we look?

The phenomenon to the rescue are cosmic rays. Cosmic rays are a bit of a mystery.

We observe very high energy particles impacting the earth from all directions and we call these cosmic rays. They are known to come from pulsars, like the Crab Nebula, but that one clear observational fact is usually greatly downplayed

in favor of the Standard Model description of cosmic rays, which says that they come from the most cataclysmic events imaginable, like dying exploding

superstars and colliding black holes, and colliding and exploding magnetars and colliding, exploding galaxies. You get the picture.

The Standard Model paints a picture of our isolated Sun in a sea of debris generated from random destruction.

Occasionally a stray bullet from this mayhem will ricochet through a sunspot magnetic field and be flung towards the earth. As already said, every prediction of this model was incorrect. The data is fascinating. The solid circle in the middle is the disc of the photosphere; the outer dashed circle is the outer limit of where they collected the data. Each dot is a gamma ray detected.

The left two panels are from solar maximum when there's many sunspots and during which the previous model predicted there'd be more gamma rays.

The right two panels are from solar minimum, where there are few sunspots and the previous model predicted there will be fewer counts. I am struck by how little data there is.

Over 10 years and we have only a few hundred data points? These solar gamma-ray events are very rare. I admit the telescope is very small

and very far away from the Sun but still,
compared to the gazillions of visible light
photons coming off the Sun every second,
gamma rays are rare events. How
might this data make more sense if
we include electricity in our cosmology?

If we pull back and look at the
filaments of the interstellar medium,
all stars and planets are very, very
small specks on much larger filaments.

The distance scales here are difficult
to comprehend. Do you remember those
comparisons, if the entire atom were the
size of a football stadium, then the
nucleus would be a golf ball in the center?

Those are the sort of sizes we need to
imagine for stars in galactic filaments.

I will try a metaphor, using cities here
on Earth to understand the sizes
involved with the filament model.

Imagine the galactic filament is the
high tension power lines connecting entire
cities on Earth. If we zoom into one city,
that is the region of the filament where our Sun
lives. Zoom in further to a football stadium in
that city, that is the full body of our solar

system and then all the planets and the bright disk of the Sun what we usually think of as our solar system are all contained in that little golf ball in the center of the stadium.

From this, how then do we get 10 billion electron volt gamma-ray bursts?

Does this mean that the galactic currents have this kind of voltage? No, not at all.

Think about lightning on Earth and about the upward shooting sprites and elves.

The Earth's global electric circuit only sustains a few hundred thousand volts between the ground and the upper cloud layers.

Yet, in a strong thunderstorm, we see gamma rays corresponding to many millions of volts. How do we explain this apparent contradiction? Where did the energy come from, since locally there is only a hundred thousand volts between the cloud and the ground?

As Alfven pointed out, in a distributed electrical circuit, such as the electrical grid for a town, the energy from the entire grid can be released at one small point during an explosive breakdown.

The transformer might only have a

thousand volts across it, yet when it
explodes, it releases electrons
with millions of volts. How?

Because the transformer is just a
small piece of a much larger circuit.

The same explains how sprites and elves
above storm clouds can send gamma rays
out into space packed with billions of volts.

If you read the existing literature
about elves and sprites, the explanations
are stuck on exactly this point. They are
not including that the burst is part of
the entire electrical circuit of the Earth.

The same applies to the Sun. The surface
of the Sun and the corona of the Sun are
all connected to a much larger circuit that
includes and reaches beyond our visible Sun.

Explosive releases in the form of gamma rays
can happen inside of that photosphere surface.

They can happen above the surface,
or even several radii away from the Sun,

because the electrical body of the Sun
extends out to the heliopause and is
connected to a circuit that reaches to
the neighboring stars. The filament model
predicts that we should see at least

some high energy events analogous to the strongest lightning on Earth. Studying the Earth gamma rays will teach us how to better understand the Sun's electrical environment. What about the polar component? The authors say that there is a steady source of gamma rays coming from the polar regions of the Sun. In the Standard Model this is unexplainable, because the Standard Model says that above the poles are weak magnetic fields that are relatively straight. Hence, they would be unable to bend cosmic rays.

But in the electrical model, stars are connected through their poles to larger filaments that stretch for many light years, connecting multiple stars into one larger circuit. Charged particles flowing towards stars, would have a very long running distance along these smooth magnetic field lines and be capable of picking up very large energies.

In the electrical model, we would expect to see a relatively constant source of high energy emissions coming from the polar regions, which is exactly what the data shows.

The authors further describe an

equatorial component of the data.

I do not see that so clearly and I think maybe they are holding on to the Standard Model which says that there should be something special about the Sunspot region.

It looks to me that the rays are coming from a sheath that surrounds the photosphere.

It looks to me that the gamma rays are not at all limited to what we would call the surface of the Sun. The data is spread out around the Sun.

This region around the photosphere is where atoms become stripped of their outer electrons, which is usually interpreted as thermal heat. Contemporary astronomers look at the ions around the Sun and say that the corona must have an enormous heat and temperature of millions of degrees. But this stripping of electrons could have an electrical, or even a chemical cause and not be related to anything, like temperature as we have defined it on our cold, wet planet. Remember, you can strip electrons off of water with a 5,000 degree oven or with a 9 Volt battery at room temperature.

According to Don Scott's model which

builds upon the model of Hannes Alfvén,
our star is powered primarily by a DC
current that flows into both poles of the Sun.
This DC current also has a ripple, where the current
rises and falls slightly over a 22-year cycle.
This 22-year ripple in current is
connected to the 22-year solar cycle
where sunspots come and go and
the polarity of the Sun's magnetic
field flips. The 22-year cycle is not necessarily
coming from the outside, nor coming only
from the Sun, but is more likely a result
of the interaction between the Sun and the
larger filament. We can draw a simple graph of
the electrical current powering the Sun. The
blue wavy line represents this current
feeding the Sun. The current does not go
positive and negative like an AC current in your
house. The current is one-directional but has a
strengthening and a weakening. In
other words an AC ripple on top of a
predominant DC current. For example, the Sun might
have a current oscillating between 10 billion and 11
billion Amps. On the diagram I have circled in red
the maximum and minimum of the wave. Here the
current to the Sun is steady - it does not

change much. We are in solar minimum.

The magnetic field of the Sun is smoother.

Now there is longer running room for particles to be accelerated towards and away from the Sun. We would expect higher gamma ray output.

I have boxed in green the places where the current of the Sun is changing rapidly. Here we are in solar maximum.

The magnetic field of the Sun is agitated by the quickly changing current.

Electrons flowing towards the Sun at this time are caught up in the smaller circuits and cannot so easily reach gamma-ray energies.

The electrical model agrees with the Fermi Telescope data. What about solar flares? according to the Standard Model, solar flares cannot reach the 100 GeV energies that are seen by the Fermi Telescope. Yet, several of the data points happened exactly during large solar flares. The authors are perplexed by this coincidence.

I would again point to what we know about lightning on Earth. If the earth can produce gamma rays in electrical discharges, solar flares can easily reach hundreds of times those energies.

What about the number of gamma rays we see?

The Standard Model is short by a factor of about a hundred. Remember, the Standard Model says that the gamma rays are only produced when a background flux of cosmic rays randomly interacts with the surface of the Sun.

For this model to so clearly get the numbers wrong means to me that the gamma rays are simply not being produced in this way.

This again is clearly better described by the filament model, where stars are fed by concentrated rivers of energy and not some random background.

We will have to build out different solar electrical circuit models and see which circuits give the observed number of gamma rays. Lastly, we can ask about the dramatic absence of gamma rays in the 40 to 50 GeV range.

I do not have much to say about this one.

Usually, when we see a missing energy range in an emission spectrum, we look for some specific process that would absorb just that energy. This energy is tantalizingly close to the mass of an iron atom which we know has a special place in nuclear transmutations.

But I really think that this gap will point us to something that no one has yet imagined about basic solar physics.

I can understand if you did not closely follow all my explanations. Like me, you probably had never before looked at gamma ray data from the Sun. So, you are still wrestling with the vocabulary and how pieces fit together.

The existing model used by astrophysicists predicts everything incorrectly.

But the journals and the reviewers cannot come out and say such a simple fact and instead must contort themselves around dark matter and possible new physics.

I think some old physics, called electricity, can help us think through this gamma-ray mystery.

It seems to me that the electrical filament model of stars does a particularly good job of explaining why we see a hundred times more gamma rays than the random model and why there is a steady polar component.

I also think the filament model explains the distribution of gamma rays in a sheath surrounding the photosphere.

There's plenty of quantitative

work to be flushed out in all this.

I'd be happy to help someone tackle that.

Thanks again to Wal and Don for

helping me think through these ideas.

[Music]

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

It's one of many enduring
mysteries in solar physics,
"Why is the Sun's lower corona hundreds
of times hotter than the Sun's photosphere?"

For many decades, scientists have
sought an answer to the puzzle,
though always doing so within
the confines of the standard
thermonuclear model of the Sun.

Recently the ESA and NASA Solar Orbiter
spacecraft returned to scientists on Earth
the closest images of the Sun taken to date.

Some mission scientists are speculating
that the images may reveal clues to the
problem of coronal heating. A

principal investigator, astrophysicist

David Berghmans points to what he describes
as "campfires" in the images. He states,

"The campfires we are talking about
here are the little nephews of solar flares,
at least a million, perhaps
a billion times smaller.

When looking at the new

high-resolution EUV images,
they are literally everywhere we look.”
A NASA press release on the images states,
“It's not yet clear what these campfires
are, or how they correspond to solar
brightenings observed by
other spacecraft. But it's
possible they are mini-explosions known as
nanoflares-- tiny but ubiquitous sparks, theorized to
help heat the Sun's outer atmosphere,
or corona, to its temperature 300 times
hotter than the solar surface... To
know for sure, scientists need a more
precise measurement of
the campfires' temperature.”

Ironically a 2016 phys.org report
entitled, “The Mystery of Coronal Heating”
emphasizes how wildly inappropriate the campfire
analogy is in any attempt to explain the Sun's hot
corona. The article states, “Imagine standing
around a roaring campfire, roasting s'mores.

You feel the warmth of the flames as the
marshmallows crackle.

Now back away. You get cooler, right?

That's not how it works on the Sun. The
visible surface of the Sun has a

temperature of 10,000 degrees Fahrenheit.

Backing away from the inferno

should cool things down,

but it doesn't. Instead the

Sun's upper atmosphere

or corona sizzles at

millions of degrees-

a temperature 200 to 500 times higher

than that of the roaring furnace below.

For more than a half century, astronomers

have tried to figure out what causes

the corona to be so hot. It is one of the most

vexing problems in astrophysics." As he's done in

previous episodes, we asked Dr. Donald Scott

to explain why the Sun's super-hot corona

has always been a predictable

feature of the Electric Sun model.

It is as if just about every couple of weeks recently,

some official arm of the astrophysics community

issues a press release that reveals just how

far off-track the mainstream really is. it's

almost getting to be like a press

conference where the interviewers

throw out softball questions to the

speaker, who's waiting for them and hits

them out of the ballpark. Now,

I don't know if I'll be able to hit this
one out of the ballpark, but it's
not exactly like that, because
we here in the Electric
Universe Thunderbolts Group
never know what these
folks are going to say next
to demonstrate how uninformed and
uneducated they are in the areas
in which they claim to be experts. So, we
have to be ready for just about every
anything that the "Fortress astrophysicists"
put out. And they really do live in a
fortress; it's a closed shop
and they refuse to acknowledge
we exist. So, anyway, for example
there have been a couple of these press
releases in recent days, and I think it's
crucially important that we respond to them.
About two weeks ago on July 16th,
ABC News, and I said, oh ABC News. No,
that's the Australian Broadcasting Company,
not the American Broadcasting Company,
released a press release entitled, "Solar
Probe Snaps Closest Ever Pictures of the Sun
Revealing Campfires on the Surface" and I

thought that, when I said, you got to be kidding. Well, let me quote from the press release. "...the discovery of thousands of tiny solar flares that scientists have dubbed 'campfires', offering clues about the extreme heat of the outermost part of its atmosphere."

Let me end the quote there. Of course, I want to talk about their use of the word 'campfires', but also, this last gratuitous comment that they hung on the end of that first sentence, about 'clues' that they see about the extreme heat of the Sun's outer atmosphere, which of course is its corona, the lower corona, shows they still haven't figured out the cause of the lower corona's extreme temperature.

For decades they wondered why there was this extreme jump in temperature as you came out of the Sun and up into the corona. Well one of the most basic and important contributions of the Electric Universe is Ralph Juergens' Electric Sun model which was published back in the 1970's.

Juergens' model inherently explains the high temperature of the lower corona,

and many other phenomena about the Sun that the gravity-only mainstream still finds enigmatic, because it's electrical and they can't explain it electrically. They refuse to. Juergens and the rest of us in the Electric Universe have been, and continue to be, completely ignored by the power structure, called 'accepted astrophysics' or I call it 'fortress astrophysics'.

We have presented dozens of Space News videos, just like this one, that discuss and explain the temperature anomaly that worries them so, as being completely understandable as the result of the acceleration of positive ions, electrical acceleration of positive ions, leaving the Sun, that collide with more static ions and neutral atoms just below the corona. Their use of the word 'clues' to me is very interesting, because it sticks out.

It implies to me that they see this still as a mystery. If it wasn't a mystery, you have clues to mysteries, but you don't have clues to things that are

very explainable by accepted theory.

Juergens published his paper back in the late 1970's. Where have they been for about 40 years?

This was a 28-page paper containing much evidence that the Sun's photospheric surface is, was, is highly electrical in nature.

But astrophysics' public relations people certainly love quaint and

whimsical phrases like,

'campfires on the Sun'. Maybe they think

of themselves as being so much more

informed than the rest of

us, that they have to talk

down to us as if we were children. Or do they

actually think there might be big campfires

burning up there on the Sun?

Anyway, they included several images,

and one is a multiple image. It does

indeed show some bright points

on the main photospheric layer.

But Juergens discussed these,

back in 1979, saying they were

fountains of electrons called spicules,

in the Sun's chromosphere, being ejected

upward in a self-regulating plasma

mechanism, to maintain a strong

electric field at the photosphere,
that produced that self-same change in
the temperature that bewilders them so.

Anyway, it involved creation of
what is now called a 'double layer'.

Irving Langmuir, scientist,
an American scientist had
discovered and published his work
on the double layer requirement
back in the early 1930's, and been awarded
actually the Nobel Prize in 1932 for doing it.

But these guys have never heard of it.

Anyway, many images of the Sun obtained over
many years, many decades actually,
show bright spots just like this, and in many
diagrams of the various
solar layers, you see
these spicules, these
fountains of electrons.

What we see on the Sun, are the
various forms that plasma creates there.

Nothing more. Anyway, many photographic
images that have been taken over the years,
show bright spots, and were
these people unaware of it?

These new photographs were taken, I guess,

very close to the Sun, but they're no better than many other photographs we have of this same phenomenon. Spicules are thin, elongated jets, a few hundred kilometers wide. They reach up to six thousand kilometers in height, and they can move around at speeds of more than 100 kilometers per second.

And spicules are found all over the solar surface, but they can be observed and photographed most easily near the limb of the Sun.

The bright spots also may just be locations, where the streams of incoming electrons, are stronger, denser. But wait a second.

Didn't they realize the word 'campfires', that that was actually seriously used by astronomers in the 19th century in another embarrassingly long period of time, when they had no answer to the question of why the sun is so hot?

And why it doesn't burn out?

These were the years around the beginning of the 20th century, when atomic

energy was being developed; you know the Curies
and all that. So, they desperately
latched on to this atomic fusion
process, in a last-ditch effort, like a drowning
man grabs a life ring, to explain the Sun's
tremendous and apparently ever-
lasting stream of output power.

But why do they reuse
that word again now?

You would think they'd be
embarrassed by it. They ought to be.

[Music]

I am talking about "Science Set Free" and what science is being set free from, is the science delusion. The science delusion is the belief that science has already understood the nature of reality in principle, leaving only the details to be filled in. This is very widely believed in our society. It's one of the reasons for the dogmatism that all of us encounter, and which is so annoying, but it's because people think they already know the truth. They sincerely believe that, and this is probably one of the most widespread delusions in our society and we've now exported it to the rest of the world. There's a conflict in the heart of science between science as a method of inquiry, about the testing of hypotheses, looking at the evidence, finding out what's really going on, open-minded, subject to correction, and so forth. The ideal of science which many people think of as what science is, now it's what science ought to be and I agree with that ideal. The reality as many of us have encountered through better experience is rather different. For many people science has become a belief

system, a world view. This is sometimes called scientism where people take the dogmas of science to be a kind of religious belief system, or quasi-religious belief system.

And it's this dogmatic belief system which I think is now constricting and holding science back in a very serious way. In almost every branch of science we see the law of diminishing returns. More expensive research yields fewer and fewer really new results. And I think the reason for all that is this dogmatic belief system. If science can be set free from it, new experiments and new possibilities open up in every area.

What I do in my book "Science Set Free" is take the ten dogmas of institutional science which are part of the scientific worldview and turn these dogmas into questions, treat them not as beliefs or truths, but as hypotheses that can be tested against the evidence. I then look at them scientifically to see how well they stack up when you take into account the evidence. None of them do and in every case new possibilities open up. Sounds would become regenerated when we undergo this process.

I don't have time to discuss all ten dogmas today,
but what I'll do first is just say what they are.

First and foremost, Dogma One is the belief
that nature is mechanical, or machine-like.

This has been the foundational principle
of science since the beginning of
modern science in the 17th century.

Mechanistic Science is based on the
machine metaphor. Nature is a machine.

Stars are machines. Animals and plants
are machines. That's why you can
have industrial agriculture, genetic
engineering, factory farming, and so on. And they're
just machines. And we're machines too. Lumbering robots,
in Richard Dawkins vivid phrase, with brains
that are genetically programmed computers.

The second Dogma is: the total amount of
matter and energy is always the same,
except at the moment of the Big Bang when it
all appeared from nowhere. The third Dogma is
similar to that: the laws of nature are
fixed. The laws and constants of the
world are the same today as they were at
the moment of the Big Bang when they all
suddenly appeared like a kind of cosmic Napoleonic
Code. As Terence McKenna used to say, modern

science is based on the principle: give us one free miracle, and we'll explain the rest. And the one free miracle is the appearance of all the matter and energy in the universe, and all the laws that govern it, from nothing in a single instant.

The fourth Dogma is that matter is unconscious.

The universe is made up of totally unconscious matter. Fifth, nature is purposeless.

There are no purposes in nature and the evolutionary process has no purpose or direction.

Sixth, biological inheritance is material.

It's genetic, in the genetic material DNA, or possibly in epigenetic modifications of the DNA which are also chemical, or in cytoplasmic inheritance. But at any rate it's all material.

Seven, memories are stored as material traces inside the brain. Everything you remember is somewhere inside your head as a stored memory, either in phosphorylated proteins, modified synapses, or some material form which has not yet been fully identified. Although the details are very vague, attempts to find these traces have failed over and over again.

But nevertheless it's universally

believed within neuroscience that they're all inside the brain. Dogma eight. The mind is inside the head. Mental activity is brain activity. Your mind is nothing but what goes on in your brain. Dogma nine follows from Dogma eight. Psychic phenomena are illusory. Things like telepathy can't really happen, because they would imply the mind can work at a distance from the body, and it can't do that because it's all inside the head. And Dogma 10, mechanistic medicine is the only kind that really works. Alternative and complementary therapies may appear to work, but that's only because people would have got better anyway, or it's all the placebo effect. But the real kind, the only kind that really works is mechanistic medicine, which is why in most parts of the world it's the only kind taught in medical schools. It's the only kind funded by government funding agencies and so on. Well, these are the 10 beliefs which are more or less the default belief system of most scientists and most educated people today. Wherever they are in the world, in India or China or wherever, this is the belief system which is predominant. Now, within science itself of course,

people at the leading edge of research in many ways have moved beyond this belief system. Research scientists are not necessarily committed to this in every detail, but they're usually only at the frontier of one region. A physicist might be at the frontiers of cosmology and have gone beyond some of these dogmas of physics, but they wouldn't question the dogmas of psychology or biology. Those would remain more or less intact. So, there are various people who question bits of it, but there's very little that's been done to question the whole thing. This is essentially the materialist world view and it became the dominant view of science in the 19th century. Science was as it were hijacked by materialist philosophy, and since then has been a wholly owned subsidiary of materialism. There's no reason why science has to be materialistic. It wasn't materialist before the 19th century, it was dualist as I'll say soon. And I think we can go beyond that to a new, more inclusive, more organic, organismic paradigm for science.

What I'm going to do first is look at the dogma that the total amount of matter and energy is always the same. This got built into the foundations of science in the 17th century. It was not brought about by incredibly detailed observations using nanogram balances and so forth. It came about for purely philosophical or rather theological reasons. The founding fathers of modern science were all Christians who believed that the world was a machine, that God was a machine maker, an engineering mathematically-minded God, who'd created the world machine. And he'd started off the world machine in the first place by creating the matter that's in it, which he created in the form of atoms, taking the idea from Greek atomism. And these atoms by definition couldn't be destroyed, they couldn't be broken up, so once God had created them the total amount of atoms or matter must automatically remain the same forever. And God also endowed the universe with a certain quantum of movement or force which started it in motion. And thereafter, because this God-given force couldn't be changed by anything else, the

amount remained the same. So, the principles of conservation of matter and energy were built into science from the outset. Not on the basis of detailed measurements. They've served as useful accountancy principles ever since, but they were formulated more rigorously in the mid-19th century in the law of conservation of matter and energy and in the first law of thermodynamics.

So, it was assumed that that was the end of the matter and that they were fixed forever. And most people take that for granted today. They've learned it in high school and they never see any reason to question it. This was the dogma of science which I myself didn't question until quite recently. I'd questioned all the others but it was only when I was writing this book that I thought I should look at this one. I actually rather wanted it to turn out to be true because I thought if I said that all ten dogmas of science were false, it might sound a bit biased, so I thought it'd be quite nice if one of them held up and I thought this was the best candidate. But when I thought about it, it turned out to be a shambles.

First of all, where physicists are above the law, they've found themselves quite free to invent or hypothesize forms of matter and energy which no one had ever thought of before.

One of them is of course dark matter.

Observations of galaxies and the way that stars moved within them and also the ways that galaxies interact with each other, suggested that the galaxies, if they were to be explained in terms of gravitation, simply wouldn't work. The whole thing simply didn't work. So, in order to make it work they hypothesized there was extra matter which you can't see; hence the name dark matter that accounted for all the phenomena of galaxies and their interactions. Well, how much dark matter was there? Well, simple.

Just invent the exact amount you need to explain the observed phenomena. You can titrate the amount of dark matter at will to explain the phenomena you're trying to explain. If you find new phenomena, peculiar bulges in galaxies or something that one-size-fits-all dark matter won't explain, then you add a bit more where it's needed. The system works

perfectly and you can explain everything with complete accuracy because you can change the amount at will.

The only trouble is no one knows what it is and there's no independent evidence for it. People have been speculating about its nature ever since it was first postulated.

Having created all this extra matter in the universe, then this meant there should be more gravitation.

Physicists expected in the 1990s that the universal expansion from the Big Bang would slow down. The universe would stop expanding, then begin to contract under the influence of all this gravitational matter, until it ended in tears in the reverse of a Big Bang known in the trade as the Big Crunch. So, when in the late 1990s people observed that the universe appeared to be accelerating, because of red shifts in distant quasars and galaxies, then there was the problem how do you explain this acceleration? Well, the answer was ready to hand: a new form of energy no one had known about before which caused the universe to expand. How much is that, well just the right amount to explain the facts. So, we now have dark matter and dark energy as a huge amount of

the universe. They currently make up about 96 percent of reality.

Look, physicists have invented something like 20 times more energy and mass than anyone had ever heard of till the 1980s.

And no one's said, oh you can't do that it's defying the law of conservation of matter and energy. And if you ask is all this matter and energy conserved? Is the total amount always the same? Well for dark matter nobody knows. For dark energy the most usual theory is that actually the amount is increasing. As the universe expands there's more dark energy. The universe is now a perpetual motion machine.

So the idea it's all rigorously conserved doesn't really make much sense in those terms.

Within quantum physics there's also Zero-point Energy, a form of energy which is supposed to be there underlying the world we live in, which is like waves on an ocean of energy. And there's huge amounts of it. The amount in a teaspoon would be enough to power the United States for years.

Not surprisingly, some people claim that they can tap this energy and have devices which tap

unconventional or unknown forms of energy, including Zero-point Energy.

If you go online, you'll find there are many people who claim to have above-unity devices, machines that produce more energy than you put into them.

Well, these are immediately banned from regular science because they violate the first of science's taboos established by Galileo in the early 17th century, the taboo against perpetual motion machines.

This taboo long predated the laws of thermodynamics and it's one of the most deep-seated taboos in science.

So, things like Cold Fusion, or above-unity devices or free energy devices, whether they're based on Zero-point Energy or peculiar electromagnetic effects, or parametric resonance, or the various other theories that are used to explain them, are totally beyond the pale. Nevertheless, people claim they've got them and they exist.

If they do exist of course it would totally transform the world economy and the world energy situation.

So, do they really work? Well, right now it's very, very hard to find out because there's claims that may

or may not be substantiated. There's a universal rejection within orthodox science of this; a few people within the Department of Defense, a few people who are kind of maverick investors are interested in this. The Japanese government is interested, but basically they're not part of the normal discourse of science. I myself think the best way forward here would be to have a prize, say a million dollar prize for the best above-unity device. And those who claim to have them, could then have them tested. This is not an attempt to debunk them, it's an attempt to see what really works. They'd be tested under fair, agreed conditions. And if any of them do indeed produce more energy than is put into them and that which can't be explained in terms of any known energy source, they'd win the prize. If several do, then the best one would win the prize. I think this would be the best way of bringing this whole thing out into the open and finding out what's really going on. And I think that commercial betting companies could open a book on this as well and people could

bet on whether the prize will be awarded.

Then all those skeptics who say it's impossible could put their money where their mouth is and bet a million dollars that no one would win the prize. How much would they actually be prepared to bet?

That would be a very interesting question. I'd be prepared to bet at least a thousand dollars that someone would win it. So, I think this would put the thing totally into the public domain. The media would love it, everyone would be discussing it, and if someone won it, I think it would completely change the climate. I think investors would get interested, governments, how it works and the situation could move on. Right now we've been at a stalemate for years with these things.

It turns out that in biology the whole question of energy conservation is much, much more questionable than most people assume. We all assume that the total amount of energy that we produce can be explained by the food we take in and this was assumed in the 1850s by Hermann Von Helmholtz who was eager to prove

that living organisms were nothing but machines.

He didn't prove it, he assumed it and since then it's been a basic dogma of biology.

It wasn't tested in humans until 1899 by two American researchers called Atwater and Benedict and they were determined to prove that we're nothing but machines.

They were mechanists and they started from the assumption this was true and they did the experiments not to find out if it was true or not, but as they put it, to demonstrate it in order to further the cause of science. They had people in calorimeters and measured all the heat produced, the carbon dioxide, the oxygen taken in, feces, urine, food consumed and so on, did a complete energy balance sheet. When they did it, the results came out wrong. So, they changed the correction factors for the value of food until they got the expected result, and this then became built into the foundations of biology as a certain fact.

It wasn't re-examined until an independent-minded American nutritionist, Paul Webb, redid their experiments in the 1970s. He found huge discrepancies. People

who were overweight, overeating and doing very little exercise seemed to have 25 percent or so of the energy just vanish. People who are not eating and doing exercise gained about 25 percent. Too much energy. Where was it coming from? Nobody knows. He called it X, the unexplained amount of energy that could either disappear or appear. He then re-examined Atwater and Benedict's results and found that they'd got similar discrepancies, but they'd made sure there were just as many people who had too much and too little so that, when they averaged them, it canceled out to give the expected result. There are people who claim there are other forms of energy: Chi, Prana, vital energies, and so on. These are usually treated as metaphoric, but they may be much more literal than we usually think. And this is a huge unexplored area. It's not as if nutrition science is the most successful branch of modern biology. And I think that this is something which bears re-examination. In my book, I suggest several quite radical

experiments that could be done quite simply and cheaply, to look at this.

Well, now let me turn briefly to the idea that the laws and constants of nature are fixed.

The idea that the laws are fixed is a hangover from Greek philosophy. Plato and Pythagoras thought that the world was governed by mathematical principles beyond space and time, eternal ideas. In the 17th century people thought these were ideas in the mind of a mathematical God and that God had these mathematical ideas and that scientists were actually finding out about the mind of God by finding out the math of nature. People thought Newton's laws of gravitation were not just human hypotheses, mere guessses or mere working principles. They thought this was a direct insight into the divine mind, superior to that of religion, much more precise, much less disputable. And this was really the basis for enlightenment ideology of science and reason.

They thought science and reason transcended religion in giving a direct insight into the divine nature. Now, you don't hear much about that today,

but there's still the strong enlightenment tradition and the idea of the laws of nature are fixed is a hangover from that point of view.

But in a radically evolutionary universe which the Big Bang postulates, why shouldn't the laws of nature themselves evolve? In fact, why should there be laws at all? Law is a very human metaphor, only humans have laws and only civilized societies. Why should we project this anthropocentric metaphor onto the whole of nature? I myself think that the idea of habits of nature makes much better sense.

This is the basis of my own idea of morphic resonance which is a memory principle in nature, but I'm not the first to propose habits. The American philosopher C.S. Purse, at the beginning of the 20th century suggested that in an evolutionary universe the regularities could be thought of as evolving habits.

I think it's a much better way to think of it and it's a testable hypothesis.

The theory of morphic resonance predicts for example that if you crystallize a new chemical compound for the first time,

it may be very difficult to crystallize because it hasn't yet got a habit to crystallize with a particular lattice structure. But if you crystallize it again somewhere else, there'll be a resonance from the first crystals across space and time - morphic resonance - that will make it easier to crystallize. And the third time it'll be easier still because of resonance from the first and the second crystals. It'll get easier and easier to crystallize all around the world. There's a lot of evidence that that really happens. Chemists explain it by saying that fragments of previous crystals must have been wafted around the world as dust particles. But I'm predicting the same will happen even if you filtered dust particles out of the air.

The theory also predicts that if you train an animal, say rats, to learn a new trick. If you train rats in Albuquerque to learn a new trick, then all over the world rats in New York and London and Tokyo should learn the same trick quicker, just because the rats have learned it here. Surprisingly there's already evidence from experiments, a long series of experiments with rats

done at Harvard, at the University of Edinburgh at the University of Melbourne in Australia that this actually happens. The same applies to people. It should be getting easier to learn things that others have already learned.

Well, I'm not going to go into detail on this because this is the theme of my own theory of morphic resonance. And my purpose in this lecture and in my book is not really so much to push my own ideas, as to show how questionable the standard ones are, and how much the field is open for different answers.

But I'll turn just briefly to the constants of nature because this affects the Electric Universe, or indeed any model of the universe. It's assumed that the constants of nature are constant. The fundamental constants like Newton's gravitational constant, big G, or the speed of light c.

Well, I began to wonder whether they really were constant, when I got into the Habit view of nature. And so I tried to find out what the actual values were. I started off by getting handbooks of physical constants

and looking at old editions. Most people only look at the latest edition and they usually throw the old ones away. But in the patent office library in London I found they kept them all. And so, I got them all out of the reserve stock at 10-year intervals. They wheeled in a trolley of handbooks of physical constants, dusting them off and I looked through these things to see how they changed. To my amazement I found that the speed of light dropped by 20 kilometers per second between 1928 and 1945. I then looked up the data in more detail and found that all over the world people have been getting this much lower figure with very small error bars. The original thing was up there with little error bars and it goes down much lower with little error bars. It wasn't as if the error bars were 20 kilometers per second. No they were point/decimal places of kilometers per second. I checked in the primary literature and found this indeed seemed to be the case and then they went up again after 1945. I couldn't understand what was going on

so I asked the head of the Metrology Department (metrologists are people who measure constants) at the British National Physical Laboratory if I could go and see him and I went to visit him. He was very friendly and I said to him Dr. Petley, I'd like to know how you explain this drop in the speed of light between 1928 and 1945. And he said, "Oh dear". I said "...What"? He said, "You've uncovered one of the most embarrassing incidents in the history of our country." So, I said, "Well, could it mean that the speed of light really did drop, at least as measured on Earth during that period?" He said, "Of course not," and I said, "Why not?" He said, "Because it's a constant." So, I said, "Well then, I can't see any other explanation than that people all around the world were sort of fudging their results to get what they thought everyone else would expect them to get, and then discarding outliers and stuff and coming up with these very narrow error bars that agreed with everyone else. And so, it then it must have been produced by some

kind of fudging process". He said,
"We don't like to use the word 'fudge'.
So I said, "What do you prefer?" He said,
"We prefer to call it intellectual phase locking."
So, I said to him, "Well, if it was happening
then, how do we know it's not happening now?"
He said, "Oh, we know it's not happening
now" and I said, "Why?" "He said, because we
fixed the speed of light by definition in
1972." So I said, "Well, it might still vary."
And he leaned back, looking very smug and
said, "Well, if it did, no one would ever find
out, because we've defined the
meter in terms of the speed of light,
so the units would vary with it." So,
I said "Well okay, you fixed that one,
but what about the gravitational constant, that's
been varying wildly and even actually in the last
three or four years, it's varied by more than 1.3
percent as measured in different Laboratories. The usual
assumption is this is just error,
it's experimental error, it's hard to
measure, its error, so labs all over the
world get quite different results. And
the International Committee on Metrology
fixes the results every few years by

averaging ones from different Labs
weighting ones they think are more
reliable, discarding ones they think are
not. And indeed, when I left Dr. Petley,
thanking him for his time, he reached
down to a cardboard box beside his desk,
full of pamphlets and said, "By the way,
these have just come from the printers.
You might like one." He handed me this pamphlet,
the latest values of the physical constants. so, I
looked at these data from different labs
on G , Big G . And the question that I
was wondering, there's all these big
errors, could it be that they're actually
changing together in different labs, as
the earth rotates around the Sun, as it
rotates during the day, and as the whole solar system
moves through different astronomical environments.
To find that out, one would look at
the day-by-day measurements from
different labs and see if the errors,
or so-called errors, are correlated.
I've spent more than 10 years trying to
persuade metrologists to do this. And
they simply will not, because they say
it's a constant, so there's no point

looking for variations. But I say, you've got these huge differences and they say oh they're just errors it's hard to measure but they simply won't do it. An exercise in open science would be if they put their raw data with the dates online. And then anyone could try and look for patterns, and there could be a website where they're discussed. It would cost nothing, and we might find something out. We'll find out nothing by pretending it's fixed. There are in fact already papers that suggest diurnal variations in accordance with the sidereal day. A group at MIT recently found a daily variation, and some evidence of annual variations. But there may be other, wilder fluctuations that happen in concert. I myself think the so-called physical constants may vary from time to time and possibly even chaotically within certain limits. I think the day may come when in scientific periodicals like Nature there'll be a page, a bit like the stock market reports. You know this week's value of the constants. This week the G was slightly up; the

charge on the electron held steady;
there was a drop in the fine structure
constant, you know and if that were
the case then it would give varying
qualities of time when different things
could happen. The idea they're all
rigidly fixed is a hangover from an old platonic point
way of thinking. So there, right in the heart of physics,
is I think a really open and interesting
question. The key revolution in the Scientific
Revolution of the 17th century was the
shift from an organic view of nature to
a machine view of nature. It was a
revolution because it rejected what
people thought before. And what people
thought before was a philosophy of
nature taught in the medieval
universities of Europe based on
Aristotle as refined by Saint Thomas Aquinas
in the 12th century. And it was a very
sophisticated philosophy of nature.
According to Aristotle and Saint Thomas
all living beings had souls and the
soul of a living being was not some
metaphysical thing to do with life after
death, it was what gave it its form, its

structure. The body was in the soul, the soul was not in the body. And the soul gave each kind of plant its form, its leaves, its flowers, its roots, its shape. And the soul worked by attraction. As the tree grew, it was attracted towards the mature form by the soul of the plant. It was like the form. In addition, animals had, as well as the vegetative soul that shaped their embryos and growth of the body and maintained its health, there was the animal soul which was concerned with instinct, sensations and movements. And of course the word animal comes from the Latin word for soul, anima. Human beings had a vegetative soul that shaped the body, an animal soul that gave us our animal nature, our senses and instincts and so on, are very similar to those of animals. But in addition, the rational or intellectual soul to do with reason, language, the mind, consciousness. But nobody thought that the human mind was totally separate from the rest of nature. It was embedded in a psychic system which connected us to animals and plants. And the whole world was alive, the

earth was alive, the planets were alive.

We still call them by the names of the Roman gods and goddesses, and the stars were alive. They were intelligent beings.

Each star in the sky as people looked up, it was filled with an intelligence. One of the levels of angels, the dominations, virtues and powers, the third three levels of angels in the hierarchy of the nine-fold hierarchy of angels were the spirits or intelligences of the stars. So when a medieval person looked at the sky, they looked at a living universe filled with the presence of God. Every star was a living intelligent being.

Now, the mechanistic revolution replaced that with the idea that everything's a machine. A machine is a bit like an organism, except it no longer has its own design or purpose. Those are put into the machine from the human designer or maker.

And this metaphor meant God was the intelligent designer of the machinery and through divine intervention that the whole world had been made in the first place.

The organic view of the Middle Ages was really a form of Christian animism.

Plants and animals had their own purposes, their own desires, the soul gave them their motivation and their goal. The whole of nature had a purpose. It was striving towards the being of God, striving towards perfection. God was the prime mover of the universe not by pushing it from behind, but by attracting it from the future. That view was destroyed and replaced by a machine view. The heavens became dead matter, the solar system became a mechanical clockwork-like system. Animals and plants became mere machines with no feelings so it was all right to vivisect them or treat them appallingly in factory farms. The only thing that was left that wasn't mechanical in the world was the human rational mind, that was the only thing left, except for angels and God which were immaterial spirits like the human mind. This was Descartes' view and it created an extreme dualism of body and soul, matter and spirit. So for Descartes, the whole world was mechanical, made of unconscious matter. Consciousness existed only in humans, angels and God, and were separate from the rest of nature by being immaterial, not in space and time.

This created a radical dualism between people and animals, mind and body, and between religion and science because science got the realm of spirit: human minds, angels and God. Religion got that and science got the whole of the physical universe, including the stars and the heavens, which now became dead, unconscious and inanimate. Well that was the revolution, and matter in this view was defined as unconscious. They did experiments accurate to many places of decimals. It was simply defined as unconscious by Descartes and it's remained so ever since in the view of scientists, without further discussion. Now Cartesian dualism was unsatisfactory for many people. By the 19th century a lot of people didn't want to have two fundamental principles. They thought two was too many. They wanted to have just one. And dualism, this view that it's too many meant that they tried to collapse it into one of these two principles. The idealist said everything is consciousness. Matter is just a kind of dulled-down spirit or consciousness, or mind. But the more popular view was the materialist view. Everything's matter, there's no such thing as this mysterious

non-material spirit of the human mind,
and certainly not angels and God. So, at
one stroke the materialists wiped out
angels and God and said the human mind
is nothing but the activity of the brain.
They collapsed it down in into the brain.
And that is the view that took over
science by the late 19th century and
it's been the standard paradigm ever since.
Of course, it creates appalling problems and one of
them is that it makes human
consciousness inexplicable. If matter is
unconscious, how come we are conscious?
Well, some philosophers of mind,
materialists philosophers, say well
there's a simple solution to that. We're
not conscious, the mind is just an
illusion, we're just machines. That's
called 'eliminative materialism' and in the
United States throughout much of the
20th century the official doctrine of
academic psychology was behaviorism,
which denied the existence of
consciousness. It said, the only thing you
can measure objectively and scientifically are muscular
movements and glandular secretions and that's what

scientific psychology should study,
ignoring the folk belief in consciousness.

Others take the view that consciousness
is nothing but an epi-phenomenon, a bit
like a shadow of the activity of the brain that
does nothing. And others take the view that
consciousness is an illusion produced by
the brain to make us feel good and get
out of bed in the morning, because it doesn't
actually do anything. None of these views say that
consciousness does anything. We don't
have free will, it doesn't actually do
anything useful, it might just well not
be there, we might just as well be
zombies or robots and it's irrelevant to
science because it doesn't really exist.

The trouble is that this isn't a very
convincing view, even for materialists. I
mean they'll argue it at work, but as
soon as they get home in the evening
they don't treat their spouses, their
children and their dogs as if they're
inanimate machines, and they themselves
don't believe that they're materialist
because their brain makes them believe it, they'd like
to think they're materialists because they believe in

science, reason and evidence.

And yet their entire philosophical position undermines their belief in materialism.

It's incoherent. That doesn't stop it being the dominant philosophy in all our universities and in almost all philosophy departments, it's the dominant view. But it's so incoherent and so difficult to square with observable facts, that within consciousness studies this is now very, very much disputed. There's been a breaking away from materialism by leading philosophers. One of the first breakaways was Galen Strawson, a British philosopher who lives in America, who wrote a key paper a few years ago called "Does Materialism Imply Pan-psychism", to which he answered yes. Pan-psychism is the idea that there's a kind of mental aspect to all kinds of nature, even electrons. And although he didn't give any details, he said this was the only coherent way we could explain the emergence of consciousness in humans. Because if you try and conjure it out of totally unconscious matter, it's really just reinventing dualism on a kind of evolutionary basis. More interestingly and I think more

coherently, the American philosopher Thomas Nagel wrote a book a few months ago which I think is a breakthrough in modern philosophy. Nagel is a leading philosopher of mind in New York, and his book is called "Mind and Cosmos - why the materialist near-Darwinian conception of nature is almost certainly false". His book was hated by the materialist militant atheist crowd. He was denounced as going off the rails and that kind of thing, but it's a deeply thoughtful and fascinating book. But of course pan-psychism is not new as a philosophy. It's what people thought in the Middle Ages basically and in the 17th century, soon after Descartes, in the next generation of philosophers people were already exploring this possibility. One of them was Leibniz and Leibniz argued that the universe is made up of monads, units of organization including us, but also including atoms and that every monad, as well as having a body, has a mind and each monad reflects the universe from its own point of view. So every monad has a completely different point of view because it's in a

different place, like everyone in this

room has a different point of view.

Because we're all in different places, we

can't all be in the same place at the

same time because bodies are impenetrable.

So, that was one pan-psychist's view.

Another was Spinoza who said that the

whole of nature is the body of God and

it has a consciousness or mind (the whole of nature),

it's God or nature it was a kind of pantheistic view.

The most important philosopher in this tradition

in the 20th century was Alfred North Whitehead,

and Whitehead argued that all physical systems

that are self-organizing have a mental aspect.

Self-organizing is a key here. This

doesn't apply to chairs, tables motorcars

and so on. They're not organized,

they're put together by an external

force - humans. But things that organize

themselves include atoms, molecules crystals,

cells, animals, plants, ecosystems, planets

solar systems and galaxies. Those are

self-organizing systems and Whitehead

argued that all self-organizing systems

are processes in time. There's no such thing as enduring

matter like little billiard balls. He was the first

philosopher to appreciate the importance of quantum theory. And what quantum theory shows is that even electrons are waves. They're wave-like patterns of activity, they're processes, not things. And if they're processes, they take time. You can't have a wave at an instant. That's the fundamental reason for quantum uncertainty. You can't have an instantaneous wave at an exact moment of time because a wave takes time. That means a wave has a future pole and a past pole, it's a process. And this philosophy is called process philosophy. And so, even an electron has a future and a past pole. And Whitehead's most original contribution, in my view, was the way he understood the relation of mind and body. Usually people think of it in terms of spatial metaphors. The mind is the inner life, the body is the outer world, or the outer part. It's the inner and outer. He thought the relationship was a temporal relationship. The mind is the future pole, the body's the past pole. In an electron the Schrodinger wave equation describes all the possible things that electron could do. Those

possibilities coexist. They're not physical, material, measurable realities, because they're possibilities. It's a different kind of thing. But as soon as the electron interacts with something or is measured, then these possibilities collapse down to one physical observable fact. That's now in the past. The physical pole is in the past and now a whole new realm of possibilities develop. The same with our conscious minds. They're filled with coexisting possibilities. Our minds are realms of possibility. Mental reality is a realm of possibility, about potential futures, virtual futures, things we could do. And our minds are involved in choosing among these possibilities. As soon as we choose to do something and do it, it becomes an observable physical fact, objectively measurable. But before that, it's a possibility and this gives a view of causation, a two-fold form of causation. The possibility-mental causation working from virtual futures towards the past and regular-physical causation working from the past towards the future and they overlap in the present. I think this is the best way of thinking

of the relation of mind and body, the most fruitful. It has many implications and I don't have time to go into them for now, at this moment. What I do want to do is just explore what this pan-psychist view might mean when we look at big things. Most discussions of it are about atoms and electrons, but since we're here at the Electric Universe conference, what about thinking about the Sun and the galaxy.

The Sun is a self-organizing system. Indeed the whole solar system is a self-organizing system. It's not put together in a factory, it organizes itself and the entire galaxy is a self-organizing system.

From that point of view, they're organisms and from Whitehead's point of view that would mean they would have a mental pole which did would be to do with potential futures, and a physical pole depending on the decisions or choices made among those possible futures.

What we observe is the physical pole.

But they have a great deal of indeterminate activity going on in them, particularly electrical activity.

Electromagnetic activity, we know there's no dispute that the Sun is highly active

electromagnetically, however one interprets the source of its energy, everybody agrees that highly complex electromagnetic patterns are going on there. People also think that the interface between our brains and our minds are the complex electromagnetic patterns going on inside our brains. So, what if these electrical patterns in the Sun are an interface with the Sun's mind? What if the Sun thinks? Now, as soon as you raise that question you realize this is utterly taboo subject. You're not allowed to ask that question. Matter is unconscious. Since the 17th century, materialists have assumed and dualists had assumed that matter is unconscious. It's simply off-limits.

However, all traditional cultures have treated the Sun as alive and indeed the planets and the stars. Children when they draw the Sun draw it with a smiley face. And so, this in itself is taken as evidence against the fact that the Sun can be alive or conscious, because if children see it that way, it shows it's a primitive or childish way of looking at things. And the fact that people all over the world say it that way until science comes along again proves it's primitive and superstitious. We've risen above it. I don't think we've risen above it at all.

I think we sunk below it to a level of dogmatism which simply closes off a whole area of questions for no reason other than the fact that a French philosopher in the 17th century chose to divide up the world in such a way that he defined matter as unconscious. It's become a habit of thought with us. About ten years ago, with a few other people I organized a small Invitational conference in England held at Overby at the summer solstice in the countryside called, "Is the Sun conscious?" We spent several days discussing the consciousness of the Sun. Well, of course none of us could really prove the Sun was conscious, and you might say, well, if it's conscious, prove it. Well, my answer to that is, well you can't prove it's unconscious. It's actually an open question, but once we got beyond discussing what it might mean, we then got onto the question of if the Sun does think what does it think about? Well, one obvious thing would be its body, which is the solar system right out to the heliopause. And it knows what's going on in the solar system. It's pervaded by the Sun's electromagnetic field.

Everything in this room is within the Sun's electromagnetic field. The electromagnetic activity in your brain is within the Sun's electromagnetic field. So, the Sun in a sense, just through the electromagnetic field alone, would be able to sense what's going on in the entire solar system and beyond.

Its decisions might involve when to send out coronal mass ejections, the timing of solar flares, whether to point them towards the earth or not. You know there's all sorts of things, and also the variable cycles of the Sun may be reflections of its psychic activity.

So part of its concern may be with its body.

Part of it may also be with its peer group, the other stars and the galaxy as a whole you see may have a mind. I'd love that talk yesterday by Michael

Claridge where he conjured out this wonderful image of variable currents moving through the arms of the galaxy with more activity in some places than others, changing from time to time, like MRI scans of the brain change when you're thinking about one thing or about another thing. The entire galaxy is a living organism.

with a mind as well as a body. The Electric Universe aspect of this is the perfect interface between the physical activity of the galaxy and its possible mental life.

Of course, if we start thinking and say, why stop at galaxies, you've got galactic clusters and then you've got the entire universe. What if there's a cosmic mind? Well, this is by no means a new idea, but I think that science itself can open up something. We're not talking now about supernaturalism, or blind faith. We're talking about a way of thinking about nature which gives us an organic coherent view of nature and opens up completely new forms of dialogue with spiritual and religious traditions.

I want to end by just reflecting for a few moments on the location of our own minds. The normal view is that the activity of the brain is inside the head. But this leaves a great many things unexplained, including vision. What's going on when you see something? What's going on when you see me now? Well, light moves from me through the electromagnetic field, enters the eyes,

inverted images on the retinas, changes in the cone cells, impulses up the optic nerves, and changes in various regions of the brain which can be illuminated through brain scanning. We know more about them than ever before. Does this explain vision?

Well, no, it just describes changes in the brain. The first thing about vision that isn't explained is the fact you're conscious of what you see. That's an example of the 'hard problem' in consciousness studies or philosophy of mind. The very existence of consciousness is unexplained. But then is the question of where are the images you're seeing? You're seeing a three-dimensional colored world.

The conventional view is that all that's inside your brain. You've got a virtual reality display somewhere inside your head, which includes me and the rest of this room and everybody else here.

It's all in your head. If you look at the sky at night, or in the day, the sky you're seeing is inside your head.

A key paper recently in one of the consciousness journals by a philosopher

of mind was called, "Is your skull beyond the sky?" And the author of the article answered, Yes. He's a materialist, so he said the minds and the brain, everything you experience, is inside your head. Your skull is beyond the sky. This is only a virtual skull, but your real skull is beyond the sky. Everything you're experiencing is inside your head. Your whole conscious, subjective life is inside your head.

I propose a much simpler view which takes into account our indirect experiences. So simple, it's hard to grasp, and that's that your image of things is in your mind, but not inside your head.

Your image of me is exactly where it seems to me to be, outside your head where I'm standing. Visions are two-way processes.

You project out images which coincide normally with what you're looking at. This means that there's a kind of outward movement of the mind. The mind is not confined to the inside of the head. It's extended out through attention and intention, and that means we should be able to affect things just by looking at them.

And that means, for example, that if I look

at you from behind, and you don't know
I'm there, you might be able to feel my
gaze. Now could that possibly be true?
Well, as soon as you ask that question,
you realize it's a common experience.
More than 90 percent of people have
experienced being stared at from behind.
You turn around, there's someone looking
at you or, staring at someone and making them
turn around. There was an almost complete taboo on
this in science until the 1980s because it simply ought
not to happen. So, skeptics dismissed it. It doesn't
happen, it's an illusion, it's just folk
belief, superstition, it's coincidence,
selective memory. Experiments however,
show that it does seem to happen. There's
now a lot of experimental evidence,
people can really tell when they're
being looked at from behind that can't
be explained just in terms of signs or
smells. It works through glass, it works through
one-way mirrors, even works through CCTV.
Now, this means that our minds reach out to touch what
we're looking at. And I just want to leave you with this
thought, as when we're talking about the
extended mind. When we look at the stars,

it means that our minds from this point of view are reaching out over literally astronomical distances, contacting those stars.

Now the question then arises. The light takes, say ten light years to get from a star to our mind when we project out our image of the star, is it just stretching out in time and reaching the star ten light years after it was emitted? Or is our conscious mind working backwards in time and contacting it ten light years in the past? I think it's contacting it when the light was emitted ten light years in the past. I think our minds are stretching out in time as well as space and I think our conscious minds work backwards in time as it were.

So, this means that when we look at the universe, the Electric Universe, the stars, the planets, not only may we be looking at a living organism, the whole universe is a living organism with the galaxies and the solar systems within it as living organisms. Our minds are stretching out to contact it. It's not just something inside our heads of these ideas when we look at the stars directly or indirectly through telescopes, our

minds are reaching out into the cosmos
and may be interacting with it in ways
we can barely begin to imagine. Not just
with potential Little Green Men on other
planets, but with the stars themselves, with the
galaxy itself. So, I think that the Electric Universe
which gives us an organic view of
galaxies and solar systems as organisms
held together by electric activities and
plasma is completely consistent with the
emerging view of nature, the
post-mechanistic view of nature, as the
universe as a living organism, made up of
many levels of organism within it, each
organism containing smaller ones. The
galaxies contain solar systems. They
contain planets, ecosystems, species,
social groups. Organisms contain organs
cells, molecules, crystals. A living
universe with habits evolving in time
and one of which we're living parts. I
think is a few much more consistent
with our experience of nature, a much
healthier view of nature, one that breaks
down that artificial division between
mind and body, humans and nature, which

the mechanistic theory gives us and
contacts us with the traditional wisdom
of all traditional societies which have
all seen the universe as alive and
organic. And I think we're rediscovering
that at a higher turn of the spiral.

I think as we move beyond the dogmas of materialism,
science can be set free in almost every area.

In medicine, in astronomy, in cosmology,
in biology, in psychology, in chemistry, in
our understanding of evolution. So, I think, instead
of knowing almost everything which is the common
assumption, we know very little indeed.

And the dogmatism we all encounter comes
from a belief system, a worldview which
has long outlived its usefulness. It long
passed its 'sell by date' and as we move on from
it, science will be set free in all sorts of ways.

And I think we'll see a scientific renaissance,
and I think this gathering is part of it. Thank You.

[Music]

[Music]

okay what's the matter with matter at the human scale it's something like a rock you can hold it in your hand it feels weighty it looks solid it has sharp boundaries it has continuous extension and definite location it's there if you look at it through an electron microscope the solidity is mostly empty space there are a few dark splotches scattered around that you can call atoms of matter but you can't hold them in your hand you can't weigh them on your bathroom scale the boundaries are fuzzy and trail off into the toe of a probability curve the splotches don't have definite locations they are merely regions of increasing probability function the idea of continuous extension is nonsensical at this scale a closer look shows that the splotches too are mostly empty space calling them matter is only analogous not homologous atoms aren't really there you've entered the realm of cognitive operations you've entered the land of metaphor you've entered you don't know what you're

talking about you're imagining things
by that I mean that you're making images
of sensations and concepts that you
judge to be unities and the images that
you're making have their roots in the
human scale of everyday life as a
materialist I must confess that I don't
know what matter is the closer I look
the more matter turns out to be not
there a field of view with an idea of
solidity hiding somewhere I think that
there must be some thing there but thing
is an idea a cognitive operation ideas
matter that the idea of matter is not
matter the idea isn't all there is to it
the pain in my shin when I knock against
the coffee table in the dark is not an
idea I don't imagine
pain its raw data that's given unbidden
and i hope i won't be given any more of
it only after i stop whimpering and try
to tell someone if only myself what
happened do ideas ideas of things like
coffee tables creep in if I were to be
consistently philosophical I'd
contemplate the question what else could

it be but while I'm seeing stars which I
presume are not part of the coffee table
idea I'm not interested in alternative
theories I only want one that will
enable me to avoid that batam of
experience in the future I don't care if
the theory is atomic or platonic I want
results

neurology studies show that even before
were born our cognitive operations are
operating by the time we're old enough
to study theoretical physics
we're in mid thought we're developing
and revising and replacing ideas that
came from we know not whence our
theories and their assumptions are far
from any foundation far from any
justification what we need all we need
our results not secured foundations not
settled assumptions science is
provisional its theories are true
provided the assumptions the initial
propositions are true or insofar as they
are true furthermore we're not aware of
many perhaps most of the assumptions we
remember if we've read in a history that

some of them have changed over time and
perhaps they will again science occupies
a middle position a mutable position a
mortal position it occupies a human
position we start theorizing at some
arbitrary location an intellectual
midair and immediately commit an excess
we lay a cornerstone intending to build
a cathedral of ultimate truth on it from
that high point our enterprise sinks
into conceit arrogance and absurdity if
we are made aware of that excess
may leap to a second excess of thinking
that if a theory isn't absolutely true
nothing is true and anything goes and
then we have the experience of pain in
our shins matter in the sense of pain in
our shins only exists at the scale of
coffee tables we don't stub our toes on
atoms or stars but we do understand
atoms and stars by picking out their
similarities with coffee tables matter
appears in mid scale and we build
metaphorical universes on it afterward
we make excuses and call those excuses
foundations confusing logic with pain we

know a few specific things for a little
while
geocentrism for 1,400 years gravity for
300 years plasma for who knows we know
enough to get us through the night so we
can struggle with it again in the
morning but we don't know so much that
we can take tomorrow off

Welcome to the Electricity of Life,
brought to you by The Thunderbolts
Project™ at Thunderbolts.info

The Electric Universe and plasma cosmology
have laid the foundations for a new
understanding of our Sun and of all
stars. Many decades ago, the father of
plasma cosmology, the Nobel Prize winner
Hannes Alfvén, proposed that stars form
electromagnetically along vast networks
of filaments, like pearls on a string.

Later, the electrical engineer Ralph
Juergen's went a step further and
developed an electrical model of the Sun
as an anode, a positively charged body
powered by galactic electric currents. In
the last year, the project scientists
with the independent SAFIRE experiment
announced a series of findings in
agreement with the Electric Sun model.

Indeed, we learn more everyday about
the extraordinary electromagnetic
connection between our planet and its
parent star, including the discovery in
2014, that powerful outbursts from the
Sun result in increased lightning on

Earth. Perhaps even more remarkably, a number of scientific papers have reported an apparent correlation between surprising changes in radioactive decay rates and solar activity. But not only does our planet, and all of its complex atmospheric systems, share a remarkable relationship with the Sun, so too is all of life affected by the Sun in ways that science has only begun to recognize. And here the electrical nature of the Sun shines through with striking clarity.

Consider the recent scientific discovery of a surprising correlation between solar storms and the beaching of grey whales and certain other cetacean species. The apparent connection was originally noted by a biologist and his team at Duke University, who found that when dark sunspots cover the Sun, the marine mammals are more likely to beach themselves. With the help of an astronomer, they were able to confirm the connection. Their findings have been published in the journal *Current Biology* in the paper "Grey whales

strand more often on days with increased levels of atmospheric radio-frequency noise.” The paper’s abstract states that the findings suggest “The potential for magnetoreception in this species.” In fact, this is not the first scientific paper to demonstrate such a correlation. In 2016, Cambridge University's International Journal of Astrobiology published the paper “Solar storms may trigger sperm whale strandings.” The authors state in the paper’s abstract “... magnetic fields can affect terrestrial life such as migrating animals. Thus, terrestrial life is connected to astronomical interrelations between different magnetic fields, particle flows and radiation. Whales’ magnetic sense may play an important role in orientation and migration, and strandings may thus be triggered by geomagnetic storms.” Of course the concept of magnetoreception in some animals is not new. Many biologists have long proposed that the mysterious abilities of homing pigeons

is resolved by the presence of magnetic particles in the pigeons heads. This apparent magnetic sensing has also been found in other animals, perhaps surprisingly, including cattle. As reported in a study published in the Proceedings of the National Academy of Sciences USA in 2008, "We demonstrate that domestic cattle across the globe and grazing and resting red and roe deer align their body axes in roughly a north-south direction. Direct observations of roe deer revealed that animals orient their heads northward when grazing or resting. Amazingly, this ubiquitous phenomenon does not seem to have been noticed by herdsmen, ranchers or hunters." Other species that seem sensitive to Earth's magnetic field include frogs, lobsters, snails and perhaps most intriguingly of all, humans. While a human magnetic sense has long been a subject of interest and investigation, the most powerful scientific evidence to date came in 2019 with the publication of the paper,

"Transduction of the Geomagnetic Field as Evidenced from alpha-Band activity in the Human Brain." In the experiment, conducted by a team of Caltech scientists, 34 subjects sat in an aluminum box which shielded them from electromagnetic noise. The box was lined with coils through which electric currents flowed, and the investigators created a magnetic field which sloped downward, similar to the geomagnetic field at the mid-latitudes of the Northern Hemisphere. They then rotated the field, producing a measurable change in the brain activity of nearly 1/3 of the study's participants. In an article in Science Magazine, biologist Margaret Ahmad states in the findings "I'm not surprised there's an effect.

There's something in a cell that is different in the presence of a magnetic field. We see this effect in human embryonic kidney cells; you're not going to convince me that an effect in brain cells is of any greater or lesser

significance.” And here, the great significance of the electromagnetic connection between the Sun and the Earth comes into focus. The Earth is a rotating charged body and electric currents from the Sun touch down at the Earth's poles, producing the aurorae and modifying our planet's magnetic field. Evidence of the profound biological effects of both electric and magnetic fields, increases with each passing year. So, the question is, do geomagnetic events impact the physiology of human beings? Increasingly, it seems the answer is yes. In fact, it was over a century ago that the Soviet era scientist Alexander Chizhevsky founded the field of heliobiology, the study of the Sun's effect on biology. As noted in an earlier *Electricity of Life* by Alex Fournier, Chizhevsky conducted exhaustive data analysis, which compared solar activity with prominent historical events in human society. Using a “mass excitability” index, Chizhevsky found that the timing of these prominent events consistently linked to outbursts

from the Sun, which led to Chizhevsky to propose that geomagnetic storms had a significant impact on the human mind and behavior. As a result of his scientific endeavor, after refusing to retract his findings, he was placed in a labor gulag for eight years by Soviet leader Joseph Stalin. Today, scientific research into the Sun's effects on the human body and mind continues, with an emphasis on the role of electromagnetism. For example, a number of studies have reported data suggesting a connection between geomagnetic storms and dramatic changes in blood pressure and other effects on the heart. And as suggested by earlier research, some scientists have found an apparent linkage between geomagnetic storms and major changes in behavior. In 2006, the peer-reviewed journal, Bioelectromagnetics, published a paper, "Do Ambient Electromagnetic Fields Affect Behaviour? A demonstration of the Relationship Between Geomagnetic Storm Activity and Suicide." The authors studied the geomagnetic storm activity,

and the national suicide statistics for Australia, between the years 1968 and 2002. Their conclusion was that the data "...suggests that perturbations in ambient electromagnetic field activity impact behavior in a clinically meaningful manner." In February of 2020, another study, this time focusing on suicide statistics in Taiwan, reported similar results. Such findings might sound strange, but the purpose of this series is to explore the role of electricity in nature and biology, including the body's electrical circuitry. In fact, the connection between major health changes and geomagnetic activity might actually be predictable, in light of the remarkable scientific research of our previous guest, Dr. Jerry Tennant. Dr. Tennant has proposed that many health problems are essentially the result of a disruption of the natural voltage in the body's muscles and organs. Emotions, Dr. Tennant suggests, are stored in and around our bodies in the form of magnetic fields. The treatment he's

devised involves the use of other
magnetic fields and scale our energy to
restore the body's voltage and
"erase the residual effects of trauma." In
describing the relationship between
celestial objects and the greater cosmos,
we have stated that
"...no islands exist in our Electric
Universe." Of course, this applies not
only to astronomical objects, but to all of
life. And thus, it is unsurprising that
the evidence of the electrical nature of
the cosmos, continues to illuminate
the interconnectedness of all things.

[Music]

[Music]

A supernova was a star, then it
was transformed into something
new that is capable of taking on greater
responsibility within the body of the galaxy.
Galaxies are very complex. They are not just
a random collection of independent stars.
In fact, the galaxy is just as complex as your body.
In biology class, we learn that each cell
in your body has very specific responsibilities.
These cells are grouped together
into tissues that have their own functions.
The tissues are grouped together into organs
that have more far-reaching
responsibilities within the proper
functioning of the body as a whole. The same
structure, or hierarchy, is present in galaxies.
The stars that we see in the sky are just
one aspect of galactic intricacies. Stars are
grouped together into larger structures
that were particularly shown to us by
the Planck and Herschel space telescopes.
These larger structures are part of still
larger, functional regions within the full body of
the galaxy. Each of these levels of organization is
doing something. None of it is pointless or

random. Where does a supernova fit into this larger perspective? For it is only with such a perspective that we can begin to understand the nature of supernova. I did not invent the perspective. I was lucky enough to inherit the ideas and I'm doing my best to apply them to astronomy. I began studying supernova in the late 1980's, collecting data about the pulsar named 1913+16. We were looking at the spin-down rate to compare that with the theory of general relativity. As much as we know about supernova, it will probably not come as a surprise that we also know very little about them. We are confident that they start off as stars, and somehow that star undergoes a very rapid transformation which, for an instant, puts out as much energy as the entire galaxy of which it is a part. This brief, all-encompassing flash is what we call the supernova. After that flash, the star is gone, and we see in its place something very different. The very center of this new creature pulses very rapidly, hundreds, even thousands, of times a second. Each

supernova remnant has a unique pulse shape.

Unique like your fingerprint or voice.

Around this compact pulsing center

is a rapidly expanding, larger electric and

magnetic body. Here is a little portrait gallery

of such transformed stars. What

strikes me, first, is their beauty

and their individuality. There is

a bit of a classification problem

for people familiar with the astrophysics. For

a long time, we classified the events as Type I

and Type II. But then we found some that blended

the features of the two types. Then we found

ones that were neither type. Then we found

more and more that were supposed to be

impossible. I would like to change

the terms of the discussion.

Let us stop describing supernovas as

dead, or dying stars. Let's stop describing

them as Type I and II. Let's forget about

the distinction with planetary nebula.

Let's instead, start talking about

transformed stars. About stars that are reborn

onto a larger playing field. About stars that

found some way to be conduits for a greater

amount of energy, and hence are

able to take on greater responsibility.

Our galaxy is filled with structures like this,
which became visible to us only from the Planck
and Herschel telescope data. One hundred
lightyears across, composed of an
enormous variety of organic molecules.

Connected into a coherent whole by
magnetic fields; electric currents
flowing through the whole thing;
complex vibrations traveling up
and down the whole structure.

Hundreds or thousands of stars might
participate in such a structure. It has very
well-defined boundaries, membranes,
actually, that are just as well
defined as your blood vessels. These
plasma membranes are also, like
all the membranes of your
body, semi-permeable.

At one lecture I showed this
picture and a woman yelled out,
..."that looks like a Fallopian tube" which
is certainly thinking in the right direction.
We really do not know what this thing is,
and never will understand it without
acknowledging that it has a

function. It is doing something for the interstellar medium or for the galaxy. Supernova are connected with these sorts of larger structures.

We do not know yet which comes first: the supernova or the larger structure, or if they arise together as part of some larger process. Now that we've spoken, very briefly, about these cosmological miracles, let us turn the focus to a human level.

What can we learn about ourselves by studying supernova?

Supernova are extraordinary stars.

Perhaps they can shed light on extraordinary people. I've always been fascinated with how some people, like a Mahatma Gandhi or a Saint Claire of Assisi, can affect so many people, over such a large distance and for such a long time. I'm not talking about social media,

I think that is a different discussion. Let us keep our focus on pre-internet circumstances.

How much effect can one person have?

Most of us affect only our nearest neighbors.

Yet in history, we see that some people affect whole continents. Think of Gandhi in India.

We see hundreds of thousands,

even millions of people, being moved
physically, now here, now there. We
know that by the thousands, they're
having new thoughts about themselves and their
country. New hopes and wishes and that these new
thoughts and feelings will persist for decades,
and will be felt in the future by people
who never met him. Well, I have
to admit I do not actually know
what kind of energy can produce all that.
I do know that it is orders of magnitude
beyond what you and I are capable of in our current
condition. Let us bounce back and forth between the
world of supernova and the world of people,
in hopes of understanding both better. A
supernova becomes instrumental in organizing
matter over much larger distances than it did while
it was a star. Our star orchestrates
matter over a distance of about
a hundredth of a lightyear. That means, affecting
mostly only the star's nearest neighbors. By
comparison, the Crab Nebula
supernova is organizing matter
over at least 20 lightyears and is
connected to structures that are
hundreds, maybe thousands of lightyears across.

That is a scale jump, comparable to how Saint Claire could change the life of the religious, not only in the small town of Assisi, but in all of Italy and then all of Europe. Claire did not yell louder to reach more people. I'm fairly certain she was soft-spoken. Some other transformation must have taken place in her, that allowed her to be connected to people over vastly larger distances.

Another supernova characteristic is the quantity and the quality of the new energies produced. I've already mentioned that during its initial flare, the supernova can put out a quantity of energy comparable to the entire galaxy. That would be like one of your cells putting out as much energy as your entire body. The average cell would be blown to smithereens by that much energy. The Crab Nebula continues to put out at least a hundred thousand times the energy of our Sun. In the real world quantity is important, but also the quality of energy is important.

As a physicist, our toolbox is very limited in distinguishing, describing, measuring different qualities of energy. Some physicists even believe that energy cannot have different

qualities. But something can exist,
even if I do not have a name for it. The
best we can do with current physics is to look
at the frequency of the energy emitted.
For example, the frequencies emitted by
the Crab Nebula, compared to an ordinary
star. We see that for the supernova
the frequencies are shifted very much towards
the higher, such as ultraviolet, X-ray, gamma-ray.
The Crab Pulsar in fact has the
distinction of being the source of the
highest-frequency photons we have ever measured.
Higher frequencies are more penetrating.
Think about X-rays being able to give
you a photo of the inside of the body,
as opposed to the lower frequencies
of visible light that can see
only the very outside of your skin.
Higher frequencies can also
carry more information. Bringing
this over to the human realm,
I'm not necessarily saying that Buddha
emitted higher frequencies than you and me,
though he very well might have. I am saying,
that the energies he worked with, were much
more penetrating and able to accomplish

much more in a very short time.

In the electric cosmology viewpoint, stars are conduits for energy just as everything is in the universe. You and I do not really create energy, we take in material around us and we liberate that energy. Stars transform the galactic electrical energy into the light and heat that sustain us. Stars are conduits for the liberation or the transformation of energy. When a star goes supernova, it becomes capable of conducting millions of times more energy than the star it came from. In the human world, I am proposing that something comparable is possible for you and me, and was actual for the Buddha and perhaps on a smaller scale, for someone like Dr. Martin Luther King. Their lives and consciousness actually are more penetrating. They are working with a different quality of energy. They found a way to conduct and transform, both a larger quantity, and a finer quality, of energy. A third characteristic of the supernova, is that of changing time. In the compact pulsar that we see in the center of the growing supernova body,

the gravity is so intense
that, according to general relativity,
time flows hundreds or even thousands of
times slower than it does for you and me.
But there's more to it than that. I can
have two events of equal energy,
but the effects of one event
will dissipate and disappear
very quickly, while the effects
of the second event might last for years or
centuries. What makes that difference? I wonder
about that. I think it has something
to do with working for myself
versus working for others. Vain glory and
self-importance generally do not lead to lasting and
beneficial change. But even the worst tyrants
have claimed they were working for the benefit of
others, so we must be very careful
when trying to answer this one.
I do know that the soul of Martin Luther King Jr.
really does reach across time to touch
people who never knew him. I know that
many physicists tell us that cause and effect
only work locally, and causes cannot stretch
across time. But my direct experience
tells me otherwise, and I must follow what

I know. That time is flexible and has other dimensions outside of a simple line, is actually ancient knowledge and I would daresay, a direct experience that many of us have had.

Basic principles are expressed at all levels of the universe. The potential to really change, and become useful to something larger, is a principle that is playing out at every level of the universe, in cells, in people, in stars which you can begin to see if you know to look for it. We can learn about such possibilities in ourselves by studying the comparable phenomena outside ourselves.

Studying this possibility in the world around me, can help me work with the same in myself.

If we did not see it with our own eyes, we would not believe that stars could become supernova.

But they do. If we did not see it with our own eyes, we would not believe that caterpillars can turn into butterflies.

But they do. And that level of transformation really is comparable to a transition latent within each of us.

[Music]

[Music]

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info human beings around the world today are looking at planets in an entirely new light the electric universe offers new theoretical possibilities for planet formation and planetary science experimental research with electrical discharges and electric fields has created new horizons for understanding the visible features of planets our neighbor Mars is the source of many ongoing mysteries for planetary scientists as Professor and Mars investigator Phil Christiansen recently stated there's a lot of knowledge and not so much understanding the most stupendous feature on Mars is Valles Marineris the great trench stretching more than three thousand miles across the Martian surface in the 1970s the engineer Ralph juergen's first proposed that Valles Marineris is the scar left by a giant interplanetary lightning bolt if these events did occur can they be

replicated in experiments on earth
within the electric universe community
this challenge is now being met by those
exploring the theory of planetary
electrical scarring recently geologic
researcher Michael Steinbach and an
experimentalist Billy Albertson have
collaborated to replicate the complex
conditions that might have been present
in an epoch of planetary instability
today Michael and Billy provide an
introduction to their collaboration
including Billy's recent reproduction of
Valles Marineris it was some time ago
that Mark Spann gave me a call and told
me about this friend of his named Billy
Yelverton and how I had to contact him
he was doing all these experiments it
reflected well on what I was proposing
so I called Billy we hit it off right
away we just seemed to enjoy each
other's company and talk and he's been
doing experiments using electricity
seventy thousand ninety thousand volts
moving material and the idea is he can
kind of replicate what's described in

worlds in collision what took place
sometime within the last 10,000 years
and there's descriptions of all of this
dust
and how it's being blown around by
incredible winds and making formations
so Billy started originally removing
material from the bottom of his chamber
and it would reorganize it and it was
really interesting it made what looked
like circular mountain formations in
many instances and I kept bugging him
Billy can you please drop the dirt from
above instead of lifting it from below
so it might be more similar to what's
what was happening he graciously figured
out how to do this he got a box of dust
and a screen fine screen and heat a
vibrator and he vibrates the box and the
dust falls from above in a very
controlled manner while he has an
electromagnetic event taking place both
blow and the first one he did happened
to be the day that Ben Davidson was
visiting the suspicious observers Ben
Davidson and lo and behold they start

talking about how this reminds them of a
barred spiral galaxy and it starts to
have features that are fairly similar to
Valles Marineris and it's creating one
side larger than the other I think the a
notice is concentrating the dust faster
than the cathode it might be the reverse
Billy knows and there's an area in
between it's kind of resembles the
canyon but it's not being excavated it's
being prevented while this event is
happening surrounding it and later if he
did one with a water element that
prevented accumulation while you have
formations growing around it and I sent
it to a friend of mine at Princeton
actually the gentleman who introduced me
to Velikovsky in 1970 and he saw this
and he goes this guy Billy Alpert it's
incredible you have to find him and meet
him and I said he's my friend he's my
buddy and he couldn't believe that of
like 7 billion people on the planet I
happened to somehow hook up with this
savant who's able to do things on a
shoestring in his backyard

baking things that seemed to be
replicating catastrophes
and really recently and he's continuing
to evolve and change and shift I make
recommendations and he does him and it's
just like a dream come true I can't
believe how lucky I am
Billy Albertson has been if I was
religious a godsend
he's been beyond my wildest dreams
and everything seems to be pointing into
a process of accumulation these
catastrophes be caused by dusty plasma
electromagnetically organized and
concentrated it all started with the
Thunderbolts without a contest or
dendritic Ridge formations and up until
that time had done quite a bit with
electricity but not really into the
geological realm there and so we started
out with the lightning bolt and of
course you know we create a perfect
crater with a raised rim and you know
all the features that you see with the
with a collision we can perform
identically if not better with a with a

lightning bolt electric arc mode

discharge

however down the road as we continued I

I noticed that the dielectric properties

had more to do with it than conductive

anodes and cathodes so to speak and so

we tried some acrylic sheets and glass

sheets laid down on top of a conductive

iron cathode and we started with anodes

above that with some material like clay

we used told the mind and all different

types of sand and in pottery clay as

well as you know Georgia clay right out

of the ground and we found that this

dark mode discharge turned out to move

and create more motion than any of the

conductive type discharges over

conductive areas and though that turned

out to be quite astonishing we were in a

lot of it in AC voltage and DC voltage

and turns out that with with the with

the AC voltage you can put one electrode

whether

be handled cap you know well the basis

actually doesn't really matter with a

single overhead electrode we could get

incredible amount of motion across a sheet of acrylic with the that resembles you know what is described with the thunderbolts as EDM electric discharge machining and after that we went into the DC voltage and found that with just a single overhead anode or cathode we would not get those same type of motions so we had to play around there a little bit so we figured out that we if we placed anode and cathode above a neutral base then we got everything back youth all these motions start coming back to the table of you and yeah was until talking with Michael and of course if anybody knows Michael he's he's quite a persistent fellow there so you know it's if you want to get him off your back you just well go ahead and try some of these things he encouraged me quite a bit though and from there it was just very much incredible he was wanting to try and blow the dust up or maybe lift it up with a fan or some sort of you know blower to get the the dust up into the atmosphere and I thought well why don't

we you know if he you know read worlds
in collision if we just you know put it
above it if we could place a reservoir
above the discharge you know table and
shake it out so made a little wooden box
and put a screen on the bottom of it and
we attached a little small vibrating
motor or the speed control to you know
control the amount of dirt that fell and
lo and behold this uh this perfect death
shape bar spiral will show up and it's
very consistent that happens every
single time there every time you put it
down there it's pretty incredible
for continuous updates on space news
from the electric universe stay tuned to
Thunderbolts dot info

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you

and there's nothing to fear.

In our previous episode, we observed the

critical role of a great crescent in

the ancient sky. The placement of

this crescent on the sphere of an

enigmatic body called the primeval Sun is one

of the unresolved mysteries of the ancient world.

The first step in a resolution must be

to honor the early historic descriptions

of things not seen in our sky today.

The crescent had nothing to do with our

moon, and the great sphere on which the

crescent appeared certainly was not our Sun.

It was the sphere of the gas giant Saturn,

appearing as a massive body

visually dominating the sky.

Yes, today's Sun was present.

It was the Sun that cast the illuminated

crescent on the towering form of Saturn.

But, why the incessant contradiction
of our familiar sky?

Ancient astronomies place Saturn at
a preposterous location, far from the
orbit that we know today. Saturn occupied the
celestial pole, the axial center of the turning heavens.

This unthinkable idea, when taken
with the seriousness it deserves,
places stringent demands on our reconstruction -
and an inescapable requirement that the
crescent revolve around the polar center
in a cycle of day and night.

Descending to the left at sunset,
below at midnight, rising to the right at sunrise,
and standing inverted above at noon.

Of course, in this description we're
using the modern language of day and night.

But the language is reversed
in more ancient times.

It's well established that the ancient
counting of days was from sunset to sunset.

We explain this language by an
ancient reverence for that moment in the
daily cycle when the planetary
configuration exploded into life
at the beginning of the archaic day.

But there's much more to this story.

The symbolism of the crescent takes on
far-reaching implications with the
emergence of the cosmic pillar, a form
we noted only briefly in the previous segment.

The pillar, linked to the
movement of the planet Mars,
arose with the descent of material
from the red planet toward the Earth,
creating a form universally interpreted,
not just as a pillar,
but as the axial World Mountain, the
cosmic support and resting place
of the creator himself,
the primeval Sun.

A mountain of fire and light,
the mountain of creation, the mountain of assembly,
an axial pillar around which
the heavens visually turned,
all meaningless in the absence of
the original referent in the sky.

A single cosmic column inspired the diverse
images of the crescent at the summit.

Suddenly things were seen imaginatively
that were not imagined previously:
the mythic mountain of the moon;

the outstretched arms or wings
of a divine celestial figure;
shining horns, a horned pillar
called the Bull of Heaven;
a cleft peak, or twin peaks; twin supports of
the sky, as extensions of the central column;
a revolving crescent ship on its mooring post;
and we can add countless ancient
images and pictographs of the daily cycle.

We explain the full range of mythic images
by the placement and movement of the crescent.

Each and every mythic form inspired by
the crescent must have revolved in the sky

- against all seeming logic,
against all familiar human experience.

And not just a revolving crescent form,
but revolution in a precise relationship
to an archaic daily cycle. A

contradiction of anything and
everything that could be
said of a daily cycle today.

Every mythic interpretation of the
crescent thus becomes an acid test.

That means, a test the reconstruction must meet
and alternative explanations could not meet.

A crescent form seen as the

arms of a celestial figure.

Upright and inverted arms in a

predictable relationship

to opposite phases of

growing bright and growing dim.

One phase seen as the twin

or double of the other.

The phase of brilliance, arms upright,

produced the images of life and power,

the phase of dimming, with arms inverted

came to mean negation, or absence of life.

This unique mythic role of a revolving

crescent as outstretched arms in a daily cycle,

can only open our minds to a much

broader range of myths and symbols.

What about the other mythic forms of the crescent,

since they must also have rotated

absurdly around a central star?

We'll show that every predicted correspondence occurs

in explicit detail, the more archaic the tradition,

the more precise the correspondence,

as we would expect,

all with no explanations available under

common suppositions about the ancient sky.

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

How and when did the asteroids and comets in our solar system form? For many decades, astronomers have embraced the story that these small rocky bodies are the primordial leftovers of our solar system's formation; supposedly from a nebular cloud, four and a half billion years ago.

Of course, as viewers of this series have long known, science discovery has done little to nothing to support this view. In fact, one of the great surprises of the Space Age is that asteroids and comet nuclei appear remarkably similar. They have complex rocky and rubble-strewn surfaces. The Electric Universe has always proposed the “radical hypothesis” that comets, asteroids and meteoroids were torn from planetary surfaces by interplanetary lightning in an epoch of planetary instability. A major piece of this puzzle is the evidence for electrical scarring on planets and moons and one of the most dramatic examples of such scarring may

be the enormous trench, Valles Marineris on Mars. In this episode, retired nuclear engineer Ray Gallucci offers an independent analysis of the specific role that Mars may have played in creating the asteroid belt. Today I'd like to talk on the plausibility of the electrical birth of the asteroid belt from the Electric Universe perspective. Some background on the asteroid belt. Traditionally the asteroid belt formed from the primordial solar nebula as a group of planetesimals form proto planets, and this is taken from the asteroid belt discussion in Wikipedia. Between Mars and Jupiter however, gravitational perturbations from Jupiter imbued the proto planets with too much orbital energy for them to accrete into a planet. The collisions became too violent and most of the proto planets shattered. As a result, 99.9 percent of the asteroid belt's original mass was lost in the first 100 million years. Now, on the Electric Universe Theory, the EU Theory

of asteroid formation does not require that one object smash into another one for there to be craters; and there's a discussion video on Thunderbolts.info, Dawn Approaches the Asteroid Belt and I'll be taking some quotes from there. Electric arcs can gouge surfaces and scoop out material, accelerating it into space, leaving clean, deep pits. Comets also exhibit surface features that are the same as those observed on asteroids, so the conclusion is that the two are really one thing and not "dirty snowballs" versus "rocky bodies." Let's talk about Vesta which is the second largest asteroid. Vesta with a diameter of approximately 530 kilometers, compares to Saturn's moon Enceladus or Mimas in size, again taken from that Thunderbolts presentation. There are indications that Vesta has experienced some powerful collisions in the past, since one of the craters near Vesta's South Pole is 460 kilometers in diameter, which is more than 80% of the asteroid size. The crater is close to 13 kilometers below the mean

elevation of the terrain with a rim about six kilometers above. There was an 18 km-high central peak as well. The question that's asked in the Electric Universe presentation is, why did an impact that removed more than 1% of the asteroid's mass not blast it into pieces? Especially given that the size of the crater is almost the size of the diameter of the asteroid itself.

Continuing with Vesta, other asteroids as well as small moons exhibit craters that should have exploded them into fragments when they were hit. According to gravity-based models, they are loosely compacted and act like big sand piles and absorb the impacts without shattering. They have no hard crust to begin with, so they haven't fractured despite repeated pounding. Plasma arcs do not disturb the surrounding surfaces when they are used in industrial applications. Based on laboratory analysis, that is what has occurred on Vesta and in all the asteroids, moons and planets of the solar system: plasma

discharge erosion.... So again, that's the Electric Universe Theory. Now let's look at the Valles Marineris on Mars and this is taken from the Wikipedia entry on Valles Marineris. This is a system of canyons that runs more than 4,000 kilometers long (that's 2,500 miles) it's 200 kilometers wide (that's 120 miles) and it's up to 7 kilometers, deep or 23,000 feet. It's one of the larger canyons of the solar system. Valles Marineris is located along the equator of Mars and stretches for nearly a quarter of the planet's circumference. It has recently been suggested that Valles Marineris is a large tectonic crack, formed as the crust thickened and was subsequently widened by erosion. Some channels may have been formed by water or carbon dioxide and this is the Wikipedia explanation of Valles Marineris and this is what the mainstream physics holds: that it's all due to tectonic activities. The picture shows there - you can see how long Valles Marineris is. I mean it is a huge surface

feature on Mars itself and we note that in the 1970's the engineer Ralph Juergens first proposed that Valles Marineris is the scar left by a giant interplanetary lightning bolt, not necessarily a tectonic activity. Let's talk about an analogy with laboratory plasma. Recently, geologic researcher Michael Steinbacher and experimentalist Billy Yelverton, exploring the theory of planetary electrical scarring, have collaborated to replicate the complex conditions that might have been present in an epoch of planetary instability; and this is taken from the Thunderbolts video: Valles Marineris in the laboratory, a Space News from 2015 and there's a picture there of the scarring that was done in the laboratory. And my observation is, even the most jaded skeptic should admit some resemblance to Valles Marineris. If you just go back to the previous slide and you look at the picture of Valles Marineris there, and then you look at the laboratory version of the plasma scarring, I think it's

pretty obvious that there's certainly a similarity. So, now I would like to consider if Mars was the sole source of the asteroid belt.

So rather than delve into the electrical plasma arc discharge as the potential creator of Valles Marineris, I'm going to focus on the mass of Mars surface potentially ejected during such an encounter with a closely placed passing planetesimal, comparable in size to the largest of the known asteroids which happens to be also known as dwarf planets, now that Pluto has been demoted, and this asteroid is Ceres. I'm going to take an independent look and see if the amount of mass in the asteroid belt consistent with what might have been ejected from Mars? The maximum amount of Mars' surface ejected during such an encounter would have been - there's a calculation there based on the volume of the depth and expanse of Valles Marineris. It calculates out to 2.2 times 10^{19} kilograms. From the estimated total mass of the asteroid belt,

which is about three times 10^{21} kilograms, more than a hundred times greater than the maximum estimated mass that could have been ejected from Valles Marineris. Ejection solely of Mars surface material could not have generated the entire asteroid belt. It's about a factor of 100 too small; not that it could not have contributed to it, but we need to find some other mass in order to account for the asteroid belt. Let's consider a contribution from a planetesimal. The total mass of the asteroid belt, 3×10^{21} kilograms, with less than 1% arising from Mars itself, that 3×10^{21} kilograms, that would be the minimal mass needed for the planetesimal, if it were completely disintegrated and its debris contained within the belt. Again, I'm going to just talk about a collision, or about, it's not a collision but an interaction, electrical interaction between Mars and one planetesimal. I mean there could have been multiple, but let's look at if it

had one and what would the size of that one planetesimals have had to be. Let's assume the same density as the largest asteroid or dwarf planet, which is Ceres, the corresponding radius would have been the cube root of this formula here, which is based on the size of the mass of the asteroid belt, the mean density of Ceres etc. This planetesimal would have had to have a radius of 690 kilometers.

Ceres itself has a mass just under 10^{21} kilograms at a radius of 473 kilometers.

So, the postulated planetesimal would have been roughly three times as massive and 50% wider than the currently known largest asteroid, which is Ceres. Let's put this in some perspective. Mars itself has a mass of 6.4×10^{23} kilograms and a

radius of 3,390 kilometers. So, the planetesimal would have been only about 0.5% as massive and 2% as wide as Mars.

Quite a small entity, but certainly not far out of line with Ceres. If this was all going to come from one planetesimal,

the asteroid belt, in an interaction with Mars, it would not have had to be that much larger than Ceres which is the largest one currently known.

Despite the moon being roughly 25% the width of the earth, in other words 1,737 km versus 6,371 km, we note that its mass is only slightly above 1% that of Earth, which is around seven point three times 10 to the 22nd kilograms versus Earth's mass of just under 6 times 10 to the 24th kilograms. The ratio of the moon's mass to that of Earth is only about twice the ratio of the proposed planetesimal to that of Mars, despite a much greater difference in size. I mean the moon is quite large compared to the earth itself, as moons go relative to their planets. And so, what Mars would have needed for this interaction would have been something a lot smaller than our own moon. Therefore the planetesimal need only have been comparably as dense as other lone asteroids to have generated the asteroid belt via an electrical discharge interaction with Mars.

So, in conclusion, is the Electric Universe Theory's explanation for the formation of the asteroid belt plausible? At least from the perspective of the amount of mass involved, I did a crude analysis and I have a positive answer to that. However, I leave it to the Electric Universe theorists to continue their explanation of the phenomenology and its plausibility, towards which they appear to be off to a good start.

[Music]

This is the first of a two-part presentation on some of my thoughts of the cosmology of the Electric Universe.

Like bad margarine or cheap white bread, the cosmology offered by current physics is a harmful imitation of something that used to be wonderful.

Cosmology is supposed to be a framework in which everything we experience has its own place, as well as its relation to everything else. However, in current cosmology, you and I are meaningless accidents, which means that everything most real to you, your thoughts and feelings and sensations, they are henceforth declared meaningless and accidental. This is an act of violence, perpetrated upon us by astrophysics and it must be called out for what it is, and replaced by a framework that includes you and me, and all of humanity, and furthermore includes aspirations and yearnings and those anticipations we feel when we are in touch with deeper parts of ourselves. I first encountered the Electric Universe collective while I was preparing lectures on supernova in 2012 in my hometown of Boston. It

took me a while to adjust to what I was reading.

Electricity? In space? In my first education
the presence of electricity in astrophysics
was dismissed in about 10 minutes.

I kid you not, and it was never brought
up again. So during that year, 2012

I was chewing on the idea that
electricity might actually play a part.

And I came to see that, well, not only does
electricity do a better job of explaining supernova,
but that just about every branch
of science would benefit immensely
by reconsidering the role of electricity.

Consider the following diagram.

The student of science these days meets many such
diagrams. On the top, you see I have a line, a
distance scale. And on the left we have
very small sizes, the size of nuclei of atoms
and then moving to the right, we go to
very, the largest distances that we know,
the distances of galactic superclusters.

On the bottom is another line.

This time with frequencies, and very low
frequencies on the left, very slow oscillations,
and then moving up to the right, all the way to the
highest, fastest frequencies that we know of, the

cosmic rays. Now one thing you'll note about this diagram is that everything is on the same line. Well, what an assumption to think that the length of an atom is the same kind of length as the length of a man, or the length of a galaxy. In our current cosmology we are justified in putting everything on one line, because we believe that the only difference is magnitude.

Or with energy; we put the intense gamma ray of a supernova on the same line as the infrared warmth that you and I feel when we embrace each other.

There's an assumption in these diagrams, that the frequencies are not different kinds of energy.

They're only different amounts of energy and different rates of oscillation. Now consider this second diagram. This is a very different cosmological statement.

Inhabitants of this cosmology are not primarily known by a number, but they are known by what they fit inside of and what is inside of them.

This is not a new idea. I did not make this up. This is a very old idea.

In fact it is only in the last few centuries that western science came up with the notion that we can put everything on one line, or that we would even want to.

It is only in the past few centuries that scientists abandoned the idea that we live in a living universe and that everything lives inside of some larger world. Take some time. Put these two diagrams next to each other.

Ponder them and what they say.

The cosmology of the Electric Universe is more like the second diagram. If you talk to people who are studying in the EU community, whether in geology, or biology or planetary science, I think you'll find that all of them are seeing that we live in a connected universe. A universe that is worlds within worlds. Hierarchy is a real idea. A cell within your body is not at the same level as your entire body. A star within a galaxy is not at the same level as the entire galaxy. These differences in scale matter; they are real and they give a complexity and a beauty to science that cannot be found when you place everything on the same line.

Let us look at the relationship between stars and planets. Take our Sun and Earth. When you read

about the solar wind in mainstream media,
the solar wind is something to be feared.
Oh the poor Earth. It is in danger,
according to the mainstream narrative.
It is a lucky accident that there just
happens to be a magnetic field on the Earth,
that just happens to be strong enough to protect
the Earth. This narrative is harmful and it needs
to be resisted. I can assure you that the
Earth is in no more danger from the Sun
than your liver is in danger from your
heart. The solar system is a living being.
All parts connect and work together. This
connection between stars and planets,
it is just as complex as the connection between
the heart and the various organs of our bodies.
And this is part of what I am studying. If we
simplify the picture, and include connections,
we can have a very different view of the Sun and
the Earth. The previous, antagonistic image is
replaced by one of connection. The Sun,
on the left, sends out electromagnetic flux
which both enwraps the Earth
and is transformed by the Earth.
This modified flux then returns to the Sun.
Schematically, we are looking at an electrical

transformer. Already this is a completely different idea than of a dead rock, silently circling a lonely fusion bomb of a star. This is a new picture of an Earth intimately connected to the Sun. It might even evoke ideas of the Earth playing the role of some sort of transformation of solar energy.

This is a cosmology I can take seriously. Let us look more at this electrical connection between the Sun and the Earth, starting on the surface of the Earth and working our way out.

On a sunny day, there is an approximately 100 volts per meter potential on the surface of the Earth, pointing straight up into our atmosphere. This is shocking; no pun intended. Our electrical outlets in our homes are about 100 volts and are you saying that between my head and my feet is just that amount of voltage? Yes, that is the truth.

Let us zoom out. On the Earth there's always hundreds of lightning storms producing about 100 lightning strikes per second and each strike, a million volts, 10,000 amperes. The textbooks tell us that this electrical activity is only local to the Earth.

That this electrical activity has nothing to do with any connection, to the Sun or other planets. This is completely false. The electrical phenomena on Earth make no sense, unless we see them connected to the larger body of the solar system. Zooming out more, we can see this electrical connection beyond the Earth was brought out by recent studies into what are called jets, sprites and elves that reach out from the Earth into space. Electric Universe people have been predicting this for decades, that we should see electrical activity shooting off the Earth and going out into space. This prediction was met with ridicule and any publication of such nonsense was completely forbidden, except for those pesky commercial airline pilots. They kept seeing beautiful shots of red and blue lightning, shooting up above the tops of thunder- clouds, shooting up into space. And believe it or not, for 20 years the reports of the pilots were ignored, because according to existing theories, this was impossible. If ever you need an example of the absurdity

of the human condition, remember this case where thousands of reports by hundreds of pilots were ignored, because such things were considered not possible.

I don't know what tipped the balance.

Someone in power must have died.

Luckily the journals started publishing the findings. Let us zoom out a little more and see what larger environment these sprites and jets are communicating with.

Pulling further out, we see the Earth and all its lightning and its sprites and its jets are just a very small part of a much larger electrical system. Here I've drawn two rings around the Earth. They are called the Van Allen belts. The inside ring is high-energy protons.

The outer ring is high-energy electrons. You should know that these were a complete surprise to our current batch of planetary scientists.

But someone who was awake to the fact that all worlds live within larger worlds, which live within

larger worlds, well this sort of thing is not a surprise. Electrical systems create layers of alternating positive and negative charge. We see this in biology

and geology, so why should we not see it in astronomy? The function of these belts is yet unknown but we can say with certainty that they are part of the electrical body of the planet and that they are essential for the assimilation of solar energies into the planetary level. We can step back more and we can see our Earth in the same picture as our Sun. I've drawn the Sun and the first three planets with a third dimension. On my drawing there is a hill, leading up to the Sun.

This hill represents electrical activity. The Sun is the highest electrical activity in our system; the highest electrical potential. All planets in our system live within the electrical body of the Sun. As we move out from the Sun, the electrical potential decreases.

Mercury is at a higher electrical potential than Venus. Venus is at a higher electrical potential than the Earth.

Try, if you can, to remember all the electrical activity around the Earth.

The lightning strikes, the sprites and the jets, the Van Allen belts.

All this exists in the larger

electrical body of the Sun.

In Part 2 of the Cosmology of the

Electric Universe,

we will explore how the body of the Sun

lives in the larger body of the galaxy.

Welcome to Space News from
the Electric Universe,
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NASA's New Horizons mission
to the dwarf planet Pluto
has provided scientists on Earth with
countless puzzles and mysteries.

From impossible sand dunes,
which were never expected on the
tiny planet's frozen surface;
to equally unexpected
giant mountains;
to surprising absence of
so-called "impact craters"
and selective regional cratering
with highly circular craters
not to be expected on
any Kuiper Belt object.

The Plutonian moons have proved equally
surprising, such as the moon Charon
with it's puzzling troughs and trenches
stretching for hundreds of miles.

And now, a team working with
the Chandra X-ray Observatory

has reported perhaps the greatest surprise about Pluto to date, the discovery of the emission of X-rays from Pluto.

The team is also reporting that Pluto has a giant comet-like tail, which the scientists believe maybe as much as 1,000 times the radius of Pluto.

The scientists say of

Pluto's surprising X-rays:

"We have just detected, for the first time, X-rays coming from an object in our Kuiper Belt, and learned that Pluto is interacting with the solar wind in an unexpected and energetic fashion.

We can expect other large Kuiper Belt objects to be doing the same.

Before our observations, scientists thought it was highly unlikely that we'd detect X-rays from Pluto."

Today, physicist Eugene Bagshov begins the first in a four-part series, offering his analysis of the most compelling scientific data from the Plutonian system.

In the recent months, we have seen more and more data being released and analyses being made in the wake of the historical Pluto flyby of the New Horizons space probe.

Let us briefly review the available data in some of the publications to see if they might provide a noble outlook on this warped planet and maybe even clues relevant to the Electric Universe agenda.

First, I would like to discuss the visual part of the planet, and what is happening on its surface.

When you look at Pluto, probably the first thing that catches your eye is its incredible diversity.

We might see quite complex and strange land forms as well as more regular ones: craters, mountains, rills, valleys, smooth plains, "pitted uplands, bladed terrain, snakeskin terrain," and even something that resembles sand or snow dunes and other things like that.

So, from the first look it doesn't
appear to belong in the place
where it is situated
right now in our system.

Rather it looks more similar to
our terrestrial planet family
or maybe Saturn's moon Titan.

In previous Space News
episodes about Pluto,
we've already touched on
that subject and discussed
the possible origins of this dwarf
planet as a captured object,
possibly former moon
of a giant planet.

So the diversity of its surface
seems to support this idea,
which is consistent with the EU
scenario of planetary chaos.

Probably the most distinctive
feature on the whole planet,
or at least the part that we've been able to
observe, is the so-called Tombaugh Regio,
a bright feature sitting slightly to the right of
center of the New Horizon's encountered hemisphere
and on the opposite side of the planet, with

respect to the prime meridian of Pluto.

The prime meridian is counted from the spot
above which the biggest moon Charon hovers.

So, this mentioned region
cannot be seen from Charon.

The brightest part of Tombaugh Regio
is called the Sputnik Planum,
and in a lot of ways it's very different
from all the other visible regions.

According to the spectroscopical
data, Sputnik Planum terrain
is mostly composed of nitrogen,
carbon monoxide, and methane ices.

We might see very bizarre
cellular patterns on its surface.

From the visual data available, they
seem to be a slightly convex features
separated by shallow troughs
about 100 meters deep.

It is thought that this might
be caused by convection,
since the mentioned ices are somewhat
soft in the present conditions
and might flow almost like a very viscous
liquid, creating these convective polygons.

The heat source for this

convection is unknown.

Basically a few

versions were proposed.

The remainder of the internal heat left

from the epic of planetary formation,

the heat from radioactive

elements in the deeper layers,

or maybe there were freezings of the

hypothesized subsurface oceans,

which would also liberate a

significant amount of latent heat.

Aside from those

cellular structures,

the Sputnik Planum demonstrates

another remarkable feature,

the complete absence of craters.

So, whatever it is that shapes the surface

of this region, it should do it fast

and strong enough to erase the possible

cratering that could have been present.

Aside from the

convective resurfacing,

another acting force could

be the atmospheric erosion,

mainly the sublimation and subsequent re-freezing

of those ices on a daily and seasonal basis.

It is also supposed that the mixture of those 3 ices might non-trivially interact with water ice and could possibly flow into the nearby regions, causing some geological surface changes, pretty much like glaciers do on Earth.

I'd also like to note here that electrical erosion, of course, might also cause the material removal and deposition, and it is unknown whether it might play a role today or not.

At this point, we have no idea about how strong is the electric field in Pluto's atmosphere.

But as we'll see later, we have some other evidence that might suggest it is present there.

I'd like to venture now into some more speculation and discuss the possible nature of the Tombaugh Regio and Sputnik Planum.

It seems likely indeed that, as the scientists suggest,

this is the planetary scale reservoir of
nitrogen, methane and carbon monoxide ices.

But why does it occupy

this particular place?

If the atmospheric dynamics of Pluto

is mostly governed by sublimation

and refreezing of ices, then they

might end up anywhere on the planet.

It is actually known that the atmospheric

characteristics are pretty homogeneous there,

pretty much the same all

over the Pluto's globe.

So, one might expect more or less

homogeneous distribution of ices,

at least over the strips

of the same latitude,

and indeed we see those

ices in various places

but not anywhere near

that kind of quantity.

So, this leads to the question of

the formation of this feature.

Maybe initially there was a

significant terrain slope

and a huge basin in this

part of the Planum.

Actually, the New Horizons team seems

to think the same thing, I quote:

"Sputnik Planum is mostly bordered

by locally higher terrain,

which suggests that it fills

a topographic basin."

And later this basin could have

been filled with volatiles

since the temperature on

Pluto rises with altitude.

So, the terrain depressions act

like refrigerators, of sorts.

NASA scientists seem to consider

that some large impact event

as being the reason for

Sputnik Planum formation.

Yet the two recent papers

that model the ice convection

do not consider the depth of this reservoir

to be more than around 10 kilometers.

But what if it's not formed by an impact,

what if it's significantly deeper?

Just as a wild speculation, I'd like

to note that this region is located

wide at the equator

of the dwarf planet,

where the orbit of Charon

and other moons lie.

And it has roughly the same diameter as

Charon, a bit more than 1,000 kilometers.

Could it possibly be the very

place of Charon's birth?

Maybe it was somehow torn out of Pluto

or perhaps the material was just

excavated electrically during one of the

chaotic events in the Pluto's past.

The same event could have led to

the rich volatile loading on Pluto

and birth of its

other satellites,

which have later settled closer

to their current resonant orbits.

There've probably been

dozens of other satellites,

which had had too unstable

orbits to survive.

Although, as I mentioned earlier, the

actual point above which Charon hovers

is located right on the opposite side of

Pluto with respect to the Sputnik Planum.

So, if this version of

their origins is correct,

there should have also been a certain
period of stabilization of orbits,
possibly including strong
mechanical and maybe
even electrical stresses
to the respectful bodies
during which Charon eventually migrated
to the opposite side of the planet
at the same time significantly
slowing down Pluto's rotation.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
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[Music]

Mainstream astronomers' reliance on gravity as the primal force shaping the Universe, has restricted them to thinking in terms of spherical explosions and voids or bubbles, created by dying stars. Around these supposed voids, gas filaments can be seen arcing away. Our Sun sits in the middle of an enormous void called the 'local bubble'. They say this contains million-degree ionized hydrogen gas surrounded by a wall of colder, denser neutral gas. Within this hot bubble, gas density is much sparser. At first they thought that the local bubble was an asymmetric cavity of 330 to 490 light years in diameter. This implied that two bubbles might have collided and merged. The most important point to note is that they believe the local bubble is deficient in neutral gas. In all the literature they keep describing it as 'neutral gas deficient', rather than simply stating that it is highly ionized. Further mappings reveal that the ionized pockets actually form a tunnel that extends at least 820 light years

towards Ursa Major, suggesting that it might connect at least a thousand light years into the galactic halo.

As the research continues, it starts to become clear that our 'local bubble' was actually part of a larger cylindrical cavity that pierces through the disk of the galaxy, dubbed the 'local chimney'.

So how do they explain the formation of the bubbles, and how can they explain the structure of the local chimney?

They believe supernova explosions are responsible for creating these voids.

In the case of the local chimney, they speculate that energetic supernova explosions created fast-moving expanding bubbles of hot gas that collided with surrounding cold gas of the interstellar space, which in turn became compressed into thin shells.

Eventually these shells of cold gas meet other expanding hot cavities and break up, forming small tunnels or pathways between the expanding voids.

Towards the center of the local chimney we find the Pleiades, and it is here that astronomers search for the possible source of a

supernovae. A little further out from these are a belt of stars, called the Gould belt. These are massive hot OB-type stars. These provide a clue as to what might be going on.

The supposed young stars appear to form a ring, centered on the Pleiades and have motions that appear to imply that they are also orbiting around this point. Yet, there is not enough mass for this to be possible.

Let's just take a little step back here.

Are we surprised that our Sun sits in a bubble of ionized hydrogen? No, this is exactly what we would expect to find. Our Sun sits on a filament which powers our star. The fact that this structure seems to take on a cylindrical appearance, should also not come as a surprise.

So what are we to make of the boundary layer of cooler gas surrounding this structure?

Assuming that the filament takes on a simple Birkeland Current structure, we would expect recombination to occur.

Marklund identified this process and showed that the elements will become preferentially sorted according to their ionization energy.

This means that hydrogen and helium would always

be found towards the outer edge of the filament.

So comparing the density of hydrogen inside the filament to the outer edges, you should see a sharp increase in the density, and the appearance of a wall.

If we examine this image, then we see that the areas in white are low density, probably hot, ionized gas. So in other words, plasma. The darker colored areas are thought to be cold dense gas, possibly largely molecular in nature. We can clearly see that many areas seem to connect to each other, forming a sort of network. Now it is important to point out that there is likely to be many smaller filaments connecting and overlapping, creating this blurred white part of the image.

From Jim Wenninger's work on Arcturus, we can see that the motion of the stars may reveal parts of this structure nearby us, with us circling around the local Arcturus filament.

Some astronomers have wondered if the local bubble, or chimney system of the interlocking gaseous cavities is characteristic of the entire Milky Way.

Astronomers looking at an updated map of cold local interstellar gas in the galactic

plane, see an inner empty region with finger-like extensions or tunnels that poke through the surrounding wall and reach into the nearby regions of the galaxy. These regions are known to contain large amounts of hot, ionized, low-density gas that can be detected at radio and ultraviolet wavelengths.

Right next to our local bubble, astronomers have identified a new bubble called the Per-Tau shell. It is thought to extend for about 500 light years and spans two well-studied molecular clouds, called Taurus and Perseus.

Using a special technique, they were able to create three-dimensional maps of the local cloud structures. If we examine the Chameleon molecular cloud, we can see a series of filaments that seem to connect via a hub-like structure.

With a void in the center, it is also physically connected to the Musca dark cloud. The Taurus cloud extends between 131 and 168 parsecs.

When viewed from the top, you might be able to notice that it consists of two layers, separated by about 10 to 15 parsecs.

This layering is consistent with several previous studies. Musca is a clear example

of a filament on both the two-dimensional and three-dimensional image. It is termed a dark cloud, meaning that it contains a myriad of sub-micron sized solid particles, often referred to as intergalactic dust grains. They tend to block out visible light, making them appear dark. They are thought to be composed of largely molecular gas, rather than containing ionized material.

Ultraviolet starlight is considered the main source of ionization in H2 regions, and in H1 regions it ionizes elements with low ionization potentials.

This has led to the belief that it is the only ionizer and that in dark clouds, where starlight is absorbed, the ionization may go down to zero. This is not necessarily correct, because in many cases, most ionization of cosmic plasma is produced by hydromagnetic transfer of kinetic energy into electrical currents which ionize.

One common theme that they identified, was a point I touched on earlier - the creation of the atomic hydrogen

envelopes around the molecular clouds.

They also discovered that the widths between the outer and inner envelopes had a consistent ratio of 3.4. When they identified the radial density profiles, they found that it was inconsistent with a filament driven only by gravity, and was much better suited to one where the filaments were magnetized.

Previous studies of the structures of magnetic fields in the solar neighborhood cloud, have found strong coupling between the gas column density and the magnetic field orientation; which is consistent with the idea that magnetic fields play an important role in structuring the interstellar medium in and around, the local molecular cloud.

Despite all of this, they still favor the formation of bubbles through supernovae.

If the galaxy is composed of a network of filaments that carry slow moving ions these form magnetic fields that hold the structure together.

Hannes Alfven pointed out that these structures are capable of transferring energy over vast distances, and

dissipating the energy across the double layer with a voltage drop.

It is important to understand that the current required to accomplish this, may very well consist of low energy particles.

The plasma and material in these areas is not simply mixed together through random collisions.

Plasmas have a tendency to produce large variations in the chemical composition.

One mechanism is due to the different laws of motion of the non-ionized and ionized components of a magnetized plasma. The condensation of non-volatile substances to grains, constitutes another separation mechanism. Any charged grains of dust, or ions, will feel an attraction towards the filament.

As they move towards the filament, if they gain enough speed, they can cause non-ionized material to become ionized.

This is particularly so in areas where a pinch occurs. This can cause large areas of low density to be created. At the same time Marklund convection will sort material into radial shells.

Together, these could explain the network of bubbles we see throughout our local neighborhood.

[Music]

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you

and there is nothing to fear.

We've said it before, and it bears repeating,

that the first step in assessing the

complex and extraordinary claims

of this reconstruction

is to be crystal clear as to the core

details and their testable implications.

This stylized form is the

fulcrum of the reconstruction.

From here, we can look

backwards and forwards,

to name critical events in the

evolution of the configuration.

We earlier named the planetary components:

Saturn is the large sphere, at the celestial pole,

no rings at the time. Venus is

the discharging star-like form,

on-axis in the center of Saturn.

And the smallest sphere, Mars,

visually appearing within

the sphere of Venus.

We've called this a quasi-stable phase of
an evolving or metamorphosing configuration.

Episodic motions of Mars occurred
along the axis provoking streams of
material alternately

between Mars and Venus,

and between Mars and Earth. We also
observe dramatic changes in the number
of discharge streamers that

stretched between Venus and Saturn.

In episode 4, we describe the emergence
of a triangular form from the dusty
plasma medium, and a

subsequent explosive discharge,

producing a vast cloud of luminous and
chaotic debris in the space surrounding

the aligned bodies. Later

appeared the 8-rayed star,

the centerpiece of our chronology, marking a
tentative stabilization of the discharge activity.

We've noted as well, that a libration

occurred along the axis, such that, from

Earth the different discharge

configurations were seen alternately

on-axis and off-axis. For any
assessment of this reconstruction
the shifts in 3-dimensional vantage
point will be essential.

In the early phases of the configuration,
the interplanetary medium
prevented observation of
the Sun as a discrete sphere,
though the Sun's lighting effects on the
configuration become quite clear
with the appearance of the crescent on
Saturn. This meant not only a reduction
in the surrounding dusty plasma medium, but
a more clearly defined cycle of day and night.

At the polar location, the crescent
visually revolved around the polar
center with the
rotation of the Earth,
in a daily cycle of
dimming and brightening.

Closely associated with the appearance
of this turning crescent,
was the descent of material from Mars.

The first effect was a luminous spike
reaching earthward. As Mars moved closer
to the Earth the downward stream of

material extended well below
the visible sphere of Saturn,
eventually connecting with the
circumpolar region of the Earth.

It seems that, over time, the 8-fold
Venus discharge was compressed into just
four directional streamers,
expanding across the face of Saturn.

This phase seems to have merged
insensibly with another,
as a dusty plasma column between Mars and Venus
exhibited a conical form when seen slightly off-axis,
while appearing as a bright equatorial
band around Mars when viewed on-axis.

Metamorphosis continued with the
progressive displacement of Venus and Mars
from their axial positions, the plasma stream
between the two bodies taking on a spiralling form.

As we'll see in due course, with continued
displacement, the spiralling plasma stream
between Mars and Venus gave way to a chaotic,
undulating appearance as the configuration itself
grew catastrophically unstable.

The violent episodes that followed
marked the most terrifying events in
all of human history.

The disastrous interlude between the
dismemberment of the configuration
and a spectacular
phase of reconstruction.

Welcome to Space News from
the Electric Universe,
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The American Southwest is
an ideal testing ground
for the hypotheses of
Electric Universe geology.

Geological textbooks tell us that
the hallmark breathtaking features
of these desert regions formed through slow
erosional processes over eons of time.

But laboratory experiments with electrical
discharges have opened new theoretical pathways
that enquirers in increasing numbers
around the world are following.

A remarkable contributor to the
burgeoning field of EU geology
is Thunderbolts colleague Andrew Hall
whose articles and video presentations
have explored new electrical
interpretations of desert geology.

In part one of his
three-part presentation,
Hall presents his detailed analysis of

the stunning features in Canyonlands,
a dramatic desert
landscape in Utah

beginning with the discussion of the
amazing formations called the Arches.

In summer of 2016 following EU
conference in Phoenix, Arizona,
EU geology researchers visited
Arches National Monument

in the deep reaches
of Canyonlands, Utah

where the Green and Colorado rivers
channel through the Colorado Plateau.

Arches National Monument is an astonishing
place for anyone interested in EU geology.

By conventional reckoning,
the high desert plateau
was carved into fantastical
arches and hoodoos

after millions of years of
subtle water and wind erosion.

To the EU researchers, however, it
was evident the land was zapped,
carved and seared by electrical storms
that could have happened last year,
so fresh looked the

marks of evidence.

The Arches' formation tells a story
which explains one of the key phenomena
that shaped the
face of the planet.

The phenomenon is called
sputtering discharge.

So let's take a look
at what that is.

Sputtering discharge, as
used in manufacturing,
is a dark to glow-mode
current in plasma
used to deposit thin films of
material onto a substrate surface.

It's analogous to electroplating,
or galvanic reaction in a fluid.

An electric field accelerates positive ions
in plasma to collide with a source material,
which breaks molecular bonds,
eroding the source material.

This is what the term
"sputter" refers to --
the breaking away of particles
in the source material
which then drift in an electric

field to coat the substrate.

The source material is the cathode, and the substrate is the anode in the circuit.

The material exchange is performed by electricity.

Manufacturers often use magnetrons to shape and control the current and improve material transport efficiency with external magnetic fields.

The point to be made, however, is that high voltage, low current in a plasma will erode or etch away a cathodic surface and plate itself in layers on the anodic surface.

This is a process that shaped Canyonlands.

To fully understand these canyons, however, first we must understand domes, because the canyons are carved from a dome.

The entire Colorado Plateau is a dome -- or rather, a series of domes overlaying each other.

The domes are composed of sedimentary

layers of limestone and sandstone.

The layers are stacked for the most part evenly and flat, like a layer cake.

This basic layer cake

structure is capped

with the Rocky Mountains on the East

and carved into canyons on the West,

while it's shot through with

the Lichtenberg-patterned,

vertically cut gorges of the

Colorado and Green Rivers.

The dome structure of the plateau

and the canyons carved through it

is primarily the result of a natural

sputtering discharge process

created during intense

electrical storms.

Of course, in this case, we're speaking about

storms created in a past environment

when Earth's electric field

was amplified to the point

the entire

atmosphere was ionized.

Imagine the atmosphere stirred into a maelstrom

lit with streamers of glowing plasma.

Where lightning crackled, not only

in the sky, but across the land,
and mountain tops glowed with coronal fire
under swirling clouds of dusty plasma.
It would have been surreal.
A place where streams of wind
became electric currents.
Where high and low-pressure zones
acted like battery terminals,
and mountain tops became electrodes drawing
machine-gun lightning from the sky.
Anything standing in the wind would have
hissed and snapped with coronal fire.
Dust in the air would
have acted strange, too,
as the energy of free electrons collided
and overpowered weaker atomic bonds,
ionizing matter, causing it to act like a
ferro-fluid under the influence of a magnet.
Ionic species segregated,
forming unipolar winds
that tore past each other
in opposite directions,
creating shear zones of
intense electrical discharge
and vortex winds of
supersonic speed.

The inside of Earth would
have been in turmoil as well.
Hot magmas spewing from volcanic
vents. Aquifers boiling.
Explosive eruptions of steam from deep
underground, pocking the landscape with holes.
Even arcs would erupt --
lightning from the ground --
caused by buried pockets of charge
where minerals and water ionized.
The winds, dust-laden and electric,
deposited the Colorado Plateau,
plating a cake across the
western half of North America
in the same way semiconductor manufacturers
layer circuitry onto silica wafers.
The stratified layers are
interspersed with magma flows,
petrified forests, inland seas, and
dinosaur boneyards of different ages
that indicate it formed in a series of events
that likely recurred over millions of years.
To create the Canyonlands, the
voltage potential had to reverse
and eat away at landscape
newly laid down by the storm.

Under the electric field

of an electrical storm,

the surface of the earth

becomes positively-charged.

It becomes the anode in the circuit where

lightning strikes from the negative cloud base

and where rain falls.

In primordial ionic storms like

those that formed the plateau,

rain did not fall, but silica did,

as dust in the air fell and

adhered in layers to the dome.

Inland seas, or layers washed over by

tsunami generated by the storm itself,

became covered over with more layers of

dry overburden as the storm progressed.

This left a moist layer, like icing

in the center of the layer cake.

This icing layer then ionized

under intense bombardment

from sputtering discharge

in the eye of the storm

and created what is known as barrier discharge

in the moist layer beneath the ground.

Which brings us back to

Arches National Monument,

proof that the canyons were carved
by sputtering discharge,
aided by barrier discharge, in
a moist layer of the big cake.

This image tells
most of the story.

A band of rock that looks
tortured and fluid,
as if it were boiled
mud when it solidified,
sandwiched between smooth, more-
or-less even layers of stone.

The canyon floor is flat,
which is surprising
if one accepts the consensus view that
canyons were made by water erosion.

Water erosion leaves deep
channels and vee-cut valleys,
not flat floors.

This closer image shows the
fluidity of the layers.

At the top, the overburden rock
barely sinks into the sagging layer
beneath it that turned plastic
because it was still solid.

The plastic layer beneath sagged

but didn't compress, and
maintained a consistent thickness.
Below that on the bottom,
the 'boiled mud' layer fluidized
completely and squeezed like toothpaste.
What turned this bottom layer fluid and
caused to sag beneath a solid overburden
was electrical current. A
barrier discharge current,
where no gaseous atmosphere was
present to ionize into plasma,
but instead, the moisture and
minerals in the layer ionized,
generating a subsurface current.
The moist layer ionized
and charged species pooled
into a plasma-like mud the
electric field wanted to lift away.
The electric currents
boiled the moist layer,
and it began to foam and arc into the drier
and electrically resistant overburden.
When sputtering removed the
surrounding overburden,
pressure released and vapors expanded,
making gas bubbles that raised the arches.

Hardened pinnacles formed where mud boiled up
in convective blossoms of hot ionization.

One can see how the moist
layer boiled and heaved,
while currents arched and thrust upward,
trying to break through the overburden rock.

But in this area, it was unsuccessful. The
traces of barrier discharge remain in the rock.

The empty, flat canyon floor, where the
overburden and moist layer were carried away
is where the discharge broke
through to complete the circuit.

Arches is a display of etching, or Electric
Discharge Machining (EDM) stopped in process.

The wet layer was boiling off
due to the current in it
and lifting away with the
overburden when the process stopped
leaving these
arches and hoodoos.

It likely stopped when the sputtering
glow current suddenly jumped to arc mode,
and lightning struck, dissipating the charge
built-up in the wet, 'boiled-mud' layer.

Sputtering discharge is typically
used in manufacturing

to remove only

micro-meters of material.

The ion bombardment on the

surface of cathode material

only shallowly penetrates to break atomic,

or molecular bonds and release particles.

So how could such a process remove

hundreds of feet of solid sandstone?

Well, one reason is the strength of the

electric field at work on the charged species.

In the primordial storm

we are discussing,

the electric field would have been

billions, perhaps trillions of volts.

The electromotive

force of such a field

applied to any large pool of charged

species could lift a mountain

and the other reason

is diffusion of charge

through a thousand feet of dry, sandstone

overburden, to ionize the wet layer.

The section of the dome overlaying the wet

layer acted as a solid-state semiconductor,

coherent with the

intense electric field.

Charge diffused through
the silica layers
in a manner to be discussed in more
detail in Part Two of this article.

But solid state electronics
are the way to evaluate
how charge diffused
through the landscape.

The wet, ionized layer then underwent a
process called heat spike sputtering.

Heat spike sputtering occurs when diffusing
ionization causes secondary reactions.

The secondary reactions
occur in the wet layer,
which is highly
conductive and volatile.

Currents heated the material
and that caused thermal liquefaction,
melting, and steam micro-explosions.

In Canyonlands, when the wet layer
ionized, it induced currents
which heat-spiked, discharging from
the wet layer to the layer above.

The arches and bubble-like pinnacles
in Arches National Monument
were created by heat-spike sputtering

and bubbles of micro-explosions
as the 'boiled mud' layer ionized, vaporized,
and discharged into the overburden.

This short film produced
by diveflyfish on YouTube
helps visualize the process
of diffusion through rock
and the process of barrier discharge
that caused the 'boiled-mud' layer to boil,
and in it, Jim Hamman, the creator of
diveflyfish and an EU contributor,
employs a high voltage Tesla circuit to
generate current through a granite block.

There are two things to
note as you watch the film.

First, note how the flow of electricity
diffuses through the entire granite block.
Instead of channeling directly below the
electrode in a narrow stream like an arc,
it flows out the full footprint
of the crystalline granite block.

The external electric field of the circuit
is diffusing charge through the granite
as it would in a
solid-state body.

In the tense electric field surrounding the eye

of the hyper-storm that etched the canyons,
currents also diffused through
the dome matrix in this way,
ultimately ripping out mountains
of earth in the blink of an eye
as currents boiled and
liquified the wet matrix below,
similar to the plasma tornadoes
that are swirling in the gaps
between the electrodes
and granite in the film.

Second, note the plasma tornadoes that bridge
the gap between the block and electrode.

They are not in bright arc mode
but are filaments in glow mode.

The plasma tornado currents are in the air
gap where the air has ionized to plasma.

In the Arches, there was no air gap between
the ionizing wet layer and the overburden,
so the discharge was a barrier
discharge coming from the 'boiled mud'.

The currents flowed around the
boiling, bubbling, foaming heat-spikes
to fuse and harden the less conductive overburden
in its pattern of arches and pinnacles.

Jim's experiment demonstrates how

current diffuses through granite

which demonstrates how ground

currents can diffuse in natural rock.

Watch towards the end of the clip, arcing

begins in hot spots to eat through the granite

collecting the current

into single arcing paths

and starving the diffusion

currents around them.

There are many other evidences of sputtering

discharge in the Utah Canyonlands.

In Part Two of Sputtering Canyons,

we'll examine some more.

Thank you!

it is been a journey this last year and
a half I do have a lot of material to
cover I recognize that there's some here
that are new and I need to honor that
and those who are quite involved in the
project so Sapphire a sense for Solar
atmospheric function in regulation
experiment and dr. mark cleric Paul
Anderson wal thornhill Don Scott and
others are here on the what I call a
core team and a job is really to
evaluate the possibility is it possible
to do an experiment is it feasible as a
viable is it capable and those are words
that we use in designs of experiments
and kind of an analytical perspective
when we progress with an experiment okay
because this is what I would call
classical science it's not theoretical
its classical so we've got to break all
the natural philosophy down and we've
got to take a look at the opinions of
suppositions two models two concepts and
see whether or not it's possible to test
hypotheses you see and that's really the
kind of work I've done for the last 35

years

so Safire I'm just gonna get on with it

here as quickly as I can

these are some of the older guys kind of

come and gone that are you know we look

into to see you know if there's there's

a basis for the work that we do so we

always build on the shoulders of others

and it really kind of goes back from

what I can see to guys like Sir Isaac

Newton who was looking at spectroscopy

as well you know he wouldn't might have

used that word in gravity of course

Heinrich Geissler was really kind of I

would say the grandfather of the neon

tube the gas discharge we move on to

William Crookes which his experiment of

throwing rubies into a vacuum chamber

and watching them radiate regardless of

their their opacity brilliant red

was quite remarkable and I would say

probably the first plasma spectroscopy

type of experiment although he may not

have said this but observations um of

course Kristian Birkeland you know we

just kind of build you know on each

other's work as that as years go on and
we'll get into his his working more
depth as we we proceed here
nikola tesla's well somebody say well it
has not much to do with it but obviously
his work was based on others and the
research and we know what today what you
know what's coming off his work hands
often I'm not gonna speak too much about
this because we all touched on his work
earlier off waves which NASA and you
know many others refer to with respect
to their study of the Sun ah

Rolf your guns I think is probably the
one in my opinion right now that dr. Don
Scott's work is based on which would be
the first I guess more comprehensive a
quantitative evaluation of what the Sun
looks like as a circuit and then so you
can see down here in I just you know
quick picture of Don Scott's model here
ok so this is our team there's a great
there's a core team as I mentioned
before there's Donald Scott as well
Farah hill paul michael jim writer
forest bishop David tell but Susan and

Mark and then there's others that we
resource um you know try to gather them
in so the idea behind this is that I
build a team a diverse team of various
disciplines because the idea behind it
is we want to find out if the experiment
is going to fail we don't want to spend
money if we have any opportunity for
failure you see or holes in the
experiment so that's why we want a
diverse team so stellar atmospheric
function and regulation experiment what
I want to do is kind of move into
quickly the overview which is phase one
exam as a contemporary plausible stellar
atmospheric process concepts that
includes gravitational and electric
process capability
and concept viability determine if a
design of experiments method is
applicable now I know that some of these
terms here may be new to some of you but
those who are into experimentation would
understand very quickly what design of
experiments and how powerful that is
it's a fairly recent tool in the last

maybe 60 years to obtain a very high
confidence level of analysis of a
process okay I'm just want to leave it
there we can talk about that maybe one
on one later on
so gravitational electric process
capability phase two examination of the
electric Sun concept prior to
experiments and observations phase three
quantify stellar atmospheric function in
mathematical terms we may leave that as
we as we move through this as there some
changes now the challenge is
experimental limitations design failure
modes and effects analysis and phase
fours examine the experimental options
the plausibility feasibility viability
and capability and that that doesn't
just apply to whether or not we can
replicate the phenomenon in a laboratory
experiment but it also means the means
by which we measure are they capable do
we have a standard no theoretics nor
theoretical models no extrapolations no
interpolations no mathematical
adjustments of the data do we have a

ruler that we can actually all agree on
that's a standard that's capable you see
of giving us consistent measurements so
it's vital because otherwise it's up to
anybody's idea as to what you know the
results are going to return and it's
something that we deal with all the time
in science right it's a it's a bit of a
challenge so evaluation of prior
experiments determine if if they're
viable candidates so we can build on
those you see is there is a precedent
for this determine if prior experiments
require augmentation to thoroughly test
the hypothesis and we're going to find
that there is evaluation of contemporary
merit illogical capabilities determine
if the experiment is feasible so all
these things have to be addressed right
upfront before we even start spending a
nickel because I won't do it you know I
mean I spent millions in our idea over
the years
and you have to evaluate you know before
you get into it especially if you have
shareholders okay

so phase five engineering design and
construction of the experimental so
Louis I want to thank Rennes for that
word because it's a lot I mean small son
the u.s. is masculine not sure why but I
suppose you could tell me why it's
masculine the earth is I guess feminine
so I probably dates back some time but
these are these are the disciplines
right we want all the disciplines all
with distance is applying in these
models face sex execution of the
experiment using a design of experiments
methods phase seven evaluate evaluation
and reconciliation of the test results
mathematical predictions and real solar
data and now this is really what we're
after right here now the design of
experiments methodology does not allow
for sanitization or sanitizing of the
data the actual data feeds back into the
experiment and you need that to develop
your methods to identify what factors
are the primary factors associated with
the phenomena okay and maybe now you can
see after Poul Anderson's work why he's

on the team you see so
hertzsprung-russell diagram has told the
other day this is an old diagram but
nevertheless it's something that we're
all familiar with or many of us are
generally it's used to take a look at
the evolutionary lifecycle of a star or a
star I look at a little differently and
from my perspective I look at a process
and this is really important that we
understand that what this means is that
we have an extremely extremely stable
universe electrically if we take a look
at the luminosity the spectral signature
and temperature under the three hundred
billion stars that we have in our galaxy
there may be a few supernovae but
generally out of the 300 billion they're
not they don't vary they may be quite
violent in themselves but generally
extremely extremely stable enough for a
person

doing experimental work that is like a
lifesaver you've got a process that is
already under control you're not trying
to identify the factors or the causes of

reason why something is out of control
okay if you're making hamburgers and
they're bad every other day you got to
find out what's wrong with them but in
this case you know we're making 300
billion hamburgers and there's only one
or two that are bad so it would say that
however you're making hammer is it
probably pretty stable you know you know
what you're doing so when we look at it
from a process not an evolutionary
perspective it draws a it's quite a
quite a different picture so it means
that we only have point zero zero one
star per million that change from the
normal DV you know from the normal curve
every year so from a statistical
perspective it's an extremely stable
situation and that's just that's just
great news for anyone who's studying
this process okay so we have two
candidates one is the nuclear concept
you know there's the electrical concept
as we know the electrical concepts based
on gravitational model by which elements
are compressed to such a state that

nuclear reactions occur fusion occurs in
the core of the star as result of
complex processing whatever those
complexities are and they are really
really complex from a mathematical
perspective and just so you know when I
did my first evaluation in January last
year I found numerous disparities with
the gravitational model and came to the
conclusion myself personally
it's none testable it's non testable
model okay I I don't know how you could
test it with so many so many problems
with it now the electric concept on the
other hands electric universe concept
claims that luminosity spectrum and
thermal differentials are the result of
intense plasma discharge behavior
beginning in the diffuse Corona and
terminating in the denser Solar
ionosphere okay now what that means to
me is that we have two factors two
primary factors we have incoming charged
plasma affecting matter of a different
electrical potential and that's it
period

that's great this is a model of the Sun
as standard model of the Sun and we've
gone over that's almost being real time
on it because I've got we're gonna get
into the experiment and what we're doing
this is the model of the electric Sun
and it's basically incoming charge
plasma to a body of a different
electrical potential in this case here
the Sun is positive the incoming charge
is coming from our heliopause or the
source of electrons which is negative
for a cathode from an electrical
perspective and that's the model so we
want to talk about some of the features
spicules there's a lot of literature on
this from solar Dynamics Observatory got
McIntosh in the National Center for
Atmospheric Research published in nature
article he says the that looked very
similar to Kristian Birkeland's
experiment results that were obtained
over a hundred years ago hmm interesting
so this is NASA okay so they're
recognizing that they don't starting to
look at and I respect these people I

know there's some that have issues but
myself personally you know we put men on
the moon they've done a lot of things I
think there's a very very intelligent
people but I think that with all of us
including myself if I have an assumption
that may not be correct I can trigger
now on the wrong path pretty quickly and
it can cost a lot of money so these
society there's a picture a hundred
years ago looks very very very similar
and we're going to examine these more
more detail shortly
so Kristian Birkeland if the globe is
slightly magnetized slightly the patches
of eruption are seen to arrange
themselves in zones with long pencils
issuing into space almost as in figure
the picture I showed you only these
pencils are bent by the magnetism which
is exactly analogous to what we have
assumed regarding the cathode rays
issuing from the Sun okay now wall
showed you this picture earlier so I
won't play the point but you know these
are quite remarkable it shows that

branch discharge issuing from the spot
sometimes follows the magnetic
lines of force in the neighbor
neighborhood of the equator giving rise
to a phenomenon which greatly resembles
the black filaments of the Sun studied
by Hale and Fox these these are
these are fellows that were studying
astrophysics boxes in his time so he
wasn't just working on his own he had
friends that were what we would call
modern-day astrophysics or physicists at
the time this is a modern NASA Marshall
Space Flight Center from David Hathaway
they believe this is due to acoustic you
know is it Genesis that the super
rotation senior granular rotation of the
of the atmosphere of the Sun around its
equator I have a different and you have
a different perspective of why that's
occurring and if we take a look at the
picture wall shows earlier this is quite
remarkable from my perspective I look at
it a little different than you all does
but more what's really notable about
this is the actual rotation of the

plasma torus but the predominance in
this area here this is spinning around
the Sun the counterclockwise direction
that's correct right
well it's counterclockwise I do this
yeah and now we have the EU model if you
see here we have incoming charge bottom
I'm not sure why that is but I know it
appears that that is what is occurring
but we have this mania increase main
current increase in strength about its
equator it's interesting because this
isn't Brooklyn's work this is Quinton
fioretto in March 1967 when they were
studying plasma discharge for they were
looking to - what it takes to actually
bring plasma instability they weren't
looking at any comparisons to what we
see occurring in the planets or the Sun
itself that was interesting in the paper
is the predominance of this Taurus at
forum that was spinning around spinning
around the globe you see they weren't
looking for this we're trying to find
out how we can stabilize it the problem
of course is that these are fairly

granular pictures they're just the
black-and-white there's not really been
much examination from the electrical
properties which is what sapphire is
looking into CME's berkland currents
coronal mass ejections what's
interesting here if I can
is this predominance here if you could
see the spiral shape in this ejection
and take a look at what occurred with
their Tarawa in 1967 and their
experiment here you see and they're not
the only ones I mean these types of
phenomena are being recorded by others
who have conducted Torrell experiments
around the world in Norway in
Switzerland and you know Brooklyn of
course and and others dear assuming this
stellar arcing or what is called today
sympathetic flares but really to break
it right down or we're saying that
there's Cimiez that are occurring on
either side of the Sun at the same time
so for those of you you know we're
thinking about relativity and speed
light and time and things just let that

soak in for a second because it means it means they were measuring this we don't understand it but it can't be happening instantaneously so we'll call it sympathetic arcing but in fact it's happening concurrently within milliseconds of each other and this is something that was observed by mister berkland the discharges opposite points this is not clearly seen because it's a still photograph however brought to my mind a very strange picture of some enormous eruptions on the Sun reproduced from marbles of the universe from some of this astrophysics guys his friends okay so we have some CME's we have mr. burr clones experiment boy there lookie visually they look very very close don't they you see and we take a look at you know the typical dark filaments that he called you know erupting from the Sun here's a picture of what his friends were able to procure from their cameras and their imagery from you know a hundred years ago concurrently you see now they couldn't measure it to be

concurrent it's like wow this is like
happening at the same time but now we
have instrumentation is saying well
they're happening within milliseconds of
each other so sapphire was result
expectation now what this is pointing to
is the things that we're gonna be going
after we're going to be looking for ion
acceleration now from my perspective I
do physics I do engineering I do
consulting and that's what I get paid
for and I'm gonna tell you right now I
accept that it takes a force to cause
something to accelerate we all know that
but what forces that I can see if you
know if there's a coronal mass ejection
it's possible that maybe the particles
can maintain their velocity that's for
me a little difficult to to handle I
would expect them to decelerate but I
sure would never expect them to
accelerate as you know as they leave the
Sun it's just not you know they don't
start to expedite should they should do
that but they do okay so does this
happen well as a matter of fact it

appears that it does happen in normal plasma discharge stellar coronal mass ejections are a normal characteristic to this process of plasma discharge upon matter what we've already seen in some of the photographs these types of discharges within the Tarawa so we'll expect to see those things solar photosphere tufting granulation can be expected so tufting means and we're you know we're going to end up with intense plasma charge on the surface we've seen some of the pictures earlier okay now we're just talking visual right now but we have got to a point now we can actually go in and measure these things electrically and spectrally and this is the key to success at first success or it's you know as we move forward here stellar photosphere nuclear fusion vortices within the photosphere Tufts could be expected while those who are familiar with chickens know that there's calcium and every one of their eggs and there must be people have come to conclusion that there's fusion occurring

within a chicken so does it have to be
millions and millions of degrees where
does the calcium come from you know they
keep laying these eggs but the calcium
doesn't appear to be coming out of their
bones so you know calcium we know as
being one of the beasts one of the
elements right you know so where is this
coming from so is it possible we'll see
fusion you know I'm kind of excited this
would be really cool you know so stellar
a photosphere nuclear fusion vortices
within a photosphere tufts can be
expected Wow so a cellular photosphere
cooler than a corona can be expected
well I've four grandsons and I find this
quite remarkable because this is really
getting closer to what turned me on to
the EU because you know where the gamma
rays you know it's a nuclear explosion
just well there isn't many so why is the
photosphere cooler well my grandson
knows the closer I get to a match you
know the hotter it gets and I could tell
you he's like a burnt finger you know so
why is it cooler but but this appears to

be a normal phenomenon of a plasma
discharge hmm so my perspectives
starting to add up to an electric model
photosphere ik stability and contrast at
higher level Asia higher elevations
higher frequencies can be replicable in
this model as a natural result of double
layers formed within a stellar discharge
with instability at higher frequencies
so we're going to be getting of that a
little bit later not too much detail
here cyclic magnetic variation results
from varying direct current electrical
supply to a star the charged quasi
neutral plasma interacting with
positively charged body will exhibit the
same characteristics regardless of
stellar material and this is really what
I was saying my first paper I don't
really care what a star's made out of
the spectrum is just an indication of
the predominant elements
okay so you can and that goes right back
to Crookes work he stuck some rubies in
there lit up Brett
you know he's took some green cheese

maybe it'll come up with some other color but the bottom line is that every element is going to start radiating a particular spectral color depending on what you know I guess order magnitude the discharge it's being exposed to you know ice cream will probably melt but you know there's other elements in there that I think we're going to go after and this is where the spectroscopy comes in and you're going to find that the technology today is available to us to really really examine these things in a significant resolution in detail so sunspots the complex behavior due to varying cosmic discharge in magnetized body similar tennis arc generation to different points can be expected so we're going to expect a number of these things to occur in the experiment

the comet 67p churyumov-gerasimenko will be in the news for several months and it has the potential to spark extensive controversy issues could range from electric fields in space to solar system history and the history of earth itself a bedrock assumption in the modern science of comets is the claim that the nucleus of every common harbors water ice along with frozen carbon dioxide and other volatiles but paradoxically earlier probes of comets have only highlighted the absence of expected ices comet surfaces are remarkably dry and only one comet Tempel 1 revealed even a trace of frozen water just a light frost that by all appearances drifted to the surface from the coma that's the unsolved mystery of comets that 67p is no exception water in the coma but a surface that has burned black as coal and looked very much like a rocky asteroid in the standard interpretation water must be there but hidden from view as a comet

approaches the Sun we see vaporous Jets
emerging delivering dust and gases from
the nucleus to the coma

such observations have fostered the
scientific conviction that warming by
the Sun causes subsurface ices to
evaporate this creates pockets of
pressurized gas as the pressure builds
the gases break through a surface layer
of dust to form distinctive Jets often
spanning thousands of kilometres the
Jets then become the confirmation of the
theory that subsurface ices are
responsible even if we can't see these
ices directly

but there is another view in an electric
interpretation a common may or may not
contain subsurface ice but its activity
has little to do with solar warming
rather this activity occurs as the body
traverses regions of different charged
in the plasma domain of the Sun a vast
and rarefied atmosphere of the Sun
through which all of the planets move
this sea of charged particles includes
an electric field stretching from the

surface of the Sun to the Heliospheric boundary the limit of the sun's influence though exceedingly weak at any particular place it can hold immense charge across the volume of the heliosphere as a comet moves millions of kilometres through this electric field the electrical stress is developing on the surface of the nucleus triggered dust raising events first a coma then the distinctive cometary tail as the activity grows it progressively erodes the surface much like industrial electrical machining processes the close-up images of 67p provide a direct opportunity to compare the predictions of the electric comet to the standard model of the dirty snowball we can trace the Jets to their sources observations are already underway and no exposed ice patches are reported most telling is the stark terrain that has apparently been eaten away to create massive cliffs the active excavation of the surface gives us a direct view of what was once the interior of the nucleus

neither the walls of these towering
cliffs nor the deep floors below exhibit
the ice that the standard model requires
but the problem grows the more active
the comet becomes if subsurface pockets
of evaporating ices are the source of
jets pushing through the surface dust
then as this activity increases it would
be certain to expose these ices below
anything accelerated to 1/3 of walking
speed will escape the nucleus altogether
so far at least none of the erosional
activity not even the concentrated jet
activity has given investigators a first
hint of buried ice
is it possible therefore that the
nucleus of Comet 67p really could be the
rock that it appears to be what might a
dry rock tell us about the nature of
comets and their obscure origins and is
it possible that this very comet could
hold a secret for us about the birth of
such bodies in a recent and violent
phase of planetary history
you

[Music]

[Music]

good morning ladies and gentlemen I'd like to thank firstly the Thunderbolts project and the organizers for inviting me again to address you this year and I'd also like to correct a little thing that I've just said he called me dr. Carruthers well actually I'm not doctor and so I'm just leave Crothers okay today I'm going to speak to you about logo which you know is the laser interferometer gravitational observatory in its claims for black holes and gravitational waves I'd like to read to you from the LIGO team's discovery declaration it was a discovery paper this is their declaration the basic features of gw1 5:09 one for point being produced by the coalescence of two black holes that is the orbital in spiral and merger and subsequent final black hole ring down over over nought point two seconds the signal increases in frequency and amplitude in about eight cycles from 35 to 150 Hertz where the

amplitude reaches a maximum the most plausible explanation for this evolution is the inspiral of two orbiting masses M_1 and M_2 due to gravitational wave emission Abbott et al. in this paper in Physical Review Letters now the two things to note here the two masses that's the first thing and the gravitational wave emission these are things to dispute here's a table from their paper like as black hole binary black holes it's a binary system you see the two black holes that they say that they first started with was one of 36 solar masses and the other with 29 solar masses and after they allegedly combined to form one black hole of a different type they were three solar masses as short as three solar masses were radiated away as gravitational wave energy allegedly I'd like to review some things that I've done in the past regarding incompatibility of universes I've put a list here on the left hand side of what constitutes fundamentally a blackhole universe and on the right hand side what

constitutes a BIGBANG universe now recall that black holes are part of a Big Bang universe allegedly all of this gravitational waves etc it's not just black holes it's inside some Big Bang universe there are let's have a look at the left side but now I'll begin with the right side in fact a Big Bang universe now there are three types of Big Bang universe and they are categorized by their K curvature and so we see that the Big Bang universe has a K curvature but no black hole universe has a K curvature and yet they are supposed to be in the same universe now the three Big Bang universes depend on as I said K and if K is equal to 1 it's a finite it's as positive curvature and it has a finite spacial size but a black hole universe is spatially infinite one can only wonder how you can fit an infinite black hole universe inside especially finite Big Bang universe similarly the other two universes of beep bang are K minus 1 in case not they are spatially infinite well the black

hole universe is infinite but it doesn't
have a K curvature the other other thing
about a big bang universe all of the
three is that they are legend 13.8
billion years old but all black hole
universes are eternal they don't have
any beginning or end in time so how you
can you put a black hole universe inside
a Big Bang universe when they don't even
have the right age or Big Bang universes
are literally expanding but no black
hole universe is expanding at all black
hole universes are allegedly
asymptotically flat now this means that
as you get further away from the from
the black hole
thus the so-called curvature of space
times gets less and less and it's
asymptotic so as you continue to go
without any bound infinitely it becomes
flatter and flatter but
none of the BIGBANG universes are
asymptotically anything and they'd be
the black hole universe contains only
one mess that is the black hole itself
we call that the LIGO team claimed that

they have two black holes coalescing to
form one black hole you meeting
gravitational waves within a BIGBANG
universe and the Big Bang universe
allegedly contains many masses so you
see that they are fundamentally
incompatible mathematically physically
whatever they describe the boy
they are logically incompatible yet the
LIGO team claims to have found two of
them not just once but three times now
so that's what a total of six black
holes in a BIGBANG universe of which
they don't really specify but as we see
they are logically inconsistent so
certainly they didn't find any black
holes in a BIGBANG University meeting
gravitational waves I'd like to go
further over some properties of the big
bling universe the finite mass is
concentrated at its singularity and this
singularity has zero volume and infinite
density the is also has an event horizon
the black hole has an event horizon will
you pass the event horizon there's a
point of no return and it goes into the

singularity but there are forces in
gravity there are forces in general
relativity but gravity is not one of
them and the reason is that in
Einstein's theory gravity is space-time
curvature it's not a force now the
infinite space-time curvature at this
infinite space-time curvature at the
singularity let's think about that a
finite mass is located in zero volume
has infinite density and has infinite
gravity do you think any such thing
exists well I certainly believe I
certainly know that no such thing exists
as I've said also they have an inner
they have an escape speed the event
horizon is the speed at the event
horizon they have an escape speed that's
the speed of light question is what is
the speed of light at the event horizon
well I'll cover that in another slide
we'll see that this argument was also
logically inconsistent the
asymptotically flat infinite space-time
not expanding universe eternal and a
single mass as I've already said so we

see that these are the alleged physical
properties of a black hole universe here
we have a diagrammatic representation of
a black hole I had to draw it in white
otherwise you wouldn't see it because
it's on a black background and so I've
put a blue arrow there
that's dark matter and it's an event
horizon the singularity is the right at
the center at the at the edge at the end
of that little red radio line and we see
that they have a sparse tool radius they
call it our sub black of light now the
speed of light in vacuum is something
like 300 million meters per second
excuse me and this is an eternal
infinite asymptotically flat space-time
now here are now my diagram a
diagrammatic form of multiple black
holes again they're all in white never
various sizes because they come in sizes
but sizes is not a type of the hole
they're just different sizes human
beings of different sizes but they're
still all human beings there are four
different types of black holes alleged

now we look at this little diagram we see that there's eternal infinite gravity at each one of them right at their singularities and they're all supposed to be inside a 13.8 billion year old Big Bang universe that's not asymptotically anything consider any one of those black holes in that diagram they all have the same characteristics of a singularity where we have zero volume infinite density and infinite gravity and they're also supposed to be asymptotically flat spaced times now every one of those black holes encounters what outside of it another black hole which has infinite gravity but let's see from the space-time curvature that's a long way from being asymptotically flat so you see you can't have even on the idea of a black hole if we take that at face value you can't have multiple black holes bivariate by the very definition of the black holes here is a technical issue regarding mathematical forms it's a called the principle of superposition

now general activity is a nonlinear theory and that means that the principle of superposition does not hold so if you have say X as a black hole universe and Y is a big bang universe then X plus y is not a solution it's not a universe in this theory

neither is X plus y or X plus X y plus y etcetera any combinations thereof because that's just superposing and that violates the mathematical form of the theory nonetheless what does Abbott and the LIGO team tell us here's what is in their discovery paper

it matches the wave form predicted by general relativity for the in spiral and murder of a pair of black holes in the ring down of the resulting single black hole so how did they get these black holes in the BIGBANG universe they superposed everything's just superposed but you can't superpose because you need to have a set of Einstein's field equations to describe any configuration that you want and then solve them for that configuration

you can't just superpose things upon the other because of this non-linearity so I want to now remind you about escape speed in Newton's theory the escape speed is given by this formula V_{escape} is the square root of $2GM/R$ where R was the radius of the object a spherical object M as its mass G is the universal constant for gravitation now escape speed is a two-body relation if I take a ball and I throw it into the year that left the earth but it didn't escape because I didn't throw it fast enough and if you throw or fire something fast enough it will continue to go up and not come back the minimum speed that you have to leave the earth with is called the escape speed and it's a two-body relation because if you have one body in the universe there's nothing to escape from anything so it's a two-body relation despite the fact that there is only one mass that's present in the actual expression for the escape speed but to get that expression you need to invoke Newton's theory of

gravity where there are two masses which
you see there is given by F is equal to
 $G M_{\text{large}} M_{\text{small}} / R^2$ so
it's fundamentally a two-body relation
where as a black hole is a one body
universe so how can a black hole have an
escape speed when it's in the universe
on its own keynote so let's go a little
further with the escape speed issue this
comes from the dictionary of geophysics
astrophysics and astronomy they're all
experts so they tell us in general
relativity for spherical black holes
spargue to black holes that's what they
asked very gone exactly the same
expression our BH holds for the surface
of a black hole that's the expression I
just gave you from Newton let's quickly
go back to him
there's Newton's expression that's a two
body relation and they say it's the same
expression the surface of a black hole
that R_B is an old surface consisting
of those photon trajectories in our rays
which just do not escape to infinity
this surface is also called the black

hole horizon the required radius B_H follows from setting V_{escape} equal to C . C is what the speed of light some 300 million meters per second there's the equation that they use for the black hole radius to GM over C^2 well that's just the rearrangement of Newton's formula Newton's expression which is a two-body relation let's have a look at now how they confound two different escape speeds at the same place at the same time in the one equation this top expression is called a metric and it's actually a solution that's for a so called spacelike black hole and light travels along a null line so that means that ds^2 on the left hand side this acquire light will be zero so we put zero in there on the left-hand side in the second line and then we can look at it without any loss of generality by considering an equatorial plane that means θ can be 90 degrees inside θ is zero so the sine θ term drops out and dr which is just the

differential element of a constant is also zero so that right hand side drops out completely and we're left with this middle expression now if we rearrange this middle expression we get dr over dt well that's just distance over time distance divided by the time taken is a speed so we get speed and this expression here is the dr/dt then they say at the event horizon well at the event horizon what's the value of R well we just saw that it's $2GM$ over C squared so if we put $2GM$ over C squared in the value of R we get 1 minus 1 that's 0 and they tell us here we find that the velocity of light at the event horizon is zero so the escape speed is the speed of light to get C in the first place they use Newton's formula and it's 300 million meters per second in this very equation now they use the same escape speed then they tell us that the escape speed is zero so in the one equation we have two different escape speeds for at the same place which is quite impossible you can only really you

can only really shake your head in
amazement at how cosmologists do things
here's the spot your radius of a black
hole $2GM$ over C squared where C is
allegedly the escape speed of 300
million meters per second but we just
saw that they told us at zero the other
thing of course is that in this geometry
it's not Euclidean Einstein's fancy
non-euclidean four dimensional geometry
it's Romanian or pseudo Romanian and so
this expression or this quantity R that
appears in
equations it's not a radius and it's not
even a distance and yet they adorn it
with the properties of a radius when
strictly speaking it's not a distance at
all in this expression here we go again
with the swatch two radii it's not a
radius remember but they tell us here
this is from Wally's book on general
relativity it's quite a well-known book
it's another fairy story from A to Z as
fast your black hole of mass equal to
that of the earth it has a spatial
radius of one centimeter he says it's a

radius no it isn't a black hole of one
solar mass has as fast your radius of
only three kilometers well no it's not a
radius and that's where the escape speed
is which I just spoke of having that
schizophrenic property here we come
again to the idea of forces
gravitational forces in generality
videos I said gravity is not a force
because the space-time curvature now
let's consider a spring who's a pretty
unsophisticated looking Springs because
I drew them myself and I didn't have
much software to do it with anyway
we take a spring horizontal and let's
assume that the left-hand side of this
spring is fixed through a wall or
something so I can't move and you want
to stretch this spring or compress it
what do you do you apply a force to it
or you could pull it with your hand
or you could push it and that's a force
Springs respond to forces now let's turn
the spring vertical so now it's stuck to
the ceiling say and we put a weight on
it what pulls the spring down it's

weight

what is weight weight is a force the spring responds due to a force pulling the spring but there are no forces of gravity in general relativity so this spring would have to be stretched or compressed by curved space-time it doesn't make any sense at all you can consider for instance if your result as me or older you'll know that when you go to the grocery shop in those days you used to have a spring balance and he put a bag of spuds on there you say well you owe me 10 bucks because of weighs this much that's a weight

did space-time curvature or a force stretch his spring cosmologists don't know the difference between forces and geometry space-time curvature what they can do here's another one that I like they tell us that they're from this equation for a black hole that there's an event horizon at R equals to $\frac{GM}{C^2}$ when you put that in you get the R squared over zero that's a division by zero they tell us

that's infinity that's infinity well we
all learnt in lower a lower high school
that you cannot divide by zero because
it's undefined then they go through this
singularity down to another one where R
is actually zero again they get a
division by zero and they tell us that
this is the real singularity the other
one is a fake one because they can
remove it with their imaginations here's
what they tell us about this singularity
this is from Dodson and Poston tensor
geometry once a body of of meta of any
mass M lies inside its parts your radius
 $2m$ it undergoes gravitational collapse
gravitational collapse we'll put a tag
on that we come back to it and the
singularity becomes physical not a
limiting friction so the divide by zero
it's not a limiting friction so we're
not talking about limits in calculus
we're talking about division Z by zero
and I say it's a real thing it's
physical of course what is the physical
thing zero volume infinite density
infinite gravity

here's Carol honestly this is a large book on modern astrophysics our non rotating black hole has a particularly simple structure at the center is the singularity a point of zero volume and infinite density density where all of the black holes mass is located space-time is infinitely curved at the singularity the black hole singularity is a real physical entity it is not a mathematical artifact so they're telling you yes you can have zero volume for nightmares infinite density infinite gravity and you can divide boy Lloyd twice

maizena thorn and wheeler have written a book it's as big as well it used to be as big as its Sydney telephone book it's half the size of a Sydney telephone book now

Sydney's ground not because it's a bookcase one says that our equals zero is a physical singularity of space-time so there can be no ambiguity as to what these experts assert it goes on with Hawking these are the singularities

again there must be a singularity of
infinite density and space-time
curvature within the black hole now we
come to Roger Penrose
a friend of Hawking as our decreases the
space-time curvature mounts in
proportion to our the -3 becoming
theoretically infinite at R equals
naught but as I said no finite masses 0
volume infinite density and infinite
gravity anywhere this is a fairy story
here's another paradox this one has a
little bit of mathematics in it but the
top here is Einstein's field equations
the two terms on the left-hand side
constitute his tensor for space-time
curvature λ there is the cosmological
constant that they implement and the
right-hand side is his energy momentum
tensor to describe the material sources
of his gravitational field and they say
well when $R_{\mu\nu} = 0$ we get a
sponsored universe now note that to get
 $R_{\mu\nu} = 0$ you set $T_{\mu\nu}$
equal to zero the other parts disappear
because of a mathematical relation which

I won't go into so it doesn't look like
it but it does because of a tensor or
tensorial relation so you get $R_{\mu\nu}$
equals naught this is the so-called
special universe from which they
generate a black hole now the next one
are you simply your $\sum_{\mu\nu}$ equals
 λG little G use $\sum_{\mu\nu}$ now notice
here that this is leads to the sitter's
empty universe now why is it empty well
precisely because $T_{\mu\nu}$ equals zero
so that means there's no material
sources in this universe by this
mathematical constraint go back to the
previous
the same constraint is there $t_{\mu\nu}$
equals zero and yet they tell us that
there is a mass in that universe so now
we have by the very same mathematical
minute straight matter is both present
and absent in a universe well that's a
logical contradiction you cannot have
matter present by or aimed absent by the
very same mathematical constraint as I
said this is all inside some Big Bang
universe well quite Hawking again this

is from his book a brief history of time
I saw William Shatner and Teller owner
on a video recently he says I tried to
read that book he said I couldn't go
past a few pages or some words that
effect and then he said I can't it's
just to me science and science fiction
after reading trying to read this stuff
science and science fiction are one and
the same

he's right in current terms okay so at
the Big Bang itself the universe is
thought to have had sorry to have had
zero size and to be infinitely hot let's
think about that zero size and
infinitely hot first what is temperature
well according to chemists such as Linus
Pauling who wasn't bad at chemistry and
lots of other physicists and such the
temperature of some substances what how
it's a measure of the kinetic energy of
the particles now these particles are
moving around in space they also occupy
space because they have masses and the
more energy they have the faster they
move the temperature goes up so how fast

must particles be moving to have an
infinite temperature second if you've
got zero volume where are the particles
where they going to live you have no
volume so they can't be there and
they've got no place to run around in
this is one of my favorites I've quoted
a number of times but it's so wonderful
that I have to do it again this is from
Martha Thorne on wheels
Lula's telephone book one crucial
assumption underlies the standard hot
Big Bang model that the universe
in a state of rapid expansion from a
very nearly homogeneous isotropic
condition of infinite than in brackets
here or near infinite density and
pressure so now they're getting pressure
as well as temperature and density of
being infinite now I ask you something
how close did maizena Thorne and will
they get to infinite to know when though
in Europe this is a nonsensical
statement people read this thing and
they think we'll these guys are geniuses
how did they do it so I've just little

note here infinite hotness infinitely
hot nothingness that makes sense
infinitely your infinite density and
pressure yeah
where was the pressured surface you know
if you've got pressure what's the
definition of pressure force over area
well we got zero volume where's the
surface but now these geniuses tell us
that they have infinite or near infinite
pressure in zero volume and of course
this is a lead up to well awesome to
have some words to say on shortly
there was no condensed matter so that so
what emitted the blackbody spectrum this
is their Cosmic Microwave Background
that was a generated by their Big Bang
universe within 400 years before was
that the tender age of 400 thousand
years it's got this radiation where did
it come from so that's a lead up to what
I'm going to say enough shortly after I
discussed he kick off a little thermal
emission now this is a very important
issue its central to physics and
astronomy and it's actually false but

they believe it to be true if you take a
box and doesn't matter what you make of
as long as it's opaque right
according to kick-off who was a german
scientist in the mid 19th century
he said if you take a box you heat it up
and you keep the temperature stable
there's a radiation field inside well we
know that things radiate you get an
infrared camera and you look at things
and they're radiating so this box
radiates and inside
because it's hollow there'll be a
radiation field he was of the view that
if you take any arbitrary opaque
material and make a box of it it doesn't
matter what shape was size it is or what
it's material is as long as it's large
and I've said that the fraction is
unimportant
well diffraction is on a small scale
anyhow he says here arbitrary opaque
cavities at thermal equilibrium and I
put magically because it's magically
magically contained the very same
radiation field as one made of carbon at

the same temperature so miraculously if you make one out of granite or if you made one out of highly polished silver or any other opaque material you doesn't matter yeah it's just as though they were all more made of carbon do you think that that makes sense how does of all of these materials become the same as carbon well they don't and he says that the nature and form of the walls are irrelevant ok so that means it doesn't matter its size or shape but the truth is the materials always influence the emission field here is an example of a blackbody spectrum now I should say that these boxes that Kia cough was talking about he called it blackbody radiation because he used the lying boxes when he did some experiments with soot or lamp black and that's black so this is carbon in carbon has this property so it's called blackbody or normal radiation and when you look at the spectrum from such a material it has this kind of profile it goes up in a hump and it comes down and I've given a

few here and you see that with the increasing temperature the peak of the temperature or the peak occurs at a smaller and smaller wavelengths so you heat it up the wavelength will shift in this graph towards the left and for the peak temperature and you see that if you have a graph like this from a spectrum of some material you'll say well I can look at this spectrum and I can find its peak and then I can tell you what the temperature is of the emitter well that's okay provided it's a carbon box but what if it's not a carbon box always a carbon material you might you might get a profile that has this kind of distribution but does it tell you the temperature of the emitter and the answer is no not unless it is a blackbody such as carbon well most materials are not now what is a blackbody I should tell you that theoretically it's ideal it means that all the radiation that falls on it is absorbed immediately and all the radiation then is converted and

re-emitted so that it at thermal equilibrium there is no change of temperature because the radiation that comes in gets absorbed and it gets reradiating so there's no change of temperature but there's an absorption and emission from the surface of the material that is a blackbody now it's ideal but it's very closely approximated by soot now there's a thing in in the theory the other boundary is an ideal reflector an ideal reflector is one that absorbs nothing everything that goes falls onto the reflector is reflected so it absorbs nothing so it cannot increase its temperature by radiation because it can't absorb any radiation to increase its temperature it reflects at all so if you have now a high an ideal reflector and you have a radiation coming off it it's reflected radiation you look at it you get a Planckian spectrum and you say well I can get a temperature and you take the temperature is that the temperature of the reflector well the answer is no because this radiation

didn't come from the reflector he came from the surroundings was reflected off the reflector and does not report the temperature of the reflector the effect that cannot emit because by definition it has no emission capability has absorption of zero because it's a perfect reflector what's a perfect reflector well do they exist no but they are closely approximated by things like highly polished silver it has a reflectivities of not 0.999 one or something like that so it reflects pretty well everything that falls on it this has implications for spectra of all types cosmologists do away with the enclosure they do away with thermal equilibrium and they assume the kick-off law is still true and that they can universally apply Planck's equation now Planck developed an equation to describe these curves and so they apply Planck's equation to a nice picture that they get and I think they can get temperatures so we have now some spectra from some stars because

speaker the Sun and in Tyrus and you see
here that the temperature is reported by
the spectral 23,000 Kelvin for speaker
the Sun is the photosphere of the Sun is
at 5800 Kelvin and in towers is at 3400
Kelvin but all these stars black bodies
well they're not they're not carbon and
they don't satisfy the conditions that
strictly require the application of Q
cops law or in hence Planck's equation
so the temperatures that are received
from these are what too low the reason
why they're too low is because a black
body emits the thoth the maximum amount
of energy these are not black bodies so
they will emit in a profile they will
emit energy levels that are lower than
what a black body would have done so
this temperature that you are signed to
it is actually lower than the
temperature that it should be so these
are apparent temperatures this is
important as well for the CMB because
it's allegedly a blackbody spectrum at
approximately 2.7 to 5 Kelvin here's
Planck's equation for its spectral

density μ r ν sorry is the frequency
and C is the speed of light 300,000 300
million meters per second not the 0 and
 K is Boltzmann constant H is Planck's
constant this is important because
Planck introduced the corner of action
in this expression and that spawned
quantum mechanics so if Planck's
equation is not universal in quantum
mechanics and astronomy as such assume
it is which it isn't then they've got a
lot of problems so strictly speaking
this applies through a blackbody and
opaque solid at thermal equilibrium
within an enclosure so if we get rid of
the enclosure and such we can
approximate some materials such as
plates and certain things by this
equation but it's not universe
so contrary to what physics and
astronomy believes so we need to know
how does the thermal spectrum produce
well the very detail with the fine
details of it are not known but what we
know is that it's opaque solids produce
or opaque solids produces also liquids

can produce a thermal spectrum and this is due to their lattice structure so there's a vibration of the atoms or molecules in the lattice structure that produces this so professor Pierre Marie robotoid published in 2003 in the transactions of plasma science in the I Triple E an article about this and here's a quote from it interesting when Planck never sought to bring full physical meaning to his own law by linking it to a specific physical process undertaken by a specific physical species in a specific physical setting in this sense planking and thermal emission remains a unique in finish to this day so I have yet to link the production of a thermal photon in blackbody radiation to a direct physical cause the situation can be corrected if true blackbody emission has views this consequence of the vibration of atomic nuclei within the confines of a lattice structure well here is a profile of the bomber series of the hydrogen atom and you see that it's in line emission just

lines it's not this Planckian
distribution this is typical of gases so
a thermal special requires a lattice and
only condensed matter has a lattice
liquids and solids are condensed matter
but gases are not condensed matter but
the hypothetical Big Bang primordial
gaseous exotica well how can they emit a
thermal suppression this is their cosmic
microwave background made up of
electrons protons neutrons quark gluon
plasmas whatever that is here's an
interesting thing about black holes and
thermal emission now these Hawking
radiation it's supposed to be a
blackbody radiation from black holes one
way or another and
but black holes and lot condensed matter
they're not solids and liquids they just
have got no volume does oh I mean the
singularity has no volume and they have
no lattice structure since the
singularity has no volume so they don't
have any material structure at all and
yet this phantasmagorical black hole it
has no means to produce a blackbody

spectrum but according to Hawking it does so they violate black holes violate the physics of thermal emission well you need something to emit you can't have a mass that doesn't have a volume it doesn't even have a surface and yet it emits wonderful gravitational collapse this is very interesting recently professor Roberto again has addressed it from the point of view of thermodynamics and the truth of matter is we can analyze black holes now without any equations we just go through some laws of thermodynamics because they violate the zeroth first and second laws of thermodynamics by this process of gravitational collapse in so doing they they produce perpetual motion machines of the first and second kind well thermodynamics forbids perpetual motion machines and a free gas can't do work on itself and make itself collapse because if you take a gas and you put it in a container it spreads out and fills a container and if you want to compress it you have to apply force just

like you do with a bicycle pump you have to apply a force and the temperature goes up you can feel that when you use the bicycle pump right but you've got to now you take this container of gas and you put it inside another container and open it up the gas squirts out fills the container and then now if we do away with the walls completely what happens to the gas will it apps on itself well it'll continue to spread out that's what gases do so they can't collapse on themselves that would be doing work on yourself and that's forbidden by the laws of thermodynamics but black holes are formed by gravitational collapse of free gases

so this is a very important point in thermodynamics there are two basic quantities there's an intensive property and an extensive property and temperature is an intensive property not an extensive property here is a way to see the difference take a brick and we heat the brick up and we get it to a certain temperature we keep it there

right now I cut the brick in half the
two pieces now have different masses but
the temperature hasn't changed has it
the temperature stays the same if I cut
them again but the masses reduce the
temperature stays the same this is the
temperature is called an intensive
property right the mass is an extensive
property because it changes with this
process right so you cannot define an
intensive property in terms of an
extensive property but that's what
cosmologists do with a black hole
thermodynamics they redefine temperature
unwittingly using an extensive property
mass to define an intensive property
temperature in direct violation of the
laws of thermodynamics so the Hawking
bekenstein thermodynamics of black holes
is nonsense because thermodynamics
forbids it
now big bang creationism it's
creationism I think it's the best of all
because the Creator created itself but
our coach come back to say a few more
things about that but Big Bang creation

requires validity of kirchoff's law of thermal emission and universality of Planck's equation now what do we mean by universality of Planck's equation because because kick off made all the boxes black ones Planck's equation applies the wall boxes so it doesn't matter what the box is made of they think the equation can reply but it doesn't so Keir god's law is a force and Planck's equation is not universal now I've given here an example of a thing that produces or proves that kickoffs law is forcing that's MRI the clinical existence of MRI which is magnetic resonance imaging proves that Q cos Loras is false because if Q Gauss law is true then all the radiation in the walls of a cavity can go into the radiation field but if that is true then MRI couldn't exist because MRIs is facilitated being the same process if it is a NMR and that means that this spin lattice relaxation lattice is what the structure of the material the spin relates to the protons in the atoms and

the of the structure of the material if
all the radiation in the wors was
permitted to be going to the radiation
field you would have no way of having
spin relaxation and there produce MRI
images you wouldn't have a resonant
device because you could not build up a
standing wave inside a resonant cavity
because all the radiation would be
absorbed and then remit it but we have
resonant devices everywhere in microwave
technologies so all cavities are not
like so the clinical existence of MRI is
always proven that it's not but the
simplest one is not MRI the simplest one
is an experiment done done recently by
Professor Roberto and it's been online
for three days only now I couldn't put
it in my slides because I had to prepare
beforehand but a simple experiment that
you can do in your kitchen with about
\$1,000 worth of equipment at most not a
billion-dollar satellite right well
proof that proves to you that cacao is
false so if you go to Professor robotize
website on YouTube you just look still

search on sky scholar two words sky
scholar and look for his lecture on his
experiment it's called is ku is kickoffs
lor true the experiment now since Q
kossler is is false the Hall of
cosmology is dead why because without it
I had no Cosmic Microwave Background and
no Big Bang so now it's proven false by
a very simple experiment we don't have
to use a single tensor equation and get
confused about it so that would be
something that I recommend to you all to
go and have a look at because it affects
not just astronomy but a lot of physics
condensed matter physics quantum
mechanics everything is affected by this
because Planck's equation is not
universal
now I want to look at some conservation
laws regarding general relativity now
general relativity cannot localize its
gravitational energy that means you
cannot have gravitational waves with
this theory here is how Einstein tries
to get conservation of energy and
momentum if you take a closed system we

know from many many experiments that the total energy momentum of the closed system is conserved this is fundamental in physics now I knew that so he had to find a way to make his theory comply with this experimental finding and so what is energy that what is what is the energy of momentum to Einstein it's everything except these gravitational fields that means electromagnetic radiation mass etc all of this is matter and it contributes through the curvature of a spacetime right so he needs now some way and means of accounting for the energy of his gravitational field because in a closed system you'll have the material sources and you'll have the gravitational field we want to take the total energy and momentum of that closed system and then conserve it so he invents a thing well he's got his big T I've put them down the bottom there the total energy in momentum is equal to little T with a superscript and subscript and the big T the big T is his energy momentum tensor

for the matter what's the matter
everything except his gravitational
field so he invents a thing called he's
zero tensor the little T to represent
the energy momentum of his gravitational
field and he adds them together to get
the total energy but this is not a
tensor equation so we can't deal with it
as a tensor so what does he do formally
in mathematics if you take a divergence
of this expression and get zero you have
a conservation law so he can't take a
tensor divergence so he takes an
ordinary divergence and then he
pronounces this thus it results from our
field equations of gravitation that the
laws of conservation of momentum and
energy are satisfied here instead of the
energy components of T it's a little
displace but Σ_{μ} the
gravitational field we have to introduce
the totality of the energy components of
matter and gravitational field okay so
now he says here we got a divergence of
zero first it's not tensorial so that
violates these fundamental premise that

they must all be tensorial

the second thing is this

this is complicated expressions but that

doesn't you don't need to know it the

yeah that's the outcome when we look at

the definition of Einstein pseudotensor

that's their complicated expression at

the top because it's like a tensor he

says these quantities to α Sigma we

call the energy come in components of

the gravitational field well what since

it's like a tensor it's a certain so we

can treat it like a tensor and so we do

this thing called contraction in the

second line and it produces an invariant

now the invariant has the property of

being a first thought of intrinsic

differential invariant this is what

which means that it's made up of the

components of the metric tensor their

first derivatives and none all and

nothing else which is the last

expression the G 's are this metric

tensor but in 1900 the pure

mathematicians who invented this

mathematical apparatus prove that you

cannot construct the first order
intrinsic differential invariant they
don't exist and yet Einstein and his
followers managed to calculate the
energy of a gravitational wave to model
their alleged physical phenomena with a
with an entity a mathematical concoction
of symbols right that doesn't even have
validity in mathematics this is really
miraculous so there's only one way to
really write Einstein's field equations
you know so they can be tensorial and
satisfy a conservation law as a formal
mathematical expression and you see the
total energy and top is that it's the
top equation this is how you write them
and then the second equation is a tensor
divergence and it's zero so we say wait
we've got a we've got now a formal
conservation law but notice something
the top equation is the total energy
momentum of a closed system it's always
zero there's no other way you can write
Einstein's equations to satisfy this but
we're in experiments do we find that the
energy of momentum of a closed system is

always annoyed this is nonsense but this
is the only way you can do it so the
theory is fundamentally logically
inconsistent and mathematically true now
I come to the whole object of the thing
what like I did we see that you cannot
have black holes in Big Bang universes
the whole thing is inconsistent so so
where do their gravitational waves from
they get it from a wave
question but the wave equation does not
come from black hole equations they
talking about black holes generating
their waves it doesn't come from Big
Bang equations they black holes are
inside a big banging universe it doesn't
come from Einstein's nonlinear field
equations it comes from a linearized
form of Einstein's field equations
because you can't solve the nonlinear
ones so they linearized them by going to
indeed and get a wave equation and then
they say this wave equation tells us
that the waves travel at the speed of
light no they don't
here's logo's gravitational waves at the

speed of light bearing in mind of course
that they have two different speeds of
light for their black hole escape zero
and 300 million meters per second in
1916 this is in the LIGO discovery paper
in 1916 the year after the final
formulation of the field equations of
general relativity Albert Einstein
predicted the existence of gravitational
waves he found that the linearized weak
field equations had wave solutions
transverse waves a spatial strain that
travel at the speed of light generated
by time variations of the mass
quadrupole moment of the source it's a
lot of jargon there but it just tells
you that they're supposed to be
traveling at the speed of light let's
look at these linear equations there
they are all right the little the new
they just they just take the values one
minus one minus one sitter and the other
ones a little tiny changes in the flight
space we don't have to worry too much
about it here's the derivation they
truncate what's called the Ricci tensor

to be able to do the mathematical mumbo-jumbo then if they set the second part to nought and then you end up with a wave equation and it says well this one travels at the speed of light you know what this whole thing is coordinate dependent you can change the coordinates and you can have any speed you like so their claim that they travel at the speed of light

Einstein's included is out of nonsense it's a coordinate dependent speed so they don't have such a speed now I come to logos devious methods let's assume multiple black holes inside a Big Bang universe like they do let's assume gravitational waves propagating at the speed of light

like they do now we take me equations to manufacture trajectories of multiple black hauling directions and we generate from those equations using our computers 250,000 templates template is there fancy name for a line of best fit right 250,000 and in the sociality gravitational waves of course this is

the multiple black holes inside a Big Bang universe that they have no real equations for anyway they just made it up

then they generate these 250,000 and put them in a database then why go says I've got a generic noise fellas so the scientists are like I say that's wonderful what we'll do is we'll put any new our computer and we'll try to find from our own equations that we made up a line of best fit to the noise that we just got then they find one it's a line of best fit that doesn't have to be exact you know it could be right off it doesn't matter as long as it's close it's the closest of you 250,000 then they say well that model is for two black holes circling another thing at this speed and that in produces this so that's the physical cause of the wave of the noisy nauman device from an equation that we made up from our own nonsensical equations so we look at the database here it is I couldn't do 250,000 of them so I I don't know how many of there you

someone might like to count them anyhow

LIGO says that they steal these little

one at the bottom that's the line of

best fit from the 250,000 database from

their own manufacturing lines of best

fit here's their devious graphics notice

at the top they've got two black holes

it's a binary system they're rotating

around each other then they coalesce

they call it a chirp it makes the noise

you know like a like a bird yeah I'll

tell you about David right see because I

saw him in Queensland he was talking

about chirps anyhow you this thing

here's a chirp this waveform it makes a

noise they generate the noise maybe they

got a contract with Marshall for this

speaker so I don't know anyhow you again

that's that little tiny dot there that

noise that they got there they say well

you know that matches their line of best

fit from out of 250,000 balla base is

one so that's the one we'll pick and

then they told the world we discovered

them well with that kind of computing

power and that kind of so many degrees

of freedom and the ability to generate
whatever you like as a database you can
find a line of best fit in like a four
whistlers mother

there she is and it's a different one
you see the eye goes at the bottom
whistlers mother's up the top so I want
to tell you a little story before I come
to my final slide in December last year
David writes he went to the University
of Queensland at a teacher's conference
high school teachers conference and I
went up there cuz I'm in Tasmania right
don't mention Tasmania I was pleased to
hear that anyhow so I go up to see his
lecture but before his lecture I went to
some of the teachers workshops I just
want to see what's going on here and in
the state of Queensland

it is now mandatory directed by the
Department of Education that children as
young as twelve must be taught BIGBANG
creationism black halls in the hall
paraphernalia can you believe it
Stephen Hawking might be very happy
about that because he's written a series

of books for 12 year olds mr. George goes gallivanting with black holes and big bangs depending we depending on which book you pick it's written for 12 year olds he's about three of them at least that I know of but that's what the state of play is in state of Queensland I wouldn't be surprised if it's a same here in the US now anyway but his lecture I listened to his carry-on and I set up right up near the front so I could see the whites of his eyes you know any of course he doesn't know who I am I know who he is because I've seen him on television we've done it he says like this we've done it we found him we've discovered gravitational waves well you know this is how science is done they're scientists and they I've got a new method mass media induced message through this is how they do science did you see the guys with the Higgs boson when they announced that they were jumping up and down hugging one another on international television as though they

just scored a winning goal at the World
Cup final this is the new way to do
science well it might be their way but
that's not the real science way anyhow
so I discovered that right so you was
just doing the same thing that other
cosmologists do gallivant around the
world and tell people like Brian Cox
Larry Krauss Richard Dawkins neil
degrasse tyson they travel around the
world that lampooning everybody you know
anybody who disagrees with their
creationism and they tell everybody that
your creationism can't be right because
ours is the one and only and yours is a
false prophet another little story
before I go to the last slide if you've
got time yes a little bit of the
cosmologists are now spending or they
led boy Hawking by the way they're
spending 100 million dollars of Milnes
thoughtless money now min Milner is some
Russian billionaire who likes to throw
money at cosmologists and string
theorists no one who does real science
but these kind of guys and he gives them

three million bucks a piece
you know and if you happen to be Stephen
Hawking and you didn't get one you get a
special dispensation and you get another
three million and to top it all off
how does Milner set up his grants
everybody who wanted this year sits on
the committee to decide who wins it next
year well you know what the outcome will
be weren't you more string theorists and
more cosmologists of course
so in hell they travel around the world
doing these sorts of things now right
seas are doing the same thing he's just
going out there he's the he's the salt
a solo artist for the LTC what's the LTC
that's the liger Tabernacle Choir so he
goes around he sings the praises of logo
and he wants everybody has spent
billions of dollars to build new low
goes for them and Liza's so they're in
space and they can do more gravitational
waves on in black holes of course none
of it exists and during that talk he
made a remark to the all the teachers in
the audience they're listening to him

and he says you know Newton's theory of gravity appeared in about 1643 and I looked around the room and it seemed that I was the only one who had a problem with that statement the reason is this Newton is heralded as being the greatest genius of all right but I doubt very much that even he could have written down a theory of gravity when he was aged one that doesn't deter mr. right see and the other cosmologists from making these calculations and with nonsensical forms etc so that's a lead-up oh I have another little story this is really funny there's a there's a web blog a news blog called the conversation it's based in Australia and some Australian scientists put up an article there about these black hole gravitational wave starts with like a you know a son nonsensical I couldn't resist so I went in there and I put in some scientific remarks and Bob will know this because he did it too he told me about it so I went there and made some comments as well so he knows

the men I'm talking about well the
leader of this group is Professor
Matthew Bayliss of Swinburne University
of Technology in Australia and he's one
of the guys that are spending one
hundred million dollars of nillas money
I forgot to tell you what they're doing
it for they're trying to contact aliens
I'm serious they tried to contact
islands with this hundred million
dollars and an imbalance according to
the article is the leader of the
Australian contingent and they want to
use radio telescopes all around the
world including the Parkes radio
telescope so he didn't like my response
he didn't like walls either but he
didn't like mine in particular so he
came and made some statement he says I
am confident in the general theory of
relativity because I've found quasars
and observed quasars that's
it well you know what I'm sure that a
fishmonger would have confidence in the
theory of relativity because he found an
absurd fish so I have to say this LIGO

is a fraud it's a scientific fluid it
has absolutely nothing to do with
science it's all to do with who knows
what
money-making mesmerization mystery
mysticism but it's not science
and as I said it's science by using mass
media induce mass hysteria
so I'll conclude there you can have the
probably a well-earned break thank you
very much for listening

[Applause]

[Music]

you

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info in the previous space news we discussed astronomers recent admission that they now need a whole new theory to explain how planets form today yet another discovery has shattered conventional ideas about planet formation and the so called early solar system scientists studying data from NASA's Dawn spacecraft have learned some astonishing details about the asteroid Vesta the standard model states that the asteroid came into existence at the same time as the solar system however key predictions of this model have been falsified by the dawn data the team was surprised by the absence of the mineral olivine which they expected to find in abundance on the asteroids surface a report on the website Science Daily reads olivine is a main component of planetary mantels and should have been found in large quantities on the surface of Vesta due

to a double meteorite impact that according to computer simulations dug the celestial bodies southern Pole to a depth of 80 kilometers catapulting large amounts of material to the surface the absence of the expected olivine has led the scientists to conclude that the asteroids crust must be almost three times thicker than expected the science daily report concludes these discoveries challenge models that describe the formation of Vesta and consequently the formation of the solar system including earth a more complex model of planet formation therefore has to be considered however despite these and countless other recent astonishing discovers institutional sciences fundamental ideas about the solar system's origins remain unshaken in a lost space news we discussed the fact that researchers have finally admitted there is no successful model which can explain the formation of the solar system and now we have only about a week later a report which says asteroid Vesta to reshape theories of

planet formation the article actually goes to show just how difficult it is to shake a belief because that's all we have the story of the formation of the solar system is merely a once upon a time story which has become a belief system the article says with its 500 kilometers diameter the asteroid Vesta is one of the largest known planet embryos it came into existence at the same time as the solar system well here we have the assumption the solar system was formed in a single event it also assumes that the solar system was formed from a cloud of dust and gas and these bodies are created and formed in this case a molten core the molten iron core a crust and a mantle all the kinds of things that you would find on planet Earth the problem is this body is quite small and its composition and now the calculations of how its crust and mantle should appear don't seem to work they don't match one of the major points in the article is that using numerical simulations and data from the space

mission dawn they have found that there is a striking absence of a particular mineral olivine on the asteroid surface now it was expected that one spectacular so-called impact crater was excavated to such a depth that anything beneath the crust should have been splattered onto the surface and that particular mineral olivine is missing the authors conclude that the asteroids crust is three times thicker than expected due to the absence of olivine on the asteroid surface here we see the data being forced to fit the discredited planet formation model instead of the model being forced to fit the data in fact the data should be added to the growing list of strikes against planet formation theory together with solar system bodies that should have been shattered by impacts that are believed to have created craters a good fraction of the sizes of those bodies other outstanding examples are the 22 kilometre Martian moon Phobos with a 9 kilometre crater and satins 1060 kilometre moon tethers with a 660

kilometres crater in each instance the craters are neatly circular with no sign of splintering or frag it's as if they were machined into the surface by a cosmic drill in 2011 scientists were astonished to discover a second gigantic crater at Vesta South Pole which they described as a so-called impact basin the principal investigator on NASA's Dawn mission said at the time there is a global dichotomy on Vesta and a fundamental difference between the northern and southern hemispheres the northern hemisphere is older and heavily cratered in contrast to the brighter southern hemisphere where the texture is more smooth and there are lots of sets of grooves there is a massive mountain at the South Pole one of the more surprising aspects is a set of deep equatorial troughs this kind of global dichotomy is also witnessed on the planet Mars where the northern hemisphere has been excavated up to six miles deep as discussed in the

feature-length documentary film the
Lightning scarred planet Mars this
dichotomy falsifies the notion of
billion-year processes defining the
planetary surfaces in the electric
universe theory comets and asteroids are
the products of a relatively recent epic
of planetary instability when electrical
interactions between planets carve two
planetary surfaces it should be pointed
out that the impact crater on this
roughly 500 kilometres wide asteroid is
475 kilometres across
that's an incredible width on such a
small body what's more it has a central
peak which rises 22 kilometres high
which is twice the height of Mount
Everest the asteroid also sports
equatorial troughs that run around the
body none of these things are well
explained by impacts what's more this
huge crater seems to be superimposed on
another one slightly smaller this kind
of scarring is typical of what you see
on planetary surfaces and other moons
where you have impacts so-called

superimpose one upon the other often with the center of one crater perched on the rim of another and this is the case here on Vesta as well this is symptomatic of electrical arc machining of a surface and even the grooves and sometimes raised ridges which have been seen on other bodies seem to be characteristic of a body that's caught up in an interplanetary electrical discharge it said that the material that was excavated from the asteroid Vesta arrives on earth in the form of a certain kind of meteorite but what if the meteorites and Vesta were all formed in the same catastrophic birth process of this particular body because in the electric universe asteroids comets meteors planets and moons are all born electrically they are not formed by gravitational accretion and therefore the internal structure of this body has nothing to do with the separation of elements from a primordial cloud of dust and gas it has instead the composition of the body from which it

was born and that would have been highly differentiated to begin with so the model of the formation of this object is completely wrong and the data they are finding from the Dawn spacecraft supports this this business of the composition of asteroid Vesta also harks back to the discovery from the Stardust mission which found that the minerals being emitted from a comet also have the structure of the minerals from a well differentiated body not from primordial dust and gas in a related news item the European Space Agency's probe Rosetta has acquired new images of what scientists are calling a contact binary comet a recent BBC report says of this image how the comet came to take this form is unknown however plasma scientist CJ ransom replicated this form in the laboratory applying an electrical discharge to a mineral surface a related item just a few days ago is the announcement for that the Rosetta missions target which was a comet is now found to be a double Comet

the sensational new images show that what we have is apparently what they call a contact binary that is two objects either attached or in contact with one another as they rotate the article says referring to this comet that how it took this form is unknown but just as the asteroid Vesta and the formation of those colossal so-called impact craters can be explained electrically more simply so too can this particular double Comet it's been found in laboratory experiments that when a discharge strikes a mineral surface it forms small spherules or small beads and quite often those beads are joined together with a very narrow neck so if comets are also formed in a plasma discharge in an electrical discharge to a planetary surface the chances of forming these double headed and maybe multiple headed objects is quite high there is another possibility and that was put forward by Tom Van Flandern and he suggested that based on the orbits of comets and

asteroids that they were formed in a single event which he termed an exploding planet without actually explaining how that planet might explode but this fits with the electrical view that these objects are machined from a planet surface electrically in a single event or maybe a series of events and therefore they will have orbits which show a common origin and here we have an object which is also commonly found when an electric discharge strikes a mineral surface we've seen that the notion that planets are formed by accretion of widely dispersed dust and gas just does not work the electric universe model is quite different in fact it has more in common with the biological birth of an object and that is that the electrical nature of all cosmic bodies is such that if they are disturbed or if there's a powerful electric discharge to their surface they may respond by actually ejecting part of their matter into space the reason for this is down to our misunderstanding of gravity if you think

about it every atom has almost all of the mass concentrated in the central nucleus the positively charged central nucleus in a gravitational field therefore every atom will be distorted by the nucleus being pulled to one side of the atom in other words towards the center of a planet for instance that means that the atom itself has the charge redistributed so that it forms a tiny electric dipole with the positive pole facing inwards towards the center of the planet and the negative pole facing towards the surface now in large bodies like stars and gas giants and so on pressure ionization will allow some electrons to escape from the atoms and they will tend to drift towards the surface so that all cosmic bodies will have some form of electric charge on them it's a situation known in the trade as an electret something that maintains an electric charge now if you imagine that a powerful electric discharge or even a large body and a gravitational field disturbing another body can cause

an instability and that instability can be so great because it's electrical rather than gravitational that the response will be the ejection of matter from one body into space that in turn allows you to see the so-called accretion disks where planets are supposed to be formed according to the standard theory are actually expulsion discs it's just been an assumption that they are accretion discs but we know that stars expel matter our own star our own Sun expels matter regularly into space at great velocity so the very notion that stars and gas giants and so on can expel matter into space it makes perfect sense and it also explains why we find huge gas giant planets orbiting very closely their parent in other stellar systems so when astronomers say that they need an entirely new theory of planet formation they have one here it is the electric universe model for continuous updates on space news from the electric universe stay tuned to

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you

[Music]

In the Big Bang model in the early universe,
young galaxies were incredibly active
and their centers produce fast plasma jets
that stretch for incredible distances.

When the jets point towards
Earth, these are called blazars.

Within the jets, the plasma
travels at relativistic speed.

This, combined with the fact
that the beams point towards us,
makes the blazars appear much brighter.

They are very variable as well
and can undergo rapid changes in
brightness in short timescales of
hours to days. These should be
very common in the early universe.

But astronomers have
struggled to find these objects,
suggesting that they are not as
common as they thought they were.

In new research published, astronomers
have managed to find a blazar at a very
high redshift, which they think makes
it a whopping 13 billion years old.

This is a mere 800,000 years

after the supposed Big Bang event.

They were able to image the jets that were moving away from the blazar, using the VLBA, which is a system of 10 radio telescopes. This radio image revealed a broken object, emitting brightly in radio, stretching out about 1,600 light years.

When they analyzed the data, they discovered that the plasma was traveling at 75 percent of the speed of light. In the mainstream model, these powerful jets are powered by supermassive black holes.

Material is drawn in towards this and forms what they term as an accretion disk. The exact process whereby the jets are created, is still open to debate. But some speculate that the intense magnetic fields twist in around the poles, and cause material that is falling in to be ejected along these confined magnetic fields.

So, why are these blazars predicted to be more common than they are?

In the Big Bang model, the early universe needs to become ionized.

This is achieved through star

formation and by the jets from these active galactic nuclei. Early galaxies would have to create stars at a rapid rate, in order to achieve this ionization. The center of these galaxies would also be growing at an extraordinary rate. The masses of the detected active galactic nuclei, at these high redshifts, would indeed indicate a fast and efficient growth of these supermassive black holes. The problem is that this challenges the standard formation model of supermassive black holes, and does not seem to be supported by the lack of these high redshift blazars. So, how do they explain this then? They speculate that there could be a mismatch, meaning that the more distant blazars have different properties compared to the more local ones, and this could mean that the jets may be moving slower. This in turn, may be due to a lower angular momentum of the gas in the accretion disk, which in turn, allows the black hole to grow at a more rapid rate, leading to more rapid star formation. So, is there a different way of looking at this? Once more we must consider the question of distance

and age. We have discussed many times that the notion that redshift is only related to recessional velocity, and hence distance, is wrong. Redshift can be caused by many additional factors. Halton Arp was an astronomer who spent many years cataloging quasars and galaxies. He published many books on his finds and showed clear evidence of a discrepancy between the measured distance, using the Tully- Fisher measure, and the associated redshift of these galaxies. The Tully-Fisher relationship is a way of relating luminosity of the galaxy with its distance. The further away these galaxies were, the greater the difference between these two measures became. We also see this appear in the quantization of this redshift, which has been interpreted as a great wall of galaxies, which seem to stretch out in a great big sphere, away from us. He also drew a clear relationship between quasars and the host galaxy, and showed that the redshift of these ejected objects appears to reduce as they got further from the parent galaxy, and their brightness increased. This means that we should be open to the idea that redshift might indeed tell us something

about the age of the object, but in the opposite way. The higher the redshift, the younger the object might be, or the more electrically active it is.

As the redshift slowly decreases, so the brightness will increase. The Big Bang postulates that all matter came into existence at a specific point and that the universe itself has expanded from this point onwards.

The Electric Universe model, based on plasma cosmology, instead holds that there was no Big Bang and that the universe is not expanding.

The universe is filled with plasma that has different types of charges and these tend to separate themselves via double layers, or conform into large filaments, called Birkeland currents. These can carry vast amounts of plasma from one area of high charge, to another area with a lower charge.

Along these filaments, a pinching effect can cause the material to become compressed.

These can form highly energetic plasmoids.

This pinching will cause more material to be drawn inwards, eventually forming what we see as a quasar.

These plasmoids are characteristic

in having a toroidal structure
and having two beams of material
ejected from the center along the axis.

This is confirmed by experiments carried out by Eric
Lerner, and the papers written by him on how his
laboratory experiments could be scaled up,
and may in fact be what mainstream calls
black holes or quasars. In this
model, these beams would not be
continuous, but would be pulsed. This is
exactly what we are seeing in these images.

The periodic ejection of blobs from the
quasar are initially in the form of neutrons,
which decay into electrons and protons.

These electrons get slowed more than the
protons in the galactic magnetic field.

This means that the strong non-thermal
emission across the whole spectrum
that they observe for this blazar,
is due to this process. This means the
young quasar is electron-deficient,
so has a low mass and high redshift and
a low brightness due to its diffuseness.

So why do we not see more high redshift blazars,
if they are young newly formed objects? There are a
number of aspects to consider. When

we see active jets from galaxies,
these tend to be from galaxies with a
lower redshift compared to this blazar.

Halton Arp considered the majority of galaxies
we observe were part of what he termed our local
supercluster, of which the Virgo
cluster was the most distant part.

He thought that there may well be
large areas of void in between these
large clusters, and it may not be possible to
see objects from other parts of the universe.

He also speculated that the intrinsic
redshift would step with distance
and he demonstrated this with our
local group and the Virgo cluster.

So, is it possible that this blazar has a
high redshift compared to local blazars,
because it is not from our supercluster?

The reason these high redshift blazars
may be so rare, is because we can only
just see the edge of the next supercluster.

Another option to consider is that there
may well be a difference between a
quasar that was ejected from an active
galaxy, and one that formed in the pinch of an
intergalactic Birkeland current.

Could it be that one formed in the
latter, would be far more energetic,
and have a much higher redshift,
and also be much rarer? There are many
questions still to be answered and only
by keeping an open mind can we hope to
start unraveling the mysteries of our universe.

[Music]

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

The NASA Space Agency is
preparing to launch a spacecraft
that will approach the sun more closely
than any man-made technology in history.

NASA's Parker Solar Probe,
a robotic spacecraft intended
to explore, among other things,
the mysteries of the solar wind,
and the enduring puzzle
of coronal heating,
will approach within less than four
million miles of the sun's photosphere
or what is sometimes referred
to as the sun's surface.

For decades, within the
Electric Universe community,
our scientists have proposed a
radically alternative model of the Sun
based on principles of electrical
engineering and plasma physics.

Today, retired professor Dr. Donald Scott

outlines the opportunities for the NASA mission
to test the predictions
of the Electric Sun model.

NASA has been talking for several
years about their Solar Probe.

This is a space probe
really, that is going to go as close
to the Sun as they can get it
without melting it.

The vehicle is due to be
launched about August 11th
and the only reason I thought maybe we should
talk about a little bit here on Space News
is that there are some things
that are very good about it
and some things that I think
are sort of overblown about it.

So let me just, sort of, give
you a mind-dump from this end
as to what I think
about it.

The mission is scheduled
to last about 7 years
and it's going to use a slowdown
technique of using Venus to slow it down
and so on these various

orbits around the sun

it will approach closer, more

closely and more closely.

But NASA says it will "fly

through the sun's atmosphere."

Well now, that right-off-the-bat depends on

how you define the extent of the atmosphere

because the particles in the so-called solar

wind travel out as far as the heliopause

and that's about 18

billion kilometers.

That's more than three times

the distance to Pluto

and that's really the sun's

atmosphere using one definition.

But I don't think they're talking about

that. They're talking, I think, about

the atmosphere as far

out as the Corona.

Well, that presents

a problem actually

because this morning's NASA press release

says that the Parker Solar Probe will

"Touch the Sun".

That's, I think we recognize

that as overblown rhetoric

and it's designed to
impress the public
but it doesn't lend confidence to anybody who
wants to take their press releases seriously.

Be that as it may, the vehicle
is going to get closer to the Sun
than any other man-made
object has ever gotten
and the orbit of the probe will be
closely restricted to the ecliptic plane.

That is to say it'll go around the Sun
in, essentially around the sun's equator.

So anything that's going on over
the sun's poles such as these
very important, to me at least,
coronal plumes or coronal streamers,
these long thin twisting streams
of current and magnetic field
that extend outward from the
sun's North and South poles,
those are possible sources of
the electrical charge flow
that maintains the
sun's positive voltage.

Well, we aren't going to learn anything
about those from the Parker Solar Probe.

But anyway, NASA says that the probe will get within a distance, when they really get down to saying it, about 4 million miles from the Sun surface.

Now that's about nine solar radii. That is, if you look at a picture of the sun and put an imaginary dot right in the middle of it, the distance from that dot out to the what looks like the surface of the sun is the so-called surface of the photosphere.

It's the closest-in surface that is not opaque so that photospheric surface, you can't see through it.

So we talk about that as the sun's surface.

But that four million miles that the probe will get within is nine solar radii so if you measure from that dot out to the edge of the Sun and then go nine times that distance, that's as far in as this

Parker probe is going to get.

Well, the farthest out that the corona extends is about five solar radii or so. It varies with the time of the quiet Sun and the active Sun but it gets about five, three to five to six maybe at most out from the surface of the Sun.

So my point is, the Parker Solar Probe is not even going to get close to the outermost regions of the corona.

So this is a far cry from "Touching the Sun".

However, it's a lot closer than we've ever been before.

The power density radiation that's coming out of this, out of the photosphere of the Sun, is in the neighborhood of 6,000 watts per square centimeter.

So if you put your fingers and make a little square about one centimeter, this is roughly a half an inch by half an inch, and think of 6,000 watts of electrical light coming out of that one square centimeter,

that's a lot of power.

So, at a distance of 9 solar radii which
is where the probe is going to get to,
that radiation power ought to be about
74 watts per square centimeter.

Maybe you say well,
that's not very much,
74 watts per square centimeter.

Well yeah, but you realize there are 10,000
square centimeters in a square meter
so that means that that solar
probe, the heat shield on it,
has to either absorb or reflect
some 740,000 watts per square meter.

That's a lot of energy, a lot of power
energy per unit time coming at that thing.

So, NASA says they're expecting a
temperature of around 2,500 Fahrenheit.

Well okay, so I guess the
main 'get down to brass tacks',
what can the

Parker probe measure?

We've mentioned some
things that it can't measure.

Well, one of the things

I hope it can measure

and I don't know whether they will program
it or be interested enough to do it,
is there are these things
called coronal caps.

If you look at a nice picture of the
sun when it's at solar eclipse,
you can see these, all
these triangular things.

Some people say they
look like dunce
caps, other people
say they look like
wizards' caps with streamers
coming out of them,
but they're these triangular things
and there's so easily, well half a
dozen or more usually
are around,
somewhere around the sun.

Why they form, these coronal
caps, why do they form?

Well, we in the Electric Universe
know very well why they form,
they're due to the tendency
of plasma to form filaments.

When plasma leaves the Sun, it

doesn't go radially outward,
or like if you spread
the fingers of your hand
and look at the angles at
which your fingers go out.

Plasma doesn't go out
like that, radially.

It goes out and then comes
back and joins in together,
it forms these triangles,
these solar caps.

I'm hoping that the Parker probe
might be able to get close enough
to take some pictures of those solar caps
and get the detail of what they look like
because those caps may very well be
the origins of the Birkeland currents
that connect out from the
sun to the various planets.

We have of course one to Earth
there's a gigantic one out to Jupiter,
another one to Saturn,
to Neptune, to Uranus...

And so, if they can ever
get pictures of what those,
what those condensed

plasma streams,
what some people call it, the
magnetic flux ropes, look like,
that would be very nice.

This probe is going to carry
a wide-field imager.

It's called WISPR, W I S P R.

That WISPR might
get some pictures.

I'm praying 'might', of the, first pictures we've
seen up close of a Birkeland current stream.

Finally, one of the
announced goals of mission
is to identify the cause
of coronal heating.

This coronal heating effect is, astronomers
were worried about that for decades.

Why is the lower
corona 2 million degrees
whereas the photospheric surface of the sun
right below that 2 million is only at 6,000?

And so, it's pretty mysterious.

It's been that way for decades
and they are desperately trying
to find out why that occurs.

We in the Electric Universe,

we know what causes it.

It's caused by collisions of
electrically accelerated ions
coming out of the top of
the photospheric tufts
and going, slamming into the bottom of
the corona. These collisions
create turbulence and turbulence
is measured as temperature.

So this happens right above
the surface of the photosphere.

That's at one solar radius,
not not 9 or 6 or whatever.

So the Parker probe will be unable to
reveal the cause of coronal heating
because it can't get
to where the action is,
it can't get to where
the effect is happening.

So keep your eyes peeled for any new
hypothetical non-electrical explanations
that fall out of this.

I hope that they don't do that because
they will be imaginary of things
if they are. The cause
of the coronal heating

and the temperature minimum,
so-called, of the sun,
is way beyond the capability
of the probe to see it.

The probe is instrumented to be able to
measure electric field strengths though
and magnetic field strengths.

An instrument called SWEAP, S W E A P
that stands for Solar Wind Electrons
Alpha-particles and Protons.

That instrument can measure the velocity
density and temperature of those particles.

And that would be very interesting to
get measurements of those particles
and see how closely they fit
into the Electric Sun model.

I suspect, if they do
make those measurements
they will probably be surprised
and I'll be very happy.

There's another
instrument called ISOIS
and ISOIS will also measure the
properties of solar wind particles.

NASA's description
says this will

"... help determine which of
several theorized mechanisms
causes the particles in the
solar wind to accelerate."

Now that is not possible if
you stop and think about it
because if you measure
however accurately,
the velocity, the density and the temperature
of a particle or a bunch of particles,
that tells you nothing at all
about where they came from.

You can take a picture of an automobile
flying at high speed down a major highway
and so he says, well, why
is it going that fast?

And so he says, well, it's got
a high rpm gasoline engine
and the other guy next
to it says, no no no
it's a high-torque electric
motor, it's a Tesla, you know.

That's my sort of half humorous
attempt or attempt at half humor
to say that you can't by taking an
instantaneous measurement of a velocity

or even an acceleration,
determine why this thing has
the properties that it does.

What got it going so fast. You can't
tell. You can tell it's going fast
but there's no way to say this
will determine this measurement.

Which of several theorized mechanisms
caused the particles' acceleration?

Anyway, we're gonna hear about
lots of data being collected,
lots of these images being taken,
what particles were
seen in the solar wind.

I'm praying that we do not hear
that they have observed magnetic
reconnection one more time
because it's nonsense.

I think, eventually they will
come to realize this but...

But what will be very
interesting for any measurements
that are mentioned, interesting to
us in the Electric Universe
are: any actual physical measurements
of electric field strengths,

current densities, particle
velocities and accelerations
and also measurements of the
filamentation I was talking about.

And the reason is because
astronomers have long maintained
that plasma cannot support
an electric field.

Well then why did they instrument
the Parker Solar Probe
with instruments that can
measure electric fields?

Because they have put out of their mind
the possibility that electric fields
can exist in plasma.

And by golly, there is one thing
sure, they're gonna be flying around
within a tremendous
amount of plasma
and trying to measure the
electric fields there.

I suspect, they will indeed
measure electric fields there
and I don't know how they're
gonna cope with that,
how they are going to explain it.

I'm confident because in SAFIRE,
the SAFIRE laboratory experiment
that we have here on Earth,
they have measured electric fields
of upward of 8,000 volts per meter.
And so, if they do measure any electric
fields out there, it's gonna be interesting
to see how they
explain them away.

Anyway, every day that the
Parker probe survives
this wildly hot environment that
it's gonna pass through, is a testament
to the professional
expertise of its designers
and the engineers who created it.

I feel very strongly that it's going
to be a marvelous engineering feat.

But the official NASA interpretations
of any data it manages to send back
must be filtered to
exclude fictions

such as magnetic reconnection
and open-ended magnetic fields
and shockwaves in non-
collisional plasmas.

There's no collisions,

how can there be shockwaves?

Well, there's a whole bunch of things

like that that NASA seems to be fond of

dredging up and

throwing at the public

that we have to be aware of.

This new NASA probe has the possibility of

making some new, very useful measurements

provided that everybody realizes that the

actual restrictions inherent in its abilities

are what they are.

Anyway, we await the

reports with bated breath

and we are also armed

with a rational skepticism

of overreaching assumptions that may

be proposed as factual causations

that are not.

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

In recent years, a profound development
has been unfolding in astrophysics,
the inevitable acknowledgement
of tremendous electric currents
at the largest cosmic scales.

One of the most stupendous
electromagnetic cosmic phenomena
is the collimated, light years long,
jets produced at active galactic nuclei.

Recently, the obvious
electrical nature of these jets
has been explored in scientific papers
published in peer-reviewed journals.

One such paper entitled
"The jets of active galactic nuclei
as giant coaxial cables" summarizes,
"...our results have now yielded firm
evidence that many — possibly all —
active galactic nuclei jets have
inward currents along their axes
and outward currents in a more extended

region surrounding the jets....

It also indicates that astrophysical jets are fundamentally electromagnetic structures..."

Another paper entitled "Electric Currents along Astrophysical Jets"

also argues for cosmic-scale electric currents

though also doing so from the framework of gravitational theory.

The author states, "Several researchers have reported direct evidence for large-scale electric currents along astrophysical jets.

Quite unexpectedly, their directions are not random as would have been the case if the magnetic field were generated by a magnetohydrodynamic dynamo.

Instead, in all kiloparsec-scale detections, the inferred electric currents are found to flow away from the galactic nucleus.

This unexpected break of symmetry suggests that a battery mechanism is operating around the central black hole."

And here we see emphasized the fundamental

differences between Standard Astrophysical Theory
and Plasma Cosmology and
the Electric Universe.

Astrophysicists can only imagine
colossal gravity, a black hole,
producing tremendous magnetism which then
produces the stupendous electric currents.

In this episode, retired professor of
electrical engineering, Donald Scott,
offers the Electric

Universe interpretation,
first addressing a basic
problem in cosmology:

what is the real source
of magnetism in space?

We have to realize that magnetic fields are
caused by one thing and one thing only.

That's the movement of charge, in
other words, electric currents.

Electric currents create magnetic fields and
when magnetic fields collide with conductors,
then currents will be induced, that is to
say initiated, created in those conductors.

You can't have one
without the other.

But anyway, they've been very reluctant

to mention electric currents until
very, very recently, when they do,
indeed, mention electric currents.

So, one was "Electric Currents along
Astrophysical Jets" by Ioannis Contopoulos.

When I saw this, I went,
"Wow, electric currents and jets, that
sounds just like Birkeland currents!"

Until you begin to
read the article,
and I do admit they do mention
electric currents, so that's,
that's two points to
remember and that's good.

But I think it's the first
sentence in the article,
"Astrophysical black holes and
their surrounding accretion disks
are believed to be threaded by grand
design helical magnetic fields.

There is strong
theoretical evidence."

Now, I don't know what "strong
theoretical evidence" means.

There's either strong observational
evidence or a well-believed theory

but there's no such thing as
"strong theoretical evidence."

"But the main driver of their winds
and jets is the Lorentz force
generated by these fields and their
associated electric currents."

That's good.

The Lorentz forces certainly are
at play in Birkeland currents.

Then they go on and said, "Several
researchers have reported
direct evidence for large-scale electric
currents along astrophysical jets."

Good!

"Quite unexpectedly, their directions are
not random as would have been the case
if the magnetic field were generated
by a magnetohydrodynamic dynamo."

Oh, oh, there we
go again, dynamos.

If you look up the definition
of dynamo in Wikipedia,
and I did it just to
be sure I was right.

The dynamo is an electrical generator
that produces direct current.

In other words, it's

a DC generator.

It's a way Edison made DC current

in Chicago, I think it was.

But that has nothing to do, really,

with what's going on in space.

I don't think we really have any use for

dynamos and what they use this word,

almost like a magic Shibboleth

that it's a dynamo caused it.

Anyway, "Magnetic fields are

an important constituent

of cosmic plasmas at all

astrophysical scales.

They are thought to be produced by 'seed'

fields generated by random currents

that are amplified by dynamo action

in planetary and stellar interiors,

accretion disks and generally

rotating astrophysical plasmas."

I mean, other than the fact that

they mentioned astrophysical plasma,

everything there is

wrong or non-existent.

There's no such thing as accretion

disk, they like to think about.

It's well-known that Tony Peratt said
that in the Los Alamos laboratory,
they would try to simulate an accretion
disk and totally failed, miserably.

They couldn't do it and if they mixed
plasma in with their simulation
and allowed for Maxwell's
equations to be used as well,
then yes, you could get
the thing to accrete.

But without plasma,
without electricity,
there's no such thing as a
magnetic accretion disk.

But anyway, there's another paper
which I think is less obviously wrong
in many of its points but still
has some things to worry about.

That one is "The jets of AGMs (active
galactic nuclei) as giant coaxial cables."

This paper was written by Denise C.

Gabuzda and her associate authors

Nagle and Roche in the Department of Physics
at the University College Cork, Ireland.

And the first sentence

in that paper is,

"Active galactic nuclei (AGNs)

release vast amounts of energy,

whose ultimate source is a supermassive

black hole in the galactic nucleus.

In so-called radio-loud AGNs..."

Remember that radio-loud,

that's important.

"Radio loud AGNs, two relativistic jets

of plasma emanate from the nucleus,

presumably along the rotational

axis of the black hole."

In other words, they can't let go of black

holes and gravity and all this other nonsense,

when the evidence is right

in front of their face!

She says, radio-loud AGNs.

What makes loud radio noise?

Answer — double layers.

That's been well known for decades since

Hannes Alfven won the Nobel Prize in 1970.

Let me just conclude by saying, in

the end of that paper by Gabuzda,

her Figure 2 is almost

an identical figure

to one that I published in my paper

in "Progress In Physics" in 2015.

It's a cross section of
the Birkeland current.

It shows counter-rotating currents and
magnetic fields and that's indeed true.

So if she gets it that right, why can't she
let go of the supermassive black holes?

There's no excuse for anyone with any claim
to being an investigator of cosmic phenomena
as not to know about the

seminal prizable work

of people like C.E.R. Bruce, Ralph
Juergens, Earl Milton, Wal Thornhill,
Tony Peratt, Hannes Alfven,
Birkeland, and many others.

These people have staked out
their rightful claims years ago
and it's shameful that their work is
being ignored as if they never had lived
and worked for years to
promote these concepts.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

[Music]

Previously I promised to talk about what the James Webb Telescope may tell us about newborn planets and the subsequent formation of planetary systems. I said and I quote, "It includes the formation of the solar system and the recent history of the Earth. It's a cosmology that involves us." End quote.

Those who have watched the feature-length videos on the Thunderbolts website, Symbols of an Alien Sky and The Lightning Scarred Planet Mars, may appreciate the extent of the revolution in all the sciences and humanities that are implied by the Electric Universe paradigm.

Fred Hoyle in 1950 expressed it well, open quote, "...if there is one important result that comes out of our inquiry into the nature of the universe, it is this: when by patient inquiry we learn the answer to any problem, we always find, both as a whole and in detail, that the answer thus revealed is finer in concept and design than anything we could ever have arrived at by a random guess."

End quote. Thankfully, the 10 billion dollar

James Webb Space Telescope has been successfully launched towards its parking spot, 1.6 million kilometers away. That's about four times the distance to the moon. We are told it will take a month to get there and another five months before its infrared eyes are ready to start scanning the cosmos. In a high-stakes quest to behold light from the first stars and galaxies and to scour the universe for hints of life. The technology is amazing, but the real science that is needed to properly understand the observations is non-existent. Our SAFIRE plasma experiment proved that astrophysicists don't understand stars and their source of radiant energy. The notion of first light is based solely on the Big Bang creation myth which I dealt with in part one of this series. As for gravitational cosmology, Newton's view of gravity has only been shown to work in the solar system and Einstein's warped view of gravity in his non-physical theory of space and time did away with Newton's force of gravity, the force we experience every waking moment.

Einstein stopped doing science by elasticizing the fundamental standards of length and time. At the same time quantum theory divorced physical cause from effect, which is fundamental to science. So it is no surprise that recent articles declare an emergency in Big Bang cosmology and often no obvious way out of the dead end.

Meanwhile, all other creation myths from around the world have been shown by scholars to have a common origin in a celestial cosmology that is ignored, while featuring identifiable planets battling with strange-looking thunderbolts in a doomsday sky.

The creation stories tell of the establishment of the present sky following a period of apocalyptic chaos.

Rationally, those stories can have nothing to do with the creation of the universe.

On 1 December, 2021 New Scientist published an article titled, "Is our solar system a cosmic oddity?" Evidence from exoplanets says yes.

The author goes on to suggest that the story of the formation of the solar system has started to look like a fairy tale.

It is in fact a bedtime story invented to make us feel safe, because

the echoes of those creation
events have imprinted an instinctive
existential fear in humans
which we see manipulated by many
unprincipled leaders throughout history.
The solar system has a frightful recent
history that is essential to grasp
before we have any hope of understanding
exoplanetary systems, ourselves,
or life in the universe. The hopes
and massive investment in the
James Webb Space Telescope will not benefit us all
without real science to understand the observations.
So an introduction is essential, because
the events I'm about to describe and
explain in the upcoming new year episode,
is so different to anything you have heard before.
The panorama is both breathtaking
and disturbing. It changes everything.
In part two of this series on the discoveries
available to the James Webb Space Telescope,
I explained the simultaneous electric
birth of stars and gas giant planets in
molecular clouds. This has now been
essentially confirmed by a report this
week in phys.org, whereby up to 170

free-floating Jupiter-sized planets have been found 420 light-years away in a star cluster in the Milky Way.

This number greatly exceeded expectations.

They were only found because they were hot enough to glow in infrared light.

It's assumed they were born recently and it is only their natal heat that allows us

to see them. But in an electric galaxy, all

free-floating bodies will intercept some electrical energy sufficient to heat

them. So, they are not steadily cooling

and their age is indeterminate. But this

discovery raises serious problems for

the standard hypothesis that such bodies

formed by gravitational accretion about a bright

star and subsequent ejection by planet-to-

planet scattering. In the Electric Universe of

electric stars, these free-floating Jupiter-sized

planets are formed singly or in pairs at the

low end of the brown dwarf star masses.

In my previous Space News I wrote and I

quote, "These stars are arguably the most

important target for the infrared James

Webb Telescope because they are the most

numerous and some of the closest stars to us.

The telescope should confirm that all brown dwarfs against giant-sized bodies enclosed in a huge red anode glow.

To give some idea -- if Jupiter's present invisible plasma sheath will lit up, it would appear in the sky at opposition the size of the Sun.

Brown dwarfs are simply small red giants.”

In December 1999, I published, “Other stars, other worlds, other life?” on my Holoscience website. There I wrote, Open quote,

“In the last few years a new class of faint stars has been discovered.

They are called L-type brown dwarfs, because the element lithium appears in their spectra. They are the most numerous stellar objects in the galaxy and bridge the gap between stars and Jupiter-sized planets.

They are too small to be shining from internal thermonuclear power.

A further puzzle is that they radiate blue and ultraviolet light even though they are cool at a temperature of around 950K.

Water molecules dominate their spectra.

All of these puzzles are simply explained by an electric star.”

And I note here, in 2019 it was shown

that lithium is produced by low-energy
nuclear transmutation in the
SAFIRE plasma reactor. I continue.

"There is no lower limit to the size of a
body that can accept electric power from
the galaxy so the temperatures of smaller dwarfs
will range down to levels conducive to life.

The light of a red star is due to the
distended anode glow of an electrically
low-stressed star. The blue and ultraviolet
light come from a low energy corona.

Since an electric star is heated
externally, a planet need not be
destroyed by orbiting within its anode glow.

In fact, life is not only possible inside
the glow of a small brown dwarf, it seems far
more likely than a planet orbiting outside a star.

This is because the radiant energy
arriving on a planet orbiting inside a
glowing sphere, is evenly distributed
over the entire surface of the planet.

There are no seasons, no tropics and no ice
caps. A planet does not have to rotate; its
axis can point in any direction; and its orbit can
be eccentric. The radiant energy received by the
planet will be strongest at the

red and blue ends of the spectrum.

Photosynthesis relies on red light.

The sky's light would be a pale purple

the classical purple dawn of creation.

L-type brown dwarfs have a water as a

dominant molecule in their spectra, along

with many other biologically important

molecules and elements. Its children

would accumulate atmospheres, and water

would mist down. It is therefore of particular

interest that most of the extrasolar planets

discovered are gas giants,

several times the size of Jupiter,

orbiting their star extremely closely.

It is our system of distantly orbiting

planets that seems the odd one out.

In fact, it argues in favor of a galactic

traffic accident between the Sun and a sub-brown

dwarf like Jupiter or Saturn." End quote.

Since I wrote that article, there

have been many developments.

For example the Kepler and TESS space

telescopes have discovered that hot

Jupiters are less common than previously thought.

And that so-called super-Earths are the

most numerous class of exoplanet.

The most important developments in Electric Universe thinking is a more mature understanding of electro-gravity, supported by the general electrodynamic theory of the great experimental scientist of the 19th century Wilhelm Weber, together with the observations of the modern day Galileo, Dr. Halton Arp.

Unlike the Big Bang, unbalanced universe, the Electric Universe is in balance with a dipole of gravitational force which is identical to the magnetic force, but manifests weakly due to the gravitational distortion of the electrical structure within the electron and proton inside the atoms of a celestial body.

The gravity of that body is established initially by the powerful long-range electromagnetic convection of matter into the center of the Birkeland current filament in a molecular cloud.

Being a dipole electric force, the gravity of a star or planet will change with changes to the surface charge of that body.

This provides the essential feedback mechanism

required for the ready capture of passing bodies
and the rapid stabilization of orbit.

Halton Arp provided a fundamental
benchmark for real cosmology, when he
found that the universe is not expanding.

It is balanced and requires a repulsive
gravity to explain his extensive observations.

The Electric Universe had to meet that
observational benchmark and it does so
for the simple reason that all celestial
bodies will be spherically polarized
with the same gravitational pole facing
outwards. They will repel each other.

Every ponderable body is subject to
that repulsive force of gravity from all of
the other matter in the universe -
a manifestation of Mach's principle,
which results in gravity appearing to be an
attractive force. This attribute is essential to
understand our survival of the planetary
close encounters recorded by our prehistoric
myth makers, and memorialized
by cultures around the world.

It explains why the first civilizations
arose suddenly in a thunderclap
following those events. The unexpectedly large

number of free-floating Jupiter-sized planets in a single nearby star cluster announced in the phys.org report, has particular significance for our Electric Universe cosmology. In the Electric Universe these objects are not free-floating planets, but are in fact brown dwarf stars that glow in infrared because they are receiving a low level of electric power from the galactic circuit, sufficient to establish a discharge, manifesting as a red anode sheath. Such objects form a reservoir of brown dwarf stellar systems that could encounter and become integrated into a more powerful star system, like that of our Sun. That there are so many of them goes to explain why such an event is not only plausible, but inevitable.

[Music]

[Music]

We orbit around a star as part of the solar system. This star is one of a hundred to four hundred million stars that make up the Milky Way.

Our solar system is unique in many ways, and one of those is that it only comprises one star.

Most star systems actually consist of two stars called a binary system.

Most binary systems can be hard to detect.

The easiest way is through visual observations where it is possible to resolve the individual stars themselves.

This is most often not possible, so astronomers have to rely on other techniques.

One involves looking at changes in the spectra of the starlight, which can show a wobble to the motion of the star, indicating that it is moving about a common center.

The third method uses a measurement of the light intensity received by the star.

Many stars show a periodic change in their apparent brightness.

This could happen for a number of reasons.

Some stars undergo changes in their intrinsic luminosity. The other possibility is

that it is a binary system where the orbital plane lies edge-on to us so that the stars periodically eclipse one another.

These systems are called eclipsing binaries.

Sometimes these systems can contain more than two stars. But now NASA has detected a new and bizarre sextuple system, in which all the stars are aligned perfectly, creating a sextuple eclipsing star system.

More strange is that the system seems to consist of three pairs of binary stars locked into an exotic dance. It was discovered using NASA's exoplanet hunting Transiting Exoplanet Survey Satellite, or TESS for short.

TESS is cataloging how the brightness of around 800 million stars change over time.

This means that they can identify stars whose brightness dips, which is usually a good sign that a planet might be in orbit around the star.

Using this mechanism, they were able to identify a hundred star systems with potentially three or more stars.

From this data they were able to identify the rather remarkable

sextuple system TYC 7037-89-1.

So let's examine the system in a little more detail. They can identify three pairs of star, pair A, B and C. When we examine the masses and the size of the stars in the system, something rather remarkable stands out: each pair of stars consists of one larger star which is brighter and one smaller star which is smaller. It also appears as if the ratio between the larger and smaller star is consistently the same throughout the system. The estimated temperatures of the stars are also consistently the same for both the larger and the smaller star.

Pair A orbits each other every 1.3 days, and pair C every 1.6 days.

Pair A orbits pair C every four years. Much further out from pair A and C sits pair B.

These orbit each other every 8.2 days, and B orbits pair A and C every 2,000 years.

This system is a very interesting find and the astronomers offer no clue as to how such a system could form.

Although the idea of star capture is possible, the sheer number of binary star systems

rules out this possibility as the main cause.

Instead, mainstream scientists rely on the idea that some fragmentation of the molecular cloud occurred, causing multiple stars to be formed.

The problem here is that this has to occur three times at different locations, but every time in the same ratio split of two to one, and also with the plane exactly aligned to Earth. In the

Electric Universe there is a much simpler way of looking at these systems.

So let's break this down in a different way.

We know that stars form along filaments and that plasma flows along these filaments.

As the plasma flows, it will tend to form into filaments. One large flowing mass of plasma will form into a number of smaller filaments.

As the currents flow along these filaments, they will generate a magnetic field which will cause the filaments to become attracted to each other. This

often results in the formation of twin filaments wrapping around each other. Peratt studied these in detail in his laboratory and has written about

them in his book on the Plasma Universe.

Of particular interest is a computer simulation he performed which showed that when three filaments start to form, and two are slightly closer to each other, then this attractive force will cause the two closest to wrap around each other and not the other one.

This may be an alternative way of explaining why stars form and are often found in pairs. And in this example, we would have the initial formation process whereby three stars formed, two much closer due to the attraction, and one on a much larger orbit compared to the others.

When Peratt looked to the interactions of Birkeland currents, he saw that when the filaments pinch, a double layer forms at the same point in each filament.

This would also therefore explain why all the stars are in the same plane with their rotation vectors aligned. So how would we explain a sextuple star system then? In the Electric Universe the stars are powered by the movement of this plasma.

Stars will form where a filament becomes

pinched causing the material to be compressed in a small area. Electric stars attempt to balance their incoming current and electron availability with the output brightness and surface area. Sudden dramatic changes to the incoming current density can cause an overload to the star. The only way to deal with this increase of charge is to create a greater surface area. The simplest way to do this is by splitting the star in two. This immediately increases the surface area greatly. These events are often referred to as electrical stressing events and the splitting process is called the fissioning of the star, meaning it splits into two. We also suspect that stars can become ejected from their birthing filament. This is something that I have previously looked into, if you are interested in more details on this. The basic concept is that the filaments are not stationary. So, while the star forms and is small, it is able to move with this moving filament. But at a certain point it gains enough mass that

it can no longer follow the movement and gets kicked out of it. As the stars formed at the same time, it is likely that this process happened at the same time for all three stars.

Upon leaving the filament, it is likely that the stars would have undergone a significant electrical stressing event, causing them to fission.

This would have resulted in the formation of a close companion to each of the initial three stars. This would not only explain how it is possible to create a sextuple star system, all aligned along the same plane, while they all have pairs of stars where one is about a third the size of the other, and why one of the pairs is so much further out compared to the other two pairs.

There is one other possibility to explaining this sextuple star system.

It is important to remember that they are not able to resolve the differences between the pairs of stars in each system.

So is it possible that what they see as variability in luminosity is not caused

by an eclipsing star at all, but instead
is caused by the flickering of the star itself?
We know that our Sun undergoes a regular
change to its output, but this is
on the order of years, not days.
What we do see is that all three star
pairs seem to have a very similar
variation in their brightness, which
is assumed to be caused by one
star passing in front of the other.
Is it possible that all three stars are
connected somewhere to the same source
of electrical power and that the circuit
has a similar resonant frequency for all
of them? Until we are able to resolve the
differences between each pair of stars,
it is not possible to know which of
these two scenarios is the more likely to have
occurred. These types of unusual, almost miraculous
star systems, are slowly building a
picture of how stars might evolve, not
just singly, but as pairs, or in this case up to
six stars, and shows that the interaction of
the Birkeland currents together is an
important aspect that must be considered.

[Music]

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

What fills the vast space in
the unimaginable distances
separating celestial
objects in the cosmos?

Space is indeed a big place but
it's not a perfect void or vacuum.

Today this fact is acknowledged
even by the NASA space agency
which states in an

official report from 2014,
"Space may appear empty -- a soundless
vacuum, but it's not an absolute void.

It flows with electric activity
that is not visible to our eyes."

The movement of electrically charged
particles requires a medium
and that medium in
space is plasma
or the so called 4th
state of matter.

Plasma is commonly

referred to as a gas
whose constituent atoms have been
split into electrons and ions
which move independently
of each other.

Well over 99% of the visible
universe is composed of plasma
including the Earth's ionosphere,
the Sun and All Stars
and nearly all of the interplanetary,
interstellar and intergalactic medium.

Electric currents
flowing through plasma
can be recognized through their
distinct filamentary shape
as seen in the familiar
novelty plasma ball.

With extraordinary advances
in space telescopes
we see today, in unprecedented
detail, filamentary structures
that pervade the visible
universe at all scales.

The appearances of these distinct structures
have proved puzzling to astronomers
far more often than not

as they defy the expected form and
behaviors of hot gas in a vacuum.

In part two of this

10 part presentation

we explore why filamentation throughout
the cosmos is just one of 10 reasons
why the universe is electric.

Filaments in Space

Let us begin by considering the examples
of filaments that we see locally
associated with celestial
bodies in our own solar system.

The most dramatic displays can
surely be seen on our Sun.

Of course we see huge
plasma filaments,
sometimes a million
kilometers or longer,
that occasionally erupt or
explode off of the Sun's surface.

But one of countless unresolved
problems in solar physics
is the observation of giant
snake-like filaments
reaching from the surface of the
Sun to the dark cores of sunspots.

For decades, scientists following
the standard solar model
have viewed the Sun spot penumbra
filaments as "convection cells"
or columns of hot gases transporting heat
from the Sun's interior to its surface.

But as physicist Wal
Thornhill has observed,
the filaments bear no resemblance to any
known form of convection in a hot gas.

Indeed, in our first
ever Space News episode,
we reported on the discovery of
anomalously weak solar convection
by scientists measuring the
Sun's internal plasma motions.

The Electric Universe theory
proposes that the Sun
is not powered by an internal
thermonuclear reaction
but rather it receives its electrical
energy from interstellar space
in which case the absence of
convection is to be expected.

The complex magnetic fields associated
with the penumbra filaments

are acknowledged by

solar physicists.

As seen in the text of the Astronomy Picture

of the Day image seen on your screen,

"Here magnetic field lines can be clearly followed outward from the sunspot to distant regions."

A clear defiance of the expected

behaviors of so-called convection cells.

In a 2002 article on his website;

Thornhill wrote on the

mysterious nature of sunspots,

"It is crucially important

to understand a sunspot

because it is the only place on the Sun that

gives a glimpse below the bright photosphere.

And what do we see?

It is cooler down there

by thousands of degrees!

That is not expected at all if the

Sun is trying to rid itself of heat.

The sunspot center should be much hotter

and brighter than its surroundings."

In the Electric Universe, the penumbral

filaments are electrical discharges in plasma

in the characteristic form of

long thin rope-like structures.

If the filaments are
"convecting gas"
then one would expect the filament centers
to be the hottest and brightest points.

But instead, solar physicists
were amazed to observe
that the penumbral
filaments have dark cores.

In the Electric Universe, the Sun and all
stars are positively charged anodes
and the Sun's
electrical circuitry
reaches across vast distances
throughout the solar system.

The electromagnetic connection
of the Sun to planets,
including the earth,
is now undeniable.

In 2007, NASA scientists were amazed to
discover dynamic so-called magnetic flux ropes
that constantly "form and unravel
in Earth's magnetosphere"
and, in 2017, scientists with
NASA's Cassini mission
were astonished to discover that
these same "magnetic ropes"

connect the Sun and
the planet Saturn
over the incredible distance
of nearly 900 million miles.

These so-called magnetic ropes are in
fact electrical Birkeland currents
which are now known to
power Earth's auroras.

It's now more clear than ever that planets
within the Sun's electrical domain
are electrically charged bodies.

On our own Earth, this fact is best demonstrated
by the relatively recent discovery
of powerful lightning that sometimes
occurs above thunderstorms,
reaching towards space.

For decades, airline pilots have reported their
observations of the stupendous lightning
though it wasn't until the early
1990s that institutional science
finally recognized the
phenomenon exists.

More recently, scientists working
with the ESA Swarm mission
reported their discovery of "supersonic
plasma jets" high up in our atmosphere.

A Phys.org report on
the discovery stated,
"The theory that there are
huge electric currents,
powered by solar wind and guided through
the ionosphere by Earth's magnetic field,
was postulated more than a century ago by
Norwegian scientist Kristian Birkeland.

While much is known about
these current systems,
recent observations... have revealed that they
are associated with large electrical fields."

The spectacular filamentary discharges
we see in our upper atmosphere
may have analogs in other
bodies in our solar system
that scientists have
yet to recognize.

The most extreme example may
be seen on the Jovian moon Io
which astronomers have
characterized since 1979
as the most volcanically active
body in the solar system.

But as we've discussed
many times on this series,

the theory that the spectacular, so-called,
plumes are a form of cryovolcanism
has been falsified
on numerous counts.

Just one of many problems
for planetary scientists
is outlined on the official Wikipedia
page on Tvashtar Paterae region of Io
which states that the over 300 kilometer
high, so-called, volcanic plume displays
"an as yet unexplained
filamentary structure".

However, this statement
is factually incorrect.

The filamentary structure
was explained decades ago
by plasma scientists who
recognized that the "plumes"
are high-energy
electrical discharges.

This theory was first proposed by the
renowned astrophysicist Thomas Gold in 1979.

Then in 1988, plasma scientist Dr. Anthony
Peratt and co-author Alex Dessler
explained, in a peer-reviewed
paper, that the Io plumes

are comparable in
form to a plasma gun.

Similar filamentary plasma discharges are
seen on the Saturnian moon Enceladus,
though again, planetary scientists can
only apply theories of cryovolcanism.

But for several years
astronomers have recognized
the electric current systems connecting
Saturn and Jupiter to their respective moons
though they still imagine volcanism
producing the detected charged particles.

The Electric Universe
is a connected universe
and the braided filamentary structures
we see throughout our solar system;
jetting from planetary surfaces,
on the surface of the Sun
and in the plasma structures
surrounding comets
as seen in this NASA infrared
image of comet Holmes,
all attest to the electrical circuitry
that governs our celestial neighborhood.

We turn our attention now
outside of our solar system

to our galaxy's

interstellar medium

and the extraordinary role that plasma

filaments play in the formation of stars.

A key prediction of the Electric Universe

theory was outlined in the 2005 monograph,

The Electric Universe, by Wal Thornhill

and David Talbott. They wrote,

"Plasma physicists argue that stars are

formed by an electromagnetic 'pinch' effect

on widely dispersed

gas and dust.

The 'pinch' is created by the magnetic

force between parallel current filaments

that are part of the huge electric

currents flowing inside a galaxy."

In 2015, this prediction was affirmed by

data from the Herschel Space Telescope

which imaged, in unprecedented detail, networks

of filaments throughout the Milky Way.

A Phys.org report on the

observations states:

"ESA's Herschel Space Observatory

has been a true game changer...

One of the key aspects that

emerged from these observations

is the presence of a
filamentary network
nearly everywhere in our
galaxy's interstellar medium.

The picture that is emerging
is that these structures
are closely linked to the
formation of stars."

The principal investigator
of the survey stated,
"The greatest surprise was the ubiquity
of the filaments in these nearby clouds
and their intimate connection
with star formation.

But there is more: these
observations revealed that filaments,
which may extend to several
light-years in length,
appear to have a universal width of
about one third of a light year.

This suggests that something
fundamental is lurking underneath."

Of course, the fundamental thing, lurking
underneath the stupendous filaments,
is electricity.

The universal width of the filaments that

Herschel observed is not coincidental.

On Earth, lightning bolts of constant width
are sometimes observed to stretch for miles.

Unfortunately, standard

astronomy still holds

to the pre space-age notion of

an electrically sterile universe

and thus the researchers attempt to explain

the filamentary networks as follows,

"Turbulent motions of the

interstellar gas and dust

create an intricate web of

filamentary structures..."

However, from the Electric

Universe viewpoint

it is paramount that the

most prominent filaments

are seen drawing matter from a

network of smaller filaments.

Smaller coronal filaments are also

characteristic of electric discharges in plasma.

Other filamentary structures

throughout the Milky Way

attest to the spectacular

electromagnetic energies

that, in fact, organize

and drive all galaxies.

Near the center of our galaxy is a structure called the Galactic Center Radio Arc, a long-standing source of mystery for astronomers.

The long parallel rays that shoot straight out from the galactic plane are described in an Astronomy

Picture of the Day as follows,

"The radio arc is connected to the Galactic center by strange curving filaments known as the Arches.

The bright radio structure at the bottom right likely surrounds a black hole at the Galactic center and is known as Sagittarius A*.

One origin hypothesis holds that the Radio Arc and the Arches have their geometry because they contain hot plasma flowing along lines of constant magnetic field.

Recent images from the Chandra X-ray Observatory appear to show this plasma colliding with a nearby cloud of cold gas."

But plasma cosmology recognizes the

dynamic behaviors of electric currents
flowing through
conductive plasma.

What standard astronomy describes
as "long parallel rays",
plasma physicists recognized
as spiralling pairs
of magnetic field aligned
Birkeland currents.

The so called strange curving
filaments are Birkeland currents
feeding electrical power
into the galactic center.

In plasma cosmology it
is not a black hole
but a plasmoid that is responsible for
the tremendous concentration of energies
and therefore mass at
the centers of galaxies.

As we look at an
even greater scale
we see affirmation of the underlying
concept of the Electric Universe that
"there are no islands in space".

Earlier this year, researchers publishing in the
Monthly Notices of the Royal Astronomical Society

reported the first ever measurement of the "magnetic bridge" linking the Milky Way's two nearest galaxies. Known as the Magellanic bridge, the unimaginably vast filament stretches for approximately 75 thousand light years connecting the large and small Magellanic Clouds.

One of the researchers says of the findings, "Not only are entire galaxies magnetic, but the faint delicate threads joining galaxies are magnetic, too.

Everywhere we look in the sky, we find magnetism."

The lead researcher of the study stated, "In general, we don't know how such vast magnetic fields are generated, nor how these large-scale magnetic fields affect galaxy formation and evolution.

Understanding the role that magnetic fields play in the evolution of galaxies and their environment is a fundamental question in astronomy that remains to be answered."

But as we explained in the
first episode of this series,
magnetism in space will
always remain mysterious
unless and until astronomers recognize
the electric currents required
to induce and sustain
the magnetic fields.

In fact, at the galactic scale, some of the
world's most distinguished plasma physicists
have provided experimental proof
that resolves the "mysteries",
both of the motions of galaxies
and their magnetic fields.

Plasma experiments
show that rotation
is a natural function of interacting
electric currents in plasma.

A good example is the
ubiquitous spiral galaxy,
a predictable configuration
of a cosmic scale discharge.

Computer models of two current
filaments, interacting in a plasma,
have reproduced fine
details of spiral galaxies

with no need for the influence
of hypothetical dark matter.

Consider the comparison of
the images on your screen:

On the top is a picture
of the spiral galaxy M81
as imaged by NASA's
Spitzer Space Telescope.

Beneath are snapshots from a computer simulation,
by plasma scientist Dr. Anthony Peratt,
illustrating the evolution of galactic structures
under the influence of electric currents.

Through the electromagnetic
pinch effect,
parallel currents converge to
produce spiraling structures.

Peratt was a protégé of the Nobel Prize
winner, plasma physicist Hannes Alfvén,
who stated of cosmic
electrical activity,
"Space is filled with a
network of currents
which transfer energy and momentum
over large or very large distances.

The currents often pinch to
filamentary or surface currents.

The latter are likely
to give space,
as also interstellar and intergalactic
space, a cellular structure."
Indeed in the 1920s, it
was Irving Langmuir
who is credited with having coined the
term plasma to describe an ionized gas
due to its seemingly lifelike
properties reminiscent of blood plasma.
The filamentary structures
we see throughout the cosmos;
in the spectacular threaded
networks in nebulae,
to the high-energy collimated
jets, light-years in length,
shooting from so-called
Herbig-Haro objects,
to the stupendous cometary knots
seen in planetary nebulae,
to the cosmic web where galaxies,
like stars in our Milky Way,
line filaments of matter
like pearls on a string;
all testify to the electromagnetic force
exponentially more powerful than gravity,

organizing matter at every scale.

Stay tuned for Part 3

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

[Music]

[Music]

well it's a pleasure to be here this is
my third time in about four years so
it's a it's nice to be here take you
guys for coming back for the break I'm
sure you have a nice lunch and I will
try to entertain you with comments so I
will talk about reactions that actually
occur or that we suspect actually
occurred in comments okay all right the
actual title that I decided to come up
with it's actually bolted driven
chemistry and dark cool involve
electrochemistry as also it could also
indicate maybe some plasma chemistry but
in this particular case I'll be talking
mostly about gas surface reactions are
actually driven by voltage or electric
fields all right so this is the unlike
my talk I have about 36 37 slides so you
can get a sense of where I am any point
in a given time and this is where I'd be
covering a big talking about charge
separation be talking about electric
field such a pressure over here electric

fields and how they actually move ions
positive negative and I'll talk about
dust grains voltage driven chemical
reactions that we observe and finally I
give a few examples of type of reactions
they rewrite order actions that we
suspect that might be happening okay all
right so let me give you a reminder
first why this topic and why is the
context of this topic so this is one of
the anomalies that we observe with the
standard sublimation model that has been
in place for the last 50 plus years we
actually see that each it's a particular
component actually has its own personality
and we know now that you know it has
different features because it's
composition is different okay
the presence of ions and electrons near
the nucleus has been shown to be there
in a scale that is actually more than
will be expected is photo ionization and
I'll talk about that I talked about last
time and also mentioning again this time
there's this situation where we have
what appears would be allowed outgassing

a lot of boil tiles in the in the coma
as a function of heliocentric distance
it doesn't quite match so you see that
there's something else going on I
mentioned last time I mentioned this
time as well
active jets in the dark side of the
nucleus which are basically not exposed
to Sun radiation sorry this is something
that I talked before I'm not going to
talk at this time but this is a point to
keep in mind and the origin our common
outburst is still that clear I think
some of you actually mentioning and look
at it from the electrical perspective as
a capacitor and the presence of a large
hydrogen gas cloud is something that I
talked last about two times so I will
not cover it this time right so I'm
gonna start here by this work of
warcraft where he basically proposed a
model that they actually explained the
rotation of galaxies and it is model he
actually was very enough to actually
consider the electrostatic force okay so
here is basically a figure in this in

this paper and what he concludes is that at the at the end of the day he said you need to have a charge of about ten to thirty first coulombs to actually explain the actual rotation on on the galaxy's that you see on top of gravity of course it says it's gravity but they were top of that you need to have a necessary force this how much colors you need but he goes beyond that he says that positive charge is actually located at the centre and the where you see the negative charge will be there and the periphery so we have a chat separation at this particular case now out I will extend this chat separation observe and apply the property of vitality in the universe okay which applies to different scales and I'm gonna be also brave to say that we will see the size of separation or charge even at the atomic level when we have a nucleus which is positively charged and the negative charge is actually an electric cloud that actually at the periphery or the surrounding of

the nucleus so I beginning to see here
where your custom is that this there's a
fatality here there is a current
basically this distribution is similar
are different scales and so I again
being brave again and I was you know I
will say that perhaps this is also and
maybe also supported by evidence that
this is how in a solar system we also
have chat separation and I think we will
be talking about it at least in this
community for quite some time that this
is the kind of observation that we see
so I'm going to stay with it and just
note that also this you know charge
neutrality but it doesn't really mean
that for instance you know at the atomic
level we have ions possibly negative so
you can also have not necessarily in
Chechen try it all the time so maybe you
can apply in the reverse way maybe at a
galactic level you might have galaxy's
that would be you know overly negative
charge the only positive charge that
also happen based on the property of
fatality that I'm applying to to these

observation now here what I have is a cartoonish way an idealized charge separation that we have been occurring at the solar system so I put the Sun here as positive charge and then the end the periphery or there at the end of hemisphere which is actually a sphere it's not two dimensions I have here will be negative charge these are idealized but most likely what's gonna happen or was happy happening yes Electric electrochemistry is the charge we actually be not quite as idealized and this is being shown recently in the last few years when we talk about dual layers but I'm not doing this time but the charge would be a little bit intermingle so what we really want to look at is at the net charge with a net charge what is the net positive charge where is the net negative charge and I just want to highlight here is that we know for instance that the substructure of you call him I namely feel I like to call the electric fields good it's easy for

me to understand the solar system level
is not homogeneous it's actually quite
complex and I based these comments on
the oxidation the comments behave quite
differently you can have the same
comment on the same you know route and
they were actually not follow the same
behavior right so that means the idea
electric field or the voltage
differential being experienced by the
comment along his path it's not the same
every time so I think Scott dr. Scott
mentioned my native flux ropes which me
as electric fields and these are the
fields are dynamic okay so that's part
of the so structure that I see and what
I want to highlight is that if we if
this model is correct
I think I'm mentioning this for the
third time it is - correct what we
should be able to see is that the net
motion okay of positive and negative
ions should be such that the positive
ions would go from the Sun in a ready
form upwards in this form so you see
what the positive ions the Hylian plus

protons and so on so forth even heavy metals they should actually have a tendency to move to the periphery or the hemisphere because that's what the negative charge is so it would be a natural tendency for the test for this particles to move in that direction now happening between allow happy mitosis now it's not a simple model but a net charge should be in that direction right and when you have positive charges moving in one direction the negative charges would like to follow especially electrons which are faster because the nice heavy they were also intermingle but you can also have of course electrons move along with the positive ions in that's in the same direction as well but the net charge should be the opposite so net charge I should be able to see electrons going or moving towards the Sun I'd like to to see that so this model should say that this is this what's happening it's not clear at this stage we know for instance up the positive ions definitely

move rarely from the away from the Sun
towards the preferred the hemisphere
okay now how will post profile would
look like based on the modeled edges
survive mention here well this is this
is a diagram that I have on the left
readily radially constricted circles
they specify distance and on the right
here what I have here is a graph of
voltage versus distance so how will it
look like
so if I just need to look at the
positive across to the Sun or any beyond
the surface of the Sun my voltage world
would be arbitrarily positive and then
as I see the distance I see this as a
function of distance my voltage will
drop okay so in I drug use by my hand
and I think it's properly okay because
this voltage drop is a gradual
job oh it should be gradual gradual
watch it drop and it's going to be is
now gonna be beautiful
okay it's not going to be nicely
exponentially or pulling polynomial it's
gonna be up and down and so I expect

this this diagram this picture here this cartoon is probably okay and then when we go all the way to the periphery or the hemisphere well it would be we would have a more stable voltage differential now when I look at this voltage differential here then I don't need to have just just because of suppression of charge I don't need to have any motor EMF force or anything to explain the motion or higher electrons let me know I have a voltage differential here and electrons will move towards a positive end and ions will move towards the negative end just so they like the chemical concept of motion of ions it's just a start but I cannot really explain it such a separation so I would need the engineers and so on to actually explain why is there such separation on the level of the universe galaxy solar system at some level okay that's something I can explain now let's take a look at the comet so I've been talking about the solar system so this is the Sun flat environment and

periphery or the or the end of the
hemisphere if I look at the if I take is
I think I think of a comet as being a
electrode so I go back to at the
chemistry and say you know I take the
comet as being negative charge electrode
okay in a plasma environment it's that
is both negative and positive charge
depending on location or hillock hence
its distance from the Sun then the the
profile will look like this so this is
the voltage profile over here we have
voltage you have distance and in this
model I have this the the center the
center here is negative charge that
would be my comment 67p or any other
comment and because this is
electrochemical model then I would have
a layer of positive ions and they will
have a layer or negative ions so the
profile basically would look like this
okay there would be a voltage drop from
the surface to the plasma environment on
the comment in this in this case is
shown as a radical drop okay doesn't
have to be that way but this is how

showing is in this diagram and if there would be another gradual voltage drop at the end as we extend far away from the nucleus okay so again this voltage involve there will be electric fields present this is a non zero electric field and that would be enough to provide energy required for ions to move about collide and give rise to chemical reactions

all right so that's a DC in the first part basically talk about how such separations give these two electric fields now I'm gonna go and talk about how the electric fields has been shown to provide the energy required for ions to well move about okay so what I'm gonna do here is just give you a few examples of

studies that I already been done okay and this particular example here what I have is a graph that shows shows me here spectral density when in fear and here is the frequency of this magnetic field which shows that is between approximately two nano tell sort of

probably fallen details I think we're talking about the solar solar system solar flux here and this many fields shows all different kind of oscillations but in this particular case it shows a frequency of falling nearly Hertz which is a little bit different from anything has been described before this corresponds to 67p and it basically shows is that this exactly feel in the order of final amps per meter square okay close to the nucleus another example here I have what is possibly be island flux versus distance from the Sun okay and why shows in this particular study is that what ice assumed to be water ions okay so actually in this particular paper what it shows is that you know based on the technique use is able to detect the ions you know the velocity that they come in is actually the speed as well direction but they don't really know what kind of our it is so they refer to another study that says okay around around the nucleus of Comet 67p we have a large number of

ions that appear to be water based on spectroscopic data so based on these into relationship which is I think it's okay is fair academically it's fair but it doesn't really mean that is what it is out there okay but it's possible so I'm not gonna say it's not what it is but I just gonna give you a reminder that how the conclusion were came about okay

it could be something else it could be all the boiler towels it's a la puerta 67p there are also there so the important thing is that these these islands do have velocity okay and what do the kinetic energy come from especially since in the backyard space we're talking about very low temperatures okay

so genetically speaking well they need to have energies coming from somewhere and so it's directed fields that provide the energy the energy in is given here there are two types we can see here the cold water ions 10 to 15 electron volts and hot is a very water ions 120 to

5,000 like the most this is tremendous amount of energy in tennis I mean at least at least for the chemical perspective that we're talking about here just to give you a background or context if I want to ionize hydrogen you know atomic hydrogen atom I just only need thirteen point one with the two point two electron volts maybe a little bit more safe 14 electron volts so you were talking about a very large amount of energy okay in my opinion this is good enough already to actually strip our electrons from the surface of the nucleus provided the electric field is being experienced on the surface of the on the nucleus of course right now why was discovery here this is very interesting is that when you look at the distance this part here when we go from three point six to two astronomical units distance or the comet 67p from the Sun okay the was called the water island flux so in in in the terminology that's being

used on the model it's always outgassing
because it's always the gases coming out
from the nucleus which is not clear it's
verified definitely not clear anymore
okay

it's increases right so the number one x
increases but as a function of solar
flux okay it is in the case there is not
a linear relationship the expectation
could be is that you increase the solar
flux you'll be able to see more
sublimation and therefore you're gonna
have a great amount of bottles
well it's definitely not linear and in
my opinion there's all the factors
involved in here okay and I'll mention
that in other slides I was I think it's
happening here so here's another example
of again electron electron in this case
these lectures Na^+ ions that have been
detected in the coma
they also been detected near the nucleus
and these electrons also are was called
super thermal for hyper thermal which
means that they have a low kinetic
energy we're talking about hundreds a

few thousands electron volts of energy
of this electron so all this is being
all these energies being supplied by
electric fields this is a very all
actually slide I think I used it last
time and just to highlight here that at
a time we're talking about maybe a
hundred you know a flux of a hundred per
volume how do we elected fair value but
this number has changed now maybe 2,000
to 10,000 per per volume okay and I just
want to highlight
look at this potential here is a hundred
volts potential different observers in t
of the nucleus of ^{60}P it's a large this
is very this is a lot I mean I don't
know from a chemical perspective is
Allah energy it's a long energy all
right and so again in the previous slide
we use an electron sensor and I'm for it
in ion sensor to detect directly I
really like that
we actually sensing these ions and in
this case we representing our work that
actually uses UPA mission spectroscopy
is a different technique and I I really

like the fact that you have different techniques collaborating the same it's a phenomena this is something that we do here on planet earth frequently it's very difficult to do this in space because of limitations or instruments in because of just massive scale distance but with the Rosetta probe we are able to see different instruments collaborate similar phenomena and but it's not beautiful data should be that way data is not beautiful issues NASA sometimes I sing example for instance where you have different techniques do can the same phenomena and the numbers of the kymaro is totally different it's all different off by 20% okay but that's that's fine that's how it should be okay we need to have more population sampling before you actually reach conclusions more solidly right now I think is we're gonna week end now this is a different work and you can actually see their citations over here and I want to highlight I want you I want you to bring out these this highlight here in yellow okay

because 67p it was determined not to be
a very active comment okay but when you
were a distance or about 3.6 Salomika
units okay

this comment already show okay a lot of
activity illegal activity

a lot okay and this goes again against
the idea that everything occurs because
of sublimation souffle mentioned usually
thought not to be acted after three it's
a sonica units but here we're talking
about 3.6 okay so it's way beyond the
suit emission level but you still did we
see a lot of like our islands and and
being active around the nucleus so
something else is happening and what I
really suspect is happening is that this
is actually electrical activity I think

I mentioned back 2013 what I really did
not know that much

about comments but I suspected that I
said that if we really want to

differentiate between sublimation in
electrical activity we need to go far

away from the Sun but sublimation is not
in fact we need to remove that variable

and I think this is a particularly simple way that there has been mostly removed and we see still see a lot activity and I think this is a very important work they just came out this year what we have here is example I should work as an example of a limb let me prove so we actually showing you is IV characteristics both of you don't know where it is I mean this I've this is current and here will be voltage okay so this is a V current voltage curve and in this particular example why was done is the setup row of actually two probes extending out a particular distance for each other and a voltage was applied between these two probes in reference to the to the reseller instrument and then the current was measured between the two probes okay it's go a long way approach some of you might be familiar with it and we see here as a function of his sacred distance basically how far away the copy was from the Sun and also as a way as a function of commit committed distance how far was the actual Rosetta

probe from the comet so in this particular example we here we only see a few nano amps of current okay especially our positive bias what we see is that this corresponds to the solar wind because we actually seven thousand goes away from the actual comment so the solar wind has shows currents in an under a branch okay if we move a little bit closer in terms of discipline Sun in much much closer to the azure comment we see that this current actually increases from five to all the way to 20 plus nano amps if we again move a little bit closer to point seven five seven s Omega units and still close still within you know the coma of 67p we're seeing it to a much larger increase about a hundred nano amps and we're very close to perihelion window we are far away you know relatively speaking to 35 and 28 kilometers we see current about 15 micro amps so we see why large increment of current do all this means is that you have a lot of electrons and a lot of positive ions or in this case I guess

only we are measure on the electrons but
you could have to have both in the
vicinity of the nucleus okay today's
there is plenty of energy for these
elections there's plenty of ions
elections in the vicinity this is
obvious is gonna lead to collisions okay
and before I go to talk about chemical
collisions let me also mention the fact
that I've been talking about positive
ions and I'd be also talking about
electrons but there also was this
nanograins called clusters the actually
present so a 67p we have here we have
green energy the electron volts and here
we have sized and I just want I'm going
to concentrate on two types you can see
these columns over here this one for
instance about 50 nano nano meters and
you can actually see that we have this
much energy so we're talking about 10 to
the fourth electron volts so 10,000
maybe just a lot of energy involved I
wish you know involved with these
clusters so if we go a little smaller
size about fine and on the meters we see

that we're talking about a few hundred
it looks on both energy so nanoclusters
I also present now like I mentioned to
you they range from five hundred to ten
thousand of them before fitting the
upper 750 nanometers and from one to two
hundred four finally meters okay now in
in this work they have to settle within
a particular distance I don't recall
exactly baby was between he was not far
from from the nucleus and he please
oriented the probe towards the nucleus
and they begin to measure both positive
and negative ions and what they realize
is that the current find the Quint
detecting the positive ions they only
detect the negative ions so to be right
indicates basically argued that is just
an instrumental error which it could be
by way indicates to me is that I give me
an indication of ways the soft structure
or the electric fields around the
vicinity of 67p you need to be careful
with orientation okay if you take
thinking about the nuclear which is
negative charge I would suspect the

negative charge our electrodes would be actually moving away readily from the nucleus of ^{67}P so if such a make sense to me that you will read them you expect them to to sense them but the positive ion the net charge the net motion of them should be in the early direction and that's what we see a lot of protons in protons heavy metal ions Killian you know alpha particles they're all moving towards the nucleus and actually they could lie on the surface and they create a lot of sputtering right so so orientation is important and again is this corroborates the fact or maybe the fact the occupation that the electrons come out of the nucleus and the positive ions should be moving towards the nucleus now I'm gonna move a little bit to Lovejoy because I don't have it off daily with ^{67}P and what I want to highlight here is the most of these clusters which actually show allows creation behavior okay this is also certain people the analysis of what this creation

behavior what these particles are it's
not clear most of these are actually seen
is iron is in metal ions metal ions we
low ionization potential okay
the easy to remove electrons from and
because you have you have you have this
voltage field is applied voltage around
the vicinity might be I think it's
dynamic you have you will see these
minerals being removed as you know from
the surface basically lectures are being
stripped out and then you have these
left out of it you're just basically
destroyed the structure the lattice
structure of the minerals electrons
going one direction you have the
positive ions going in the other
direction and what is very interesting
is that because of the size of these
clusters we can attribute that to solar
pressure because they're large
it's definitely but they actually motion
they actually been accelerated towards
solar wind speeds so they go from a few
electron volts or a few below a few I
say a few miles per second velocities to

about 300 to 320 50 minutes I think the
meters per second excuse me meter per
second which is the solar wind speed so
they're being celebrated by electric
fields right the fields are present now
and again I used that as evidence of the
electric strip in a model that I present
the last time and to me that model
actually explains why we see a lot of
lectures which are due to due to to this
model and not to photo in this session
because their meaning that many works
that have been talked about there
indicates that there's more electrons
that should be allowed by photo
intersections well we have electro
stripping here behavior and this has
been observed with the odd on all the
comments as well all right so let me
move to something more interesting as
voltage driven chemical reactions so I
set up the table so I show you for
instance that we have strands separation
we have electric fields which oppressive
which are accelerating electrons and
positive charge

so what do they do well I mean what happens when you have all this together well what you're gonna happen is you can have collisions so let me let me briefly tell you show you our model of a car coalition is that you can have well you're gonna have either gas gas collisions or you're gonna have gas surface collisions and that's what we see so I want to talk about gas surface collisions and now I'm not gonna talk about gas gas gas gas collisions will occur in the coma okay but the gas surface collisions will come also in the coma but in dust grains and on the surface of the comet I think that's more interesting so in this particular model what we see is that the rate constant which is associated it's associated with a reaction cross section what I mean by rational cross section I don't know if you guys can see here but here we have a cylinder which explains this particle which is in motion and what we will do is the moves in this direction provided that you have all the particles in the

Byzantine well did we react
there would be a reaction so this is
what we call the cross section this is
the cross sectional area okay in the
kinetic the kinetic we basically talked
about the speed or reaction is being
controlled by this cross section now for
the reactions to occur for all for a
bomb to form okay you need to have the
right energy you also have the right
orientation but I guess I want to
highlight is in this in this in this
slide here is that the kinetics also
follow is called the Maxwell Boltzmann
distribution which as shown in this
graphic over here where I have the
number of particles as a function of
kinetic energy and only the particles
which are this end here had enough
kinetic energy for them to collide which
will lead to potentially a chemical bond
okay it didn't have enough energy mister
nothing's gonna happen it just bounced
off okay and you can see there is a
function of temperature if you increase
the temperature you also increase the

amount of particles available for
collision okay and there is a barrier
which we call the activation energy okay
so the this is based on temperature okay
show you here is
like I said the kinetics are based on
temperature this is K it refers to K
is the Boltzmann constant and T is
temperature in kelvins so you can see
here you also hear here so it is
connected okay now what do you biggest
I'll say challenges for chemists okay
after chemist husband is I've been the
fact that we use you see Allah chemicals
on our talents and our reactions occur
not only in commerce but also in space
and they cannot really explain it
because the temperature is not high
enough alright just not high enough so
if you only talk about you only look
about the temperature model okay and
what mean by temperature is only given
by say solar radiation you know that UV
light my photos will be enough energy or
I cannot think anything else in space
that can actually provide energy so if

you find way from stars questions well
you don't have a source of energy so
temperature is wrong but you see
chemical reactions so what's happening
here okay and this is what I want to
mention to you guys that you need to
have the right angle if you had the
right angle this no reaction well
there's a problem here okay but okay but
this can be solved because I just show
you that we have a lot of super thermal
electrons so the energy of required for
collisions to occur is actually be
giving out or provided or granted I see
well call it by the electric fields okay
which is due to stress separation so
electric fields give the kinetic energy
necessary food for ions in elections to
react and they accelerate obviously both
positive and negative particles we also
have surfaces okay in comments silicates
metallic organic surfaces that are
allowed there which provide or can
catalyze these reactions okay
and this is not temperature dependent
definitely that temperature dependence

so forget about temperature forget about
the fact that you are in a cold area of
space because

have four actions I suppose you have
energy fields okay so we still apply
collision theory because the particles
have kinetic energy but is given by
electric fields not solar radiation okay
so this allows us to do chemistry
and not to worry about temperature I
think that's a very powerful situation
and I'm gonna end up my talk by talking
about a one particular type of reaction

the early rate of the reaction
this is a gas surface reaction I will
talk about two cases and I just just to
remind you that we have particles those
particles in the interstellar medium
all different sizes so the reactions can
occur definite can occur over there I
say also current surface all right so
conditions necessary for for this
particular reaction which we talked
about the formation of deuterium
deuterium is a compound basically water
it's called but it just have one of the

hydrogen actually has a neutron so it's
a behavior we have again for the
previous work we have water ions okay
ice elevated between 120 to 800 electron
volts and we also have what's called
coal oil between 10 and 50 electron
volts so these are available potentially
a reservoir higher audio Tyrian this is
not collaborated this is just a
supposition okay I really it's not
really clear that the minerals on comet
67p are reaching to turn okay but this
work was done in the lab okay but we do
have know for instance this on the
theory which in solid organic matter is
being shown to be available in comments
but not see to 7p but you only need you
need to have these requirements which
potential available in common cmp to
show that that squeezed because come see
design p has a ratio corresponding to
this is a deuterium to hydrogen ratio
5.3 plus or minus 0.7 10^{-4}
okay this is extracted from deuterium
how to call this outgassing versus water
outgassing

but you also say due to information
versus white information because it's
not clear if these two species actually
are gassing or being formed in situ so
you take water you take the Tyrian and
you get a comparison if you want to look
at it in terms of something that makes
more sense we talked about liters per
second or being a being formed deuterium
about 12 liters per second versus 17
point seven thousand seventeen percent
thousand liters per second water that's
being formed per second okay these
numbers are being instructed on based on
spectroscopic data now in this
particular model and then we bore you
here little bit with chemistry here but
it's actually simple we have a surface
which is reaching the Tyrian you can see
the duty right here
okay so that represents this grain that
I talked to you about and if you have
water ions put the rice with the correct
energy then it will form a complex shown
over here okay and these complex which
is the intermediate species then

separates into a deal

Tirion iron and another pageant nearly

charged iron here okay now this is

something I already mentioned

now this can happen okay so it shouldn't

happen in the lab it should happen in a

lab okay and this is the the graph or

the image to prevent the graph we have

excess energy this is how much energy is

being bounced off from the from the

nucleus and here what I have is the

incident energy of the incoming ion so

let me see what it is you have a surface

which is made up Latin which has been

those with the Tyrians they have a

surface

we allow deuterium in here I have a gun

that projects water islands I'm heating

the surface

what irons also stop happening all the

different boiled tiles go to a mass

spectrometer so I know what they are and

so here is a graph that shows different

species the form

okay all the other species of form and

the one that we're actually looking at

what the interested in would be the one
in red which is so where we here so all
the species you feel actually formed in
the lab ok and so you make the
assumption that okay if the conditions
are giving in the lab if you look at the
comment the comment also has similar
condition it can happen doesn't mean
they're happening it can happen
all right but I like this approach even
though I you see that is a limitation
here but I like it because because is
lab work they can be repeated okay it
can be repeated now I'm almost at the
end here on my talk this is another
example this is for molecular oxygen it
follows a similar idea you have a
surface here but this surface now is
reaching oxygen
now that we know right we know silicates
we have hydroxy groups on a surface
we are also disallow oxides so that we
know is correct for this event P for
allowing on the comments and so we have
incoming water iron again interacts okay
with the surface its tracts the oxygen

okay eventually you get a subsequent reaction that gives you molecular oxygen

okay this is a little more difficult for me to understand okay but it can happen all right

and again what I really like about this is that the conditions are there

incoming electron P is happening in the lab okay we know that the water the the water cations have enough energy they did because did you know given by the electric field so this can't happen right this can definitely happen and here's the evidence shown again this is the energy of the incoming particles they're being detected by mass spectrometer here is a the amount of energy would you put in the park of hitting the surface again the surf in this case is planning we oxygen so as you can see in the lab this is idealized this is not how I was expecting it is happening in space but this is idealized but it's a good start okay this is a good start

and we actually see molecular oxygen

which is in black actually being formed
okay you can see there's a linear
connection between a the amount energy
that the incoming ion will have and the
energy that we it will come out okay so
it's a very interesting situation but
there are limitations for this model
okay so I just show you okay you know
you can have reactions in there the
collisions are there but there's
something that is there is contradicting
here so this is this is a piece
paragraph from the author's book
actually see here for instance he says
the whining ions in the extended
commissariat towards the nucleus here we
know that okay in the cross it's
actually dehydrated so where the water
molecules coming from so I really don't
understand that part okay because okay I
mean we are you know we are trying to
figure out what's happening but I think
it's best to start explaining where the
water is coming from first okay and then
once you understand what the water is
coming from okay you can say yeah we

have plenty of them and then we can actually you know say that they are actually hitting the surface or hitting the surface of the nucleus or here the surface of the different dust grains and these reactions are occurring so there are limitations to this model I would suspect that the water molecules for this to be explained and they can do it in the many labs like actually do this and I hope that they can go forward and do it I do not have the to do it myself I don't have high vacuum equipment to do it and I'm gonna end up by give you an illustration or not only the model but she's scientific limitations okay so there's this work done on comment on Lovejoy this using infrared spectroscopy okay and look and let me show you this so here's Lovejoy okay he is preparing helium and prepare helium that the experiment was done using radio waves okay post perihelion the experiment phosphor helium was done using infrared

spectroscopy two very different techniques okay

and so I mean you know it's difficult for me to look at this data because I have here production rates for deuterium tertiary for water and they are looking at the ratio over here and this is how much it is versus the vienna standard mean ocean water basically if you look at the ocean on earth this is the ratio they used you will see between deuterium to water point in iron okay now if we look at infrared data I see different portion rates but let me have a concentrate only on the vienna standard mean ocean water to do Tyrael to water ratio very different so point a 91.9 for the authors went on and talked about this you know they tell us whole publication about this now these guys are actually very honest and they explain that how can we do this I mean this is this is one technique to me these apples and these oranges if you want to do a comparison paper a helium possibly Helio we need to we need to

fill the gaps over here we don't and the authenticity was happening when we allowed data that we see for either astronomy cosmology for you there's not enough at least from my perspective as a training so the legal chemist so I'm training I'm looking at data and I need to have differing instruments looking at the same thing they agree okay now I'm I'm satisfied but I don't see that much happening in these fields besides the Rosetta and when I look at Rosetta I mean I read that maybe like 50 papers they all concentrate on the own little field small little feel and so I think that's the that's the biggest problem that we see is that we and this one for shown in cosmology we just don't have enough there's not enough data out there for us to begin to see the bigger picture and so just to show you okay look at the spread or the th water ratio when you look at cichlid of all the different reports this how it looks like okay it's quite they say to be isn't

complete we need we need more data we
need more simple population to actually
come up with a conclusion so to finish
up take-home take-home points here like
to feel the pressing that we seen to
commence a Steven P these are used to
provide kinetic energy for irons any
lectures and I could give you an example
of gas surface reaction and the previous
talk I talked about actually plasma
reactions the corona discharge which
again can be occur because you have
electric fields and I'm just going to
end out here saying the crew meteorology
instrumentation is lacking it's nice
efficient we don't have enough well I
thank you for your attention this all I
have to say today

[Applause]

[Music]

you

Welcome to Space News from
the Electric Universe,
brought to you by The
Thunderbolts Project™
at Thunderbolts.info
21st century astrophysicists
hold to an astounding belief
that purely gravitational
phenomena are the cause
of unfathomably powerful electromagnetic
energies and emissions in deep space.

Consensus scientific theory maintains
that mechanical and kinetic processes,
collisions, explosions, gravitational
collapse and heating
produce mysterious magnetism which
causes the measured electrical effects.

From the extraordinarily
densely packed neutrons,
which are thought to compose
magnetized spinning neutron stars
which produce pulsing
radio and X-ray emissions
or supermassive stars
going supernova
collapsing into black holes and producing

extraordinary gamma-ray bursts
or the nearly infinite
compression of matter
that is thought to
constitute a black hole,
these theoretical phenomena
have been exhaustively codified
through mathematical modeling
and supercomputer simulations
and imposing sums
of taxpayer money
have been spent on the most
sophisticated technologies
resulting in tweaks to the models
rather than testing alternatives.

What experimentalists observe
in nature and the laboratory
is of secondary importance in
gravito-centric cosmology
whose symbol of genius
remains the mathematician.

No clearer example of this can be seen than
in the standard astrophysical interpretation
of the largest scale lightning
observed in the universe.

As we will see,

lightning is indeed
the only valid interpretation
of the spectacular phenomena.

In our recent installment
of our series,

The Top 10 Reasons the
Universe is Electric,
we discussed the "mysterious
nature of cosmic jets".

From the light-years long filamentary
jets of so-called Herbig-Haro objects
to extra-galactic radio jets that stretch
for hundreds of thousands of light-years
and even beyond,
what mechanism is capable of
producing these high energy jets
across such
spectacular distances
and what confines the jets
and prevents the material from
dispersing in the "vacuum of space"?

Astrophysicists have never
successfully explained the phenomena
and a new scientific
report only underscores
the desperate need for

new theoretical pathways.

On October 16th, 2017, the website phys.org reported on the cosmic jet of a quasar that stretches for an incredible 300,000 light years.

The report begins by misrepresenting a popular theory as an unassailable fact.

It states,

"Quasars are galaxies with massive black holes at their cores."

From this one belief it seems inevitable that only confusion can follow.

The report describes scientists' ongoing struggle to explain the X-ray emissions of the collimated bipolar jets from quasars as follows,

"Even after more than two decades of study, however, there is still no clear conclusion as to the physical mechanism actually responsible for the X-ray emission."

On the jets' electrical nature, a vital clue is found in the report's following statement,

"Both the magnetic field strength and the particle velocities

are (remarkably) quite constant all along the length of this jet..."

Of course, both the constancy of the jets' particle velocities and magnetic field strength are the undeniable hallmarks of lightning.

However, since astronomers hold to the unbending belief that electricity causes nothing in space including unfathomably powerful electrical discharges, the confusion only deepens with ever finer technological data.

A perfect example can be seen in a 2015 NASA Hubble report which describes a so-called shock collision of mysterious knots inside a "black hole jet".

A Hubble time-lapse video shows the knots in the jet which form like "pearls on a string".

The report begins, "When you're blasting through space at more than 98% of the speed of light, you may need driver's insurance.

Astronomers have discovered for the first time a rear-end collision between two high-speed knots of ejected matter."

The report continues, "Such extragalactic jets are not well understood.

They appear to transport energetic plasma in a confined beam from the active nucleus of the host galaxy.

The new analysis suggests that shocks produced by collisions within the jet further accelerate particles and brighten the regions of colliding material."

Of course, the collimated and knotty form of the jets are the well-documented signatures of electrical discharges in plasma.

As we will see as we continue, it is not a coincidence that both stars and galaxies form like pearls on a string and the plasma filaments connecting galaxies are now a subject of growing

scientific investigation.

In the Electric Universe it is not a supermassive black hole at the center of a galaxy but a doughnut-shaped object called a plasmoid which unlike a black hole has a proven physical reality.

In plasma laboratories on Earth, a plasmoid is an ultra-high density energy storage phenomenon.

Electric currents flow equatorially inward to the plasmoid where energy is stored electromagnetically.

The Electric Universe model proposes simply that so much concentrated energy is stored in the galactic plasmoid that it may be the compact source whose mass is attributed to a hypothetical black hole.

As the plasmoid's charge density increases along the axis of the "doughnut", it creates the well-known plasma feature called a double layer

which can explode or
release energy axially
in the form of cosmic jets and
other spectacular emissions.

The scalability of plasma phenomena is of
course paramount in cosmic investigations.

The Nobel Prize winner and father
of plasma cosmology Hannes Alfvén
proposed that plasma phenomena can be scaled
to an incredible 28 orders of magnitude.

In fact, in 1986 Alfvén spoke
at a NASA sponsored conference
on the astrophysical role
of double layers.

He stated,
"Double layers in space should be classified
as a new type of celestial object
(one example is the
double radio sources).

It is tentatively suggested
that X-ray and gamma-ray bursts
may be due to exploding
double layers."

In the aforementioned
NASA report,
the authors proposed that heating

and mysterious magnetism
are responsible for the jets'
velocities and collimation.

They state,

"One theory is that material
falling onto the central object
is superheated and ejected
along the object's spin axis.

Powerful magnetic fields constrain
the material into a narrow jet."

But of course, super
heating alone

does not explain the origins and
extraordinary velocities of the jets;
and why the magnetic field should
exist at all to confine the jets
remains completely unexplained
in standard theory.

As we've outlined in
many recent episodes,
cosmic scale magnetic fields
were, until very recently,
considered to be "not important"
in standard astrophysics.

So it's not surprising that countless
scientific reports in the last decade

feature expressions of surprise
and perplexity from astronomers
who are detecting magnetism
everywhere throughout the cosmos.

The perplexity must continue
until astronomers integrate
a simple law of physics:
electric currents
produce magnetic fields.

Today we are seeing the inevitable confirmation
of the electrical nature of cosmic jets.

As we've reported previously,
in 2011 a team of scientists
measured the electric current
in the jet shooting
from the galaxy 3C303.

They estimated the strength of the
current at 10^{18} (10 to the 18th power) amps
or the equivalent of a
trillion bolts of lightning.

Of course, the team still holds to the
theory that a supermassive black hole
ultimately produces the
spectacular electric current.

But, as we've also
recently reported,

at an even greater cosmic scale

it has become undeniable

that the electrical cosmic jets

have nothing to do with black holes.

In 2016 a Royal Astronomical Society press

release reported the discovery that

"...supermassive black holes in a

region of the distant universe

are all spinning out radio

jets in the same direction..."

A lead investigator, professor

Romeel Dave said of the findings,

"This is not obviously expected based on

our current understanding of cosmology.

It's a bizarre finding."

The problem for proponents

of black hole theory

is that, at these incredible

cosmic distances,

no mechanism exists to affect

the directionality of the jets.

Unfortunately, rather

than pausing to question

the very existence of the

hypothetical black holes,

which have never been

observed by anyone,
the researchers proposed the ad-hoc theory
that the spin alignment of the galaxies
must have somehow occurred
in the early universe
causing the black holes to
spin in the same direction.

But in the Electric Universe, such cosmic
alignments are in fact predicted and required
if the dominant organizational
force is electromagnetism.

Space, across the vastest
cosmic distances,
has a substructure of
twisted-pair current filaments
with stars and galaxies forming
along them like pearls on a string
and having their spin axes
aligned along their filament.

Science discovery continues
to confirm this prediction.

In 2015, scientists using the
Herschel Space Observatory
reported the detection
in unprecedented detail
of filamentary structures

throughout the Milky Way galaxy.

A phys.org report

states of the finding,

"...One of the key aspects that

emerged from these observations

is the presence of a

filamentary network

nearly everywhere in our

Galaxy's interstellar medium.

The picture that is emerging

is that these structures

are closely linked to the

formation of stars."

The principal investigator

of the survey stated,

"The greatest surprise was the ubiquity

of filaments in these nearby clouds

and their intimate connection

with star formation."

The picture of proto stars forming due to

gravitational collapse in molecular clouds

is now falsified by

direct observation.

Instead, stars as well as galaxies

form like pearls on a string

which we must find if the

electromagnetic z-pinch effect
is responsible for
star formation.

The tell-tale signature of the electric currents
that confine the star forming filaments
was also detected in the
aforementioned study.

The principal investigator
said of the finding,

"These observations
revealed that filaments,
which may extend to several
light-years in length,
appear to have a universal width of
about one third of a light year.

This suggests that something
fundamental is lurking underneath."

As previously stated, the
universal width of filaments,
which is completely unexpected in
standard reasoning, is not coincidental.

On Earth, constant
width is observed
in the most powerful natural
electrical discharge phenomenon

- lightning -

In fact, for many mysterious
astrophysical phenomena
it is lightning that works as the
most promising natural analog.

We then ask the question:

if Occam's razor were actually
applied in astrophysical circles,
would consensus theory remain
that gravity is the most likely,
that is to say,
simplest explanation

for the undeniable stupendous
electric currents in space?

On our own Earth, the phenomena we
experience in nature and the laboratory
may surely help demystify the ongoing
mysteries in our electric universe.

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The following presentation is an adaptation of the Stephen Smith Picture Of the Day article, "Plasmoids are the Power". The link to the article may be found in the description box of this video.

What causes energetic emissions from galactic cores? According to a recent press release, there is a so-called "supermassive black hole" at the center of the Milky Way that is tearing stars apart and flinging the remains into space at speeds of 10,000 kilometers per second. The shredded stars then coalesce into planet-sized objects with masses that can exceed 2×10^{37} kilograms, or as much as ten Jupiters. It is not from observational data that the concept is derived. It is from computer models designed to simulate someone's idea about what might be going on with the supermassive black

hole Sagittarius A (should such a thing exist). Eden Girma, an undergraduate student at Harvard University wrote: "A single shredded star can form hundreds of these planets-mass objects. We wondered; where do they end up? How close do they come to us? We developed a computer code to answer those questions." There are thought to be thousands of "free- floating" planets wandering through space.

Why? It is because of how stars and planets theoretically form.

Protoplanetary disks, as consensus understanding sees them, are prone to collisions among their evolving clumps of matter until they settle down into stable arrangements. Some of those clumps condense into gas giants or rocky bodies, while others are destroyed. However, astronomers believe that many of these new planets are subsequently expelled from their systems.

The literature suggests that free-floating planets might exceed the number associated with stars. The ultimate answer, though, is that they do not know.

As the announcement from Harvard University states: "those newly minted planets are probably different from those that evolved 'naturally'". The researchers borrow a term from Carl Sagan, and state that they are made of "star-stuff", so their ingredients will not be the same because different parts of exploded stars will form different planetary objects. The question is, how to tell them apart?

There are significant problems with both ideas, protoplanetary evolution, as well as black holes, in general. Black holes cannot be seen by the most powerful telescopes and radiation sensors, but astrophysicists continue to maintain that they exist because of their effects. They assume that matter is accelerated and compressed until it is "spaghettified" or stretched inside the so-called "event horizon" until it is torn apart and reconfigured into more "rogue planets". Since almost all (more than 95%) of galaxies are said to be home to one or more black holes,

they might all be shooting
"spitballs" at us from vast distances.
Since matter spins around a black hole at
extreme velocities, consensus opinions
state that it heats up from friction,
generating X-rays and ultraviolet light.
It is those emissions that are
interpreted as indirect evidence for
black holes. Previous Pictures of the Day
take issue with both aspects of this new
computer model. The terminology, itself,
is highly speculative and ambiguous.
Protoplanetary discs and gravitational
tides, for example, are invoked in order
to explain how stars are destroyed and
remade. To say that X-rays and
ultraviolet light in space are created
in gravity fields is to betray an
ignorance. Experiments in the laboratory
create those energies by accelerating
charged particles in an electric field.
There is no experiment that can provide
evidence for matter collapse to
"near infinite density". Rather, Bennett
pinches (or z-pinches) in plasma-
state material

form plasmoids that then become stars.

When the electric flux inside double layers within galactic circuits gets too high, there is a sudden "short circuit" that draws energy from the surrounding space.

That energy could be concentrated from hundreds of cubic light-years and then discharged in a burst of cosmic lightning, generating X-rays or flares of ultraviolet light. X-ray radiation from a plasmoid in the Milky Way's heart is the same as from stars undergoing strong electrical stresses. A plasmoid is a charged particle accelerator, so electrons spiral in the electromagnetic field and give off X-rays. The diffuse currents then flow toward the galaxy's equatorial plane and spiral back toward the core. In an Electric Universe, electromagnetism is more than able to create celestial phenomena, without the supernatural physics of supermassive black holes.

Plasma discharge events are commonly known to generate high energy light. The greater the electric charge flow, the higher the frequency of light will be

emitted. Supply enough power and even

gamma rays are released.

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Welcome to Space News. This is Andy Hall,

and over the course of the past year

I've been presenting a multi-part

series called Eye of the Storm.

Eye of the Storm presents a case study

for how electrical forces shaped the

Colorado Plateau and its surroundings.

In this tenth and final chapter, there

are a few things to conclude and review in

summary. What we've done in these chapters is

reverse engineer the Earth, starting

with outside layers and peeling inward,

following the patterns of electrical scarring.

We logically assumed circuitry is the

fundamental structure of the planet

since that is the very structure of life,

energy and the cosmos in general. Abstract

theories for cause and effect aren't needed,

when the patterns of nature are laid bare for

us to see, repeating at every scale and every

structure in the universe. We merely need

to recognize what makes the patterns.

In the case of geology, it's not just gravity, the mist of time or coincidence, it's the diffusion of charge in an environment of extreme electrical stress.

Meaning, in the case of the Colorado Plateau, a huge potential difference between the Earth and something else.

Charge diffusion means there is a circuit.

Whether an element of charge finds a bond in atomic structure, or drifts in patterns formed by fields, it has to move. And that motion is subject to a myriad of emergent influences; but it is always patterned in the most fundamental way by the coherent influence of electrical circuitry. Whether a chemical reaction or a thermodynamic cycle, dissect it down to the quantum level.

And it's all electromagnetic circuitry and as a result we can look at the planets and stars in the solar system and see the same effects at play over and over. If a planet has dead circuits, like Mercury or the moon, facing a high potential, it responds to static charge buildup on its surface with explosive discharges that leave it pockmarked with craters and rilles.

The evidence is overwhelming, as anyone who reads Thunderbolts knows.

Then there are planets that used to be alive and are now dead, like Mars or those in the process of birth or death, like Venus. And there's a bunch of debris from planet formation and electrical interactions orbiting the Sun. But if a planet is alive, with an atmospheric crust enveloped in a self-amplifying magnetosphere, and sustained resonant feedback with the solar system, it must have energy flowing through that crust and atmosphere, storing inside it, making it a spherical capacitor.

Weather and geology is driven by this capacitance.

That is pure logic and physics, once it's recognized that Earth and the solar system are circuits. Correlations can be drawn because circuitry acts the same regardless of what planet it's on, depending on type. Hence, we can see Jupiter's storms being motivated by circuitry and correlate actions of turbulent wind with geologic patterns on Earth, and draw conclusions about the common cause.

We don't have to theorize, we just apply known science. Mountain structures,

shaped by sonic shock waves, provide the biggest evidence of all the Electric Earth theories presented in the Eye of the Storm.

If tetrahedrons and other features produced by shockwaves in a wind tunnel, precisely match what we see in geology, and if there is no other demonstrable process that can produce the same features, that is astonishing evidence that supersonic plasma winds built mountains. If supersonic plasma winds are acknowledged, then the planet's voltage rise and other circumstances required to create them have to be acknowledged as well.

And that brings all the other electrical processes described in Eye of the Storm into play, because they are inevitable consequences of charge diffusion under those circumstances.

Consensus science has decided tetrahedrons result from a combination of faulting, uplift, water erosion, and huge spans of time.

They have no empirical proof; they have no proof whatsoever that water erosion can produce repeating harmonic and nearly perfect geometric

forms, like these shown here, and many others presented in earlier chapters.

Water erosion simply cannot be that consistent.

And the earth scientists merely have an unverified hypothesis they represent as fact confirmed by consensus. And they ignore the patterns. Ignoring the obvious is scientific malpractice.

These forms are without doubt from sonic shockwaves. Tetrahedrons are formed in the separation bubble of a reflected shock wave.

it's a region where a tetrahedral zone of low pressure forms. This low-pressure zone attracts neutral and ionized dust, like a vacuum cleaner equipped with an electrostatic precipitator.

The separation bubble is electrically and pressure-polarized from the incoming plasma winds, causing static electric attraction of ionic dust. There are also magnetic fields to attract ferrous materials in identifiable bands and sheets

that conform to the shock patterns. On an Electric Earth, the means and mechanisms are all there to form mountains. Wind, water, dust and electrical bonding. Wind, water,

earth and fire. Mountain features match
shock wave forms in excruciating detail,
far beyond the unambiguous tetrahedral
shape of the saturation bubble.

There are harmonic frequencies, unstable
waveforms, subsurface reflections,
constructive and destructive interference
patterns, and expansion fans found in geology.

Not once or twice, coincidentally,
but over and over and over again.

All are empirical proofs, because the same
features have been produced in supersonic wind
tunnels for decades. That said,
exploring mountains and
researching the Electric Earth,
is like an Easter egg hunt,
with surprising evidence around every bend.

Sometimes the evidence is so cool, so
unexpected and so hidden in plain
sight, that it knocks even my socks off.

So in this final chapter of Eye of the Storm,
I'd like to share my three favorite easter eggs.

This is a photo of the Dragoon
Mountains in Southern Arizona.

Historically, the Dragoons are
famous for Cochise Stronghold,

a maze of rocky defiles where Chiricahua Apache raiding parties eluded capture from United States soldiers during the Apache wars.

The Chiricahua chief Cochise was a recognized genius at guerrilla warfare, and he used the Southern Arizona terrain strategically to stage raids and then vanish. He's supposedly buried somewhere in those rocks above the Stronghold. If you look at these ragged pinnacles and sheets of rock, stacked together like triangular dominoes, you might be tempted to agree with geologists and say, 'Gee, it must have taken millions of years'.

But I can show you it happened pretty quickly. The evidence is in this monolithic granite tetrahedron. The tetrahedron has a drip on it. A drip, meaning the tetrahedron was deposited as a viscous mass, like candle wax, or hot fudge. The drips are highlighted in the next image. Directly above the drips are pillow-like rocks, capping the crown of the tetrahedron. The pillow rock, above the drip at far left, is broken. It's not a volcanic lava flow. These rocks are granite and must have

under pressure deep underground for
immense time, according to science.
These fluid forms have been exposed to
atmosphere since they were made,
because you can't have free flow
under tons of overburden pressure.
It's not that it's unusual to see
fluid shapes in granite boulders.
Granite rocks show fluid puddling,
settling in drop configurations all the time,
even drips. But they are always
broken and hard to discern with a photo.
But this one, this one is huge and so obvious.
At the base of this drip there's fluting,
where the falling, sheet-flow of fluid solidified
in motion, like the mineral deposits from sheet flow
on cavern walls. Below the end
of the drip are splatters and drops
that fell free and landed on the rock face
below. A boulder with a runny nose makes no
sense in consensus geology. So they
ignore such a thing or insist it's not fair.
But it is. It is one minor confirmation of Electric
Earth theory. It also presents loads of information
about how it happened in the
environment on Earth at the time.

The elongated pillow rocks are
at the tip of the tetrahedron
and therefore they constitute some of the
last matter deposited into this separation
bubble. This matter was deposited in a fluid
state and it cooled into a crystalline matrix
of granite from the outside in.

Like candle wax, it formed a skin
that retained heat inside it,
keeping the inside molten for longer.

They are also at the top of the
tetrahedron and stayed hot longest,
because they had the massive rock
below them radiating through.

It likely took years for this rock mass to cool
down. The pillows hang over the leeward side
of the tetrahedron, so the wind was from
behind, pushing them over the edge,
elongating their shape like water balloons. The
separations between rock is where shockwaves
charged with current, evaporated material away,
or prevented it from depositing, leaving gaps.

Shock waves in this environment were not
only from the winds shearing and deflecting,
but also explosive lightning
strikes and reverberating thunder.

They tend to electromagnetically align parallel and orthogonal, since the winds themselves were aligned with electric fields and the shock waves carried current.

The rock shrank as it cooled, creating the pillow shapes. The largest pillow drop burst, leaving a broken pillow and its content spilled out in a stringy drip.

In fact, the top of the broken pillow displays lightning scars that likely caused the pillow to break and drip its viscous guts before it completely solidified.

Other pillars squeezed out their fluid like toothpaste. I show this example because it illustrates the kind of confusing geologic detail

Electric Earth theory can explain with ease, proving it's not really confusing at all. It just takes breaking through the matrix of false paradigm and looking with fresh eyes. It also gives a sense for the way matter was flying through the atmosphere.

There was a fire hose of hot silicon in the plasma wind that formed the Dragoon mountains. It formed like Jell-O in a mold as ions recombined in the suction of separation bubbles.

To be clear, this mountain building event

occurred in Earth's primordial paths

near the end of a period when the

continents were forming.

There are mountains chockfull of

fossilized dinosaurs and sea life and strata

of this age. But no evidence of man. There were

severe plasma storms in human history,

but not filled with a fire hose of molten silica.

Ancient people did experience coronal

storms due to some planetary conflict in

the solar system. Ancient myth is pretty clear

about that. They must have been less powerful

however, than what's been described here,

yet still carried much more punch than

they do today. And this next

Easter egg tells that [Music] story.

[Music]

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info today we continue our report on the first scientific papers on the Rosetta mission to comet 67p as noted in the previous episode comet scientists and the science media continue to hold to the traditional story of comets one basis for the scientists purported confidence is the discovery of evidence for water production and cometary comas however the electric comet Theory offers an alternative explanation that may better fit the available evidence let us briefly look back to July in August of 2014 when the Rosetta team reported the first of many unexpected discoveries the average surface temperature of the comet was about minus 90 degrees Fahrenheit a surprising relatively warm reading as noted on the Paris observatories website these temperature measurements have been compared to temperatures of a theoretical model of a comet consisting mainly of water ice the temperature

measured on comet 67p ECG turns out to be 20 to 30 Kelvin higher than the temperature expected for an icy body in August the team was also surprised to learn that the comet whose surface revealed no water ice appeared to be producing a relatively large amount of water in its coma while still a vast distance from the Sun they were then surprised to learn that the most energetic Jets originated at the Comets neck which is frequently in shadow and is the coldest region on the nucleus which means it should be the least active region if solar warming is the cause of the Jets in October scientists at the University of Bern reported still another surprise the comet was producing an amazing abundance of rich molecules much too far from the Sun to explain as sublimation from solar heating neither these discoveries nor the desiccated appearance of 67p s rocky terrain remain mysterious if the Comets production of water molecules is an electrochemical

process as the electric comet Theory has always maintained

we know that in recent years several scientific papers have provided evidence for the production of water in minerals due to interaction with the solar wind while Thornhill explains why the findings of the Rosetta mission have only strengthened the case for the electrol chemical production of a comet's water it's reported that both atomic hydrogen and oxygen have been detected close to the nucleus and vary with time probably stemming from electron impact dissociation of venting water vapour but this is evidence in support of an important prediction of the electric comet model the cathode discharge from the comet energetically strips atoms from surface minerals in fact we can expect anomalous abundances of neutral atoms and negative ions close to the comet nucleus compared to the more complex molecules like water and carbon dioxide that are supposed to be driving the Jets also the dust to gas

ratio is higher than generally accepted
for comets this too fits with the idea
that the dust is being electrically
sputtered from the surface and doesn't
need to be exclusively driven off by gas
less than 1% of the 67p nucleus surface
is needed to explain the water gas
production rates if water ice were
located on the surface however no ice
rich patches are observed indicating a
generally dehydrated nature for the
surface currently illuminated by the Sun
this is supported by a more recent
report in nature that comet dust grains
collected by Rosetta shattered on a
target plate showing that they contained
no water ice so it suggested that the de
surface dust grains have been drying out
since the last perihelion passage and
when the Comets activity increases in
coming months that surface layer will be
blown away and the dust is expected to
become more ice rich I don't think so
the Comets activity is an electrical
discharge phenomenon that will become
increasingly evident as the comet speeds

up towards the Sun the gas concentrations don't always vary as the sunlight falling on the comet changes this is taken in ad hoc fashion as evidence that they may be due to heterogeneous concentrations of different ices however cathode sputtering of charged particles from the comet's surface doesn't rely on sunlight and gives rise to complex electrochemistry that varies with the minerals at the focus of the arc and being a fragment of a planet surface we should expect heterogeneity of these minerals it doesn't require more ad hoc additions to theory of early transport of cometesites in the solar system and incredible collisions without fragmentation comet 67p doesn't look like a body formed by collisions the microwave instrument on the Rosetta orbiter Miro acquired maps of the subsurface temperature of Comet 67p and spectra of water vapour to researchers surprise the highest water densities are often observed above shadowed neck

regions where the nucleus surface and subsurface temperatures are low on the other hand low water densities are measured above some illuminated regions on the body and on the head supporting the electric discharge model much better than solar heating

discordant measures of deuterium to hydrogen ratios and isotopic abundances of solar system bodies denied the story of the formation of the earth and its anomalous abundance of water it's further evidence against the four and a half billion year long myth of earth's history instead it supports a blended solar family are very different planets each with their own unique history in our electric universe the rosetta mission has not begun to explore our origins finally it's important to understand the origin of modern comet theory it's centuries-old in the general history of nature and the theory of the heavens

17:55 Immanuel Kant laid out the nebula hypothesis in which he deduced that the

solar system formed from a large cloud
of gas a nebula he thus attempted to
explain the order of the solar system
seen previously by Newton as being in
opposed from the beginning by God this
is the unscientific dogma behind our
story of comets the big bang story is
also a fanciful rehash of Genesis as
Arthur Koestler wrote the cosmology of a
given age is not the result of a uni
linear scientific development but rather
the most striking imaginative symbol of
its mentality the projection of its
conflict prejudices and specific ways of
doublethink
on to the graceful sky in stark contrast
the electric universe is founded
empirically on forensic investigations
into mankind's entire eyewitness history
of comets which shows finally that the
archetype of all comets was gigantic
planet size and identified globally as
the planet Venus it was the celestial
fire-breathing doomsday dragon with the
planetary ball in its clutches this
worldwide evidence destroys it a stroke

the nebula and Newtonian four-and-a-half
billion year old clockwork story of the
solar system it shows that comets can be
any size and are essentially planetary
matter and according to the ancient myth
or histories these errant planets hurled
Thunderbolts of the Gods to avoid
collisions their cometary glow discharge
faded as they settled into peaceful
orbits Venus's dark current cometary
tail still stretches to tickle the earth
at inferior conjunction and Venus now
has the most circular orbit of any
planet in the solar system born in a
cosmic Thunderbolt during a recent
chaotic episode between the planets
Comet 67p my only television and the
electrical sculpting of that berth the
odd shape sharp features and cratering
are hallmarks of such an origin
hopefully comet 67p will be the rosetta
stone that opens up the real history of
the solar system
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The Electric Universe

-- A Study in Contrasts --

Contrasting viewpoints are the fuel

for progress in all human inquiry

'Vive la différence'

A gravity-driven structure?

Crab Nebula

Or electric discharge?

Crab Nebula

A contrast can highlight predictive ability

when alternative explanations are at stake.

"When astronomers detected intense radiation pumping out of the Crab Nebula, one of the most studied objects in space, at higher energies than anyone thought possible, they were nothing short of stunned."

What difference does it make

whether a planetary nebula

is a cloud of neutral gas or a

cloud of electrically active plasma?

We see the signature of electric currents in the

structure of luminous threads or filaments.

In the vacuum of space, coherent

filaments are not even conceivable

without energetic electrical

and magnetic activity.

A plasma is defined by the presence
of freely moving charged particles.

Electric currents can transport
huge amounts of energy
over virtually unlimited distances,
just as in the power grid,
where the lights of cities are
far away from the power plants.

In space plasma, this energy of electric currents
can suddenly appear as glowing streamers
and even erupt in intense outburst, all
depending on the electrical conditions.

Many filamentary nebulae are remarkably
similar to energies of dense lightning
both in storm clouds and
in volcanic eruptions.

That's not a coincidence.

Filamentation is commonplace in laboratory
experiments with electric discharge.

It's often stated as fact that a
galactic jet is powered by a black hole
but jets from galactic cores
were explained electrically
by the father of plasma science, Nobel
laureate Hannes Alfvén, decades ago.

Does it make a difference whether a black
hole or an electric discharge drives the jet?
Well yes it does, because our entire
understanding of what keeps the universe going
arises from questions such
as this and others posed here.

Each year, scientific
exploration take us deeper
into the electrical nature of
events across the cosmos.

Please join us as new insights
into the Electric Universe unfold
at Thunderbolts.info

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A new scientific study has
proposed a new hypothesis
for a longstanding mystery
in atmospheric science.

For many years scientists have wondered
why the concentration of electrons
in Earth's atmosphere suddenly drops in a
region dozens of miles above the Earth,
which some call the
'D-region ledge'.

According to a recent Space.com
report, an investigative team
is now hypothesizing that tiny meteor
dust particles higher in the atmosphere
might be responsible for "sucking up"
the so-called missing electrons.

One of the study authors says
of the electron deficiency,
"It's the most dramatic gradient
anywhere in the ionosphere.

It really is very conspicuous, so

it's begging for an explanation".

To place this mystery into a larger context,
we reached out to Dr. Michael Clarage,
one of the lead researchers
of the SAFIRE Project.

The SAFIRE Project is an independent
team of researchers building a unique
plasma discharge chamber to study a
wide variety of electrical phenomena.

We asked Dr. Clarage for his
thoughts on the electrical conditions
in Earth's environment, and a comment
on his role on the SAFIRE Team.

[Dr. Michael] My job on the
SAFIRE Team is to connect
astronomical phenomena to experiments
we can do in the SAFIRE chamber.

Making the connection between
something at a planetary scale
and something happening in the
lab is always challenging.

And, we are by no means the first
to be doing such experiments.

Since Birkeland's original work in the late
1800's there have been maybe twenty chambers,
I know about, built specifically to study

the Earth's electrical environment.

To call out just two: In 1974, Dubinin, at the Institute of Space Research in Moscow, put a magnetized sphere in a vacuum chamber, and shot high-energy electrons at it.

The spatial pattern of electrons precipitating onto the sphere mimicked electron flows around the Earth, into our own magnetosphere.

That was really a breakthrough experiment.

In 2012, researchers at the Russian Academy of Sciences also put a dipole magnetized sphere into a chamber, and blew a wind of plasma past the sphere, and were able to measure electrical potential differences across the poles of this sphere that are similar to electrical structures known to exist around the Earth where we know that the part of the Earth experiencing sunrise is at a higher electrical potential than the

parts of the Earth experiencing sunset.

Now, that was a very

impressive experiment

and really shows that laboratory

experiments can be very relevant

to exploring what might be happening

electrically around planets and stars.

The SAFIRE chamber is

considerably more flexible

than these other two

chambers I mentioned.

We are hoping to be able to

explore a much wider range

of not only planetary phenomena,

but also stellar phenomenon.

The mandate of the SAFIRE

Team is quite broad:

to explore electrical phenomena

at stellar and planetary scales,

but as to any particular

theories about

the electrical nature of planets

or stars, we are quite agnostic.

As Monty Childs has sometimes said,

"we don't have a horse in the race".

We think that it's important because

once a research group gets too locked in
to trying to prove a certain theory,
or a specific scientific model,
then they usually end up ignoring
data that does not fit their model.

We are going in there with as
few preconceptions as possible.
We want the data to lead us to the
model, not the other way around.

[Host, Michael] As one moves
away from the ground on Earth,
the atmosphere gets more
rarefied and more energized.

At around 50 kilometers
above the ground,
the atmosphere begins to
take on plasma properties
with electrons and ions coexisting
in a highly conductive medium.

Some well-known fluctuations
in electron density
including the so-called 'missing electrons'
described as the 'D-region ledge'
are not easily explained using the
standard models of the atmosphere.

We asked Dr. Clarage for

his thoughts on the recent
Space.com article which
describes this mystery.

[Dr. Michael] The first thing I
think of when reading this article
is how far we still have to go
in terms of describing the large-scale
electrical structures of planets.

It is still difficult for many astronomers
and geophysicists to conceive
that an entire planet
might have a charge
relative to other planets
or the space around it.

Even though we know from direct
measurement, on our own Earth
that the sky overhead has a
persistent positive charge
relative to the ground we stand on,
and that's around the entire Earth.

So, that is, the entire sky is charged
relative to the entire surface of the Earth,
and that's called the
'fair-weather potential'.

I've been following research
into this for years,

and most geophysicist are trying to describe this assuming the Earth is in electrical isolation from the rest of the Solar System.

So, the explanations use only lightning, and winds, and heat - that is, only events happening locally on Earth.

But, both the fair-weather potential, and what the Space.com article called 'The Case of the Missing Electrons', can also be seen as ordinary plasma structures.

I don't mean to minimize the complexity of the systems - we are talking about very complex systems here -

I only mean to say, it's worth considering that all planets are immersed in a larger electrical environment.

These charge separations of the fair-weather potential, and the persistent electron density fluctuations in the ionosphere, are examples of plasma structures that have been known

by laboratory plasmas

physicists for decades.

And, these structures arise

when one part of your system

is at a different electrical

potential than its surroundings.

Let me take a minute here, and describe one

aspect of charge separation in plasma.

I'm going to place a sphere in a

vacuum chamber filled with plasma,

and I put a negative

charge on that sphere.

In a plasma the charges can move, so the

available positive charges is in the chamber

will be attracted to the negative sphere

until overall, the charge is neutralized.

This is understandable, if I put a

negative charge inside a plasma,

a bunch of positive charges

will collect around it.

And, this is usually the only diagram you'll

find in most plasma physics textbooks.

And, the thickness of that

positive layer can be predicted -

it's called the Debye length

of that plasma environment.

But, as plasma laboratory physicists
have known for many decades,
and as we study in the SAFIRE chamber,
the actual case is often more complex.
Now, here are a few pictures from the
SAFIRE chamber showing not just one layer
of negative-positive, but multiple
layers of negative-positive fluctuation.
These results were published in the Journal
of Plasma Sources, Science and Technology.
These are beautiful dynamic phenomena
- I wish more people could be in
the lab to watch these unfold.
Each of those layers contains a persistent
separation of positive and negative charges.
The electron density ultimately increases and
decreases as you move through the layers.
Now, the exact formation is quite dynamic
and very sensitive to conditions
such as gas types, electrical
potential, magnetic fields, etc.
The whole theory of electrical double
layers is still in its infancy
- there's still much
we do not know.

Practicing plasma physicists have

known these layers to rise,
but, for historical reasons,
astronomers have believed
that such charge separations cannot
arise at the planetary or solar level.

If we look at the drawing presented
in the Space.com article,
you see on the right that
wavy red line heading up?

That represents increasing and
decreasing electron density
as you move up, away
from the Earth.

As the redline wiggles to the right that
represents increasing electron density,
as the line wiggles left that's
decreasing electron density
- this is the sort of oscillation in
charge we see in the plasma double layers.

In other words, if you
accept that the Earth
is at a different electrical
potential than the Sun,
then this sort of up-and-down fluctuations
in electron density is expected.

I'm not trying to oversimplify - the planet's

ionosphere is a very complicated structure.

But, if you start with a

simple electrical hypothesis

you can predict such features, whereas,

if you start with the opposite hypothesis

that a planet cannot be a different

electrical potential than its Sun,

then you have to construct

much more complicated models

to explain what you see

happening in the atmosphere.

To be continued ...

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A new scientific report provides stunning confirmation of a foundational prediction of the Electric Universe hypothesis. For many years, one of the great mysteries in planetary science has been the heating in the upper atmospheres of gas giant planets. The apparent anomaly cannot be explained due to simple solar heating, given the planet's tremendous distance from the Sun. Today, a team of scientists who have studied data from NASA's Cassini mission say they have an answer. The team composed the most comprehensive mapping to date of both temperature and density in the upper atmosphere of the gas giant Saturn. Based on their analysis, they've concluded that rather than solar heating, the tell-tale clue to the anomalous temperatures is Saturn's aurorae, which are induced by electric currents. A phys.org report summarizes the findings as follows. "The upper layers in the atmospheres of gas giants Saturn, Jupiter

Uranus and Neptune, are hot, just like Earth's. But unlike Earth, the Sun is too far from these outer planets to account for the high temperatures. Their heat source has been one of the great mysteries of planetary science.” The report then explains the scientists’ explanation. “Electric currents, triggered by interactions between solar winds and charged particles from Saturn's moons, spark the auroras and heat the upper atmosphere.” While this analysis may be a step in the right direction for planetary scientists, it is also another instance when the theoretical predictions of the Electric Universe have been far ahead of the curve over institutionalized science. On the question of atmospheric and temperature anomalies at Saturn, in 2005 Thunderbolts chief science adviser, physicist Wal Thornhill offered a prediction that could only seem preposterous from conventional reasoning. On his website, Thornhill analyzed the mysterious hot spot in the vortex at

Saturn's South Pole. The hot spot puzzled planetary scientists because, as described by the Keck Observatory "...both the distinct boundary of a warm polar vortex some 30 degrees latitude from the southern pole and a very hot 'tip' right at the pole, were completely unexpected."

Thornhill wrote of this feature "It's compactness is due to the electromagnetic pinch effect where it enters Saturn's atmosphere." He then stated "The Electric Universe also predicts, experimentum crucis, that both poles should be hot, not one hot and the other cold." In 2008, the Cassini spacecraft confirmed the astonishing prediction. Astonishing, because the freezing cold North Pole had been deprived of sunlight for more than 12 years. Thornhill explained, "The polar hotspot and long-lived hexagonal feature result from a continuous electric current flowing from the Sun into the pole of Saturn." in stark contrast to the conventional view of the Sun as an isolated body, powered by internal

thermonuclear reactions, the Electric Universe proposes that the Sun is primarily an electrical phenomenon at the focus of a galactic “glow discharge”. In this view, electric currents flowing from the Sun to planets has implications for many atmospheric phenomena, including the tremendous winds, as well as X-ray and temperature anomalies of gas giant planets, and also jet streams and weather patterns on Earth. While scientists today increasingly recognize the role of electric currents in planetary science, they still view the electric currents as byproducts of localized phenomena in closed systems. And yet, one of the clearest evidences of external electric currents driving extreme atmospheric phenomena, can be found with the aforementioned hexagon which was discovered at Saturn's North Pole in the 1980s. For a number of years, planetary scientists have favored the explanation that fluid experiments resolve the hexagonal feature. However, as we reported

in 2018, recent observations have pointed definitively away from the fluid dynamics explanation. Using images obtained by NASA's Cassini spacecraft a team of scientists observed an unexpected towering vortex, far above the famous hexagon. A Science Alert report on the observation states, "There's something strange over Saturn's North Pole.

A tremendous structure towering high above the clouds indicates that the planet's peculiar hexagonal formation is much, much bigger than was initially apparent." One of the investigators said of the discovery, "As the polar vortex became more and more visible, we noticed it had hexagonal edges, and realized that we were seeing the pre-existing hexagon at much higher altitudes than previously thought." The problematic nature of this discovery is noted in the Science Alert article which states, "...since wind conditions change dramatically with altitude, the fact that the hexagon shape persists so much higher than the cloud

tops, is a baffling conundrum.” In other words, the persistence of the hexagonal feature hundreds of kilometers above the clouds, is the clearest possible indication it is being driven by energy from above and cannot be explained by simple fluid dynamics. The Electric Universe explanation, as noted earlier by Thornhill, points to decades of experimental research by plasma scientists which reveals the importance of hexagons seen throughout nature. Consider the side-by-side images on your screen. On the left are vortices of an electron beam, etched onto a carbon witness plate. On the right are vortices of an electron beam, photographed on a fluorescent screen. The hexagonal form is a distinct feature of a well-documented plasma phenomenon called the “diocotron instability.” And the phenomenon observed in the laboratory, is remarkably scalable. As explained by Dr. Anthony Peratt in Physics of the Plasma Universe, “The vortices of the diocotron instability are found to occur over 12

orders of magnitude in beam current.

This mechanism was first introduced to

explain auroral curtains by Hannes

Alfvén.” As we've also discussed ad

nauseam on this series,

another signature of the external Birkeland

currents that drive atmospheric

phenomena is the counter-rotation seen

at the poles of Saturn, Jupiter, Neptune,

and in the auroral displays on our own

planet. it was in 2015 that Dr. Donald

Scott published his mathematical

modeling of the structure of a Birkeland

current which is identified visually as

counter-rotating cylindrical shells

Again, today more than ever,

mainstream science is exploring the

critical role of electric currents in

atmospheric science. Consider the recent

article published by the American

Geophysical Union's Earth and Space

Science News entitled “Electric Currents

in Outer Space Run the Show” which is a

summary of the 2018 book: Electric

Currents in Geospace and Beyond.

The article bluntly states “It is now

understood that outer space is
fundamentally electrical in nature.”

However, while the aforementioned
book does explore in detail the role of
electric currents on and near the Earth,
it does not take the theoretical leap
proposed by the Electric Universe, which
is that the Sun is itself an electrical
phenomenon with a direct electromagnetic
connection to the earth. And yet, with
each passing year, new discoveries render
smaller and smaller the theoretical leap
required by mainstream science to reach
this conclusion. Electric currents,
driving atmospheric phenomena, is just
one of countless telltale signs that
we live in an Electric Universe. [Music]

[Music]

In the early 80s Dave Talbott and myself published a trilogy of articles in Kronos, analyzing various symbols encoding Venus's recent comet-like history.

Although our findings were revolutionary in scope, they were little noticed at the time and have remained so in the meantime. That said, it is my opinion that these early papers represent David at his most original and brilliant and as such they are well worth revisiting, as the bold insights remain valid today and point unequivocally to recent episodes of planetary catastrophism and a radically different solar system. In the articles in question Talbott and I identified the planet Venus with the Eye of Horus, a novel view at the time but since endorsed by leading Egyptologists.

As is well known, the Eye is one of the most important symbols in all of ancient Egypt and subject of one of the oldest mythological narratives to survive from that civilization. According to a text known as the "Destruction of Mankind," inscribed on two

walls of various kings from the 19th dynasty, circa 1325 BCE, the Eye went on a destructive rampage at the dawn of time that purportedly brought the world to the very brink of extinction. There we read that the Eye, as the goddess Hathor, was dispatched by Re to punish mankind. Quote, "Then mankind plotted something in the very presence of Re... Then they said in the presence of his majesty: 'May thy Eye be sent, that it may catch for thee them who scheme with evil things...It should go down as Hathor.' So then this goddess came and slew mankind in the desert." End of quote. While it would take several volumes to recount the complete history of the cosmic disaster associated with the Eye, the following brief summary will offer a glimpse of the mythological treasures awaiting the diligent researcher. In the earliest textual references to the Eye, there are a number of allusions to an enigmatic lock of hair. Thus it is that the Coffin Texts speak of "...the day of the cutting off the lock of hair." Another Coffin Text speaks of

“...that day of cutting off the tress.”

Yet another speaks of “Her tress of fire is quenched.” Although each of these statements is mentioned in passing as if the story were well known to the audience, the context makes it clear that the fiery lock somehow sparked a cataclysm at the dawn of history.

According to one Coffin Text for example the god Shu succeeded in extinguishing the rage of the fiery lock restoring order in the world. Quote “I have extinguished the fire, I have calmed the soul of her who burns, I have quietened her who is in the midst of her rage..(even she) the fiery one who severed the tresses of the gods.” The reference to the goddess's rage and her “who burns,” is an unequivocal reference to the raging Eye goddess Wepset renowned for her incendiary destructive nature. But what does it mean that the Eye goddess severed the tresses of the gods? The phrase translated “tresses of the gods” =s3m/wt ntrm, wherein s3m/wt means lock of hair and is determined with the hair hieroglyph. Yet the former word

means 'mourning' as well as 'lock of hair'

and thus Joris Borghouts translates

the passage in question as

"the mourning of the gods."

According to testimony of this

particular Coffin Text then, the raging

Eye of Horus played a pivotal role in

the apocalyptic events remembered as the "mourning

of the gods." Properly understood, the fiery lock of

hair has reference to Isis's mourning

in the wake of the death of her beloved

consort Osiris. Hero Isis is said to have

cut off a lock of her hair as a sign of

mourning after which she

wandered the world in dishevelment.

A hymn to Osiris from the middle of the

second millennium BCE offers a general

summary of this archaic mythological theme.

Quote, "Isis, the powerful, the protector of

her brother, who searched for him without

wearying, who traversed this land in grief

and did not rest until she had found him,

...who sent up a cry, the mourning woman of

her brother." End of quote. The

same basic tradition is alluded to

in the Bremner-Rhind papyrus from several

millennia later, fourth century BCE.

There in a passage referencing Osiris's murder remembered as the "Great mourning and an evil deed, the like of which has never been", One reads of Isis and Nephthys that, quote, "They mourn for thee in dishevelment, the hair of their heads is disordered."

Evident here are the basic outlines of the Egyptian myth of beginnings, wherein Osiris's tragic death throws the world into darkness and chaos, an event alluded to simply as "the disaster". The underlying message is that, without the fiery tress, the raging Eye departs and begins its campaign of destruction during which Venus assumed a comet-like appearance. This while displaying disheveled hair and spewing fire from the sky.

Isis's disheveled hair is a point of emphasis in several archaic Egyptian texts.

Thus in one text Isis is described as quote "...swaying her hair like a mourning woman, she being of disordered appearance." End of quote.

So too the "book of the dead" reports that Isis had disarranged her hair.

Quote, I am Isis. You found me when I had

disarranged the hair of my face and my scalp was disordered.” End of quote.

As Talbott and I interpret the myth of Isis's mourning, it has reference to Venus departing the polar axis as a wandering lock of hair, a perfectly plausible pre-scientific description of a comet. Here it will be noted that comets were widely conceptualized as hair stars or as women with streaming or disheveled hair.

Significantly, ancient Chinese astronomers described comets as celestial mourning.

So too the famous astronomers held that the planet Venus was in charge of mourning.

Additional support for our reconstruction comes from ancient Mesopotamia where sky watchers described Inanna Venus as an agent of apocalyptic catastrophe which, like the Egyptian Eye, rained fire and destruction from the sky.

So too Mesopotamian astronomers described the planet Venus as the star of lamentation.

At this point the diligent researcher must ask himself why a distant planet moving on a supposedly stable

and peaceful orbit about the Sun,
would be described as an agent of
destruction or star of lamentation.
Certainly it can be no coincidence that
Inanna Venus was renowned for her
tortured lamentations for Dumuzi,
during which she wandered the world in
dishevelment exactly like Isis and
numerous other ancient goddesses.
As is always the case in scientific
matters, the devil is in the details.
As Talbott emphasized in these early
articles, a decisive key is offered by
the unique shape accorded the lock of hair.
As is evident from its hieroglyph, the
lock is depicted as a spiraling volute form.
In ancient Egypt the spiraling lock is
most familiar as the distinctive
sidelock of the youthful Horus.
That we are not dealing here with a
hairstyle unique to Egypt, is shown by
the fact that analogous sidelocks
adorn early Mesoamerican gods.
Especially telling are prehistoric
artworks depicting Venus in Mesopotamia.
In the earliest written texts in the world,

planet Venus as Inanna is denoted
by a pictograph showing a spiraling comet-like
form. As Talbott and I have argued for some 40
years now, the Sumerian pictograph
preserves the unique appearance of Venus
during a distinct period of instability
that saw the planet depart from its
axial alignment within the polar
configuration and wander about the axis.

The tumultuous period in question, one of
the earliest remembered astronomical
events in human history, was
conceptualized as the departure of the
Eye goddess at the beginning
of her campaign of destruction.

At the same time, the departure
or severing of the fiery lock of hair,
signaled the death of Osiris and the end
of the world age marked by Venus's
prietive mourning with disheveled hair.

And so it is that comets are associated
with the end of the world age around the globe.

Early texts from Egypt and Mesopotamia
report that the period of Venus's mourning
was marked by an apocalyptic darkness.

Thus it is that the Egyptian Eye goddess

was associated with darkness overtaking the world. Quote, "The departure of the Eye, or Hathor, results in a series of natural disasters in Egypt, where perpetual night prevails." End of quote. A similar scenario is described in the Magical Texts of Papyrus Leiden, a text which dates from the early Middle Kingdom.

Quote, "Beware of the mourning of the gods! For then primeval darkness will set in."

End of quote. So too Sumerian mythological traditions report that a cosmic disturbance associated with Inanna Venus resulted in apocalyptic darkness.

Thus a passage in a hymn to the goddess Inanna credits the planet goddess with the power to make the midday light turn into darkness. Quote, "When you are angrily staring that which is bright gets dark, you turn midday light to darkness." End of quote.

Such imagery is extremely difficult to explain by reference to the familiar Venus, needless to say. That said, it is consistent with the planet's role in ancient Babylonian astronomical omens which point to an intimate association between Venus and

the sudden onset of darkness. Quote, "As clearly stated in the omen texts, the responsibility for the darkening of the daylight is Ishtar's." End of quote

It is doubtless because of the cosmic disaster wrought by Inanna Venus, that ancient words for "mourning" often convey the sense of darkness or a darkening of the heavens or Sun. The Sumerian term "su-mu-ug" is representative in this regard, denoting "darkness; misfortune, calamity, mourning." End of quote.

And so does the Babylonian astronomer describe the eclipse of the Sun by the term "er" denoting "mourning".

The recurring motif in the Sumerian traditions describing the lamentations for Dumuzi is that the cosmos was thrown into confusion by the tragic events in question. In the following hymns Inanna 's tortured mourning caused the heavens to quake or rumble. Quote, "She of lament, she of lament struck up a lament... The hierodule of heaven, Inanna, the devastatrix of the mountain... she who

causes the heavens to rumble... she
who shakes the earth." End of quote.

Inanna 's preternatural ability to shake
Heaven and Earth is a recurring theme in
Sumerian tradition and naturally recalls
the cataclysmic effects precipitated by the
Egyptian Eye. The following passage is one of dozens
that could be cited in this regard. Quote,
"You make the heavens tremble and the
earth quake. Great priestess, who
can soothe your troubled heart?
You flash like lightning over the
highlands; you throw your firebrands
across the earth. Your deafening command...
splits apart great mountains." End of quote.

The terror inspired by the rampage of
the mourning goddess was never wholly
forgotten and is alluded to in the
legendary accounts surrounding the great
kings. In a Sumerian hymn dating to the
third millennium, the death of the king
Ur-Nammu is compared to an eclipse of the
Sun and is greeted by bitter mourning
throughout the land. It is in
this context that the following
passage occurs, quote, "Then Inanna, the fierce

storm... made the heavens tremble, made the earth shake." End of quote The comparison of Inanna Venus to a furious storm and star of lamentation, while wildly incongruous as a description of the familiar Venus, is a perfectly apt description of a celestial body whose comet-like hair became disheveled and appeared to whirl about it like a great tornado-like rope. A Sumerian hymn celebrating the mourning goddess Geshtinanna, captures this image perfectly, quote "My hair will whirl around in heaven like a hurricane for you." End of quote. If such archaic mythological traditions have an origin in historical astronomical events and it is impossible to explain the imagery surrounding Inanna Venus apart from a spectacularly turbulent celestial prototype, it is deducible that it was Venus's swirling hair that darkened the prehistoric skies, thereby ushering in a period of cosmic disorder marked by terrifying storms and the shaking of heaven and

earth. And so it is that comets are associated with apocalyptic disaster and the death of great kings around the globe. To summarize, the evidence pertaining to Venus's cometary history encoded in ancient mythology and early artworks will never be explained by reference to the present solar system. The evidence in question is there for everyone to see. And in the final analysis it is the evidence that will dictate the course of 21st century science.

[Music]

Welcome to Space News from
the Electric Universe,
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New scientific reports are
again forcing planetary
scientists to rewrite the
history of our Moon.

A new study into the lunar surface
contradicts the notion that
cratering on the moon occurs
incrementally over vast eons of time.

A team of scientists studied
several thousands of
before-and-after images of
the Moon's surface
with the visual data covering
nearly a million square miles.

What they found is that lunar
cratering appears to occur at a rate
more than 100 times faster than the
standard impact model has predicted.

The lead author of
the study states:

"Before the Lunar Reconnaissance

Orbiter was launched in 2009,
we thought that it took
hundreds of thousands
to millions of years to change the
lunar surface layers significantly.
But we've discovered that the
moon's uppermost surface materials
are completely turned over in
something like 80,000 years."

A Phys.org report on
the study states:

"The number of craters is
greater than anticipated
by standard impact-modeling
rates used by lunar scientists.

The discovery has the effect of giving
lunar surface features younger ages.

Theory says that a lunar geologic
unit should accumulate a certain
number of craters of a given size
in a million years, for example.

But if it turns out that impacts
are making craters more quickly,
then it takes less time to
reach the benchmark number,
and the geologic unit is in reality

younger than theory predicts."

Unfortunately, the only process
the scientists have considered
for the astonishingly high rate of
cratering is impacts from space.

However, many of recent discoveries
reported on this series should
provide a doorway to alternative
theoretical possibilities.

A clue can be found in
investigations into dramatic
electrostatic dust raising events on
various bodies in the solar system.

In August, we reported on a recent
NASA funded study which confirms
that electrostatic dust transportation
occurs on airless bodies in space.

This includes the electrostatic dust
storms and electrical discharges
that are regularly
observed on the Moon
when it passes through
the Earth's magnetotail.

As described by NASA
scientist Tim Stubbs:

Earth's magnetotail extends well

beyond the orbit of the Moon

and once a month the

Moon orbits through it.

It's gonna have consequences

ranging from lunar dust storms

to electrostatic discharges.

Could at least some of

the new lunar craters be

the result of this kind of

electrostatic activity?

Electrical discharges to solid

surfaces and to plates of dust

result in cratering and many other geological

features familiar to planetary science

as we repeatedly referenced in

these experiments by Billy Yelverton.

In fact, in recent years the scientific

mainstream has begun to recognize

the role of electrical forces

in altering the lunar soil.

A scientific paper in 2014 explored

the possibility that so-called

"electrical sparking" may occur

under the Moon's surface.

But the surprisingly high rate of new

lunar craters is only the latest

of many unresolved problems with the Moon's speculative history. In the 20th century the discovery of apparently discrepant ages of melted lunar rocks contributed to the invention of an era called "The Late Heavy Bombardment" though astronomers do not roundly accept the theory and it's not clear where the bombarding objects would have come from.

In the Electric Universe theory, as developed by the chief principles of The Thunderbolts Project, the massive cratering on the Moon and every heavily cratered planetary body was a product of electrical discharge scarring at an interplanetary scale.

Numerous references to past presentations on this theory can be found in the description box of this video.

Of course any new electrical cratering occurring on the Moon today would be at a vastly smaller scale than the events that violently scarred

its surface from pole to pole.

In any case, new scientific data
will continue to make it more clear
that cratering is not the result of periodic
impacts from space over eons of time.

Electrical cratering is just one
of many new pathways of discovery
waiting to be explored in
our electric universe.

For continuous updates on Space
News from the Electric Universe
stay tuned to
Thunderbolts.info

[Music]

[Music]

he's expert at image acquisition and analysis we've talked a lot about common sense and common sense is essential to having keeping our feet on the ground and forming cogent understandings of the world that we live in but we know also that our senses are somewhat limited there's only so much that we can see with the eyes that we've grown in our bodies that we can touch with our hands and our are our five senses so science when it's properly functioning and serving common sense extends those senses into the realms beyond our ability to perceive - in that sense make visible that which is there but is invisible to our common senses and that is part of the expertise of our next speaker an important part of what p.m. re ro Battaglia is is accomplished at in 1996 he was responsible for developing breaking essentially the world record form in a magnetic resonance imager II developing and essentially doubling the

power of magnetic resonance with an 8
Tesla MRI and I'm is going to share with
us some of what he sees to add to our
growing sense of the electric universe
welcome professor Pierre Marie

Robitaille

[Applause]

well thank you I would like to begin by
thanking Dave Talbot for inviting me
here and for providing scientists from
different viewpoints the opportunity to
address the scientific community it is a
privilege to be here today I'll be
speaking about the microwave background
and as Steve tried to explain to you
when you look at the microwave
background if you're located on the
earth you have signal from the earth
itself the emissions of the oceans water
around the earth and then you also have
galactic emissions that are reaching the
earth you have signals beyond the galaxy
perhaps that that we get to see as well
so there are many signals that are
coming when you're at the earth but when
you're at 12 the earth of course cannot

hit the satellites that are at L2
therefore you will not get a monopole at
L2 and the only data if you want to call
it data that you get at all - will be
dominated by the galaxy before I begin
to speak because I'm I'm in the College
of Medicine I did want to speak just
briefly about anchoring now in medicine
what is anchoring anchoring is occurs
when a patient comes to the hospital and
if and he's gravely ill and we'll assume
that he's gravely ill and what happens
is a physician sees him and he decides
on the diagnosis but the diagnosis is
incorrect the next physician comes in
sees them and doesn't do his own
physical and follows the diagnosis of
the first physician
so eventually unfortunately our patient
dies the doctors get sued they lose
their license and of course the
attorneys get to make lots of money
but in what happens in physics when we
anchor well that's a different problem
because we're not in a position that
somebody's going to lose their life over

it at least we hope not
but when physics makes an error
it's much harder to rectify because you
can anchor and it takes tremendous
incentive to go back and recheck the
assumptions so relative to the microwave
background to recheck the assumptions
you actually have to go all the way back
to 1860 and deal with kirchoff's law of
thermal emission now I will talk about
that law on Sunday not now because it it
in of itself is actually the most
important talk I will give even though
this one's on the background and the
other one is on the Sun also because I'm
in the College of Medicine it's you know
I have to figure out how this works I'd
like to dedicate this work to two
physicians now the first is my father he
just retired from medicine after more
than 50 years I think 55 years as a
physician he was a family practitioner
he delivered over 800 babies in his life
he also helped the Saiga Mach Indians in
Northern Ontario and he lowered the
infant mortality rate for the Saiga Mach

First Nations both for the mothers and
their babies he was one of the first
Caucasian men to be named as an honorary
Indian chief in North America the next
whoops that's the mistake that we make
okay I'll get it here the next person
that I'd like to dedicate the talk to is
dr. Ignaz Semmelweis now I dedicate it
to him as well because he's got a lesson
for us right so in ninth in 1847 he
advocated the physicians wash their
hands with chlorinated lime solutions to
reduce the incidence of mortality from
child bed fever and a physician saw this
as an insult because they felt that you
know they were already pretty clean even
though they were going for the necropsy
lab to delivering women and they were
killing these mothers and he he actually
documented when he got the doctors to
wash their hands that the mortality
rates would drop so the physicians
rather than just listen to him and keep
washing their hands decided that he had
to be incorrect
his papers and ideas were largely

rejected there were only a few people of
the European medical community that
recognized the importance of what he was
saying he's actually I think the father
of hygienic methods and he unfortunately
died in an insane asylum
he was only 47 now I've published
extensively on the microwave background
and I list the papers here some of the
important ones relative to the stalks of
Steve and I are W map or radiological
analysis of course the papers on the
earth contribution the paper on water
the the bottom one that's listed there
then you also have this all will affect
global warming whether you believe in
global warming don't believe in global
warming for us to understand how the
oceans are actually emitting is an
important problem and then there's
another paper on Kobe where I did a full
analysis of Kobe and one on plank
now dr. Reuben ski who's the editor of
progress in physics has been very kind
to me he's taken many many papers and
enabled me to publish my work in what I

consider a very new journal and of course people say well Pierre why do you publish an in-progress in physics and that's because it's a proper vehicle for what I'm dealing with now now I also want to point out that there's some parallels between MRI and the microwave background studies so an MRI scientist is actually well suited to go through this stuff because what we do are almost similar there's only the sample that changes in magnetic resonance imaging it's fundamentally a thermal method we have t_1 relaxation it's called the thermal relaxation constant that was named so by Felix Bloch most people have forgotten that name their frequency of observation is from VHF to UHF but the a Tesla that I built and new scanners are now at point four gigahertz so almost in the microwave their detection methods that we use are RF antennas and they're coupled to pre amplifiers and radiometers we display our results in spectral images now if you look at the microwave background

again you have a thermal problem you
have a maximum emission at 160 gigahertz
of course

Penzias and Wilson were at 4 gigahertz
and their first experiments that's only
we were we are now at point 4 in
magnetic resonance the detection methods
are very similar at low frequency we
have in microwave experiments we have RF
antenna coupled to preamplifiers again
and radiometers and we display our
results in spectra or images so just
generally what are the requirements for
having an image well there's basically
two requirements through the two key
requirements is you have to have
resolution and you also have to have
signal-to-noise and it takes signal to
noise to make contrast it also takes
signal to noise to get resolution if an
image is noisy how can you tell if it
contains any information and this is
critical to anybody who believes that
the microwave background anisotropy maps
can be real for them to be real they
have to be reproducible and none of

these maps are ever reproducible so they pool the data and then the their differences are from averages - a year or in Planck now they're trying to pool a bunch of data so you can't take averages you have to look when you have a low signal-to-noise image as you do in medicine when we do functional imaging for instance we're gonna have quite low signal-to-noise sometimes in the cat 5 you might have low signal to noise and how can we tell that the signal is real because it has to be reproducible so if you ever encountering somebody who's telling you the anisotropy maps are real just ask him for reproducibility he will never be able to deliver it because the galaxy is too variable

now I want to show you an image that was done at the time that I did the a Tesla this is an image it's a clinical image from a human head is a sagittal sagittal slice and this is done with a conventional scanner it was a good scanner the image looks really bad and it's because I'm pushing the scanner

right to its limit
so I'm taking a very thin slice very
little bit of the tissue and the matrix
size is a 512 by 512 ya with only a two
millimeter slice so when I do that
there's still a little signal you can't
get contrast anymore did you remember I
told you to take signal to get contrast
so this is a 512 by 512 and now here's
an image from a Tesla and this is still
a world-record today even though it was
done for the year 2000 this was an image
of 2000 points by 2000 and resolution
same data same slice thickness a similar
nutration angle everything is very
comparable between these two images but
the difference is of course I have more
signal because I have an 8 Tesla scanner
so this remains as I said a world record
and resolution here's an expanded view
of that so now what are the central
issue is relative to understanding the
microwave background well I think there
are several the first is the early
measurements did we have a right to
assign the signal Penzias and Wilson to

the universe could water have produced
this signal and where is the water
signal from the earth if if this if the
microwave background signal really
belongs to the universe where is the
earth signal does that the 3 Kelvin
temperature really have a real value or
is the temperature really only apparent
now this will be answered primarily in
my talk on Sunday on kirchoff's law can
we really see beyond the foreground of
the galaxy into the universe and is
there any real cosmological information
in the anisotropy Maps the data
processing produced the monopole Steve
touched on the multi
you touched on this as mankind truly
sampled the first trillionth of a
trillionth of a trillionth now of a
second after the Big Bang so we'll begin
just by a quick review of the Penzias
and Wilson experiment and when they
completed their experiment they reported
immediately that they had a 3.5 Kelvin
signal that was unexpected and there was
a this excessive signal was isotropic

unpolarized and free from seasonal variations now if you look at the way the horn worked you had a contamination from the horn the noise from the horn was only point 9 Kelvin but they had the assigned 2.7 2.3 Kelvin to an atmospheric contamination so the total signal that came in was six point seven now of course they could rotate this horn and that's how they determined the amount of signal that's coming from the atmosphere they could just rotate the horn and as they rotated the horn they can compensate for this atmospheric signal but what they don't compensate for is an oceanic signal that's pumping photons into the atmosphere they also say that this 2.3 kelvin signal was due to absorption by oxygen in the atmosphere I think it had nothing to do with it nowhere in the Penzias and Wilson papers of 1965 can one find any discussion of water and where it might be expected to emit now of course they immediately say that a possible explanation is a sign is done

by these cosmologists now what happens
in Astrophysical Journal actually is
that this interpretation by Daiki
Peoples and Roll's and Wilkinson
actually precede the dependence in
Wilson publication so since when in
science do we publish the finding after
the interpretation you publish the
finding first then you publish the
interpretation so in the interpretation
they say well could the universe be
filled with microwave energy
that behaves as a blackbody that gives
us this blackbody signal the answer of
course is no the assignment of a three
points up five Kelvin temperature
constitutes a violation of the laws of
thermal emission and I will talk about
that on Sunday because that in itself is
quite detailed to explain but valid
temperatures require a known solid no
net conduction or convection or if you
don't have a known solid you must be in
thermal equilibrium with a rigid
perfectly absorbing enclosure otherwise
the temperature obtained may or may not

be accurate

so the universe is not in thermal equilibrium with an enclosure okay and especially if it's expanding it had no chance of ever becoming in thermal equilibrium a source which is not at three Kelvin can produce a signal if it sustains in addition to emission other means of contending with internal heat namely conduction and convection and this is by the way the reason that Max Planck said you cannot take a temperature of the Sun using thermal emission a source which is not at three Kelvin can produce a 3 Kelvin signal if it has an unexpected distribution of energy within its degrees of freedom as a result can water at 300 Kelvin produce a signal with an apparent temperature of 3 Kelvin so I thought we'd start by just looking assessing the situation here we're sitting on the earth I think there's quite a bit of water around us actually this famous poem that many of us learnt in grade school The Rime of the Ancient Mariner reminds us water

water everywhere

water has often complicated microwave background experiments so in their own literature when you read their papers you see that they're always having trouble with water when they're doing the experiments near the earth but they dismiss all this for instance when dr.

Smith

was testing a Radiometer at Berkeley he actually took the radiometer outside in the parking lot and there was a cloud that went overhead and he saw that he got a signal from the cloud so he knew his radiometer was working of course he was sampling water at the time then rain or Weiss

he noticed that whenever you're doing microwave background experiments it's very simple to do when there's oceans or lakes nearby John Mather he commented in his book that the people working in the Atlantic Ocean had a very difficult time getting microwave background measurements done because the oceanic Brut signals can the oceanic patterns

can produce signals that are very similar to cosmic fluctuations and dr. woody noticed that he sent up a balloon and on the ground and during the ascent they protected the antenna from condensation and then they had a small mirror to allow them to make sure that there was no condensation inside their horn well if condensation doesn't matter why do you care right now we know that condensation matters because dr. smut when he went to Lima Peru with an experiment and when he came down with the plane he got condensation as radiometers and they didn't work so what did he do he took him apart he took out all the water he dried him up put him back together and all of a sudden it worked

here's one from John Mather the effect of air conduct condensing into the antennas were seen when the second window was open the valve which controls the gas flow should have been rotated so that all the gas has forced out through the cone and the horn when the situation

was corrected emissions from the horn were reduced and the cold helium has cooled the surfaces on which the air had condensed and the signal returned to normal so he's telling you when I have water there my signal was too high now of course as Steve pointed out this slide from one of my papers I am just showing the structure of water and to remind everybody that there's a there's a hydrogen bond here and this is not at all like a hydroxyl bond the energy of this bond is about a hundred times the energy of that one the force constant the force constant in this bond that is characterizing this bond if we look at it as a simple harmonic oscillator the force constant here is a hundred times stronger than that one and that's a great concern so if you look at it if you look at the dot water dimer which we know exists in that atmosphere now I'm just taking the water dimer as an example the water dimer you can find it also in in in condensed water in in liquid water if you look at the

structure of liquid water you'll see dimers inside of it and if you compare that if you look at this whoops I'm sorry I did a boo-boo I will get there so if you look on axis here in the dimer these are these are this is a linear these two these three atoms are all arranged linearly there is libration around this one but generally you can assume that they're linear and if you do that you can easily show that the energy in system 1 divided by the energy in system 2 will just be equal to the ratios of their force constants now the energy is related to their temperature well since these force constants are different by a factor of a hundred then the emission that you'll get will be different by a factor of 100 so instead of getting 300k emission you get 3 Kelvin emission so remember if water is a powerful absorber of microwaves then by Stewarts law it's also a powerful emitter now a little brief note on the Coby satellite which Steve also covered so the ferris horn was designed to

operate over a phenomenal range actually
from 30 to 3,000 gigahertz but no
microwave horn has ever claimed to cover
such a frequency range even 25 years
later the claim is unsupported by vast
knowledge of practical microwave antenna
design on earth it's an engineering
impossibility the COBE satellite as
Steve mentioned is positioned at an
altitude of 950 kilometers but the
shield the satellite itself or the horn
within the satellite which is located
here is is this shield it has nothing to
do with microwaves this is the shield
for thermal photons not microwaves
if it was a shield for microwaves it
should be properly shielded so here I
will for instance in this case what are
you having you're having photons coming
down from the earth below it and they're
coming up and they're hitting the shield
and they're diffracting against it and
they come to the top of the door and
they diffract right into this horn
notice that the horn the fierce horn has
a very smooth wall so because it has a

smooth wall and because it's broadband
it cannot be shielded for diffraction so
so it has no corrugated surface to
prevent diffraction so a horn a
narrowband horn in microwave that you
would use to prevent diffraction would
to have walls that look something like
this so now you see this corrugation and
these corrugations that are put in horns
they're very frequency specific that's
why these are narrowband horns you never
would make such a horn for a broadband
signal so unlike the fierce horn on Kobe
which is broad banded corrugated horns
are always narrow banded the geometry of
the corrugation is carefully calculated
to be effective over a very narrow
frequency range so there's no way that
Kobe satellite could have prevented
diffraction actually Wilkinson himself
who was a member of the Kobe team and
for which the W map satellite is named
after his death was worried that there
was diffraction in the
we data so one of the old their own key
members was worried about it

so the COBE satellite of course is
located just above a powerful source of
microwave emissions the oceans of the
earth clear signs of diffractions
diffraction exist in the kobe ferrous
data the data is too high at low
frequencies too low at high
so the Penzias and Wilson signal is very
likely to be produced by the earth now
we'll go through W map now I cover W map
and there's a lot of lessons in W map
which actually applies to all their
methodologies in trying to create a nice
atre P maps now as I mentioned w map is
sitting far out in space this is a
picture of the of the satellite and it's
it's sitting over here at l2 so in this
position well away from the earth
there's no way W map is getting a
monopole signal from the earth and W map
never saw a monopole signal it's unable
to by design but Planck should have been
able to see it but it because planck has
the capability capability to see an
absolute signal but they never reported
a monopole signal from l2 with the

planck satellite in fact for planck
analysis they use kobe ferris monopole
data in their analysis and that data of
course is more than is over 25 years old
now or nearly 25 years old they also are
worried that they have a lot of noise on
their lf-i and my problem is that
remember that this is a high tech device
now that we've got 25 years of high
technology we have a lot of noise coming
into the LF I but remember that Penzias
and Wilson also almost had no noise they
only had point 9 Kelvin attributed to
the instrument now SC showed here are
the five map here are five maps from W
map in each of the frequency
and of course we see this enormous
signal from from the galaxy okay
unfortunately you can't get around this
this signal is actually much much bigger
than this these are cleaned images where
they've already processed the data to
get rid of galactic signal out here
because it was so high the galactic
center this is a quote from their papers
the galactic center is a thousand times

brighter than fluctuations in the microwave background and if you take if you take the statement as real it's impossible absolutely impossible to remove the galactic foreground and quantify any underlying signal so here's an example from NMR so it's a cosmologists really think that they can do that they can come and help us in medicine so here's an example where I take a water signal an NMR signals out so of course water is 110 molar so I'm going to take a sample I'm going to make a sample of water and I'm going to put a little bit of a compound in it just point one molar of this compound well when I take the spectrum which is a in here all you see is the water line okay this is just water I can blow it up and when I blow it up a factor of a hundred I now see some resonances from this compound now the resonances are not below the water peak they're next to it but for the microwave background they are under the water peak the same it's not water that they're looking at at 12

but it's a similar situation they're sitting over here under a strong strong microwave signal they got a little tiny signal they have probably similar line shapes they don't know what the line shapes are it's absolutely impossible for them to resolve these two signals it's a physical impossibility so the problem for the microwave background studies is that the signal of interest is exactly at the same frequency as a contaminated galactic signal in every single channel so under these circumstances the Galactic contamination of any magnitude cannot be properly addressed how does one distinguish the Galactic contamination from a constitution made by a primordial source so now you've got this this enormous signal and you have the primordial source I'm sorry and you have now the primordial source this little tiny signal well actually very very tiny compared to this this is really off scale right I do have to use a slide here so I have an

analogy okay Paul and Mary may or may not be real there's a bowl containing six cups of water on the table how many cups of water if any did Mary pour in the bowl

that's the question they want to answer all we really can tell is that there's a bowl with water on the table that's as bad as my jokes get now the situation is further complicated with W map with 300 known point sources so now we've got a whole bunch of point sources that we have to take out of the map so now we've got the Galactic contamination we got the point sources and we got the Galactic signal now for Planck they've got 15,000 point sources we'll try to put 15,000 point sources on this image and you could basically build any image you want so the problem for the microwave background studies is that the signal of interest is exactly at the same frequency as the contaminated Galactic and point source signals in every single channel in reality there are millions of microwave point sources

in the universe because every star
Kadeem it in the microwave and every
galaxy can these problems potentially
exists at every single point in the map
when one looks at the anisotropy maps
all the points matter even the points
with near zero signal
because they are contained in the
multiple analysis but the interfering
galactic signal can be greater than the
signal of interest by a very very large
amount because the signal of interest
can be close to zero that is why the
Galactic signal can be viewed as
contamination of a hundred a
thousandfold or more so this is shown
here you have your your map and your
resolving this in these multiples now
these are the poles that they really
care about in cosmology they don't care
about this map they care about this
stuff
but this stuff has positive and negative
contributions that means you're going
through zero right so all the points
even the points close to zero are

extremely important and you have no signal to noise the entire Assembly of laboratory experiments will say even in medicine demonstrates that it is not possible to extract a weak signal from a powerful overline contaminant unless the experiment has perfect knowledge of the signal strength involved or the ability to control the signal at the source it is physically impossible to remove the galactic foreground so how does the W's map team do it because I've just said it's impossible well they use different methods over different years however the methods have nothing that can salvage the underlying problem so I just want to highlight again what the maps really look like so these are this is the five channels down in the lower part of the page of the slide and in the middle over here you have these right the three on the right the qv and w band shown a gift at lower resolution but here's what they look like before they're cleaned now do you see how much there was galactic contamination before it's

cleaned see how it looks when they
present it
to us this is the this is what people
typically see they don't realize that
cube and actually has that much galaxies
in it and they don't even show the other
two because they're going to be red now
how do they get rid of the galactic
foreground well this is a great
experiment what you do is you break up
the signals in eleven regions some away
from the galaxy which you call region 0
and then eleven regions in the plane so
I guess twelve regions total so what do
they do well I now they're going to
they're gonna do some addition here
they've learned some algebra so what
they do is they take signal K and they
negate it and then they add it to ka
they negate Q they add V they add W now
this is what they did in region 4 now in
the adjacent region this is what they
did so you see that the coefficients are
completely different they're changing by
a factor of a thousand percent in two
regions adjacent to one another but the

reality is you're not allowed to negate
this signal all negations constitute a
violation of the laws of thermal
emission as they make a cool sky appear
warmer in the galaxy in addition one one
can be violating the third law of
thermodynamics because when one inverts
these signals he can mathematically
create negative temperatures which are
prohibited temperatures do not exist
below Absolute Zero just imagine if
there is no monopole at I_2 now in
magnetic resonance I'll confess that we
can have negative temperatures because
we can have spin populations and invert
them so we can talk about negative
temperatures in our spins
they don't get to touch the galaxies so
here's what is happening now for region
zero look what they're doing each
channel is either positive as
choose to make it there's infinite
number of combinations we can all sit
down and come and take it some to add to
one and pick any numbers you want as
long as they add to one it's a valid

solution so what have they done it's
positive this term is negative okay then
they're negative again then positive but
look this I told you the data has to be
reproducible look at the coefficients
that they use for addition see how
they're changing over the years
this one has changed 43 percent that's a
big change in the same region just oh
and by the way the three year average
contains your one so when one inverts
the channels you're creating the
monopole the multiples you're creating
these negative temperatures and you are
in violation of thermodynamics so what
is the signal to noise in the M R in the
W map images so people see oh they see
these images oh my god this is a real
image we imaged the universe that's
because they don't really understand
what is an image so this is this famous
image after the removal of the galaxies
now here's the noise that they plot in
their paper so they give us a noise of
plus or minus a hundred micro Kelvin at
this resolution and we know that their

images I'm sorry we're at plus or minus
200 at this resolution these I can't
remember I don't think these are
identical resolutions but you can gather
from their data if you look at it
carefully they have signal-to-noise of
about two to one relative to the noise
of their instrument now I just want to
show you some some Mr images of things
or different images Wilson we won't say
they're all mr so what's the first one
right here I want you to guess this is a
2.1 signal-to-noise two to one
signal-to-noise image this is an actual
image probably of my head this one is of
importance to us here this is
an image of the moon and this one no one
will guess it's the image of my right
hand so when you have no signal-to-noise
guess what you don't have an image
unless it's reproducible and their image
is not reproducible so since the W map
images are not reproducible from year to
year this is seen in the need to take
different images at lower resolution
which you're not allowed to do when you

take a difference it has to be at the same resolution because this makes things look better than they really are and their coefficients are changing from year to year so here we have year one we have the three year average now this three year average actually contains your one but when you take the difference of these oh this does not look too good because now you have to degrade the resolution well when you degrade the resolution you lower the scale right this 30 doesn't mean anything now because this is on a different resolution see how big the blocks are versus the tiny points here you have to keep the resolution the same so actually these two images don't agree at all even though this image contains that one so that gives you an idea how bad it is so to give it in a different perspective I did a color difference map with the resolution preserved so in this case now I'm taking the three year average which again contains year one and I subtracted

from year one do you see all the
leftover and I can blow it up for you
and you can see that there is a lot of
leftover and some of this signal is red
so the difference image indicates that
the data has nothing to do with
cosmology because these maps are not
stable from year to year let alone on a
cosmological time scale so if you have a
point that moves
remember we're measuring a signal that
is not supposed to have moved with the
universe they tell us as 13 billion
years old so it doesn't move
a year-to-year basis so in order to make
cosmological interpretation the W map
images must be perfectly stable from
year to year even fluctuations at the
level of a few pixels is disastrous and
it's a lot more than a few pixels
since the data must be stable on a
cosmological time scale so this is an
impossible experiment it cannot be done
now if you look they also give us new
analysis of the foreground and they
actually try to tell us well this

galactic signal I could break it into
free--free emission spinning dust
thermal dust it doesn't matter
it's all galaxies now the Planck
satellite I wrote a paper on the Planck
satellite which Steve talked about about
the conduction out of the four key
reference targets well when you have a
conductive path out of a blackbody it's
supposed to be a blackbody
it doesn't need to emit any photons to
get rid of its heat it can use
conduction so conduction is strictly
forbidden so if the satellite isn't even
designed properly the combination of
data collected at all of Planck's nine
frequencies this is a quote from them is
crucial to achieve the optimal
reconstruction of the foreground signal
in order to subtract them violate
thermodynamics and reveal the underlying
Cosmic Microwave Background so now we
have nine signals with Planck and now
we're going to play the subtraction game
with these guys I don't care how they
subtract it you cannot invert any of

these because these have real physical meaning oh and we have our fifteen thousand point sources now and they tell us it's right for follow-up characterization so here are my conclusions

Penzias and Wilson are not allowed to assign a temperature of three point five Kelvin to their signal they don't know the temperature because they don't know that the source adheres to the condition by which the laws of thermal emission can be applied the applications of the laws of thermal emission in obtaining a real temperature requires that the source be enclosed with a perfectly absorbing enclosure or that it be a solid and furthermore to have a thermal spectrum you need a vibrational lattice as you find in condensed matter and in the BIGBANG

they will never be one as such the 3.5 Kelvin temperature is not real it's only an apparent temperature and we have no evidence that the measured signal properly samples the entire energy

content of the source because if you think of water water can put some energy in the hydrogen bond it can put some in the hydroxyl bond and we know from the oceans that they can be a lot in convection currents as so the temperature assignment stands as a violation of the laws of thermal emission since Penzias and Wilson cannot ascertain that this that the source of their signal was devoid of the effects of conduction and convection that is that they properly sampled all the degrees of freedom of the system in which they're interested also relative time of the monopole given the chemical nature of the hydrogen bond and it's proven ability to emit in this frequency range we know that as Steve mentioned from microwave ovens or submarine commanders know it because as soon as they break the surface of the sea microwave is dead when they go underwater that shows that the oceans are very very powerful absorbers it is certain that the monopole signal arises

from the oceans and that other water containing bodies on our planet there is no monopole at λ_2 this implies that the earth cannot emit as much radiation in these frequency bands as some might believe that has consequences for those who are interested in radiative balance of the earth and everybody who's now with global warming so it's important to reassign the signal because humanity cares about its proper assignment this signal belongs to geophysics gnostic cosmology now of course we do have galactic signals source signals which we also sample from the earth but we don't care about those because they have no meaning they have no meaning in cosmology and they have no interest relative to understanding the earth the central signal that pen Justin Wilson won the Nobel Prize for and that signal is still tremendously important and believe me I still believe they get their Nobel Prize that was a great discovery but the thing is it has been miss assigned by others and now it has

to be reassigned and this is an example of improper anchoring in physics microwave signals come primarily from our own galaxy and the the billions of galaxies found in the universe the point sources are innumerable this is relative to the anisotropy Maps the microwave anisotropy maps have no meaning and science so it would beat it the microwave anisotropy maps have no physical meaning in science they represent signal processing errors and artifacts violations of thermodynamics it is scientifically inappropriate to negate some microwave signals and then use those results to remove the foreground this creates images with both positive and negative signals or temperatures something never found in nature it constitutes at the minimum a violation of the laws of radiation and at worst a violation of the third law of thermodynamics once again multiples have no physical meaning in science the anisotropy maps are devoid of year-to-year stability

required of a signal of cosmological
importance as Steve also talked about
the axis of evil' so the axis of evil
which has been a subject of recent
discussion in cosmology is nothing more
than image processing artifacts which
arises from an attempt to
move the foreground and create the
multiples the Copernican principle
remains valid we do not live in a
geocentric universe so even though I
said the water signal comes from the
earth I'm not doing cosmology here I'm
just telling you the oceans are emitting
in the microwave we do not live in a
geocentric universe we have never seen
and will never see the first trillionth
of a trillionth of a trillionth of a
second after the Big Bang thank you very
much

[Applause]

[Music]

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

On this series, we are
presenting what we consider
the ten most compelling
and clear-cut reasons
why electromagnetism is the
force that rules the cosmos.

This exercise provides an
invaluable opportunity
to juxtapose the theoretical
predictions and explanations
of standard cosmology versus
those of the Electric Universe.

In our first two episodes,
we explored the significance of
pervasive, vast cosmic magnetic fields
and filamentary cosmic
structures respectively,
neither of which are predicted or
explained by gravity-centric cosmology
but they are expected features
of an electric universe.

In fact, at all scales
throughout the cosmos,
both the structures and energies
of the most stupendous phenomena
reveal an underlying cause that
continues to elude space scientists.

Today we explore why spectacular emissions
across unimaginable cosmic distances
are the third of ten reasons
why the universe is electric.

Cosmic Jets

It is a mystery that space
science must openly confront,
what force is capable of producing high
energy jets spanning not millions of miles
but many light-years
across the cosmos.

What confines the jets to narrow
streams across cosmic distances
and what prevents the, so called, streams of
gas from dispersing in the "vacuum of space"?

These questions are posed by the discovery
of Herbig-Haro objects, or jetted stars,
which have sometimes been
characterized as "cosmic tornadoes".

The image on your screen appeared as the

Astronomy Picture of the Day in 2006.

The stellar jet of

Herbig-Haro 49/50

was detected at the incredible
velocity of 100 km/s.

The caption of the APOD, entitled

Cosmic Tornado, reads as follows,

"Though such energetic outflows are well known to be
associated with the formation of young stars,
the exact cause of the spiraling structures
apparent in this case is still mysterious."

Of course, terms like

tornado and outflow

are derived from the familiar behaviors
of wind and water on our own rocky planet.

But how could such terminology be applicable
to the behaviors of "gases in a vacuum"?

The inappropriateness of the analogy
is highlighted in the scientific paper,

The Formation of Stars and

Solar Systems. It states,

"Stellar jets are analogous
to giant lawn sprinklers.

Whether a sprinkler whirls,
pulses or oscillates,

it offers insights into how

its tiny mechanism works.

Likewise stellar jets, billions or trillions of miles long, offer some clues as to what's happening close into the star at scales of only millions of miles.

Material either at or near the star is heated and blasted into space, where it travels for billions of miles before colliding with interstellar material.

This explanation raises more than one fatal objection.

It begs the question, if one were to turn on a "lawn sprinkler in space" what would happen to the stream of water?

The aforementioned paper acknowledges the problem by asking the following question, "Why are jets so narrow?

The Hubble pictures increase the mystery as to how jets are confined into a thin beam."

Of course, heat alone does not explain the ejection and confinement of the jetted material.

Discussing the jet of

Herbig Haro 1/11,

the aforementioned paper admits

that a disc around the star,
which is supposed to provide the "nozzle" from
which the theoretical lawn sprinkler emanates,
is not evident in this image.

The authors then entertain a rarely
considered possibility; they state,
"One theoretical possibility is
that magnetic fields in the disk
might focus the gas
into narrow beams,
but there is as yet no direct observational
evidence that magnetic fields are important."

We note that this statement was
published more than a decade ago
and, as we outlined in the
first episode of this series,
even in the last 10 years space
scientists have had no choice
but to much more freely acknowledge the
pervasive vast cosmic magnetic fields.

A dramatic recent example of
this is the magnetic field
scientists have detected associated
with the Magellanic bridge,
a thread-like filament stretching
an astounding 75,000 light-years

and connecting the small and
large Magellanic Clouds.

One of the researchers

said of the finding,

"Not only are entire

galaxies magnetic,

but the faint delicate threads

joining galaxies are magnetic, too.

Everywhere we look in the

sky, we find magnetism."

Jane Kaczmarek of the University

of Sydney said of the finding,

"In general, we don't know how such

vast magnetic fields are generated,

nor how these large-scale magnetic fields

affect galaxy formation and evolution."

Just as electric currents sustain

and confine the vast filament

connecting the small and

large Magellanic Clouds,

it is electric currents

flowing through plasma

that produce the extraordinary structure

and energies of the Herbig-Haro jets.

An ongoing astronomical mystery is both the

beaded structure and "kinkiness" of stellar jets.

Of course, as plasma physicists will attest, beading and kink instabilities are two of the most easily recognized features of electrical discharges in plasma.

In fact, as we turn our attention to an even greater scale, to the spectacular cosmic jets seen emanating from galaxies, we see the perhaps inevitable confirmation of the jet's electrical nature.

In 2011, a team of scientists including radio astronomer Philipp Kronberg, measured the electrical current in the jet shooting from the galaxy 3C303.

The New Scientist headline "Universe's highest electric current found"

states of the finding,

"A COSMIC jet 2 billion light-years away is carrying the highest electric current ever seen:

10 to the 18th power amps, equivalent to a trillion bolts of lightning.

Philipp Kronberg of the University of Toronto in Canada and colleagues measured the alignment of radio waves around a galaxy called 3C303, which has a giant jet of

matter shooting from its core.

They saw a sudden change in the waves' alignment coinciding with the jet.

'This is an unambiguous signature of a current,' says Kronberg."

Unfortunately, the team of scientists can only conclude that a black hole produces magnetic fields which then generate the current.

But more recently, the study of cosmic jets at the vastest scale has provided findings that can only be described as fatal for this theory.

In 2016, astronomers reported a finding that will never be reconciled with conventional black hole theory.

A Royal Astronomical Society press release states of the finding,

"...supermassive black holes in a region of the distant universe are all spinning out radio jets in the same direction.."

A lead investigator, professor Romeel Dave writes,

"This is not obviously expected based on

our current understanding of cosmology.

It's a bizarre finding."

As noted by Professor

Andrew Russ Taylor,

"These black holes don't know about each other,

or have any way of exchanging information

or influencing each other directly

over such vast scales..."

In the Electric Universe it is not

black holes at the centers of galaxies

which are responsible for the

observed energies and mass.

Rather, the plasma discharge

phenomenon, called a z-pinch,

creates plasmoids at

the cores of galaxies.

As the plasmoid's charge

density increases,

it creates the well-known plasma

feature called a double layer

which can explode or release energy in the form

of cosmic jets and other spectacular emissions.

As we explained in

the previous episode,

plasma scientists have provided

persuasive experimental proof

for the dominant role of electromagnetism in
influencing the structure and rotation of galaxies.

In the Electric Universe, space
across the vastest cosmic distances
has a substructure of electrical potential,
typically extremely subtle at any point
but sufficient to affect
cosmic directionality.

Both stars and galaxies occur
like pearls on a string
revealing a filamentary or even cellular
structure to the universe at unfathomable scales.

Plasma physicists have
demonstrated experimentally
that plasma discharges can be
scaled up to 14 orders of magnitude.

In fact, the Nobel prize-winner, the
father of plasma cosmology Hannes Alfvén
proposed that plasma phenomena could be scaled
up to an incredible 28 orders of magnitude.

As we will continue to demonstrate
in our following episode,
standard astrophysics will
never successfully explain
the most stupendous electromagnetic
events in the cosmos

through theoretical models in which
electricity doesn't cause anything.

The breathtaking form and
energies of cosmic jets
are yet another of countless reminders
that we live in an electric universe.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

[Music]

First off, I think I'd better apologize that I'm going to talk more about gravity than Electric Universe, but I think you can see a few connections as we go along. I didn't know how to organize this.

Clearly I'm going to present it in a way that it wasn't derived, and what I'm trying to do here is simply to show some agreement with facts and ask questions.

What does theory say, what does the evidence say? And what's next, I'm going to talk

a little bit about the Electric Universe,

if I can get through it. I've got too

many slides, I'll admit. Okay, we'll go

ahead. First of all, I think there's some

guiding principles we need to follow. A reliable

experiment trumps any theoretical claim, and

rational explanation trumps any magical

mechanism. There's quite a bit of magic

in special relativity and that's partly

why I say that one. I like this verse

from Proverbs by Solomon. He was probably

the leading scientist of his day and I think it's

insightful. Here's a few nice quotes that

I just couldn't help from putting in.

The tendency of a group of human beings

to quickly come to believe something
that its individual members will later
see is obviously false, is truly amazing.

It is controversy that keeps science alive and keeps
it moving. And, science is the organized skepticism
in the reliability of expert opinion. I tend
to agree strongly with those statements.

Just a little background. I've written a bunch of papers;
I figured I'd put them here, so if you have questions you
can probably find them. The last one
there hasn't been accepted yet, but I'm
fairly confident it will be in the near future now. It's
been in process for two years, fighting with some of the
reviewers. Okay, now into some of the questions
and answers. I've tended to put in red things
that I disagree with (I haven't followed that
carefully) and green are things that are true.

And here's some things about GPS that I
think they have pictured properly. And
one of those is, what effects does
gravitational potential have on atomic
clocks? Clocks higher in the gravity field run
faster. And, also, in motion, what does kinetic
energy, not just velocity but kinetic energy,
speed of movement, have on atomic
clock rates? And it slows them down.

And there's clear evidence for this. GPS in an elliptic orbit (it's not highly elliptic, but elliptic enough), when it's near perigee,, it's going faster, and it's slower in the gravity field. The two effects are identically equal and add together, and in fact the equations in different uses sometimes will compute the velocity and use that and double it.

And sometimes they'll compute the potential and double that. Similarly on the surface of the earth, because we're spinning, a clock at the equator for example, is farther away from the center of the earth, it's got a [higher] gravitational potential, and that [higher] gravitational potential caused it to run faster. However, it's spinning which causes it to run slower. [These two effects] exactly cancel each other. So, if you had a mean sea level all the way around the earth, all the clocks would run at the same rate. Kind of interesting.

Next is the theory of the Equivalence Principle.

Gravity acts on electromagnetic radiation and here's what the recognized authorities say.

And here is where we run into some real problems. The claims [that] the frequency/energy

of electromagnetic radiation when rising in a gravitational field has a redshift. I.e., it decreases. When falling, it has a blueshift or increases. I show four people here, Einstein, Feynman, Clifford Will, and Neil Ashby. Will and Ashby are current theorists that are well recognized, and they all claim that this is the case.

Well, they use an energy argument from Feynman and Einstein. One of them talks about frequency, one about energy.

[This is the] same thing. The argument is made by the conservation of energy. It takes energy to move an atom up in a gravity field, and then you let it emit some radiation. You lower the atom back down and let it absorb the electromagnetic radiation. Well, the energy of the atom is different, they claim, and therefore the energy of the radiation that's gone between them has to change, or you wouldn't get back your original energy.

Well, what's the problem with that? The critical assumption in the Einstein and Feynman energy argument is that the same amount of energy is required to emit radiation from an atom, independent of the gravitational potential.

Well, this is not obviously true, and I will

show that in fact it is obviously not true.

First of all, the Transit system and GPS, both show that in fact, the frequency as it falls from satellite to ground, does not change. In fact, I find it highly interesting that Clifford Will admits on page 50 of his "Was Einstein Right?" that clocks are affected when you move them up and down in the gravity field. But he says, we can't really know if it's a clock rate because it's not measured in real time.

Yeah, just some real beautiful logic here. So I claim that it is the frequency emitted which changes and not the frequency in transit. For example, the famous experiment at Stanford where they let radiation fall in a tower, it was the fact that the clocks that they measure the frequency with, is different, not the fact that the radiation changed.

There's direct proof available from GPS to show that this frequency does not change in transit. I think this is the best case that I can make. GPS sends a modulated signal from satellite to ground that's binary encoded, and encoded in it is the time at which the signal left the clock, left the satellite, and the time at which it reaches the ground then can be measured.

The difference in time sent and the time received is multiplied by the speed of light to get the distance. If the frequency or energy increased in transit during that time, the phase reversals would be wrong and the major distance would be short. Well, maybe it is short. But the integrated carrier frequency would get shorter and shorter because it's all continuously decreasing. And in fact, my old Hatch filter where I smoothed the code measurements with the carrier, to get higher accuracy, would diverge. It doesn't diverge, therefore the frequency cannot be changing as it falls. And here's that 'outstanding logic' again from world famous relativists. Clifford Will, I already mentioned he says you don't know whether it happens in real time or not. Neil Ashby, I call this 'double or nothing' quote, "Second, the strong equivalence principle implies that light traveling downward in a gravitational field is shifted to a higher frequency; i.e., it is blue-shifted and gains energy. As a consequence, atomic clocks at a higher elevation of the gravitational field run faster." I say what kind of logic are these people trained in?

I think, quoting from Peter, just a phrase in the New Testament, "they are willingly ignorant." I happen to know, for example, Clifford Will a graduate student of his called me once after he read one of my letters and said, I talked to Will about this and he says, "you're wrong and when he gets back from vacation he'll let you know." Well, that was two years ago. I presume he's back from vacation by now. And Ashby recently submitted an article to that same magazine that I had my first paper in, on that list, and it essentially addressed the same issue that I addressed seven years earlier. Well, he came up with a weird explanation for the same thing that I explained, I think, logically. I criticized it back to the editor; turns out the editor is a friend of mine, or I would never have got the original paper published, so I sent the criticism back and that's been four or five months ago and the paper still hasn't appeared. So, I'm beginning to think that they are, as I said, 'willingly ignorant'. They don't want to look at the facts. Okay, there are a lot of related questions though if you follow this logic to its natural conclusions. Incidentally, this Sheldon Harris again I saw one earlier of this same picture I think. "He hasn't made any

progress with his theory, so he's beginning to work on his resemblance to Einstein." Okay, where does gravitational potential energy come from? How does the gravitational force arise? Do inertial and structural mass diverge? How is the total energy split between structural energy and kinetic energy? Is the matter wave frequency or energy, defined by twice the classical kinetic energy? And can black holes exist? So let's look at some of the implications of that fact that the frequency doesn't change as it falls. It has some huge implications. First of all we can reverse Einstein and Feynman to say, obviously if the frequency hasn't changed going up and down, then the energy hasn't changed of the particle itself. Well, that means that this energy of falling must have come from the structure itself. In other words, the rest mass energy (maybe I'll show later, I prefer to call it structural), the structural mass energy is what has changed and provided us our gravitational energy. Since radiant energy doesn't change, the kinetic energy of fall must come from the decrease of the rest-mass energy. And that's

a big implication. There's some gravitational force implications. If gravitational energy comes from the rest-mass, the spatial gradient/derivative of the energy should give us the gravitational force. And it does very closely. If I use a gravitational scale factor for length and energy, etc., which we will go into a little more, Einstein has the square root one there. I have instead an isotropic one, (it's called that in some of the literature), but it's the one I get when I say that matter is made up of resonant, spinning ether blobs if you will, and because it takes reaction time of the ether at sea, that's where we get $m c^2$. In any case, if I use the exponential form, you'll see it differs only out there in the second order. But when I take that potential energy and take the gradient of it, a big difference. In the isotropic form I get the scale factor in the numerator here, right there, and if I use Einstein's it goes in the denominator. In other words, the force would increase as I fall, even though I know I'm losing energy, structural energy, which I think is the gravitational potential energy. So, the isotropic

form has to be the correct form for me to gain energy from the particle itself. Well, this has other interesting implications. In fact, if you pursue it to its logical, the G itself has a scale factor. I almost neutralize that by putting c^4 in the denominator, and saying the force is generated by the energy of the rest mass energy, or structural energy of the source, and acting on the structural energy of the particle which now is decreasing in energy as it falls, and in fact this explains the Halton Arp low energy, I think. Because as you add more and more mass, it has less and less effect. Incidentally that rules out a black hole, among other things. But it also explains quite a bit of Halton Arp's observations, I believe. Since they measure how much mass there is in a star by the orbiting stars around it, or whatever, this decreased force (because of this decreased F) also says that they're measuring the mass too low, which explains why some of the blue stars have a redshift that Halton Arp explained and fits together with it being a gravitational shift, and works out very nicely.

Gravitational Scaling and No Black Holes.

Shapiro experiment did radar time delay

from Mars as it passes behind the Sun
and showed that in fact the speed
of light slows as the square of the
gravitational scale factor. Local time intervals get
longer by the inverse of s , clock frequency slowing,
which implies that lengths shorten by s ,
and that means the structural energy
decreases by s . The mass itself increases as the cube,
but the energy decreases because of the speed of light
changing. And black holes, the
gravitational force is self-limiting, the
structure and gravitational energy decrease
proportional to s . Gravitational force does not act on
electromagnetic radiation which means that any emissions
from a black hole if it were there, if it were
straight up, it would have no effect. What
you're seeing is just simply the lower
frequency at which it was emitted. Now it is true that
there's some refraction effects, so if it came out at
an angle it would dim that result. But the major
effect is there obviously could not be a black hole.

Okay, Weak Equivalence Principle.

Gravitational and inertial mass are equal, is
the claim, and the energy implications of
that. The velocity scale factor I give over
here, and there's the total energy - the

potential energy plus the kinetic. The components of the total energy, I say the structural and the kinetic are given here, and you'll notice that I've doubled the kinetic energy. And that's because I claim that there's a hidden component which is evidenced by the fact that a moving particle emits lower radiation. So, it has converted part of its structural mass, when it moves, into kinetic mass and that works out for a number of reasons, and it looks like it's great. The identification of the structural/gravitational and inertial mass then becomes like this. Inertial mass times the speed of light times s gives the total energy. And then the gravitational energy and the kinetic energy. Okay, problem is [that] the decreased potential energy causes the frequency radiated to decrease, and therefore decrease structural energy. Increased kinetic energy also causes it to decrease and the solution is the same. The structural and inertial mass diverge with velocity. There's actually been some evidence of that in some other papers that

I don't cite here. The theory says rest mass is invariant with frame and energy conservation. The invariance of the rest mass - it's really interesting here. In special relativity they claim that the rest mass doesn't change. Well, if we work through the equations and we expect energy to be conserved, what we'd expect would be that the energy of the moving planet or whatever, would be decreased by the kinetic energy. And sure enough, when you plug that into this equation, you get that the structural mass has apparently decreased by the gravity's motion factor. And that in fact resets them, so that if I'm going to measure them on the earth, they'll look like they're the same. We'll go into a little more of that. Note that it's numerical invariance and not physical invariance, for both speed of light, inertial mass and a number of other things. Confirmation of structural mass decrease and inertial mass increase with velocity, which is contrary to theory. The frequency of emission (and absorption) increases with potential energy, but decreases with kinetic energy (e.g. Pound-Rebka experiment) that I mentioned

earlier. The frequency (energy) of matter waves is twice the classical kinetic energy. I've never seen anybody try to explain why. Direct tests of inertial and gravitational mass divergence (with fall) have always been performed at the same velocities. So, they're not even really looking for it. In a given frame the structural (gravitational) mass and the inertial mass are equal when stationary, because the kinetic energy is reset to zero in your moving frame. In a given frame, the structural (gravitational) mass and inertial mass may vary by the same amount as the gravitational potential energy is changed, if you're not moving up and down in that potential. Okay, on to the next. GPS and the Strong Equivalence Principle Theory.

Here's what the experts say. The effects of acceleration and gravity are completely equivalent. Einstein said it. Feynman said it. Ashby says it in chapter 14 of the Global Positioning Bible, if you will, and let's just go on: What experiment says.

Gravitational potential causes clock rate changes, but acceleration causes Doppler frequency

changes. Well, there's a significant difference there.

I can integrate my clock frequency changes and get time. I can't integrate Doppler frequency and get time. But by the previous argument from GPS, the frequency does not change when falling and the radiated frequency (clock rate) changed as a function of the gravitational potential. In GPS, the Doppler frequency can be distinguished from the clock rate by sending the clock reading via the same electromagnetic signal, i.e. it is modulated on the signal. Tracking millisecond pulsars can distinguish between clock rate and Doppler rate and [this] clearly shows that they aren't equal. Clock rate integrates into clock time but Doppler does not. The effects are not equivalent. I do admit there is one minute [tiny] effect that cancels and that is with the earth falling towards the Sun as it orbits, and the GPS also falling, it turns out, over that 70 milliseconds, there's just enough tiny acceleration of the earth that it essentially cancels out that clock effect instantaneously. But, as we shall see,

the integration of it still has good effects.

On to theory again. Infinitesimal Lorentz Boosts

(or transformations). The theory claims that

there are valid means of adjusting SRT to accelerated

frames. And I give a bunch of references for that.

Experiment instead, agrees with Goy's hypothesis.

He's a Prof. in Italy and he says that you can't do

Lorentz transformations instantaneously, but

you can set your clock rate instantaneously to

whatever the velocity is at that point.

And that's proven by the fact [that] in

a muon storage ring the acceleration has no effect,

but the velocity does directly affect it. And

here I want to do a couple of experiments to

illustrate a little bit of this. If you use GPS and

free running clocks to measure the time

and the speed of light in orbit around

the earth, and I'm going to measure

the speed of light across this bar, or

even perhaps across this bar, if I gravity gradient

stabilize it for example, so that this always points

towards the earth, then these two clocks on the two edges

run at exactly the same rate, because they're traveling

at exactly the same rate and exactly the same

potential. Meanwhile these two are traveling at

slightly different speeds, and that speed is just exactly

enough to cancel the difference in the potential.

And so, all these clocks will run at the same rate if I'm not rotating this. The horizontal leg is just like GRACE and the GRACE satellites use GPS for time and they clearly show that, yes the clocks run at the same rate. They agree with the GPS time and GRACE is just two satellites in the same orbit, separated by a couple of hundred kilometers.

But there are some interesting things that we can also learn here. For light traveling between those two satellites, it turns out it will be measured as c minus v , the velocity of the satellites. Because of the transit time, how far the satellites have moved in that transit time, we can reduce that to a distance traveled. We can compute a change in clock that would compensate for it and it turns out that it's exactly that $v \times \text{over } c^2$ negative. And for carrying a clock, if you look at the gamma factor and look at the center part term, which is caused by the orbit, you get that same correction. The first term can be made arbitrarily small by moving slowly.

And this one is common to anything on the earth, so you can get exactly the same effect by carrying a clock from one to the other.

Slow clock transport induces a clock bias, and Einstein two-way synchronization produces that same clock bias. So they will measure the speed of light as c , if in fact you try to synchronize them.

But if you don't synchronize them and it's not rotating, you won't. Next: spin.

What if we rotate it, or what if we stop the rotation (we were rotating the last one pointing towards the earth)? This one we're not. And one way of doing that would be to spin this thing around its vertical axis, and now it won't rotate as it goes around the earth. The spin we could use to see that it would create the clock bias between the two that make it look like the speed of light is c between the two.

These two clocks run at different rates, because of their gravitational potential.

But lo and behold, if you integrate those two rates as this goes around the earth, this one will wind up being behind it, once you've gone a quarter of the way around, and it creates just exactly the right amount of

clock bias to measure the speed of light of c again. Well, this is exactly what happens on the earth: the spin of the earth keeps the earth oriented the same way in space, and the spin and the gravitational potential of the sun, wind up causing it to make it look like the speed of light is c on the earth, even though it's not. Okay I think that's good enough.

Next, theoretical claims for Lorentz transformation or boosts. If you make two non-collinear Lorentz transformations, they claim it'll create a torque. Nobody knows where the torque comes from, but Thomas gave an original derivation for that on the electron. Lorentz boosts of the earth causes the cancellation of the Sun's gravitational field, according to Ashby. Muller attempts to explain the torque and he actually gives a physical explanation which I think makes sense. The trouble is, if he were right, and if the Thomas precession explanation were right, you'd get twice as much. I do believe that the divergence of structural mass and inertial mass can cause the precession effect. The experiment: gravitational

potential of the Sun does not affect the clocks.

This does affect the clocks, whereas they claim that it didn't. The frequency effects integrate into the clock biases.

And that's exactly by the process I just explained on that spinning 'thing'. The earth is spinning; as a result you get some clock biases, that wind up making the speed of light look like it is the same in all directions. And when the orbit direction changes, the gravitational potential of the Sun is just enough to keep that bias the same amount. So, Ashby's claims are wrong. The fall of the earth does not cancel out any effect on the clocks caused by the gravitational field of the Sun. There's another fundamental question we can get back to. What about length contraction?

Is it real? If so, what's the mechanism?

I claim that the conservation of momentum requires length contraction of an orbit in a moving frame. How do

I get this? Well, when you're moving, the inertial mass increases as the experiments have shown. It turns out that, if I'm in orbit around the earth for example, up here, my orbital speed adds to the earth speed. I'm going enough faster, then my mass is a little higher.

Conservation of momentum says I have to move a little bit slower, therefore I'm going to wind up closer to the earth in front. Down here just the opposite effect. It cancels some of it. I get lower mass, therefore my speed has increased and I get a little closer to the earth on the tail end. I believe that exact same thing happens in the atoms and so forth. So, we get length contraction caused by conservation of momentum. Well, there's another amazing fact about it and that is it's exactly the same clock bias that will counteract that slow tiny velocity change and make it look like we have uniform momentum in an orbit around the earth, even when the momentum is not uniform. And the clock times. I could use this as a clock and see that there's clock slowing etc. Okay, theory says the speed of light is physically invariant. Wikipedia questions it and I say the real question is, is the speed of light physically invariant, or simply numerically invariant in a local inertial or local gravitational frame? Shapiro radar time delay shows the speed of light varies in a gravitational potential, and I say: lengths shorten, frequency decreases, speed

of light decreases as the square, but it's locally invariant numerically. In other words, it's physically changed, but it has not mathematically changed in terms of a number I would measure locally. Now back to transformations. We get the Selleri transformation. Again, a Prof. in Italy, has developed a transformation where he says there's clock slowing and there's length contraction, which is why I've argued for those two. And he gives a simple set of equations for that Selleri transformation. It's the same as the Lorentz transformation except there's a time difference equation. If you manipulate the mathematics of that time difference and simplify it, it turns out that it's that same clock bias that you get from Einstein synchronization. So, yes, the Lorentz transformation works, but it's because you've changed the clock. And it turns out you've changed the scale. Over here we're looking at that clock slowing and it winds up when you look at everything, the speed of light is physically decreased by gamma squared, if you're going one way. If you're going back the other way, for example the earth.

I call the earth a child frame of the Sun and the Sun a parent frame of the earth because the speed of light is physically different in the two frames, from what we've just looked at. And of course, there would be a galactic frame that's parent of the Sun, etc. So, numerically c is invariant, but physically it's not. Okay. One-way Sagnac effect on the earth. The measurement is the result of earth's rotation around its axis. I claim that that's absolutely false. Wang has done some experiments with conveyor belts and shown that their circular equation, right there, is really equivalent to the length, it can be put in terms of the length. Well, on a one-way path, you'd expect it to be half as big as the GPS experts claim. There's this triangle that it follows and they put it in the same form for a one-way because of earth's rotation. But again, if you work it out, it turns out it's just $v l$ over c squared. And when you put it in terms of where the satellite and the receiver are, it works out to be exactly the same as that $v \times$

distance along the equator. And so there's clock biases that have to be accounted for in GPS, to remove the Sagnac effect. Everybody asks why there isn't one for orbits. Well, there isn't one for orbits because they're all affected by the same amount. So, you just adjust your clocks. The clocks have been adjusted and are automatically kept that way from the argument we've already given. A little bit more proof of that is GPS has to include all receiver motion in the effect, whether it's just rotational or not. And that's the ICD document that claims that that's the case. So again, it's not a rotation, it's the fact that the receiver and source are moving. Okay. I then come up with what I call the Apparent Lorentz transformation. And I say it's the result of the Selleri transformation along this axis, added with a clock bias, or removed from a clock bias. There is a scale change across this, one way when you're going one way, and the other when you're going back the other way. Okay. And that has some implications later on. I say why call the transformation an Alternate Lorentz transformation? Why not call it the

Lorentz transformation? And I say, that's because the interpretation is dramatically different. Yes, the mathematics is the same, but the physical speed is different and there is a length contraction, even of the earth on the order of a few centimeters. Which incidentally, I came across the paper a long time ago. I haven't checked on it recently. When they tried to compute precise orbits with radar, of the planets, they did not get the right values. They tried it with and without Einstein's theories, and it didn't work either way very well. I claim that they're not taking into account this flattening effect and the speed of light changes as a function of direction here. The length contraction is different in different directions and incidentally that'll cause a very tiny change in your VLBI measurement of the milliarc seconds. So, there's some fun things that they don't account for, that I believe we're beginning to see the residual effects of that. The speed difference, the need to distinguish between parent frame and child frame, to know whether the scale is changing up or down. It clarifies the need for a specific bias mechanism to account for the clock bias. Special relativity in general, seems to think

and is evidenced by the infinitesimal Lorentz transformation claims, that the clocks will automatically be biased under acceleration, to still measure the speed of light to c . And that's clearly not the case. They have to be in a gravitational field that's adjusting the clocks properly, or that will not happen. And as just seen by the great satellites they are not synchronized to measure the speed of light to c , because they have not been biased by that proper amount.

Okay. So, I say it clarifies the need for Einstein re-synchronization if the acceleration is linear and not in a gravitational field.

Okay. What's next? This is from Sheldon Harris's same 'Einstein Simplified' book.

He says, "As I mentioned next week in my talk on reversible time!" So, I'm going to look a little bit here at what's next

Next week (or later): To be explained.

The anomalous Earth Gravity Assist. It's my hypothesis that [it is] that same flattening of the earth's gravitational potential upon a solar orbit. It works fine for any orbit around the earth, because they have the

same phenomena effects. But once I use the earth to send somebody else, I believe and in fact the largest earth gravity assist observed, came in directly orthogonal to what that flattening would be. So, I think (I haven't worked out the details), but I believe that that will explain the extra acceleration seen on earth gravity assists. The apparent relativity of gravitational and electromagnetic forces. My last paper, that I still haven't had published, I show how a gravito-magnetic effect looks like a gravity effect in a moving system. I intend to try to do the same thing electromagnetically and I have that outlined and I believe it'll work. It's a little more complicated than the gravity one. Another interesting thing is that there's a speed kick of millisecond pulsars whenever they collapse down more. I believe that's just a conservation of momentum effect and the direction of that momentum. They speed up and I believe it gives them a kinetic kick along the axis. Incidentally, in that gravity one I found that if I have a spinning orbit and I speed it up,

I also get the part of that spin energy goes into kinetic energy. So again, it indicates it's just like that hidden kinetic energy elsewhere.

Spin energy can create hidden kinetic energy when you start moving. I haven't really done any work on this last point in 20 years, but 20 years ago I did do some work on the relationship between gravitational and electric forces.

Now, this is hypothetical and you may have big objections to it. But nevertheless, my conjecture is that there's a relationship between gravitational and kinetic.

Gravitational potential, I believe, arises from compression of the ether and that's why it exponentially decays with distance from the planet. Gravitational forces arise from the compressive ether gradient.

Gravitational force is locally generated by the local gradient (no travel time).

Kinetic force is due to the shear gradient induced by the motion in the ether.

Electric and magnetic, I believe, are simply oscillations of the other two. A lot of people think, and properly so, because there's 40 orders of magnitude difference between them, that gravity is residual electric. I believe it's just the opposite and when you

look at how concentrated the mass is in an atom for example, I think this might help explain the effect. The electrical potential arises from an oscillation in the ether density, I believe. And the electric force is due to the interaction gradient and direction of flow of that ether oscillation. I believe an electron, for example, is anti-rotating a phasing structure and makes it look like it's coming in phase motion because of the rotation, while a positron would rotate in the opposite direction and it would look like it would be going out. Magnetic force is due to the oscillation of the shear induced by the motion, I believe. What is a little bit of supporting evidence for that? Well, for example in gravity there's no travel time. In the electromagnetic to the best of my knowledge and from what I've seen, it travels at the speed of light, and it looks like that next paper I'm working on. And that explains one of the differences between the electric and magnetic as well. There's only one sign to the charge, no repulsion, but if I have an oscillation, I can get plus and minus inward and outward phase motion. Apparent morphing of gravitational and kinetic into gravity-only. Same way, apparent

motion of electromagnetic forces with motion into electric only. Earthquakes induce electromagnetic phenomena. With the one in Japan recently, they saw the ionosphere bump up right above it. So, I believe that motion of mass, oscillation of mass in particular, can create an electric field, a strong electric field. Io was mentioned in the talk before mine. I looked at it again, 20 years ago, and the decameter radiation occurred as Io was in front and behind [Jupiter] and had opposite patterns. So, I believe that's when you'd get the most oscillation of apparent gravity, because one's following the other in either case.

And I believe it's what creates that strong electric field. And of course spiral galaxies.

You saw that electric radiation between the stars, well those stars are following one another and create an oscillation. So, I believe that it's the gravity or the mass oscillation, which causes these huge electric forces. This is a big quote. I'll skip it since we're probably low on time and I'd like for a little bit of time to ask questions. But one of the famous professors that looked at biochemical processes said at the tail end of explaining it to people, "There's no possibility

whatever that this system could have arisen by chance.”

I tend to think the same thing of

physics. There's some remarkable

mathematics and remarkable design as evidence.

So, I say, “Be a King, like Solomon. Search out matter.”

[Applause]

[Music]

[Music]

In previous episodes of this seven-arc series, we covered how the development of new instruments has accompanied, or generated, fundamental shifts in scientific thinking.

The instruments measure overlooked discrepancies and detect unimagined qualities. The previous explanatory ideas won't stretch over the new evidence without patching, and the patches become awkward and arbitrary. At some point scientists decide that the old patched ideas are too much of a nuisance and they come up with new ideas that fit better.

Brahe's more precise instruments arguably led to the replacement of Ptolemy's kinematic model of planetary motions with Newton's dynamic model.

Patching Ptolemy's perfect circles with ellipses, especially when strong objections were already raised against his linear equant element, would have been playing with dogmatic thinking.

The great increase of instrumentation in the 18th and 19th centuries, led to the replacement of Newton's dynamic model with Einstein's rubber

space-time model in the 20th century.

Gravity as a force was abandoned in favor of gravity as a warped coordinate system. But the use of the same term for both conditions caused confusion. People still talked about gravity as a force.

The invention of electronic instruments and the ability to send them into space, has now brought a flood of new data that doesn't fit Einstein's space-time. But instead of looking for clearer explanations, theoreticians are playing with dogmatic thinking. Early in the 20th century, astronomers categorically ruled out the possibility that electricity might compete with gravity as a cosmic force. That decision became a dogma that prevented them from even looking at plasma experiments. With little knowledge of the actual behavior of plasma, they hid the new data behind ad-hoc excuses of collapsed matter, and undetectable dark matter, and unexplained dark energy. They patched Einstein's rubber idea with fantasies that were invented to make the math work and to save the theory. But the theory is obscured by the stitches.

For example, the idea of neutron stars began as

a patch to conventional gravity and gas theories.

Some stars appeared to be too small to contain enough conventional matter to produce their observed gravitational influence and light output. So astronomers invented an untestable form of collapsed matter. They imagined that the increasing and unresisting gravity of a shrinking star would squeeze the electrons of atoms onto their nuclei.

This allowed many more atoms to be packed together, enhancing gravity and radiant output.

When they found motions and energetic outbursts that exceeded the neutron star's capacities, they presumed that the now irresistible bending of gravity followed their equations of collapse to the mathematical point of zero.

They didn't seem to realize that they were crossing the empirical border into metaphysical nonsense, because gravity would bend space-time so strongly nothing - not even light - could escape the collapsed star. So it would be unobservable. Hence this second patch was named a black hole.

Only crackpots remarked that the point that exploded at the beginning of the

Big Bang would have been the mother of black holes, and therefore the Big Bang couldn't have happened. But it turned out that much was escaping, if not from the black hole, at least from nearby. The black hole was reconceived as the mathematical point, as well as the nearby phenomena. It could be observed after all.

In fact, black holes often appeared not just to pull everything in, but to blow everything out.

They were transformed into white holes with magical mathematics. Astronomers never considered that the nearby phenomena might be caused by something other than a black hole.

Similar difficulties of too much energy in too small a space, also turned up in observations of galactic motions.

Galaxies and clusters were moving too fast for their mutual gravity to hold the cluster together. Most clusters should have dissipated long ago, and stars in the arms of spiral galaxies should move slower, the farther they were from the center. But they appeared to be moving at about the same speed, regardless of their distance.

In fact, the entire universe was more energetic than could be explained by the gravity of its calculated mass. So

dark matter and dark energy were
imagined to save the theory of
gravity from complete falsification.

Those patches made 96 percent of the
resulting universe of theory unobservable.

Astronomy abandoned scientific principles and
sank into dark speculations about dark phantasms.

Black holes and collapsed matter are
not explanations, they're excuses.

They try to squeeze the abundance
of energy that's observed and that's
available in electrically active plasma,
out of the dearth of energy that is all
theories of gravity and gas can supply.

Dark matter and dark energy hide a
pretense of bloated gravity behind an empirically
dishonest claim of invisibility and untestability.

Because astronomers believed in the 19th
century gravity and gas universe before
plasma was discovered, they believed that
electricity, in what they imagined to be
empty space, was impossible. The
old theories became a belief system,
a dogma that was absolutely true and
unquestionable. What else could it be, believers
exclaimed, transforming the question into a foregone

conclusion. Many observations confirm relativity,
they declared. But confirmation only
confirms what the believers already know.

The new evidence and new ideas
confront them with what they don't know.

Discovery lies in the dis-confirmations, the
anomalies. Discovery lies in searching for and
testing alternative explanations.

Even as the traditionalists retreated
into dark dogma, the pioneers of radiant
matter that Langmuir later renamed
plasma, and Birkeland's terella,
were exploring electricity in space.

Striations and bubbles, plasma - not gas -
bound by double layers and sorted by its
various characteristics, and moving by a
hand that could be much heavier than gravity.

Theoreticians shunned the new
experimental findings, because they
couldn't be expressed in prestigious
mathematical generalities, from which the
real universe of observation could be
deduced. Hannes Alfven, an early plasma
experimenter and one of the founders of
plasma cosmology, wrote this about the situation.

"The cosmical plasma physics of today

is to some extent the playground of theoreticians who have never seen a plasma in a laboratory. Many of them still believe in formulas which we know from laboratory experiments to be wrong. Several of the basic concepts on which theories of cosmical plasmas are founded are not applicable to the condition prevailing in the cosmos."

"They are generally accepted by most theoreticians, they are developed with the most sophisticated mathematical methods; and it is only the plasma itself which does not 'understand' how beautiful the theories are and absolutely refuses to obey them."

Hiding in conceptual darkness and playing mathematical games with imaginary objects negates the foundational assumptions of scientific thinking.

The objects of investigation must be sensible, that is able to be sensed, able to be detected.

They must be amenable to experimentation.

They must be explainable, not solely predictable.

Theoreticians must not only follow the math, but also follow the language, theories must mean something.

Scientists must search for alternative explanations and test them for coherence

and correspondence with the alternative interpretations of the selected evidence .

Ad-hoc patches complicate theories. The Standard Model is suffocating itself under its arbitrary patches. Plasma is detectable with many instruments. It can be generated in laboratories and its properties observed.

Explanations of its behavior can be proposed and tested. Its observed properties correspond with the observed behaviors of cosmic phenomena, and provides simple and straightforward explanations. But its electrical properties are not allowed in the Standard Model.

Mechanical inventions and the mysterious mathematics must stand in for electrical activity. The alternative to patching is the development of new fundamentals. The old theories and the old thinking served well to get us where we now are, but they're becoming a hindrance. They're becoming obscured by dogmatic thinking.

Space age evidence is surprising and unexpected.

Predictions from the old theories are not found.

Contrary evidence that falsifies them is found.

We should stop pretending that the old gravity-

and-gas thinking is adequate for our needs.

But the revolutionary effects of such
a change in thinking will not be limited
to one discipline. The previous metaphysics of
uniform and gradual change affected all of thinking.

Now the possibilities of larger and
faster changes in the natural world
will revolutionize all disciplines. The
empirical world has moved into a new
conceptual space. A new way of
thinking is emerging, one that rejects
the worshipful belief that only
gravity is of importance in cosmology.

An awareness of the greater energy and
power of electrical activity and plasma
systems in space opens our thinking
and our worldview to larger and faster
working explanatory possibilities. The Electric
Universe model of cosmology is one such possibility.

[Music]

[Music]

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

Comet science stands
at a crossroads
with enormous implications
for the future of astronomy,
institutional science as a whole,
and perhaps the entire culture,
in more ways than
might be imagined.

In our last episode, we explored
recent comet discoveries
that provide the final,
definitive refutation
of the more than a half-century old
"Dirty Snowball" comet hypothesis.

Since the mid-20th century institutional
science has subscribed to the belief
that comets are fluffy
aggregates of ice and dust
that formed through condensation or
accretion in the solar system's infancy,
four and a half

billion years ago.

But for decades the chief principals
of the Thunderbolts Project
have proposed a radically
different theory of comets.

Comets are not
billions of years old,
nor are they snowballs
of ice and dust.

Rather, comets as well as
asteroids and meteoroids,
were excavated from planets and moons
through high-energy electrical discharges
or interplanetary Thunderbolts.

This theory has always predicted
dry and rocky comet nuclei
which should be burnt black, covered
with extremely fine dust and rubble,
and displaying distinctly
planetary features.

Every space mission to date
that has imaged a comet nucleus,
has dramatically affirmed
the Electric Comet theory.

Scientists have marveled over comet nuclei
that appear indistinguishable from asteroids

and have, without exception, displayed a stunning lack of the abundant surface ice that Standard Theory predicted.

For three years on this series, we have reported on the amazing revelations from the ESA Rosetta mission to the comet 67P.

Despite insurmountable preexisting evidence to the contrary, mission scientists had expected the comet nucleus to resemble a snowball of ice and dust.

As we showed in the previous episode, recently released close-up images of the nucleus could not more dramatically refute this expectation.

Numerous forms of stratified rock appear stunningly obvious on the comet.

Again, we compare them to planetary examples such as those on our own Earth.

Of course, comet scientists never predicted the feature and how could they?

Stratification is thought to result
from planetary geological processes
such as wind and water erosion shaping
sedimentary rocks over millions of years,
or volcanic magma or lava
producing igneous rocks.

In standard comet theory, as
a comet approaches the Sun,
comet activity, including the production
of the familiar coma and tail,
is thought to result from sublimating surface
and near surface volatiles and outgassing.

Sublimating snowballs
do not produce features
indistinguishable from the
desert regions of rocky planets.

As we reported many times
previously on this series,
other uniquely planetary features
on the comet include sand dunes,
wind-streaked rocks
mesas.

And of course we see
the sharp-edged cliffs,
giant boulders
and endless fields of rubble

that we must find if a comet
was in fact torn from a planet.

In the previous episode,

we also reported

on another devastating discovery

for standard comet theory:

scientists' observation of a

comet that has become active

at the incredible distance of one

and-a-half billion miles from the Sun,

or 16 astronomical units (AU).

Comet ice is not supposed to sublimate

at distances beyond just 3 AU,

yet in the official NASA

Hubble press release

we see that neither this discovery,

nor the vast library of evidence,

disconfirming the dirty

snowball hypothesis

have had any effect at all

on NASA's view of comets.

The press release states,

"A solitary frozen traveler has been

journeying for millions of years

toward the heart of

our planetary system.

The wayward vagabond, a city-sized
snowball of ice and dust called a comet,
was gravitationally
kicked out of the Oort cloud,
it's frigid home at the outskirts
of the solar system..."

As we also noted previously,
it's a bizarre paradox that a lead Rosetta
scientist, Dr. Nicolas Thomas said in 2015,
"Rosetta has blown the dirty
snowball idea out of the water."

And yet the Rosetta team has
collectively held steadfastly
to the standard fiction of icy comets that
formed four and a half billion years ago.

Of course, the required surface ice
was never observed on the comet.

In January of 2016 the team
summarized their findings as follows,
"...the great majority of ice is believed
to come from under the comet's crust,
and very few examples of exposed water
ice have been found on the surface."

Here, as in the
aforementioned Hubble report,
we see an inexplicable

devotion to falsified theory.

It seems fitting

that the language

in an official scientific report

includes the word "believed ".

To describe the small patches of

water ice on the comet as "exposed",

implies a faith that an

invisible reservoir of ice

exists underneath the comet's

desiccated rocky exterior.

This was the logic that scientists employed,

who have taken to referring to comets as

"deep-fried ice cream".

Yet, how one gets stratified

rock in ice cream

be it deep-fried or not,

remains mysterious

and here we see again a disturbing

disconnect between science theory

and science discovery.

Recent discoveries in planetary science

affirm the continued conjectures

about subsurface comet

ice are not necessary.

Scientists today are attempting

to explain why the planet Mercury
has a surprising abundance
of ice in craters at its North Pole.

One theory that
scientists are proposing
was summarized in the September 19th, 2017
blog of the American Geophysical Union.

It states,

"...Mercury's exposure to solar
winds containing protons,
could have combined with oxygen and
hydrogen on the planet to form water."

For several years, scientists
have employed the same reasoning
to explain the discovery
of water on our own moon.

We suggest that a similar
process may be responsible
for the scant ice seen on
desiccated rocky comet nuclei,
yet another reason to end speculation
about invisible subsurface ice.

Other obstacles remain before institutional
science will likely entertain
any real alternative theories
of comets and comet origins.

One is the detection of the signature
of water molecules in cometary coma,
which comet scientists have always
interpreted as proof of sublimating ices.

But long before the discovery
of an active comet
at a billion and a half
miles from the Sun,
ample reason existed for scientists
to question such an interpretation.

Comet 67P was not the first
comet to puzzle scientists
with its ironically
overactive "water output",

In June of 2014, the ESA reported the
surprisingly early detection of water
"sweating" off of
the dry rocky comet.

They wrote,

"ESA's Rosetta spacecraft
has found that comet 67P
is releasing the equivalent of two small
glasses of water into space every second,
even at a cold 583 million
kilometers from the Sun."

the principal investigator of Rosetta's

microwave instruments stated

"We always knew we would see water
vapor outgassing from the comet,
but we were surprised at
how early we detected it."

But on a body that is covered
with stratified rock,
where is the water coming from?

A theoretical path that comet
scientists have yet to explore
is complex cometary
electrochemistry.

In recent years, Thunderbolts
colleague Dr. Franklin Anariba,
a specialist in electrochemistry,
has been presenting his thesis on comet
water production by electrochemical means.

In a five-part Space News
presentation in 2015,
Dr. Anariba proposed that a process
of electrons stripping releases O_2 , OH,
and other chemical species
into the cometary coma.

The discovery of an electron
density in the vicinity of the $67P$ nucleus
is therefore important.

It could mean that the chemical O_2 can absorb a negative charge through charge exchange, which is then followed by a process called protonation via solar wind at the comet.

Water formation can then be explained via a series of pathways, as Dr. Anariba has outlined.

Electrochemistry may also be the cause of the production of rich gases that comets have produced at a great variety of distances from the Sun, as Dr. Anariba has also discussed.

And it can account for the completely unexpected detection of molecular oxygen at comet 67P, yet another reason why no basis remains to suggest that comets are four and a half billion years old.

As reported in India's national magazine Frontline, "The detection of O_2 was unexpected... all the primordial oxygen molecules, which would have been there in a comet's evolution around 4.6 billion years ago,

should have

disappeared by now...

the Rosetta discovery of O₂ in

67P is an astrophysical enigma."

In fact, in March of this year,

in a scientific paper published in

the journal Nature Communications,

the authors essentially proposed that

water molecules, coming off a comet,

become electrically charged.

Then the solar wind accelerates the charged

molecules back to the comet's surface.

There they pick up an oxygen atom from

the surface from materials such as sand,

forming the detected O₂.

The electrical theory of comets is

based on sound scientific foundations

and nothing in the theory

is at odds with discovery.

In the Electric Universe,

most comet activity

results from comets moving through

regions of changing electrical potential.

Comets that spend most of their time in

the outer reaches of the solar system

develop a "negative charge" with

respect to their environment.

As they move toward the Sun's
more positively charged domain,
they can experience voltage spikes
in their dynamic plasma environment
and begin to discharge
electrically.

The Sun's electromagnetic influence is now
being shown, through science discovery,
to be far more vast throughout the solar
system than Standard Theory has ever imagined.

In 2016, the Cassini spacecraft
made the surprising discovery
of so-called magnetic ropes that stretch
nearly 900 million miles from the Sun
to the gas giant Saturn
and interact with the planet in a
manner similar to the Birkeland currents
that are now known to
produce Earth's auroras.

Comets can also become active
when passing through any more
positively charged region of space,
including when encountering the
vast magnetotail of a planet.

This theory can explain

much comet activity
which has only proved baffling
to mainstream theorists,
including comets that have
disintegrated or exploded
at impossibly vast
distances from the Sun
and the astonishing
electrical energies
measured when comets have
closely approached planets,
including Shoemaker-Levy 9 at Jupiter
and comet Siding Spring at Mars.

This, of course, explains why comet activity
can occur at distances from the Sun
where invisible hypothetical
ices cannot sublimate.

Another obstacle for
comet scientists
is a faith in their measurements
of a comet's density.

After all, said measurements in 67P would
suggest that the images do in fact lie
and underneath the obviously rocky
surface is a more fluffy, icy interior.

However, investigators might

have been given pause
shortly after the landing of the
Philae probe on the comet nucleus.

After the lander bounced and rolled into
the shade of a towering rocky cliff,
the team attempted to hammer
the probe into the comet's soil
but the hammer was bested by the
comet's obviously rocky composition.

The ESA describes the
event as follows,

"The probe then started to hammer
itself into the subsurface,
but was unable to make more than
a few millimeters of progress,
even at the highest power
level of the motor."

Similar surprises awaited
NASA's Stardust-Next team
when they reimaged the
surface of comet Tempel 1
after the Deep Impact mission fired a
copper projectile into the comet nucleus.
The team found that the
projectile's impact crater
was nowhere near as

dramatic as expected,
indicating a much
tougher surface
than the comet's density
measurements would seem to indicate.

But incredibly, the team proposed the
projectile did in fact leave a dramatic crater
which somehow achieved a
miraculous self-healing.

They hypothesized that material exploded
off of the comet at tremendous velocities
and then somehow fell back down in the comet's
near-zero gravity to refill the crater.

As Space.com reported in 2011,
"Temple 1's man-made crater
partially healed itself
as the ejecta settled and
refilled part of the depression."

The ramifications of this problem
reach far beyond comet science
and affect all of cosmology.

For decades, the chief science advisor to
The Thunderbolts Project Wal Thornhill,
has argued that measurements of an
object's density cannot be accurate
if one fails to account for the

electromagnetic stresses on the body.

In 2004, when NASA's Stardust mission

imaged another comet Wild 2,

which also appears indistinguishable

from an asteroid, Thornhill wrote

"Density calculations based on gravitational

perturbation theory are worthless.

Gravity is a weak dipole electric

force between subatomic particles.

So, the charge distribution in a

body affects gravity strongly.

Comets are highly charged bodies and

will exhibit anomalous gravity.

Newton's gravitational 'constant',

G, is a dependent variable.

It is dependent on the

electrical state of a body."

Astrophysicist Neil deGrasse Tyson

is famously quoted as saying,

"The good thing about science is that it's

true, whether or not you believe in it."

Those who have followed this series

will surely recognize the amazing irony

of deGrasse Tyson's statement.

In our previous episode we

concluded with the question,

"Is science self-corrective?"

Apply the question to comet science
today and the answer is self-evident.

Yet deGrasse Tyson is correct.

A thing is either true or not
and Nature has no regard
for human beliefs.

The repetition of the conjecture of our solar
system's four and a half billion year history
does not make it true.

The repetition of the conjecture of comets
as dirty snowballs does not make it true.

The consensus nature of any
belief does not make it true.

What is the truth about comets?

As Galileo Galilei stated,

"All truths are easy to understand
once they are discovered;
the point is to discover them."

We again implore viewers to
simply look at the pictures.

An easy path of discovery awaits,
leading one further into
our electric universe.

For continuous updates on Space
News from the Electric Universe,

stay tuned to

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A new discovery is again challenging planetary scientists' ideas about impacts from space and the rate at which they are thought to strike the Earth. For decades, many scientists have believed that asteroid bombardments, such as that which is thought to have killed the dinosaurs, occur on our planet at regular intervals of about every 26 million years. A popular theory was that a dim companion star called Nemesis would approach our Sun at 26 million year intervals, inevitably causing mass extinctions on Earth. However, the companion star has never been found and the problems for the hypothesis have continued to grow. Recently, a team of scientists performed analysis of 22 craters on Earth, which are thought to have formed from impacts within the last five hundred million years. A phys.org report on the study describes the research as follows, "The timeline of

events was represented in a circle with a particular range - in this case, 26 million years. If events repeated themselves regularly within this time-span, the points would have arranged themselves in a particular area of the circle. The researchers showed that there was no such accumulation." The greatest problem that the study revealed is that some massive so-called impact craters appeared to be almost precisely the same age, even though they appear on different continents. The co-author of the study states, "Some of these craters could have been formed by the collision of an asteroid accompanied by a moon. But in other cases, the impact sites are too far away from each other for this to be the explanation." When asked to explain the appearance of Chicxulub crater in Mexico and the Boltysh crater in the Ukraine, which are thought to have each formed from impacts around the same time about 66 million years ago; the author states, "We have no definitive explanation for that." But one of the greatest mistakes in

modern geology is the assumption that the only processes responsible for craters are either impacts or volcanism. On this series, we have repeatedly reported on the experimental research which has proven that electrical discharges produced almost every known type of crater, including many heretofore anomalous crater types; from crater chains to hexagonal craters, smaller craters appearing preferentially on the rims of larger craters and the improbably high rate of highly circular craters. In fact airless worlds, such as Mercury, the dwarf planet Ceres and our own Moon, reveal bodies that bear startling resemblances to the cratered surfaces in an industrial process called electrical discharge machining. In the Electric Universe theory, Earth also features dramatic craters which formed not from impacts but from high-energy electrical discharges. Let us look closely at one of the most dramatic and widely studied alleged impact craters on Earth. The

electrical interpretation changes everything institutional science tells us about so-called extinction-level events due to giant impacts from space. The aforementioned Chicxulub crater is widely accepted to be the impact site of the asteroid that killed off the dinosaurs. In 2006, The Thunderbolts Project published The Picture Of The Day article that analyzes in depth the evidence that, scientists believe, supports the giant impact theory of the crater's formation. We summarize the analysis here. The crater is a circular structure up to 300 kilometers across, which mostly lies under the water off the coast of the Yucatan Peninsula in the Gulf of Mexico. The crater's multiple concentric rings are thought to have resulted from the shock of the impact which would have blasted debris high into the atmosphere and around the world. A layer of iridium-enriched sediment has been found worldwide, supposedly the result of the debris cloud from the theoretical impact event. Other evidence

is thought to exist in the form of melted spherules and shocked quartz crystals, found in formations around the Gulf, which are believed to be debris left by the impact induced tsunami. Above the bed of spherules is a thick layer of jumbled rocks, including large boulders and cobbles. The distribution of the iridium layer is contrary to the expected drift of a debris cloud. Impacts from various angles have been proposed to try to explain both the crater asymmetry and distribution of ejecta. Cores inside the crater reveal Upper Cretaceous fossils in undisturbed layers -- fossils of the creatures that the impact was supposed to have wiped out. Clearly, these layers were laid down after the events.

Additionally, the alleged tsunami deposits in Mexico, Guatemala and Belize, show layering that suggested some were laid down over a long time. These include separate layers with embedded spherules that had been claimed to be direct ejecta fallout from the Chicxulub impact.

Recent investigation linked two such layers to "two events separated by thousands of years during which limestones accumulated and invertebrates burrowed down on the ocean floor." Extinctions always seem to coincide with both continental flood basalts and imagined meteorite impacts but under the prevailing interpretation the odds of this happening simultaneously are vanishingly small. The electrical origin of the Chicxulub crater and surrounding geology resolves all of the contradictions of the evidence. The electrical current of the cosmic thunderbolt, lasting longer than the forces of an impact, would have melted large amounts of material and formed vast clouds of spherules, a key signature of electrical discharge. Indeed, more than 99 percent of the global iridium layer is made of the spherules--droplets that condensed from vaporized rock. Only the remaining 1% of the debris consisted of rock pulverized directly into dust. The spherule-producing

ability of discharges has been demonstrated in laboratory experiments. Also, the electromagnetic pinch effect in a discharge channel can generate extremely large pressures sufficient to shock quartz crystals. When it comes to the question of mass extinctions, it is not clear that an impact like the one claimed to have created the Chicxulub crater is sufficient to cause such a thing. The complexities of the evidence for extinctions do not find simple explanations in either impact or volcanic models. But the one obvious factor that is never mentioned is that the dinosaur megafauna cannot survive on the present Earth because they are too heavy to live. It seems to be forgotten that the early dinosaur discoveries forced scientists to conclude that they must have been waders to offset their great weight. Whatever happened to the dinosaurs was far more than a puny asteroid impact could inflict. Nothing was the same on Earth after a global alteration of Earth's gravity. The

triumph of the impact model was not so much because of its adequacy in explaining the evidence as it was a default result. Only impact and volcanic explanations were considered. And the spherules and shocked quartz clearly ruled out vulcanism. As theoretical geophysicist Jay Melosh says, "We know so little about impacts." But an electrical mechanism was never considered because astronomers assure geologists that the planets have always been under present orbits and electrical events in space never happen.

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the Electric Universe,
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The following presentation
is an adaptation
of the Mel Acheson Thunderbolts
Picture Of the Day article
'Plasma versus Gravity'.

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

Kuhn's 1962 essay (The Structure
of Scientific Revolutions)
exploring the nature of
changes in scientific theories,
and a plethora of
commentaries since,

have made it out to be a Big Deal
and to be also somewhat mysterious:
"revolution", "incommensurability of paradigms",
"new world", etc.

It seems to me the essence of it
is simply different viewpoints.

Just as the landscape looks different
when viewed from different locations,

the facts and theories of
the sciences appear different
when understood from different conceptual
locations in the intellectual landscape.

Ptolemy drew a picture of what the
universe looked like from the Earth.

Copernicus described how
it looked from the Sun.

Newton depicted the
view from gravity.

Notice that the terms “Earth”, “Sun”,
and “gravity” are not “something out there”
but are concepts that make sense of or create
meaning from a selection of observations.

Gravity, for example, made sense of
falling apples and revolving planets.

The other viewpoints “saw” no
connection between apples and planets.

Definitions changed:

The observations once considered
important in the term “planet”
were replaced with
other observations.

New mathematical
techniques were developed
which would have seemed nonsensical to

people occupying the old viewpoints.

The resulting view of the “gravity universe”
was that of isolated “billiard balls”
occasionally
perturbing each other.

This replaced the old views
of a system of nested spheres
or an assembly of epicycles.

Now the “Electric Universe”
is a different viewpoint.

Notice, for example,
that its definition of “plasma”
is not the conventional
one of “ionized gas”.

That latter definition
jumps to the conclusion
that you can understand
something about plasma
by falling back on what you know about
ideal gasses and thermal ionization.

The ideal gas law is an important
insight in the conventional view,
but it becomes a blindfold
in the electric view,
preventing you from seeing
what’s before your eyes.

Rather, “plasma” is an emergent
(i.e., higher-level or statistical-level)
orderliness of complex electrical forces:
such properties
as filamentation,
long-range attraction and short-range repulsion,
braiding, characteristic velocities,
formation and decay
of plasmoids,
and identity of properties
at different scales.

The mathematical shorthand that was
developed for articulating the gravity view
and for using the technologies based
on it doesn't work for the plasma view.

A new mathematics - and new
technologies - will need to be invented.

The view of the universe
from a plasma vantage point
is one of persistently
interacting aggregates
with wide-spread
resonance effects:
a “driven” universe rather
than one rolling to a stop.

So the definitions

are different,
the facts are different,
the math is different,
the theories are different:

The universe looks different because
the plasma physicist is standing in
a different conceptual location
from the gravity physicist.

And although the content of each paradigm
can't be compared with the other,
the respective viewpoints
can be compared.

B. J. F. Lonergan's 1957 work (Insight)
on the nature of understanding
provides one ground upon which
different viewpoints can be compared.

Theories come and go,
but the underlying function,
purpose, and construction of theories
arise from the
nature of cognition.

As one of the ways in which
people relate to the universe,
cognition fashions intellectual
tools-theories-to accomplish particular goals.

Hence, from a

selection of theories,
one can be preferred on the
basis of its utility value
- the one which seems most
likely to achieve the goal
with the greatest
efficiency and least effort.

One criterion for the efficient achievement
of the goal of understanding the universe
is comprehensiveness.

Again comparing the intellectual
landscape with the physical,
the higher the viewpoint
the greater the purview.

In this sense, Kuhn's process of periods of
cumulation of knowledge within a paradigm
separated by episodes
of paradigm shifts
can be understood as the progressive
achievement of higher viewpoints
affording greater purviews.

Notice that from
this understanding
the often-used (and abused when
applied outside a paradigm)
judgements of "right/wrong",

“correct/incorrect”,
even “true/false”,
are meaningless.

Upon this ground for
comparing viewpoints,
the case can be made that the plasma
paradigm is “higher” than the gravity one
in that it encompasses a
larger domain of evidence.

Not only does it
explain more phenomena,
it explains those phenomena with a
comprehensive and unitary theory.

It “sees” more landscape,
more features of
that landscape,
and more relationships
among those features.

Gravity, in contrast,
“sees” fewer features
and “sees” them as
disparate events,
each requiring a separate
ad hoc explanation.

For example, every feature on
every planet has its own theory:

impact craters,
volcanoes,
tidal cracks,
floods of disappearing water,
lava that runs uphill,
runaway greenhouses, etc.

The generality of gravity is
obscured with ad hoc inventions,
and those inventions fail to account for
details intrinsic in the plasma view.

Gravity fails to account
for entire new observations,
extrapolating itself beyond
reality and into denial:

Super-massive stars spinning super-fast,
exploding stars whose shock-waves
create intricate structures,
cannibalistic galaxies,
dark matter that
overwhelms observed matter,
photos cropped between
galaxies and connected quasars,
silence in the face of the
quantization of redshifts, etc.

More and more evidence
is being ignored.

Newton was unaware of plasma.

Today his disciples

spend years in training

learning when and how to

shut their eyes to it.

It's not just the Big

Bang, General Relativity,

and Quantum Mechanics

that are in trouble

but the foundation of them all:

Gravity is an exhausted

and bankrupt concept.

A higher, more comprehensive

foundation is needed.

The technologies of gravity have lifted us

to a viewpoint that's bigger than gravity,

and we need new ideas and new tools

to make sense of the new vistas.

Welcome to Space News from
the Electric Universe,
brought to you by The
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In the first three parts
of this presentation,

Thunderbolts contributor Andrew Hall has
explored the electrical nature of wind
and powerful storms on planets throughout
the solar system including Earth.

Of course, mainstream geology tells
us that wind plays a significant role
in shaping the
landscape of our planet,
supposedly incrementally
over countless eons of time.

But, as Andrew has proposed
in numerous past videos,
the Earth's wind sheared
landscape reveals unique patterns
which may have been produced by ionized
shock waves in primordial electric storms.

In part four of
this 10-part series,

Andrew argues for a new perspective

on wind in Earth geology,
not as a slow erosional force
but a short-lived and violent one.

If you study Earth's surface
and look at details in its form,
there are obvious patterns:
arc patterns of mountain
ranges and island chains,
strange swirls and looping
cracks on the ocean floor,
and on close inspection there's harmony
in the shape of mountains and other terrain.

Sometimes it's geometric with
triangles, arcs, and star patterns.

But usually it's more
fluid, like a crazy paisley.

Consensus thought is, this is a
result of a series of unrelated events
that occurred over
billions of years,
driven by the slow churn of Earth's
crust subducting the continental plates
and the constant wear of erosion.

EU thinks it didn't
happen that way.

We think it was

caused by electricity
and the patterns we see make more sense
if viewed in the context of our theory.

The face of the Earth was
shaped by three primary means:
volcanic eruption,
lightning, and wind.

It occurred in primordial storms
which ionized the atmosphere,
charged the ground
like a battery,
and discharged energy
the same way we see today:
earthquakes, volcanoes and storms.

Only these storms
were beyond biblical.

They occurred before man arrived.

What we are talking about today
are the storms of creation,
which shaped the
face of the planet.

Because wind played the biggest role in
laying and piling the sediments we live on,
its effects are most visible.

The evidence is in supersonic
shockwaves imprinted on the land.

Once you start recognizing the
characteristics of wind-formed topography,
it becomes almost
impossible to ignore.

To identify wind direction,
look at mountains.

Mountains, not volcanoes,
are all essentially
wind blown dunes.

With exceptions for
shifting wind conditions,
a mountain's shape will show a
windward and leeward side like a dune.

The leeward side is generally
steep and slab-sided
and the windward side
dips at a shallower slope.

The windward side actually portrays
the shape of the wind itself,
as pressure waves undulate across
moveable sands and mold them.

If the wind reaches Mach speeds,
standing shock waves reflect from
any protrusion in the wind's path
causing a sharp change
in wind direction.

Distinct patterns form at this
crease called shock diamonds,
where the wind direction
changes abruptly.

The reflected standing shock wave
forms a fan-shaped interference pattern
of compression and rarefaction.

This pattern can be found on most mountain
forms, including Cordillera mountain arcs,
continental divides, lone
inselbergs, and basin and range.

Dust-laden supersonic winds
deposit their heavy cargo
where the crease
in the wind forms.

A tetrahedron-shaped zone of
rarefaction, or low pressure,
develops at the root
of the standing wave,
it's called a "separation bubble."

Wind-born dust collects in this bubble as
the wind deflects upward with a shock wave.

As material deposits
in the separation bubble,
it forms a new barrier
to deflect the wind,

which moves the standing shock
reflection backwards into the wind.

The separation bubble migrates
into the wind with the shock wave,
causing new dust to
overlay the old in layers
that stack into the
direction of the wind.

The shock wave is a discontinuity in
density, temperature, and ionization.

Remember, we're talking
about a primordial storm
where much of the
atmosphere ionized.

So, standing shock waves reflected
from the ground back into the clouds
providing a path for discharge.

The separation bubble is not only a
pressure sink, which collects heavy matter,
it is also a current sink,
being the lowest potential region
connected to the high potential current
in the reflected shock wave.

It, therefore, draws current to bake,
compress, and fuse the deposited dust.

It creates a distinct

pattern on the windward side.

Dragon's teeth --

triangular buttresses, or

sometimes called flat-irons,

formed by the sonic, ionized

shockwaves of supersonic winds.

They rise and fall in

amplitude and wavelength,

and display harmonic frequency shifts,

as well as many, many other features

which can only be produced by the

sonic effects of supersonic winds --

please see the "Arc Blast" and "Monocline"

articles previously published, for more details.

Understanding how winds

form these shock patterns

and examining the result on the

landscape reveals a wealth of information.

Let's consider this very

simple dune, called El Guaje,

in the Sierra Oriental

mountains of central Mexico.

The shock patterns of triangles is

very apparent on its windward side.

This next image is

annotated to show El Guaje

highlighting the four consecutively
formed pressure ridges that are visible.

The first is
highlighted in green
and it's almost buried
by later deposition,
so only the tops of its
buttresses are exposed.

The second is marked in yellow
and is another small ridge caused
by a period of weaker winds.

It's also partially buried by
the third, and the largest ridge
which obviously deposited
much more material.

Large triangular buttresses
at one end of the large ridge
shrink in amplitude with geometric
progression until they almost vanish.

This indicates the jet-
stream velocity transitioned
from supersonic to near subsonic velocity
along the wind-front of this dune.

The faster jet-stream region
advanced the growth of the dune,
depositing material faster and

pushing the shock-wave into the wind.

It advanced the ridge line at

the top of the page into the wind,

shown by the violet arc,

and built this portion of

the mountain thicker, taller,

and with larger amplitude

reflected shocks

forming bigger

triangular buttresses.

Each layer of the buttresses is

formed by a new shock front

from winds impinging

on the last layer.

New shock fronts formed as the wind

gusted, piling new layers on the old.

A final diminishing wind

created a final fourth shock front

which deposited a small pressure ridge,

shown in purple, on the foot of the mountain.

The highlights obscure

natural features

so please contrast

the annotated image

with the first, naked image,

to see the buttresses better.

The winds that created these
ridges were like any storm,
just quite a bit more violent.

They stiffened as the storm
grew, reached a crescendo
with electrically charged,
gusting blasts at Mach speeds,
and then ebbed away.

Their formation precludes any notion
that the winds that created them
were caused by a meteor or comet.

A large impact might produce
supersonic, dust-laden winds,
but they would crest
with the first shock wave
and then dissipate,
not slowly build to a crescendo
as these mountain ridges do.

Take a look at the surroundings
of El Guaje ridge,
and it becomes even more
apparent how it was made.

It's part of a
larger structure --
an oblong crater, it's 200 feet deeper
in the center than outside the rim.

The pressure ridges, including El Guaje, form the rim of the crater.

It wasn't made by an oblong meteor.

This is the result of a down-burst wind.

The pressure ridges are the rims of the crater, with triangular buttresses showing the wind direction as it blasted the Earth like a blowtorch, and blew out radially, depositing dust along the standing shock waves it created.

The outward blast is interfered at the top end by two, round mountains formed by lightning discharge which altered the wind flow around them and disrupted the symmetry of the crater.

Taking another step back in altitude reveals this entire mountain region in Mexico is shaped by a turbulent shear zone in the wind.

These mountains were formed by uni-polar

electric winds screaming from the south,
and mixing into plasma
storms along the shear zone
with an opposite polarity wind
screaming from the other direction.
It's eerily similar to the turbulent
shear zones adjacent to the Great Red Spot
on Jupiter,
creating kinked circulations
that have a crab-claw shape.
I call this mountain formation
in Mexico -- the Mexican Kink.
Turbulent winds fold back
and forth to make these kinks,
but they also fold up and
down and twist into tornadoes,
blowing and sucking at the land.
In turbulent zones, the
downdrafts form cyclones
that are often stretched out-of-round into
oval, polygonal, and U-shaped structures.
The winds are electric currents, so these
turbulent kinks are semi-steady-state
keep their form for a
long time, molding the land.
Downdraft turbulence also means

there is updraft turbulence.

So next to downdraft craters in Mexico
are mountains formed by updrafts.

An updraft wind will create a
dome or ridge of layered deposit
with a rim around it also,
but the inflow to the updraft leaves the
triangular buttresses from shockwaves
on the outside of the
mountain, pointing inward.

The updrafts deposit linear
and lobe shaped mountains
around and between
the downdraft craters.

The turbulence is
in a shear zone,
so deposits occur in narrow
lanes between conflicting winds.

Updraft deposits are composed
of more material than craters
and have the triangular patterns of
shock wave reflections on the flanks.

As it relates to
clouds on Jupiter,
a long, rising column, like the one highlighted
here, would create such linear mountains.

One can see the dark depths of the hole in the clouds from which the updraft column rises.

The winds roll upward from the ground and curl over, leaving a broom-swept linear ridge on the land below.

The turbulent kinks are fractal forms, so taking another step back in altitude reveals the fractal clab-claw shape emerging at a larger scale.

The smaller feature with the crater shown above is nested within this larger repetition of the wind pattern shown next, aligned along the same axis.

Nested fractals are very evident in Jupiter's clouds as well.

The similarity between Mexico's mountains and Jupiter's clouds is due to capacitance in the planetary circuits.

The strongest winds are vertical winds driven by the electric field.

Following is a sample of images taken

from the southern leg of storm centers
that molded South America,
Australia, Africa, and Eurasia.

The winds pushed and pulled on
the land with electric force,
literally molding it from wind action
above and volcanic action below.

The fluid shapes are a dead giveaway
for magneto-hydro-dynamic forces.

But deeper levels of
evidence are there,
in Mach speed sonic shock effects,
arcing effects, and sputtering effects
that provide a holistic electric
picture of everything that was happening.

Look close at the following images
and note patterns of stratification
and liquid deformation evident
from waves of heat and pressure.

Turbulent winds lifting off the land, arcing
across the sky, and returning in downdrafts
were filaments of plasma that varied
in charge density in cross-section too.

Take note how a tornado
is a coaxial circuit
with the outer wall of the tube being

the fastest, most dusty region,
and the inner core
often a clear draft.

The plasma filaments
of primordial storms
varied in dust content, charge density,
and velocity in cross-section as well.

The result is stratification
of mineral deposits vertically,
where the rock morphology
and mineral composition
discretely change from
the core of the feature,
to the walls of the feature and
then to the outer surroundings.

It's a coaxial arrangement.

The following images show where the
storm pulsed and ebbed with current,
stratifying these layers of dust with
different composition from the inside-out,
where the coaxial up-and-down draft
winds created domes and craters.

Layerings of varying mineral
composition are particularly evident
where winds abruptly changed direction, from
horizontal to vertical at the rim of craters

and the buttress

flanks of mountains.

There, charge densities

in the shockwaves

and the effects of magnetic

pinch were the greatest.

The stratification of species

within the electric winds of Jupiter

matches the pattern of stratification

in landforms here on earth.

They are coherently layered from the

inside-out of each turbulent kink, or vortex,

unmixed by the turbulence,

in accordance with charge densities in

currents that are primarily moving up and down.

That electromagnetic fields

sort species and recombine them

is predicted behavior in plasma.

We use a multitude of techniques

in manufacturing based on this fact.

Different materials respond

to magnetic fields differently.

The electric field responds

to charge density

so shapes itself around conductive

flows of material and vice-versa.

The result is stratification, and it's apparent
the stratification in Earth's landscapes
matches the stratification
in Jupiter's winds.

Some mountains do not conform
to the wind-blown dune shape,
exhibiting triangular buttresses
on both flanks of the mountain,
or not conforming to the
windward/leeward angle of slope.

This doesn't mean
they're not dunes,
but indicates they were formed
subject to shifting, or competing winds.

In some cases, mountains
formed as sastrugi,
or linear deposits
parallel to the wind
in the shear zone between channels
of wind of different velocity.

So, it's possible by looking at
the land to deduce wind patterns.

Following this method of
identifying wind direction
from triangular buttresses in the mountain
ranges and craters that are formed,

the next image shows
the Colorado Plateau
with wind formed pressure
ridges annotated by blue lines.

These are pressure ridges
formed perpendicular to the wind.

Each line is drawn parallel
to a pressure ridge,
and perpendicular hash marks
indicate the wind direction.

The red lines on the map indicate pressure
ridges formed parallel to the wind,
at shear zones between
the conflicting winds.

This map provides one layer
of dimension to the storm,
the dimension of
ground level winds.

But to add another layer, we can
look at the domes and craters
that formed by updraft
and downdraft winds.

The red areas on this map are
updrafts, the yellow are downdrafts,
and blue are
precipitation footprints.

Adding this layer of information
to the map of pressure ridges
produces a wind map of
the Colorado Plateau
and the Rocky Mountains
that looks like this.

Now to describe this storm.

There are two jet streams coming to
the Colorado Plateau from the north.

One poured through the Snake River
Valley, arcing east towards Yellowstone.

The other jet stream
swept into the Great Basin
rippling Nevada with rows
of windblown mountains.

There's an S-shaped range in central
Nevada that defines a center of rotation,
as this mesocyclone scraped the
ground like one incredible tornado.

It down-drafted into two streams.

One pressing down on the
Unita Valley in Utah,
and the other sweeping northern Arizona
forming much of the Mogollon Rim.

The Great Basin storm
also spun air south,

bypassing the rotation to help define
the Sierra Mountain arc,
and scoured the Owens,
Amorgosa, and Death Valley.

The Sierras were formed by winds from
the west (not shown here on the map)
which pressed against
the Great Basin rotation
as the winds bypass south.

From the south, winds collected and
then split, forming the Mexican Kink
and the El Guaje mountain.

They reformed in a ground-hugging
laminar flow near Four Corners,
sweeping across Colorado,
Utah, and northern Arizona,
laying the foundations
of the Colorado Plateau.

The southern wind fed a multi-
vortex cyclone over the plateau,
where it divided its path to
feed thunderstorm updrafts.

These winds threaded up and back down
through mesocyclone-cyclone pairs
in looping currents
like lacing a shoe.

The updrafts are defined
by San Rafael Swell in Utah
and Monument Valley and
Black Mesa in Arizona.

Winds from the south also circulated
to the east over the Great Plains
to be sucked into the
cyclone through thunderstorms
that built the eastern
face of the Rockies.

These down-drafted, forming
huge craters in the mountains,
like San Luis Valley in Colorado.

Each of these features -- the
Great Basin mesocyclone,
the multi-vortex cyclone
over the Colorado Plateau
with arching colonnades of
mesocyclone-cyclone pairs
can be identified in the
Great Red Spot on Jupiter.

It's because the shapes
and actions of the wind
are driven by the fractal process of
charge diffusion in the planetary circuit.

The difference in chemistry and

thermodynamics of Jupiter's atmosphere
compared to Earth's doesn't
make much difference,
because circuits are the
forcing mechanism of nature.

So this completes the view of
winds at the very eye of the storm.

The Colorado Plateau received the
hottest plasma torching in North America.

Surrounding areas were also ravaged
by storm but none so severely.

In fact, the whole Earth
was wrapped in storms.

So, we'll look closer at
some of those regions,
as well as more details on North
America in the next installment.

Thank you!

Stay tuned for part 5

Welcome to Space News

from the Electric Universe,

brought to you by the Thunderbolts

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Since the dawn of the space age, perhaps

no celestial body in the solar system

has proved more surprising to

astronomers than the planet

Venus. Before the arrival of the earliest space

probes, some noted scientists believe that Venus

would be Earth-like, with water clouds,

oceans and abundant vegetation.

However, well known to those

who have followed this series,

it was Dr. Immanuel Velikovsky who

made the outrageous prediction

that Venus would be superhot, based

on his hypothesis of the planet's recent

cometary origins. Today, countless

Venusian phenomena continue to puzzle

planetary scientists, including

the planet's super-fast winds;

its odd, slow backward spin; its

vast magneto tail; and even the

recent discover by the ESA's Venus Express

spacecraft of a surprisingly powerful

electric field. In recent decades, Wal Thornhill, the Chief Science Advisor to the Thunderbolts Project, has outlined his own reconstruction of Venus' role in the recent, extraordinary history of the solar system.

In Part One of this two-part presentation, Thornhill begins by recounting this history, which he offered in his 2004 article, *Cassini's Homecoming*, which he wrote prior to the arrival of the Cassini-Huygens spacecraft at Saturn.

As Thornhill explains, while astronomers to this day refer to Venus as Earth's twin, the most likely Venusian sibling may be found in the Saturnian system - that is, the moon Titan. I must explain that *Cassini's Homecoming* was published just before the arrival of the Cassini-Huygens spacecraft at Saturn.

It's perhaps one of my most important articles. My analysis and predictions were the result of applying Electric Universe principles to the remarkable forensic research of David Talbot and Edward Cardona into the global mythic history of the solar system.

Naturally we like to believe the solar system is boringly predictable, with no recent catastrophes. We ignore the fact that prehistoric astronomers obsessively recorded the motion of the stars and planets. Yet those forgotten people built monumental pyramids and monolithic stone observatories, carefully aligned to the heavens which we couldn't reproduce today with modern technology. So the question is, what motivated them to such monumental efforts? Why were the tiny specks of light, the planets worshipped as apocalyptic thunderbolt-wielding gods? Why was the planet Venus globally described as female with long flowing hair? Why was the planet Mars globally described as the sword-wielding red god of war? Why was the ringed planet Saturn globally remembered as our first Sun, our best Sun? This makes no sense according to our modern myth of a mostly safe, eon's-old, clockwork solar system. In Cassini's Homecoming, I wrote "Until recently Saturn was an independent brown dwarf star with its own entourage of

close-orbiting small planets. As a small star approaching the Sun, Saturn flickered like a faulty electric light when the two stellar magnetospheres or, that is plasma sheaths, touched together." Saturn's electrical power was then usurped by the Sun, and its appearance changed dramatically.

Such rapid variability in the appearance of stars is well documented.

"Before dimming forever, Saturn would have flared up to relieve the stresses caused by the sudden change in its electrical environment. Saturn still radiates more than twice the heat it receives from the Sun.

We also have a simple explanation for the origin of Saturn's mysterious short-lived rings." Chet Raymo, the physicist, noted writer, educator and naturalist, once wrote, as if responding to that deep primeval memory, "Nothing so evokes gasps of delight of Saturn's ring. The reason I think, is a collision of the expected and the improbable. A ringed sphere is the archetypal planet of our childhood,

familiar from a thousand
comic strips, coloring books,
classroom poster boards, stickers, rubber
stamps, birthday cards - you name it.

So, when we see Saturn, there
is a kind of instant recognition,
like meeting a relative one knows
only from the family photo album.

But there is also the shock of reality, a
sense of 'Oh my God, it actually exists!'

In the year 2000 a pivotal meeting was
held in Portland, Oregon of key figures
in the Electric Universe, including
Anthony Peratt, where it became
clear that petroglyphs are an enduring record
of the frightening collapse of a former
cosmos. Where are Saturn's children
now? As I explain in some detail
in my April 2006 report, "Venus
isn't our twin! The only common
features are their size and relative
closeness in the inner solar system.

In every other way they
could not be more different."

Thornhill's writings on Venus have
included an expansive picture of the

solar system's recent history. In this picture, Venus was born recently by its parent proto-Saturn, and the Saturnian moon Titan was a member of the same family. Based on this radical hypothesis, Thornhill has made remarkably accurate predictions about Titan, including its surface features and atmosphere. You just summarized the conclusions of many lifetimes of work, principally by Talbot and Cardona into the detailed sequence of events surrounding the entry into the solar system by the body we now call Saturn. But the inspiration for all of us came initially from the scholar Immanuel Velikovsky. In 1950, years before the space age, he concluded from his extensive interdisciplinary research that the planet Venus was remembered from the time of the dawn of the modern era as a brilliant newborn cometary body. He concluded in his best-selling book, "Worlds in Collision", that the night-side of Venus radiates heat because Venus is hot.

Here we have two theorist's
beliefs being demolished at once;
that something the size of a planet
could be a comet, and that Venus recently
had a different orbit. Typically,
later findings from space
probes supported his conclusion, but
made no difference to consensus opinion.
Astronomers minimized the importance
of Velikovsky's remarkable claim,
or simply dismissed it as a lucky guess.
Although one noted scholar
acknowledged at the time that Velikovsky had
a remarkable record of successful predictions
and no failures. The discovery that Venus
was almost red-hot made it imperative for
scientists to invent an explanation.
The result was the fictitious enhanced
or runaway greenhouse effect. All
the space-age data shows Venus is
not a twin of the earth at all.
Its magnetospheric tail has been
described as cometary; the entire
planet is said to have been resurfaced.
Of course, the idea that Venus
is an infant simply doesn't occur.

If the view about twinship is mistaken, then the belief in a common origin is without foundation.

What's more, climate scientists have allowed themselves to be misled into thinking that the hellish conditions on Venus awaits us due to a runaway greenhouse effect, if we don't mend our ways.

Ignorance is infectious. So much for twins.

Now for Venus' sibling, Saturn's moon Titan.

I wrote "What can we expect Cassini to find, based on this dramatic recent history of Saturn?

We should expect to see family traits amongst the members of the Saturnian family- including the departed Earth, Mars and Venus.

For example, the moon Titan, which is larger than the planet Mercury, seems to be a close sibling of Venus..."

"So we should be alert to similarities between Titan and Venus. It is already known that Titan has the densest atmosphere of any terrestrial planet, after Venus. That is a huge puzzle for scientists."

The New Scientist of November 6, 2004:

"Titan images add to the moon's mystery."

Stephen Battersby reported, "The world got its first peak at the surface of

Saturn's moon Titan last week. The images were taken as Nasa's Cassini-Huygens spacecraft swept past the moon.

The images show a landscape that is clearly still being shaped.

Although Titan must have suffered numerous meteor impacts in the past, its surface today is largely crater-free. Somehow these scars must have been eroded or filled in." But that's precisely what we said about Venus when the Magellan orbiter revealed that planet's surface.

I also wrote, "Titan has a global layered haze like Venus... We may expect to find that Titan's atmosphere has some of the smell of Venus about it. Both Venus and Titan's atmospheres, being very young, will not yet be in equilibrium. So calculations about atmospheric constituents that assume equilibrium as a starting point will be wrong." "The methane found in Titan's atmosphere is quickly destroyed by sunlight so it has to be replenished. That has led to the suggestion that Titan must have a hydrocarbon ocean for the methane to have lasted for the conventional age of the solar system.

However, radar, infrared and
radio observations of Titan
have not found signs of a hydrocarbon ocean.
In fact one radar return was, and I quote
'of a type that we should expect to get back
from Venus.'" End of quote. Titan is most likely
a baby brother of Venus. Six
months after writing Cassini's
Homecoming, I wrote another article,
"Titan a Rosetta stone for early Earth?"
There I wrote the Electric Universe
conceptual model can claim a number of
successful predictions. Most
importantly it was the only model
to predict the surface features
of smog- shrouded Titan
before they were
revealed in detail by Huygens
[Music]

Welcome to Space News from
the Electric Universe,
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How do objects in
our universe form?

In the unimaginably vast
cosmos at all scales,
from comets and asteroids
in our solar system
to the vastest
superclusters of galaxies
stretching for hundreds of
millions of light years,
astronomers and astrophysicists
imagine gravitational processes
and only gravitational processes
governing these objects' formation.

But the objects we see tell a different
story and demand new theoretical pathways.

In our own solar system, one
of the most puzzling forms
is a double-lobed shape of most
common nuclei imaged to date,
a weirdly similar form

also seen in nebulae
and even in the peanut-shaped cross-section
of the galactic bulge of our own Milky Way.

In this episode, physicist
Wal Thornhill will explain
why the pairing of
celestial objects
is a predictable effect of a
universe governed not by gravity
but by electromagnetism.

It is almost 50 years
since Hannes Alfvén
predicted the inevitable death of
gravitational big bang cosmology.

Why is it taking so long?

The reason seems to be that cosmology
has become a dogmatic belief system
as firmly entrenched
as any religion
within a global fraternity
who have been taught
that computer modeling based on those
beliefs will provide the answers
someday at whatever cost.

But computer models tend to
have a life of their own.

New parameters, forces, particles and
imaginary celestial objects can be introduced
and endlessly adjusted to
match almost any observation.

Gone are the classically-trained
scientists of the 19th century
who aimed for simplicity and matched
theory against physical experiment.

Today, theorists waste most of
the computing power on Earth
generating virtual reality
objects and universes.

They sit in front of computer
screens reflecting back to them
what they know about what they
know about what they know.

Meanwhile, the key is to be found in what
scientists don't know they don't know,
which is a consequence of dogmatic training
that there is no alternative to gravity
as the governing force
in the universe.

Yet no cosmologist will admit
that the force of gravity
remains unexplained
in the 21st century.

Einstein had the crazy idea that there
is no force, just our warped perception.
This requires, according to the
media celebrity Brian Cox,
that you ignore the surroundings and define
a falling object as being stationary.
It works fine until the ground,
for no apparent reason,
smacks into the
stationary object.

The product of this nonsense is a fictional
universe containing dark matter,
dark energy and black holes.

Physics, be damned!

Clearly, theoretical Big Bang
cosmology is fake science
when there's another peer-reviewed and
experimentally tested cosmology available,
based on real electrical
plasma behavior.

And remember, practically the entire
visible universe is in the plasma state.

So plasma cosmology is where real
physics answers are to be found.

Alfvén, who was both a
practical electrical engineer

and physicist in the
classical tradition,
told very publicly in his acceptance speech
for the 1970 Nobel Prize in Physics,
what theorists don't
know about plasma.

But it seems mathematical theorists
don't like an alarm going off
when they're busy
playing computer games.

Alfvén later wrote about the pressure
by theorists on real astronomers,
"...the result was the development
of a cosmological establishment,
like that of the
Ptolemaic orthodoxy,
which did not tolerate
objections or dissent."

Alfvén accentuated the essential role
of electric circuits in space plasma
and a circuit by definition,
carries electric current.

Of course, there are
no wires in space
but nature always contrives to do things
in the simplest and most effective way.

Charged particles encounter least resistance
by following magnetic lines of force
and producing what's known as
field-aligned current filaments.

Two parallel current filaments
interact electromagnetically
to draw closer and
rotate about each other.

The resulting twisted pair
of plasma current filaments
is named after an early pioneer
of the electric universe,
the Norwegian
Kristian Birkeland.

So the key signatures of cosmic electricity
are "doubleness" or pairing and rotation.

On August 24th, phys.org published
'The Origin of Binary Stars'.

It makes the admission that
"The origin of binary stars has long been
one of the central problems of astronomy."

It's been found that
protostars and young stars
are more likely to be
found in binary pairs
strung at intervals along a

filament inside a molecular cloud.

About half of the binaries are
in elongated core structures,
and they conclude that the initial cores
were also elongated structures...

One of their most significant
major conclusions
is that each dusty core of material is
likely to be the birthplace of two stars,
not the single star
usually modeled."

This raises the real issue that
astrophysicists don't understand
how either the filaments
or the stars are formed,
something that plasma cosmologists
have shown for half a century or more.

Here's an image taken at submillimeter
wavelengths of a star forming core,
showing that it contains
two young stellar embryos.

The caption says,
"Astronomers have concluded from a
systematic study of very young cores
that most embryonic stars form in multiple
systems and later some of them separate."

The problem is that astrophysicists are using a gravitational accretion model based on the concept of a center of mass which doesn't lend itself to preferentially producing pairs of stars.

Meanwhile, the plasma cosmology model is electromagnetic, driven by a linear twisted pair of Birkeland current filaments.

It's an inherently binary phenomenon.

In the Electric Universe, stars and planets are formed along the Birkeland current filament by a powerful and long-range $1/\sqrt{r}$ electromagnetic scavenging force acting on the diffused dust and gas in a molecular cloud.

This compares to the puny short-range one over r squared gravitational force which cannot form a filament anyway.

On the basis that nature doesn't do anything the hard way, gravity just isn't the answer!

To emphasize that science is
only trivially self-correcting
and has to undergo periodic
revolutions or paradigm shifts,
Hannes Alfvén argued, 40 years ago, that
stars are born in interstellar clouds
by magnetic pinching along
plasma current filaments.

Infrared space telescopes, like
the Herschel Space Observatory,
spectacularly confirmed
this 30 years later,
but Alfvén remains
ignored to this day.

Old beliefs die hard.

Plasma physicist Anthony Peratt
was a student of Alfvén.

Peratt's plasma cosmology textbook
'Physics of the Plasma Universe'
has on page 119 a section on doubleness
in current conducting plasmas.

He writes,

"The $1/r$ dependency of the Biot-Savart force
law between current conducting filaments
leads to a curious phenomenon:
a pairing of filaments.

This pairing leads directly to
a "twoness" or "doubleness"
when many filaments are
present in plasmas
in which the magnetic field
plays a major role."

The supercomputer
simulation shown here
is based on the electromagnetic interaction
of a large number of charged particles
moving in a magnetic field,
and demonstrates the evolving
sequence between three filaments.

It shows the two closest filaments
interact strongly to form a spiral
while the third
remains quiescent.

So what do we find in the paper
referred to by the phys.org report?

"The higher-order
[star] multiples
generally contain a mix of components
at wide and tight separations,
and all systems have at least one component
far from the center of the [elongated] core."

This matches Peratt's simulation of

multiple Birkeland current filaments.

On the galactic scale, the elongated core is the central bar of a spiral formation.

Here we see an X-ray image of the active galaxy Cygnus A, a relatively nearby galaxy containing a powerful quasar.

It's the second strongest radio source in the sky.

You can see three X-ray hotspots along an elongated core.

X-rays peek out where matter and current density is highest.

The two hotspots at the end of the elongated core or bar, of the galaxy, are the footprints of twin galactic Birkeland currents.

In a repeated pattern at the galactic scale, it has been found that like stars, galaxies are also strung like Catherine Wheel fireworks along cosmic wires.

But instead of producing twin stars, they generate spiral arms full of stars from the ends and along the rotating bar.

The central hotspot in the bar is due to

the electromagnetic plasmoid jet engine
at the heart of all
active galaxies.

It is the quasar factory required
by Halton Arp's research.

Since the twin Birkeland currents
are great plasma attractors,
they will form a thick toroid of matter
as they rotate about the galactic center.

Seen edge-on, it gives a peanut
profile to the galactic bulge.

So what do scientists find?

A Hubble News release
in 1994 titled

'Hubble Uncovers a Hidden Quasar in
a Nearby Galaxy (Cygnus A)' says,

"Though Cygnus A is categorized
as an elliptical galaxy,
it has an unusual peanut shape due to a dark
band of dust encircling the enigmatic nucleus."

Needless to say, the hidden
quasar in Cygnus A is a mystery.

"I was stunned when we realized we had
a quasar; it was a total surprise"

said Dr. Anne Kinney of the Space Telescope
Science Institute, Baltimore, Maryland.

The report explains that,

"Most quasars existed billions of years ago in the early universe, and, so, it's unusual to find one in our own epoch...

Though this provides an unexpected opportunity for close-up study of the mysterious 'engine' behind a quasar, these results add further mystery as to the true nature of the powerhouse."

Finally, the report adds, "Previous ground-based radio observations show that there is an elongated optical object in the Cygnus A's core.

This is inconsistent with black hole models that predict a compact point source of radiation."

Forget imaginary gravitational black holes!

Overpowering electromagnetic forces dominate in galaxies.

All of these observations are consistent with plasma cosmology and Halton Arp's observations of quasar birth from active galactic nuclei.

It supports his evidence
against redshift
being a measure of great age
and distance of quasars.

Galactic redshift is a measure
of youthfulness of a quasar.

In other words, the
universe isn't expanding.

There was no Big Bang.

The universe is of unknown
origin, age and extent.

There is no need for cosmology
to compete with creation myths.

I wrote in 2006,

"On this website I have made many
successful yet unusual predictions
based on the Electric
Universe cosmology.

For example, what would be seen when
close-ups were taken of Io's 'volcanoes';
the initial flash and unexpected
outburst from Deep Impact;
what would be found beneath
the clouds of Titan;
and the link between spiral
forms at the poles of Venus

and the 'hot spot' at

Saturn's South Pole.

If the test of a good theory

is successful predictions,

the Electric Universe

is unparalleled.

Even better, if it can simply explain details

in the new images of Saturn's South Pole.

Earlier in February, 2005,

I've written about Venus,

"...we should expect to see evidence of the

twisted pair configuration at the poles of Venus,

if the input current is sufficiently

strong and this model is correct.

The Venusian polar dipole shows

the precise configuration

and motion of Birkeland current pairs

in plasma discharge experiments.

That includes a surrounding

spiral vortex."

Professor Fred Taylor of the University of Oxford

Atmospheric Oceanic and Planetary Physics Department,

wrote about the

Venusian polar vortex,

"...the absence of viable theories which can

be tested, or in this case any theory at all,

leaves us uncomfortably in doubt as to our basic ability to understand even gross features of planetary atmospheric circulations."

Yet the same phenomenon discovered on Saturn, years later, again puzzled scientists.

My web article titled

'The "Spiral Galaxy" at Saturn's Pole'

quotes a NASA report that describes

a hurricane-like storm at Saturn's

South Pole with a well-developed eye

ringed by towering clouds.

The storm is approximately 8,000

kilometers or 5,000 miles across

or 2/3 of the diameter

of the Earth.

"It looks like a hurricane, but it

doesn't behave like a hurricane"

said Dr. Andrew Ingersoll, a

member of Cassini's imaging team

at the California Institute

of Technology in Pasadena.

It is locked to the pole

and doesn't drift around.

A movie taken by Cassini's

camera over a three-hour period,

saw the shadow cast by a ring of
towering clouds surrounding the pole
and two spiral arms of clouds
extending from the central ring.
These ring clouds,
30 to 75 kilometers
that is 20 to 45 miles above those
in the center of the storm,
are two to five times taller than the clouds
of thunderstorms and hurricanes on Earth.
Though it is unlikely moist
convection is driving Saturn's storm,
the dark eye at the pole, the eyewall
clouds and the spiral arms together
indicate a
hurricane-like system.

"The clear skies over the eye
appear to extend down to a level
about twice as deep as the usual
cloud level observed on Saturn,"
said Dr. Kevin Baines of Cassini's visual
and infrared mapping spectrometer team.

"This gives us the deepest view yet into
Saturn over a wide range of wavelengths,
and reveals a mysterious set of dark
clouds at the bottom of the eye."

Those dark clouds are the footprints
of twin Birkeland current filaments,
seen here reflecting the maxima
in a computer simulation
of the magnetic
energy distribution
between two Birkeland current
filaments in the inset.

Notice particularly, the
energy hot spots distribution
is identical to that
seen in Cygnus A.

It indicates that powerful storms
on Earth, like a hurricane
with eye wall clouds
and spiral arms,
are driven electrically and not simply
by solar heating rising moisture.

This in turn suggests
that climate scientists
are missing the most powerful
influence on extreme weather events.

It seems to be clinched by the
Mount-Everest-high dust devils on Mars
that generate a planet-wide
dust storm for months.

There's not much solar
heating or air mass on Mars
sufficient to drive this
remarkable phenomenon.

In fact, it is the Martian dust
devils that form the dusty atmosphere
and warms it by
trapping sunlight.

A change in external electrical
energy causes a change in climate.

So we should look to our electric Sun's activity
for answers to climate change on Earth.

Our recent Space News on the double-lobed
form of many asteroids and comets,
receives a simple explanation
based on their formation in an electrical
exchange between two planetary bodies.

Each filament will tend to concentrate
matter excavated from the more negative body
into two lobes joined
by a bar or neck.

It explains the mixture of
planet-surface-formed minerals
and high temperature minerals
found in comet dust.

Comets do not hold the secrets

to the formation of the Earth,
but to the violent electrical encounters
between bodies sometimes captured by the Sun.

The twin filament nature of
electric currents in plasma,
causes us to see double effects
at the galactic scale,
at the stellar scale,
at the planetary scale,
the cometary scale and right on
down to the laboratory scale.

Such vast scalability
of plasma phenomena
is an overwhelming advantage of plasma cosmology
over gravitational big bang cosmology.

It has been shown to be highly
explanatory and predictive.

These are the hallmarks
of a successful model.

Plasma cosmology doesn't require
fudging with dark matter,
black holes and dark energy.

It suggests the hugely expensive
high-energy particle physics
and gravitational wave
experiments are a waste of money

when gravitational theory

has no physical basis.

The mathematician John Wheeler described

gravity in metaphysical terms,

"...matter tells spacetime how to curve

and spacetime tells matter how to move."

The words 'spacetime' and 'tells'

are physically undefined.

It isn't physics!

Alfvén was right,

astrophysics is in crisis

as shown by the perpetual state

of surprise at new discoveries.

Charles MacKay was right

when he wrote Extraordinary Popular Delusions

and the Madness of Crowds, in 1841.

"Men, it has been well

said, think in herds;

it will be seen that

they go mad in herds

while they only recover their

senses slowly, and one by one."

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

For almost three years
on this channel,
we have reported on the
theory-shattering discoveries
from the European Space Agency's
Rosetta mission to Comet 67P.

While science media celebrated the first-ever
landing of a space probe on a comet nucleus,
the actual findings of the
mission ultimately falsified
the more than half century old,
"Dirty Snowball Comet" hypothesis.

Increasingly fine images
of the Comet's surface
provoked deeper and deeper expressions
of surprise from investigators.

The most notable surprise was that the comet
was, in the words of one ESA scientist,
"dry like hell" and its
rubble-strewn terrain
seem to bear a greater resemblance

to the American Southwest

than the slowly sublimating snowball

envisioned by Fred Whipple.

But proponents of the

Electric Universe theory,

as it is proposed by the chief

principals of The Thunderbolts Project,

were not surprised by the

geology of the comet nucleus.

The tortured and complex cometary terrain seems

to fit perfectly with the radical theory

that comets were excavated by electrical

discharges from planets and moons.

No geological feature on the comet was

more surprising than its sand dunes,

a planetary feature that is

thought to require an atmosphere

that can produce

mechanical winds.

The initial response of some scientists

around the world was borderline disbelief.

As planetary geologist and blogger Emily

Lakdawalla wrote in October 2014,

"Other features are odd because they look

familiar and yet have no right being on a comet.

I've called them 'rhythmic ridges' but to

pretty much everyone who looks at them,
they look like sand dunes.

Which are just plain impossible
on a body that has neither
atmosphere nor much of any gravity."

The comet's sand dunes
were not the only evidence
for the seemingly impossible
"winds" acting on the comet.

In fact, images revealed well
over a dozen rocks or boulders
which appeared to have so-called streaks
of wind trailing away from them.

ESA scientists first attempted to explain
these features by proposing that
the comet's jets were somehow creating
sufficient "winds" to transport dust material.

Investigators gave this
ad hoc theory the name,

"Localized Gas
Driven Transport."

Later, scientists proposed an
even more extreme process,
similar to saltation
in Earth geology.

Today, investigators are proposing

yet another strange process

to explain the

comet's sand dunes.

A Phys.org report describes the research

published in February of this year.

It states,

"The formation of sedimentary dunes requires

the presence of grains and of winds

that are strong enough to

transport them along the ground.

However, comets do not have a dense,

permanent atmosphere as on Earth.

Faced with this unexpected

finding, the researchers show

that there is in fact a wind

blowing along the comet's surface.

It is caused by the pressure

difference between the sunlit side,

where the surface ice can sublime due

to the energy provided by the sunlight,

and the night side."

However, a scientific basis exists why

none of the strange mechanical processes

investigators have

proposed are necessary.

In the Electric Comet Theory, as proposed by the

chief principals of The Thunderbolts Project,
a comet's environment
is far more dynamic
than the standard "Dirty
Snowball" theory ever suggested.

It has always been the Electric
Universe position that electric fields,
acting on the comet nucleus, will shape
surface material in dramatic ways
that cannot be explained
in standard reasoning.

A powerful test of
this story came
with NASA's 2005 "Deep Impact"
mission to the Comet Tempel 1.
Mission scientists had believed
that the comet would only lose
about one third of a meter
of depth in each orbit.

But when the Stardust's next spacecraft
reimaged the Tempel 1 nucleus in 2010,
it found that the wall of a prominent
mesa had retreated about 35 meters.

The astonishing
excavation of material
was precisely focused at the location

of mysterious pixel saturations;
which, according to proponents
of the Electric Universe,
was the focal point
of electrical arcs.

A key point about the sand
dunes on the Comet 67P
is that ESA scientists have
confirmed that the dunes are active
and are seen to change over
a period of 16 months.

This follows previous reports of astonishingly
rapid changes on the Comet's surface.

In September of 2016, scientists reported
that, over a period of six weeks,
they witnessed mysterious erosional
markings appearing and expanding
at rates exponentially faster than
predicted by standard comet theory.

As one mission scientist stated,
"These spectacular changes are
proceeding extremely rapidly,
with the rims of the features expanding
by a few tens of centimeters per hour.

This highlights the complexity of
the physical processes involved."

These discoveries confirm an explicit prediction from an earlier Space News episode, which stated that electric fields, acting on the comet, would reconfigure surface material with unexpected rapidity.

Electrical activity could profoundly reconfigure the dust layers in the course of the next few months.

Electric fields acting on the comet can also produce ionic winds, similar to those produced by air purifiers.

In this series; we have repeatedly referred to the experimental research of Billy Yelverton, who has produced countless familiar geological features including sand dunes, simply by applying electric fields to plates of dust and other materials.

It's especially puzzling that scientists continue to propose strange exotic mechanisms to explain winds acting on the comet's surface.

When increasingly mainstream research confirms
tenets of the electrical interpretation.

As noted in the previous

Space News episode;

a recent NASA-funded study affirmed

that electrostatic dust transportation

occurs on airless

bodies in space,

and is responsible for many

heretofore puzzling features

on planets, moons,

comets and asteroids.

A Phys.org report on the study

states for the findings,

"[They] bring closure to a long-standing

issue of electrostatic dust transport,

explaining a variety of unusual phenomena on

the surfaces of airless planetary bodies,

including observations from the Apollo era

to the recent Rosetta comet mission."

The article continues,

"The movement of electrons in the

tiny spaces between dust particles

can generate surprisingly

strong charges and forces,

which can lift and move dust

particles off the ground.

In addition to single particles,
clusters of dust were lofted,
which showed that electrostatic processes may
be responsible for the Rosetta detection
of fluffy dust particles released
from the surface of Comet 67P.

These laboratory observations
reveal that dusty surfaces
can become smooth due
to dust mobilization
and could help explain
the 'dust ponds'

like those seen on asteroid
Eros and Comet 67P..."

Unfortunately, it seems that countless
assumptions about our solar system
and the universe as a
whole continue to endure
even in the face of
revolutionary discoveries.

The assumption of charge neutrality
in space has been refuted.

Comets discharge electrically because
they experience voltage spikes,
passing through regions

of changing potential.

And the assumption that comets

are icy primordial leftovers

from the solar system's infancy 4.5

billion years ago is now also refuted.

Indeed, regardless of how comets form,

the comet's environment is so dynamic.

How could one possibly hope to accurately

document the comet's history and origins,

tracing back a

billion plus years?

The Rosetta comet mission was a

remarkable technological feat

and a historic

human achievement.

Yet, how will history judge institutional

science and its enduring beliefs

about one of nature's greatest

mysteries, the comet?

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

Welcome to Space News from
the Electric Universe,
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New reports in popular science media highlight
some of the theoretical limitations
in planetary science
and geology today,
limitations which have resulted
in countless mysteries
related to the planets,
moons and comets.

The reports in question
propose that volcanism
on various bodies
throughout the solar system
is more pervasive than scientists
have ever previously believed.

Even supposedly
occurring on comets.

On March 6, 2017 Astronomy.com
published the article,

"Planetary scientists are turning
up volcanoes everywhere they look."

The report focuses heavily on a theoretical

phenomenon called cryovolcanism,
or ice volcanoes.

On planet Earth scientists theorize
that the shifting of tectonic plates
is a cause in both earthquakes
and volcanic eruptions.

But on several other worlds which are
not thought to have plate tectonics,
planetary scientists believe they
observe another type of volcanism
called cryovolcanism.

A cryo volcano or ice volcano is hypothesized
to result when gravitational forces
produce tidal heating and other effects in
an icy body, producing volcanic eruptions.

For decades planetary scientists
have believed that tidal heating
is the cause of the most dramatic
volcanism in our entire solar system,
on the Jovian moon, Io.

The Astronomy.com article outlines
the hypothesis as follows:

"Io and other Galilean satellites
(such as Europa and Ganymede)
are in synchronous
rotation around Jupiter.

Io then becomes caught up in a
tug-of-war between Jupiter's gravity
and the gravity of these
other satellites...

This in turn leads to the bulging
of Io's crust up and down
and the resulting friction produces a large
amount of heat and a molten interior.

When the pressure builds, it occasionally
erupts melted rock and plumes of gas.

However, as previously reported on this
series, observations in recent years
have effectively falsified the tidal heating
model for Io's so called volcanoes.

In 2013 a geological survey found that
the surprising locations of the plumes
"...can't be reconciled with any existing
solid body tidal heating model."

But the problems for the
volcano hypothesis on Io
began almost immediately
after their discovery.

In fact, in 1979, it was the
world-renowned astrophysicist Thomas Gold
who first proposed that Io's
so-called volcanic plumes

were in fact high-energy

electrical discharges.

Nine years later plasma scientists Anthony

Peratt of Los Alamos Laboratories

and co-author Alex Dessler also proposed

an electrical mechanism for the “plumes”

If the plumes are in fact

electrical discharges,

this would account for numerous

anomalies with the standard hypothesis,

including their

filamentary structure,

a completely anomalous feature

for any volcanic plume;

as well as their surprising

movements across the surface of Io.

But perhaps most significantly,

the electrical interpretation

explains the electrical currents

that have been found connecting the

Jovian atmosphere and its icy moons.

Planetary scientists insists that the

source of the electrical currents

is charged particles

from volcanic eruptions.

But this hypothesis was complicated

when scientists also found
the auroral footprints of the
moons Europa and Ganymede.

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?”

Similar problems also face planetary
scientists who seek to explain
the high velocity features seen jetting
from the Saturnian moon Enceladus.

More than a decade ago the discovery
of the enormous jets and plumes
at Saturn's south pole astonished scientists
working on NASA's Cassini mission.

Scientists had expected the
moon to be geologically dead
and the last place they expected such
activity would be the moon’s south pole,
as reported by

Space.com at the time.

"The finding flipped everything scientists
knew about Enceladus on its head,
because what should have been a dead

moon appeared to be geologically active
and while it's supposed to be the moon's
coldest region, turned out to be its warmest.

A co-investigator of the Cassini
mission said of the discovery,

"This is as astonishing as
if we'd flown past Earth
and found that Antarctica was
warmer than the Sahara."

The tiny moon is a mere 504
kilometers in diameter
and the icy plumes were seen to
reach up to 480 kilometers high.

Investigators settled on the notion that
liquid water must be present under the surface
like a Yellowstone geyser in order
for it to erupt in high speed jets.

A NASA news release stated,
"The rare occurrence of liquid
water so near the surface
raises many (new) questions
about this mysterious moon."

But the immediate assumption of liquid
water near the surface only showed
that the surprising discovery caused no
reassessment of a theoretical framework.

Scientists settled on the
notion that Saturn must be
"gravitationally
leading Enceladus",
producing so-called cryo volcanoes at the
moon's south pole through friction heating.

In 2015 planetary scientists
made the surprising discovery
that particles in the Enceladus
plumes are electrically charged.

A lead investigator studying data from the Cassini
plasma spectrometer said of the discovery,
"What are particularly fascinating are
the bursts of dust that CAPS detects
when Cassini passes through the
individual jets in the plume.

Each jet is split according
to charge though.

Negative grains are on one side,
and positive ones on the other."

As in the Jovian system we see an electrical
connection between Saturn and Enceladus.

The comparability of the gas giants'
respective environments is summarized
by Thunderbolts Picture of the Day managing
editor Steven Smith in his article:

"Enceladus Is Plugged in,"

"It is easiest to get an idea of

what is happening on Enceladus

by comparing it to another moon in the

solar system: Jupiter's moon Io....

Io acts like an electrical generator as it

travels through Jupiter's plasmasphere,

inducing over 400,000 volts across its

diameter at more than three million amperes."

"That tremendous current flows

along its magnetic field

into the electric

environment in Jupiter.

The same kind of electromagnetic activity

connects Enceladus with Saturn's poles..."

In the Electric Universe

interpretation,

neither the one-way electrical

transaction scientists propose,

nor the assumed charge neutrality of

Jupiter, Saturn and their respective moons,

can be valid.

The electrical discharge activity

that scientists misinterpret

as cryovolcanism on

Io and Enceladus

may be comparable to the filamentary jets of comets, which are also electrical in nature.

Ironically, in the March

2017 Astronomy.com report

“Are there volcanoes

on comets?”,

the article suggests that so-called

volcanic activity has occurred on

Comet 29P Schwassmann-Wachmann in its

orbit between Saturn and Jupiter.

It states,

“The strange activity may be due to the

comet’s unusually long day/night cycle.

Unlike most comets, which

rotate on hourly scales,

29P rotates only about

once every 60 Earth-days.

During the comet’s long night, material

may pool in chambers beneath the surface.

When the comet rotates into its long day,

the gas expands, flexing the surface.

High pressures can help the gas

break through the surface,

exploding outward in a

volcano-like event.

Instead of hot magma, frozen

gas streams from the comet.”

However, neither the imagined subsurface cometary ice, nor the theoretical nozzles from which comet jets supposedly emanate, have ever been found.

The 2012 paper, “Cometary jet collimation without physical confinement” published in the American Geophysical Union acknowledged the dilemma as follows,

“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 failed to detect such apertures on comet surfaces.

Furthermore, these models do not explain why cometary jets appear to be directed normal to the local gravitational potential, and/or to originate on the faces of scarps.”

In fact electrical discharges producing comet jets on the faces of scarps is a prediction of the

Electric Comet theory

which states that electrical activity will
always center on the sharp points of a body
which act as kinds
of lightning rods.

Yet today consensus
scientific theory remains
that comets are slowly sublimating
ice balls that produce outbursts
or sometimes disintegrate due to
increasingly strange processes.

In the Electric Universe
theory, a comet's activity
is a result of its experiencing voltage
spikes in its changing plasma environment.

One of the most promising, yet still
overlooked pathways of discovery
is the growing evidence for a link between
cometary outbursts and dramatic solar activity.

At the 2016 Thunderbolts Project
conference, "Elegant Simplicity"

Russian scientist Dr. Subhon
Ibadov presented the talk,
"Nature of electric comets, electric
discharge mechanism of comet outbursts
and thunderbolts lightning in comet

nuclei due to solar flares.”

On the planet Mars recent discoveries may provide a clue to the electrical phenomena that planetary scientists sometimes interpret as volcanism.

In 2012 amateur astronomers spotted enormous plumes jetting from the Martian surface.

The plumes were more than 250 kilometers high and several hundreds of kilometers in length.

Similar bright enormous plumes have occasionally been spotted on Mars since 1997, leaving astronomers completely baffled.

However, in 2016 scientists reported that a dramatic appearance of the plumes occurred immediately after Mars was hit by a coronal mass ejection.

In standard reasoning there is no reason why charged particles from the Sun would produce such a dramatic dust raising event.

As one scientist stated, “It's very surprising that was affecting Mars right before the plume was first observed.”

A New Scientists report on
the discovery acknowledged
the unavoidability of an
electrical interpretation.

It stated,

“One possibility is that plasma could
be interacting with ice grains or dust
lower down in the atmosphere and
electrically charging them,
boosting them higher, but it's not
clear how the effect would be big.”

It's surely no coincidence that Martian plumes
appears strikingly similar in structure
to the plumes on the
moons Io and Enceladus.

Perhaps the single greatest
obstacle in the space sciences
is the ongoing assumption of charge
neutrality for celestial objects.

On our own Earth, scientists are still
making extraordinary discoveries,
completely unexpected
in standard theory,
confirming our planet's dynamic
electrical environment.

This includes the recent discovery of “supersonic

plasma” jets high up in our atmosphere
that could push temperatures up
to almost 10,000 degrees Celsius.

A Phys.org report

on the finding,

which will be the topic of a forthcoming

Space News episode, states,

“The theory that there are huge electric
currents, powered by solar wind

and guided through the ionosphere

by Earth's magnetic field,

was postulated more than a century ago by

Norwegian scientist Kristian Birkeland.

While much is known about

these current systems,

recent observations by

(the ESA’s Swarm mission)

have revealed that they are associated

with large electrical fields.”

If our own Earth so presents such

mysteries for institutional science,

what further surprises might

distant world still hold?

Moreover, how many ongoing mysteries will

finally be resolved when space scientists

abandon the notion of an electrically

sterile and disconnected universe?

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

[Music]

"Sometimes it's better not to know one wrong thing than to know a hundred things that are right."

That was a favorite saying of Halton Arp, an astronomer who pioneered the study of discordant redshift galaxies. Stephan's Quintet is a good illustration of this.

The Quintet is a closed group of five distorted galaxies that on first sight appear to be interacting. Their arms are stretched and twisted and in some places they appear to be intertwined. The two galaxies closest to each other seem to be mashed together. They're often said to be colliding.

The apparently larger galaxy at the southeast side of the group has a spectrally measured redshift $z=0.0026$. Under the consensus conjecture that redshift is a Doppler effect of the hypothetical expansion of the universe, this translates into a recessional index velocity of around 800 kilometers per second.

Three of the other four galaxies have index velocities of 6,700 kilometers per second and red shifts of 0.0225. One of the two that appear mashed together has an index velocity of 5,700 kilometers per second, a thousand kilometers per second less, redshift of 0.019. Under the

additional consensus conjecture that the index velocity represents distance, the apparently larger galaxy is 250 million light years closer than the others. The two that appear mashed together would be about 50 million light years apart, farther than the larger appearing galaxy is from us.

They appear together only by coincidence, yet the consensus opinion is that they are in fact colliding. Another fact that's consistently overlooked is that the bright H2 ionized hydrogen regions in the background galaxies are about the same angular size as those in the foreground galaxy. Since it's also believed that H2 regions tend to be of similar linear size, the consensus has simply ignored this fact.

Perhaps the assumed dark matter in the foreground galaxy can be assumed to be positioned exactly right to magnify the H2 regions beyond, through selective gravitational lensing.

Long tails on both the foreground galaxy and the one immediately north of it, are occasionally mentioned and then dismissed as due to complex interactions in the past.

The interactions must have been complex in the extreme to have affected the foreground galaxy over a distance of 250 million

light years. Knowing the one thing, that redshift can only be a measure of distance, overrides all observations indicating that it's something else.

A seldom noticed bias of astronomy, perhaps caused by the tunnel effect of its primary instrument, is a flight into tunnel vision. Attention is narrowed to single objects, or even to parts of objects, and larger connections and contexts are overlooked.

So with the long tails. On deep images both tails trail off in parallel, far toward an active large galaxy NGC 7331.

Radio observations reveal a bridge of radiation that follows the path of the tails and connects Stephan's Quintet with the active galaxy. The bridge continues on the opposite side of NGC 7331 to a cluster of quasars, which coincidentally have similar redshifts to the high redshift members of the Quintet. The bridge also appears on X-ray images. This is obviously another instance of paired ejection from an active galaxy and plasma astronomers would call the bridge an intergalactic Birkeland current.

Of course, what's obvious to one eye is not to another, because eyes tend to see what they believe. It's no shock that consensus eyes

refuse to see ejection pairs and their connections. To acknowledge those connections, would be to falsify the belief in redshift as an indicator of distance and by extension to falsify the Big Bang hypothesis. That would cause job losses for the consensus of astronomers. A universe of quasars, ejected from active galaxies and growing into companion galaxies, replaces the exploding Big Bang universe with a birthing maternal universe of pregnant galaxies and their children. A similar consensus blind spot obscures a high-redshift quasar that lies in front of that northern galaxy. According to its redshift, the quasar should be billions of light years behind the galaxy. The galaxy is full of dust, completely opaque, and therefore the quasar should be as invisible as dark matter.

The consensus opinion, is that the galaxy has a small tube of empty space through it, that coincidentally aligns with the quasar along our line of sight. The galaxy also displays an energized region, another Birkeland current, from its core to the quasar. When looking at this galaxy, consensus astronomers blink in unison. A ridge of X-ray radiation is located between the background galaxies and the foreground one. Consensus astronomers ascribe it

to gas, heated by shock waves from the collision,
and one can't help but wonder what's colliding if the
foreground galaxy is 250 million light years in front,
but at 70 million Kelvin the heating is
truly shocking. Overlooked is the fact
that long before such a temperature is
reached, gas has been fully ionized into
plasma in which electric and magnetic forces
dominate. That then the ridge would be due to
double layers, and gas astronomers would be
out of work. The 70 million figure is, like the
redshift velocity an index figure,
an artifact of uncritical extrapolation
from gas theory. With a recognition
of plasma behavior, the X-rays are
synchrotron radiation from high-speed
electrons, accelerated across the strong
electric fields of double layers, and spiraling in
magnetic fields. Since temperature is based on random
motions, and the electrons are not random, but aligned in
a magnetic field, the concept of temperature is not even
relevant. A final consideration that appears
not to have been mentioned before, concerns
this X-ray ridge. Stephan's Quintet is
considered to be a compact cluster of
which several thousand are known. George Abel cataloged

many of them before X-ray observations were possible. A review of several of them shows similar ridges of X-ray radiation across their cores. Others show simply a spot. If these compact clusters are fragmenting quasars, on their way to becoming companion galaxies around the parent active galaxy from which they were ejected, the X-rays delineate a central pinch in the parent's ejection circuits. Ridges of radiation show up in clusters whose ejection circuits are inclined to our line of sight. The spots result from our looking down the barrel of the discharge. Arp commented in the book he wrote in 1987 about the discordant redshift controversy 'Quasars, Redshifts and Controversies', "What happened in the present case was typical in that more detailed observations with new and advanced instruments were selectively interpreted with old assumptions; the net result was loss of perspective and an actual retrogression in scientific knowledge." The loss of perspective with which images from the new and advanced James Webb Space Telescope are being interpreted, confirm Arp's judgment. The new images reveal connections between galaxies that 'surprise' astronomers and send them back to the drawing board. But instead of finding new and

advanced assumptions with which to draw a new and
advanced cosmology from a new and advanced perspective,
they trace over the palimpsest of the old and obsolete.

The Electric Universe model is a step in the direction
of recognizing a new universe of plasma connections.

[Music]

[Music]

Let me give a brief hypothesis: fundamentally that the Earth has been influenced by electrical discharge. It's not the only thing it's been influenced by, but how can we quantify that? So with that background I'll have to talk about the geological effects of running water, an important component of our past and it still is measured today. Electric discharges on dielectric media is something we can do in the lab and as you've seen in the past few talks, electric discharges are scalable. The fundamental aspect of these studies is that what we do in the lab, if we have a source for it, at the galactic scale or at the earth scale, it can occur and we can measure it. You can't do that with water.

That's the only drawback to water, you can only scale it a few orders of magnitude in the laboratory.

And the fractal analysis is a tool which we'll use to measure these items. So, I'll take you through how I measured some of these landforms and compare them to existing electric discharges. So, really what is water?

Water flows all over the earth, you can find many pictures of it, we can measure it, we can measure what it actually does on the earth. Electrical discharges however, are a little bit different. They have fractal patterns, they're somewhat chaotic, but also ordered in their discharge patterns.

I'll show a few other pictures from captured lightning.

They do a lot of great work with these Lichtenberg

patterns in polyacrylic-type resins and you get these beautiful dendritic patterns. So, we can actually measure these items in the lab and we'll talk about that a little bit more. So, let's be honest. Many of you flew here, looked over the earth and saw some pretty perplexing landscapes. And now we can view that on our laptops, and we can measure things on our laptops. Okay.

As a chemist - I'm a chemist, I'm not a geologist, but I understand the concepts behind some geology - I was wondering if the current geological paradigm is missing something. As I flew over the earth, I saw these tremendous dendritic patterns and cratering and mountain tops right next to floodplains and other different topological features. So, I was wondering, we can talk all we want about other mechanisms, but if we don't have a quantitative way to measure that, no one will hear us. So is there a quantitative relationship to the various topological aspects of the earth? And I believe there is, and that's what fractal analysis will tell us.

I'm from New Jersey, Northern New Jersey.

It is more than Newark Airport, there are some beautiful regions in New Jersey. Where I live there are a lot of granite outcrops, a lot of very strange hogbacks that run from the north to the west or north northwest.

Beautiful Lake Region. So that's about 10 square miles there on Google Terrain. As we back out an order of magnitude, we see

some interesting aspects to the topology. We see our Appalachian Mountains here. Folded patterns. Supposedly these are ancient mountains that have been eroded away. But right up, buttoned against them, are dendritic patterns and caverns, extensive canyons in central Pennsylvania, formed by water presumably. This butts up against the coast which is thought to be a flood plain, and there's beautiful Newark down there. If you back out more on the East Coast, it then comes up to the flood plains of the Mississippi region. Ozarks are down here. New Hampshire, the granite state. Granite outcrops everywhere. Fairly high mountains up there. But again, the Appalachians stretch down throughout Virginia. And you have your Chesapeake Bay there.

So, in terms of scaling - when we back out from our small 10 square mile aspect - we see some very unique features at different scales. We've already seen in the past number of presentations - there haven't been that many already - that we can assume, at least for the hypothesis, that the earth was bathed in equilibration of electrical energy. From the Sun? From the galaxy? From other bodies? We don't know. That was the past. That is an 'origins' question. That is a different conversation.

But what we can do, is we can measure what's left over, and we can see if we can draw any conclusions from that. So, in that sense - this is a slide

borrowed from Wal Thornhill - if the current is coming in on our galaxy. We are just a very small subset of this. Again, it goes back to scale - Michael Claridge showed that so well - it goes back to scale. We are just a very, very small speck of dust on one of these arms.

If there is electric current flowing through these arms, it is reasonable to assume that we've been influenced by that in the past. Again, from Wal's presentation, this is just a local hypothesized environment of the plasma solar system. And where our incoming charge is coming from. From our plasma pinch currents. Again, look at the scale. The sun is still but a small speck on this overall space of things.

And then from a size scale from a NASA view, our little blue dot of earth here, we are very small compared to the sun. So, it's reasonable to expect that large changes in the sun's output could influence us dramatically, now that we know we're tied electrically to it. We know that in the late 1850s, a tremendous corona affected telegraph lines, blew out many of them. If such a corona would happen these days, we'd be in loads of trouble.

But we also have to realize that electrical effects are not the only effect. Many years of very hard work by very smart people have established certain aspects of fluvial erosion. Erosion by glaciers. It does occur. We can't deny that. But on what scale? What is the order of magnitude of a fluvial erosion versus

a massive electric thunderbolt brought about
by discharge across the earth's atmosphere?

So, these discharges across dielectrics do
exhibit fractal type patterns. What is a fractal?

Many of you might be familiar with the Mandelbrot
set. It's a very fun whirlwind through YouTube.

If you zoom in and it goes and then repeats to infinity no
matter where you increase your magnification on this set.

That's a fractal. It is the same as it is near as it

is from far. So, discharges across dielectrics - a

dielectric being some sort of insulator - exhibit these kind

of fractal characteristics. The 'capture lightning' folks do

this marvelously. This is a discharge across

polycarbonate and as you zoom in to infinity, you

could theorize that it extends down to a single electron path

in these dendritic patterns. Now, interestingly enough, when

fractal analysis started coming about (Mandelbrot

pioneered this in the early 70s and 80s, published a book)

shorelines were the first to be analyzed [because]

they did exhibit some sort of fractal characteristics.

In this case it's Chesapeake Bay. We see our dendritic pattern

here, and also some could be brought about by flow of the

rivers, from rainfall, from constant season changes. But

what are the main effects? How much of an effect does the

fluvial erosion of a riverbed have versus

an electrical origin? Can we quantify that?

So that's what we'll explore. If you go walking down a street or on a muddy path and it rains, the rain is going to fill in the path. It's that simple. We can see that every day. So the hypothesis is, what if the earth did experience these discharges which had a profound effect on the topology of the earth?

But now we're under the influence of a [steady] state of rain and snow erosion. Could these processes that had already sculpted the earth, influence what we see in the rivers today? Now, we do know that fluvial erosion happens. We can measure it. We've seen it in the earth. These are pictures from Alaska where you see the snowfall actually freezing and then melting and carving river channels. And then you have what's called alluvial fans towards the bottom. As the water decreases its energy and dissipates its energy, it spreads out. So this can be measured.

But there are other places where it does not happen so clearly. Especially on Mars, when you look at craters. At the last electric conference we had a wonderful tour of the Mars geology. And the big discrepancy here is that these alluvial fans actually go downhill. So it's the wrong direction. So, there is a problem.

This is the edge of the Victoria crater. We would expect these alluvial fans to actually increase as the fluids run down to the bottom of the crater, but that does not happen. There must be another mechanism in place,

because it does not account for fluvial creation of these dendritic patterns. Fluvial patterns we know happen. Again, Google Earth. Thank you! So, you can increase your magnification. This is Canyon Lake down in Texas. They had a lake dam breach and you can see what happened to the limestone, the surrounding limestone region. You can then pixelate that and visualize that and do some measurements on it. It's fairly linear, goes straight downhill to the river where it feeds into the river. We know it's a fluvial pattern. In the same way you can do that on the great Mississippi. I'm sorry, this is Mount St. Helens. I'll get to the Mississippi on another slide. The Mount St. Helens eruption happened. The pyroclastic flow flowed down to the lowest region. You can also quantify that, pixelate it and look at the flow of where it occurred. It also had some side channels here that I forgot to put in. Now we get on to fluvial patterns. This is like Armistad down in Texas. This has been dammed, so this has restricted the flow of the river over the course of time. And what we see, in stark contrast to an existing river flow, is a dendritic pattern occurring. Why does this occur? Because you're changing the base level. The base level is an important fundamental aspect of

geology that says water is going to flow to the lowest level. And if there's an erosive layer there, it's going to eventually erode it away and create a new base level. If there is a level there that cannot be eroded away, that will be your base level. So my question is, if this is an existing base level and this is the river, how did these existing dendritic patterns form? If you increase your base level, it's going to fill into what was already there. But those should have already flowed from somewhere else into the base level of the river. So it's kind of like a cat chasing its tail now, and we're trying to figure out how to deconfound these factors. In the same way you can look at the Mississippi flood plain. This is a part of the Mississippi River here, in terrain mode, and you see extensive arrays of dendritic channels, especially in the Ozark region, rolling channels. If you ever driven through Missouri, it's just constant up and down. The problem here is, if these were all fluvial as a result of flooding, they would also have this similar drainage pattern to a base level. But they do not. In the same way if this had a base level, we would see the same dendritic patterns brought about by constant flooding of the Mississippi in the near past, but we don't see that. These dendritic patterns further do not drain to anywhere; they are there on their own.

So this begs the question, what brought about these dendritic patterns, and how can we measure them in the differences between them and effluvial patterns?

As I mentioned, this concept of base level.

Reading through some of the basic textbooks on geology written by Tarbuk. Say if you've taken an introductory geology course

Over and over he says, "Running water is the single most important agent sculpting the Earth's land surface."

That is a constant mantra of current geology.

And that's to be said, because they have come up with the hypothesis as to how this water erodes, and some models that are validated by experimental research.

The major factors include slope, bed, suspended loads, the types of materials, depth, width, physical barriers rainfall. These can all be measured and modeled. This introduces the concept of "design of experiments." You have factors which you can control, or at least monitor. And then you have your responses including sedimentation; what's being brought down this slope by rainfall or some sort of flood that gets deposited on this new bedrock layer; the river flow; the flow rate; the erosion rate - how fast the sedimentary layer is deposited in the new area. So all these factors can be measured and you can come up with models.

This in particular is from the Department of Agriculture, a general technical report that people can use to

measure stream characteristics. And because of these extensive stream characteristics, and also rivers - this applies to rivers as well, but there are not as many classifications, because it's pretty difficult to classify larger systems. But you can see that the larger slopes lead to straighter channels, in a very fundamental sense. Lower slopes lead to what's called meandering and stream capture, so these guys can capture over here and then you can form other circular regions and that happens all the time along the flood plains and also deltas, where the river runs out to its current ocean and base level. So, we have these pictures and we also can study what kind of erosion rates happen with different types of gravel or base material. But again, it all goes back to a certain base level; it all has to eventually flow to the lowest point where it can get to. So right now 47 plus streams - I think the the classification of rivers is around 30. What does that do for us for electrical discharges?

So now on to discharges simplified in one slide. So the charge buildup here. We have two plates powered by an electrical source. We have an electric field that builds up across the dielectric - the blue being a dielectric, whether it be solid, liquid or gas. Eventually it's going to discharge if you get enough charge built up. That's why capacitors eventually break. The charge equilibrates by discharging

across the path. The factors: again we go back to the 'design of experiments' and monitoring what we know in the system. Many things can influence how this discharges your electrode materials; the type of dielectric; the potential of electricity there; the surface topology of these two electrodes; surface morphology; etc., etc. - small points will increase the local electric field there.

Now the response is what you get out when this occurs. Much like a lightning bolt, you get magnetic fields around the current flow. You get a full spectrum of light, anywhere from X-rays to visible light. You get heat, manifested in heating up the local surroundings; and possible nuclear interactions if it's strong enough and you have a pinch effect. That's a very, very simplified version of discharges. But it enables us to measure things in the laboratory so we can monitor our factors, we can measure our responses and build models from them. And because electricity is scalable, we can assume that things scale up. Now a lot of work has been done on fractal analysis of dielectric discharges, because this is very important for the wire and cable industry, for those who make transformers and power supplies. You can see, as early as 1990 to 1984, people have been doing work on the fractal dimensions of dielectric discharges, and fundamentally what they found is

that they all possess a certain fractal dimension that's characteristic of the material. This is actually an internet picture of a discharge across a transformer and to the insulator, but these are from the papers that I studied. From Kudo's paper where he measured the fractal properties of those items. Typically, they were performed in high-voltage discharges across solid plastic or a gaseous medium. So now it's quiz time. Some of you have seen this already, so don't cheat. So I'm going to tell you there are three pictures here that I've pixelated and turned into a binary picture to illustrate the scalability of electricity assuming that the Grand Canyon was formed by an electric discharge - probably not the only thing that was going on. But let's just for the moment assume a certain part of it is. Try to match each letter with the particular picture. I'll give you a minute here. So we have orders of magnitude scale here: centimeters from a polycarbonate discharge to meters of a discharge on cement, and then kilometers for the canyon. So everyone got their choices? All right. I heard some awe's. How many people got it. Be proud of yourselves how many people got it right? Just for curiosity. All right. Okay. It's not that easy, when things are pixelated and you normalize everything.

So what you're doing is you're normalizing all of your particular topography, only that which you can see in terms of what was formed by the discharge.

And we'll come back to that in just a moment.

So you can see here that scalability is an effect.

So, I thought about how rivers are formed, how discharges could affect the surface of the earth, and I kind of dug it down to the main effects here. This is called a Cause-Effect (Ishikawa) diagram. We use this a lot to identify problems in industry or whatever we're working with. On the left here is 'riverbed'. How do they form?

Well, we know they're formed somewhat by fluvial events. But they could also be formed by electrical discharges. Ignore the [characterization part] for the moment. Technically, you're not supposed to have characterization tools in with this diagram. But I wanted to share this to run parallel with these. So the fluvial factors - again the factors that influence the fluvial erosion of rivers - include the following. You have age consistency, sufficient rainfall, et cetera. You can read through these: high slopes, low slopes, tectonics, dissolved flow, suspended load, all these factors. And then what I did, is I kind of assigned categories - colored categories - to those that are measurable and testable by what we can do in the lab or in the field. Also red, which is not testable, it fails requirements to be a scientific study.

You cannot repeatably measure it. And also historical accounts, because there are a lot of historical accounts of certain electrical plasma discharge phenomena which we now know. So, in terms of the rivers, I don't know if this color is going to show up enough, but really what I saw (and we can talk about this afterwards if you disagree), but really tectonics and pre-existing geology are the assumptions. They're not testable. But nearly everything for fluvial, existing rivers can be measured, but you can't measure that which has happened in the past. So that automatically eliminates some aspects of this. For electrical discharge, we have a few different items here. Either a large solar outburst, or close-to-earth encounters, with various items. You could probably come up with some other factors here. But for the most part, we now know that there is evidence of current in space. Right? We've talked about that a few times. Even in the popular press, I shouldn't say popular, but academic press, there is measurement of electric current and [large] scale jets coming from galaxies. So it does occur in space. We can now use that as part of our toolbox. To say, electric current is scalable. We know what happens at the galactic scale. "For one component of this jet we obtain for the first time a

determination of galactic-scale electric current and its direction..." This is in the Astrophysics Journal. Okay, so that's encouraging. So from a factor we know that compositional changes can affect how electric discharge occurs. So, you can see that all these things add in to electrical discharge, making it somewhat of a feasible phenomenon. We have some historical sources from the ancients and interplanetary distances being less than they [are] in the present. It could be debated, but I do believe we have some historical accounts of that. But anything that's [stated] without drawing on any references, is inferred. Breakdown of the atmosphere. Thomas Gold and some others have said that you need a magnetic flux of greater than about 20 Gauss to have that discharge occur across the Earth. So it could have happened in the past. Now for characterization. The only things we're missing here, anything that draws on the past geologic time scales and is non-measured (or kind of the present is key to the past). Because we don't know if that riverbed was flowing as fast as it is now. Especially if we can't find a sediment load that it left over. That's an important aspect. So that's one way we can break down the problem, and trying to visualize it as to what factors are most important. I mentioned measurement methods here. So now we're going to get into what I looked at. A fractal is a self-similar pattern. In other words, it's

"the same from near as they are from far." Very few things are perfectly self-similar in nature. That means if you increase your magnification all the way, they look the same as you back out. Most of the time they're known as self-affine. In other words, they're scaled by different amounts in certain directions.

That's more the case with riverbeds. But [some] of them are known to be self-similar, and there's some separate tests you can do that I have not done yet. Now it's interesting in all the research with riverbeds, it's really only confined river networks that exhibit self-affinity, as well as some self-similarity.

Regular flowing networks of rivers such as the Mississippi and other large river networks do not exhibit that.

So already we're looking at the landform confounding our analysis of this. So the landform is dictating how the river flows. So, we tested the dissimilarity between these measured fractal dimensions of electric discharges on what we know in the lab with landforms that we know on the earth. Taking it back to the picture.

Think about the picture. You can think about any picture here that has a hole and then rain or some sort of flow rate moving in. It's going to be captured. Measuring the fractal analysis of the earth. As I mentioned, Mandelbrot did a little bit of this in his book. It's a great book; I think a trendsetter.

He did a lot of analysis of the coasts and now people are taking that into three dimensions and measuring some aspects of geomorphology. Most recently, I came across a paper that I think is very powerful in that it studied 'isolines' at varying altitudes, and I'll show you what I mean by that in just a moment. So basically, they're taking fractal dimensions at varying altitudes on the whole earth's surface because they have data for that.

I'll read you a little bit of this, "The quantitative analysis of natural relief represents an objective form of aiding in the visual interpretation of landscapes, as studies on coastlines river networks and global topography have shown. Still, an open question is whether a clear relationships between the quantitative properties of landscapes and the dominant geomorphologic processes (rain, wind, water) that originate them can be established. In this contribution, we show that the geometry of topographic isolines is an appropriate observable to help disentangle such a relationship." Not totally disentangle it, but they're getting there. Really the conclusion though I found is kind of surprising. "A more detailed inspection points to a relationship between the observed features and the geological processes that shape the planetary surface. We suggest that the erosive action of a solid or viscous phase, the erosion of a flowing liquid phase or its action through wave breaking, and tectonics, are

geological agents which work towards increasing roughness in the landscape. On the other hand, agents causing sediment deposition, formation and pronounced smooth slopes, or erosion through hydrostatic pressure (glacial) caused by large masses of liquid or ice, represent smoothing agents able to decrease the characteristic fractal dimension." The rougher you are, the higher the fractal dimension. The smoother you are, the lower the fractal dimension. The problem I have with this is that they're referring to water as doing the same thing. That's how I interpret that. So typically what they get on a map is a function of fractal dimension D as you can see that 1.8 from 1.0, and you can see that mountains obviously are the highest fractal dimension. Okay.? drawn by the coastlines which are fairly smooth due to wave action and sediments on the layer and then your intercontinental, I guess, sea floors and your trenches, they also were able to resolve. I'll go and draw some conclusions from this with the next graph. But really a study of isoline. So, basically what they're doing is, they're measuring a box-counting relationship. So the measurement of your fractal dimension d is a logarithmic relationship with the number of boxes

that they can fill into a certain area that's

scaled, and the scaling factor being ϵ .

So, on this map of New Jersey, another beautiful region in the Congleton Preserve, you can fill in an area at a thousand meters say, in height. You can fill in that isoline with a certain number of boxes and count them. You then do the same thing with a larger box, larger area for a different isoline. For larger area you'll have a different number of boxes. You can then get a plot. So this is from Baldassari's paper which I just showed you.

You can see that at different elevations, you have an increasing D-level as you increase your elevation up to about 4,500 meters. That D-level is the slope of this line, and interestingly, below the sea and right at sea level you have very low fractal dimensions brought about by fluvial erosion.

So again, the fractal dimension increases with increasing height, in elevation. I think that says something about the mechanism of how these mountains were formed. So what did I do?

In my spare time I took ImageJ, which is a microscopy analysis software, a little bit wordy chart here. I apologize, but I took the fractal dimension by the box counting method, typically between 1.0 and 2.0.

The area of each image was between 500 and 1000 miles squared. I was able to get a resolution of about

one pixel per 1/25th of a mile. So you may say, okay well, these are three dimensional figures, how can you project them in 2D? In some of the electrical studies they said that this is valid as long as this projection on a 2D plane has D values of 1.7 [or less]. So, the color-coded data sets are from fluvial, which are blue, known electrical events from the laboratory from literature papers, and then unknown structures from terrain load captures. The image processing you can accomplish fairly readily. It requires a little bit of footwork to get rid of some of the roads and whatnot on Google Earth. You grayscale it, and then you binary it, and you get this binary pattern, which you can then do your analysis on.

But furthermore, I skeletonized it because I knew we were dealing with different elevations. So the pattern that this follows can be a validation of about 600 meters from the center of this channel up to the side.

A way to kind of normalize your overall patterning and distribute it to only the branched pattern, is to skeletonize that. You can do that with your software. So eventually, what you're getting is only a skeletonized pixelated version of only the pattern.

And then you can measure your box counting map method for your fractal dimension. So here's a picture of Mississippi that I was talking about.

Numerous flood plains here, from the pixelated binary you get a D value of 1.3. This is up in Newfoundland. You're getting a value of about 1.7 even just with the standard binary image.

A lightning bolt: again we're projecting this onto a 2D which is valid. Again about 1.3 and again this is limited resolution. This is far away. You can't get all the little dendrites that are coming off this.

So that's one aspect that I think the electrical analysis is missing. In that we can't resolve all those fine dendrites, except with some of the laboratory tests that I took. So a little bit of statistics here.

You all remember your Students t-test? 95 confidence interval. I'm confident that this is different than that.

What this is doing is, because I have different values of population sets, it's a different kind of Students t-test.

So, when I did that with just a straight pixelated version, nothing was different. And with the skeletonized version, some differences did appear, namely when you skeletonize the landforms you don't have that drastic of a drop in D-value, as opposed from your river values. And indeed you get a very big significant difference with that skeletonized value, because you're normalizing all the elevations. And what happens here is the fluvial value decreases to about the same value that Baldassari found in all the fluvial erosion studies: between 1.0 and 1.2.

The unknown structures that I measured on the earth, are equivalent to electrical structures.

So, statistically speaking, the unknowns are more statistically dissimilar to fluvial events than they are from electrical events in the laboratory. So, really what that skeletonized value is doing is it's normalizing the depth.

Okay. And we can say that these structures are self-defined.

These D-values are fairly high, enough to be self-defined.

So, really in conclusion the present data set is limited right now to only 33 counts. I'm working on getting more.

I think electrical patterns are better matched towards our landforms and the fluvial patterns.

But we have to realize that other data includes fluvial erosion, because rivers have been flowing for some time. So, we have to account for that. We have to know the systems that we're measuring very well, to account for the fact that some fluvial erosion may have occurred.

So it's consistent with the literature trend.

There's a lot to do, there always is. But really, what effects do such discharges have on an environment?

I'm interested in shock-induced changes. That's something I do all the time. What does that do to rock and what does that do to populations of organisms around that, if it did occur? Does that account for many mysterious losses of populations of ancient cultures? Was that due to temperature? Also radioactive decay that was already

mentioned earlier. Some profound implications on geological sciences here that we have to explore more. So again, hopefully the further augmented data set, with more analysis [will give us] a better picture of what's going on. I'd like to acknowledge Michael Steinbacher and Montgomery Childs also for their discussions.

I got a copyrighted copy of Google Earth, so we won't get sued. And if anyone wants to contact me, there's my contact information.

I'll be happy to take any questions. Thanks.

[Music]

[Music]

We recently looked at the new discovery of filament structures that were located in our neighborhood.

We also saw that the nearest open star cluster to us revealed an important part of the filament structure of the galaxy spiral arms. Mainstream science agrees that much of the interstellar medium is not simply filled with empty space. Instead, they see that it is a hierarchical structure and facilitates the formation of filaments that are governed by the galactic potential on a large scale.

We already know that there is a network of hydrogen filaments that is structured mostly parallel to the galactic plane.

In 2010, astronomers discovered a highly filamented dark cloud which they called Nessie.

They believe that it is one of the first filaments whose morphology is likely governed by the structural dynamics of the galaxy.

Because of this, they dubbed this type of filament the bones of the Milky Way as they think that its formation, evolution, and shape could be closely linked to the global spiral arm structure. Within molecular clouds they discovered giant molecular filaments. These seem to have the

highest masses, while exhibiting the lowest column densities and star forming activity, making them good candidates to be intermediate descendants of the atomic interstellar medium structures. These structures are not only associated with spiral arms, but are also located in inter-arm regions. The recently discovered Radcliffe wave is yet another example of filaments in our local neighborhood.

Even in their own simulations they found that giant molecular clouds often form as large filaments.

Now obviously, they see the formation process a little differently and quote things like “In our simulations the galactic shear between the spiral arms plays a critical role in the formation of highly filamented structures.” Their assumption is also that these giant molecular clouds tend to sustain their large filamentary shape, before entering the spiral arms, where they are prone to being disrupted by local events of star formation and stellar feedback.

And yet, we have examples of large filaments that are located in our neighborhood.

Peering through our galaxy is not easy,

and now astronomers think that they have spotted a massive filament of atomic hydrogen. This is one of the largest structures ever observed in our galaxy. It is located about 55,000 lightyears away on the other side of the Milky Way. The research is based on data obtained by THOR, an observational program that relies on the Very Large Array in New Mexico. The project studies molecular cloud formation, the conversion of atomic molecular hydrogen, the galaxy's magnetic field, and other questions related to interstellar medium and star formation. The ultimate purpose is to determine how the two most common types of hydrogen gas converge to create dense clouds that give rise to new stars. These two types are atomic hydrogen and molecular hydrogen. The process of how atomic hydrogen transitions to molecular hydrogen, is still largely unknown, which is why finding this huge filament is so important. To put the size into context, the largest known clouds of molecular hydrogen are around 800 lightyears in length. This new cloud which they call Maggie, measures just shy

of 4,000 lightyears long and 130 lightyears wide.

More interesting is that parts of this filament extend about 1,600 lightyears below the plane of the Milky Way.

When they analyze the speed of the material moving in the filament, they determined that it had a mean velocity of 54 kilometers per second. They were also able to show that the velocities along the filament barely differ.

They determined that this filament might be remotely linked to the global spiral arm structure of the Milky Way.

They were not able to detect any carbon monoxide emissions or dust in the filament, and there were no signs of new stars forming along the filament.

On closer inspection, the team noticed that the gas converges at various points along the filament which led them to conclude that the hydrogen gas accumulates into large clouds at these locations.

The Maggie filament discloses a hub-like feature in the East, on which small-scale filaments appear to converge, and a tail that thins out towards the West. The North-Western

part shows a connection to the midplane, potentially feeding off hydrogen material located at higher latitudes. So, many of you will not be surprised by these findings, but is there more that we can learn from these observations?

An important point to note is that, although these filaments are composed of atomic hydrogen, that doesn't mean that they are not a plasma. Even if only one atom in 10,000 is ionized, it can be considered a plasma. Therefore the motion will be dominated electromagnetically.

If we examine the overall structure of the filament and look at the centroid velocity, we can see that this speeds up and slows down.

What might cause the velocity to speed up?

Around these areas we also see a much higher density of the cloud. This is likely an indication that electromagnetic pinching is occurring.

This would tend to compress the material, increasing the density, and also increasing the velocity.

In larger, more dense filaments, these are probably the areas where most star formation is taking place.

At these points we would also expect

Mankund convection to be strongest, creating a greater spread of material around these

points, which is what we see to some extent in the images of the filament so far obtained.

In Marklund convection, a hydrogen is the outermost ion from the center axis which becomes deionized or recombines with an electron.

The diffuse nature of Maggie and the lack of a CO signal, except on the smaller scale along the axis, suggests that this is a juvenile filament.

One important aspect is also that they see the movement of the material in the filament. This once more confirms the idea, that it is the movement of this material in the filaments, which powers the stars that reside in them.

[Music]

Welcome to Space News

from the Electric Universe

brought to you by the Thunderbolts

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The following presentation is an adaptation
of the Mel Acheson Picture Of the Day article,
Blindness, Stupidity and Speculation.

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

Ignorance is not bliss. In discussing the
question of progress in scientific revolutions,
Kuhn noted “There are losses as well as gains,
and scientists tend to be
peculiarly blind to the former.”

In a footnote, he
elaborates, “Because science
students ‘know the
right answers’, it is
particularly difficult to make them
analyze an older science in its own terms.”

Noting that in his broadest use of paradigm,
Kuhn included instrumentation with theory.

I would apply his footnote to data. Because
scientists know the right procedures,
it is particularly difficult to make
them attend to evidence outside the

sensitivities of their instruments.

Chapman refused to look at, or even to discuss Alphen's experiments that contradicted the "perfect insulator" theory of space.

Modern astronomers refused to look at Arp's display of connections among objects of different redshifts. Now

Thomas Gold presents a most clear-cut example of scientific blindness and loss of data

in his book *The Deep Hot Biosphere*.

He writes "The invention of the seismograph meant that it was no longer necessary to experience an earthquake directly, or to interview someone who had, in order to assemble data on the event.

Eyewitness reports were no longer believed to hold any value for the scientific venture."

Gold then proceeds to describe many eyewitness reports from ancient times to modern.

A constellation of recurring phenomena becomes apparent:

"Eruptions, flames, noises, odors asphyxiation, fountains of water, and mud" often occur before the quake.

Gold concludes on page 147:

"The accumulated observations maintained in folklore and contemplated by the intelligentsia of the time, meant that the ancients recognized a variety of phenomena that seemed to serve well as warnings of an impending quake.

In some ways, folklore is of more practical value to residents of earthquake-prone regions than is our modern science." He describes several incidents where people were able to evacuate their villages and towns a few hours before an earthquake because they were alerted by odors, fogs, or unusual animal behavior.

Folklore has saved many lives; seismographs and stress meters have yet to achieve one correct prediction-probably because they're measuring only effects, not causes. Gold adduces this evidence, and several chapters more, to support his theory of upwelling primordial gas from deep within the earth. He also mentions the near impossibility of attracting any attention to the theory,

or even to the observations
that call into question
the prevailing assumptions. He writes, "Thus
many scientists seem to have fallen into the rut
of the nearest convenient theory. They
explore the terrain of this rut very
effectively, down to the
minutest features within the
walls, yet they will not
climb out for another look.

This fear of "another look" is more
than mere scientific blindness.

It's a deliberate squeezing shut
of one's intellectual eyes,
a rejection of insight, a refusal to learn.

It's directly connected to belief, to the
assumption that one possesses
the only possible right answer,
which therefore obviates
one's considering further
questions or "other looks." Ignorance can
be overcome with persistence and study.

Ignorance, indeed, is the beginning of
learning. But the refusal to learn is stupidity,
and for it there is no remedy. Scientists
have limited time, as do we all.

It's understandable that they
should ignore many things not
immediately pertinent to their current work.

Sometimes even the pertinent must be
ignored. But that's merely "ignore-ance."

The mark of stupidity, and of the belief
behind it, is the use of the term "impossible"
and the accompanying rejection of
speculation. Let us consider

Thomas Gold again. He writes,

"The history of science offers example
after example of apparently inexplicable
features for which perfectly rational
explanations were finally found.

In nearly all such cases, assumptions
that were universally believed obscured
the truth so effectively that no progress
toward a solution seemed possible."

"Yet it is to just such apparently inexplicable
features that we must hope to find clues
that will show us how to un-
burden ourselves of false beliefs.

"Speculation is a vital step in this process.

It was once speculated that the earth
revolved around the sun. Without
this speculation, I do not think

that any systematic avenue of research
would have produced the evidence that
clinched this theory. At a time
when proposed solutions are
still speculative, they are
the driving force for the
researches that will prove
them right or wrong
and will thereby put our thinking
on a new and better track.”

[Music]

In 2013 the SAFIRE

project was created.

The objective was to replicate the Sun's

atmosphere in a laboratory on Earth.

A lab was designed and built

and at its heart was the

SAFIRE plasma engine,

the only one of its

kind on the planet.

Okay we can see you and Colin

and you see me in the background

talking to you on the cell.

Today, four years later the SAFIRE

team gives a tour of the lab,

via the web to a scientific review panel

scattered all over North America.

Two things define SAFIRE:

a unique premise,

and a remarkably

powerful methodology.

The premise driving the project is the idea

that electricity plays an essential role

in the functioning of

the Sun's atmosphere.

The methodology used to build

and run the SAFIRE lab

comes from the world of
engineering and manufacturing.

It is a statistical procedure that
allows for incredibly precise control
over the design and
managing of experiments.

This combination of
premise and methodology
has yielded remarkable,
if not startling results.

In August of 2017 the SAFIRE team
presented its most recent discoveries
at the Electric Universe conference,
"Future Science" in Phoenix Arizona

You were just
listening to SAFIRE
and that's just the beginning.

So, SAFIRE has proven
itself to be capable
to contain, control and stabilize,
high energy dense plasmas.

And you're going to
see that tonight.

We're seeing chemistry changes;
we are slowing the
speed of light down;

we're seeing variations in electron density,
comparable to the photosphere-heliosphere;
and nuclear bombs.

Electrical confinement
of high-energy photons.

These are just some
of the things,
and all of these things here, are due
to charged plasma affecting matter
of a different
electrical potential.

So, this time I want to
take the opportunity,
which is usually saved until the end of
the presentation, because time is short,
to thank the other
very key members
who are contributing so much
the success of this endeavor.

So, first of all I like to thank
Scott and Bruce Mainwaring
for their ongoing and unwavering
financial and moral support.

Dr. James Ryder for your insight, for an ear
to hear, and with help herding the cats;
and Dr. Lowell Morgan for

your amazing knowledge
and insight into the
complexities of plasma physics.

Wal Thornhill for your work in the
Electric Universe model in cosmology,
and Dr. Donald Scott for your work in developing
a more mature model of the electric Sun.

Jan Onderco for your hard
work in data acquisition.

Leighton McMillan
for your hard work
and the assistance in building
SAFIRE in such a short time.

Jason Lickver for your work in
mechanical engineering and telemetry.

I'd like to thank
you Susan Schirott
for your untiring help in administration,
finance and legal matters,
helping to make this project
go so much smoother.

Tracey Childs for your
ongoing financial work
and for always being an
awesome woman in my life.

Ben Ged Low for your work on the team

and pulling this presentation together.

And none of this would have started

without you David Talbott,

making that providential call to

persuade me to take on this project.

So now I would like to

introduce part of our team

who are joining me tonight to assist

in presenting our discoveries.

Please welcome Dr. Michael

Clarage and Dr. Paul Anderson

Research objectives:

there's a lot of detail to it but

fundamentally SAFIRE stands for:

Stellar Atmospheric

Function In Regulation;

the objective sounds

way out, there

but basically the contract says

we're to do everything we can

to recreate a "Star in a Jar"

and test the Electric Universe

and test the electric Sun model.

So, the technology we're going to use

in SAFIRE or have been using in SAFIRE:

We have Floating Potential,

Plasma Potential, Plasma Density,
Ion Current Density, Electron
Energy Distribution,
Electron Temperature,
Mass Spectroscopy,
Optical Spectroscopy,
Thermal Measurements,
Infrared Thermography, Radio
Frequency Measurements,
Electromagnetic Measurements,
Scanning Electron Microscopy,
Optical Microscopy,
Voltage across the Plasma,
Current across the Plasma,
Voltage feeding the Plasma
Current feeding the Plasma, and Video
Capture of the Plasma Phenomena.

And we're going to discuss each one
of these with you in detail tonight;
just kidding.

What we will show you however,
is how we use this technology
to reveal some of the most startling
discoveries we made this year instead.

Now, Michael you're up.

- I'm up;

- Let's get started.

Optical spectroscopy.

So, Jim Ryder said

everything we know is from light

I'll think about that

but almost everything we know about

the Sun is definitely from light.

And optical spectroscopy is a

really good friend, as a scientist.

Every element emits very

characteristic frequencies;

a lot, you could imagine, like every

species of bird has its own song,

and you would never confuse a

chickadee with a seagull, right?

So, if you study these

elements spectrographically,

each one is quite unique,

and we can learn a lot about

what's going on for those atoms,

by things like the relative

heights of those spectral lines;

the widths of those spectral lines;

the shape of those spectral lines.

Here's three different discharge

regimes in our plasma.

On the left, you can see there's
the center anode, very bright
and then around
it is halo, okay.

Those are double layers
in a halo around that.

In the middle panel you can see that
the double layer is gone, right?

Just the center anode is there

and on the right-hand panel

we basically just cranked

all the dials up to 11

and that got a super

high-powered discharge.

You can see there, that's our
spectrographic probe tip

it's a fiber optic that we can move

around anywhere we want in the chamber,

to study what's going on.

And so right there, that fiber-optic tip

is looking right into the double layer.

Okay it's not looking at the anode,

it's looking at the double layer.

The next one the

double layer is gone

so the probe tip is just looking

at the general plasma discharge.

And then the last one

we moved the probe,

but it's looking at this super

high power discharge.

So, we'll just look at

one spectrographic line.

This is like one note.

One note being emitted

by the hydrogen, okay.

It's the 656 nanometer line,

one of the most famous spectrographic

lines in the universe.

And we can measure

the width of that,

and inside the double layer we see

the width is 0.12 nanometers, okay?

That's pretty tiny; these are

pretty good instruments we have.

We boosted the resolution spectrographically

by about a factor of 4 or 5, just recently.

So we're getting...

it's good right?

That's pretty good resolution.

Then the double layer goes away.

The width of that line, same

line, hydrogen emission,
the width goes down
to 0.07 nanometers
and then for the third one, the super-high
power one, it jumps back up to 0.09.

This made us super excited to be
able to see this and measure this.

Because one of the reasons these
lines can change their shape like this,
and get broader and more narrow,
is the number of free electrons
running around in the plasma
and if there's a lot of free
electrons running around the plasma,
you can kind of picture that they're
crashing into hydrogen atoms,
and causing extra wobbles on top
of the note that's being emitted,
that tends to broaden
the line more, okay.

That may seem like a small change, you
know, 0.05 nanometers from 0.12 to 0.07,
but that represents like 50 to 100 times
change in the free electron density.

So double layers have
within them about 100 times

more free electrons running

around than not, okay.

This is super exciting

that we can measure this.

If you just stick in a probe into one

place, and you get one measurement,

you're not necessarily so sure you can

guarantee what you're looking at.

But if you can measure

changes like this,

then you have much more

confidence as a scientist,

that you're actually observing

something that you can talk about.

And where do we see

comparable changes, you know,

in free electron density?

Well, we see those changes going from

the photosphere to the chromosphere,

from the chromosphere to the corona

out at the end of the heliopause.

So, we're actually getting

into the realm where we have

changing conditions in our chamber,

and the ability to measure them,

that are also going

on in our star.

That summarizes that.

Yeah, it's too early to stop.

Do you think it's too early?

I think it's too early to stop.

I think they're just

absorbing right now.

So we'll just take a

breath and keep going?

Sure you can take a

breath, I'll keep going.

Okay.

It's not always this

much fun in the lab.

Some more yelling and screaming

going on, things like this.

So, the next section is where we get

into the fun part: statistics, okay.

But it's really,

really important,

because Design Of Experiments

(DOE), actually is the mainstay.

It's the foundation of the

work that we're doing,

because in science today there's a

lot of stuff that's in question,

and we're not going to be subject

to those kinds of questions.

So we impose what's called

Design of Experiments

and Dr. Paul Anderson is going to take you

through what we've been doing with SAFIRE

and I think you're going to be amazed

about some of the findings with them,

all right. Thank You, Monty.

So just as Monty said,

we want to investigate some basic plasma

physics that is occurring in our chamber.

The first thing we did,

was in looking at our chamber,

was that we wanted to

tame the plasma, okay.

And I'm going to show you first a video

here, of the plasma as we know it now.

We can move the cathodes as you can

see, we can stabilize double layers,

we can change the double layers

as a function of distance.

At the same time we can also change gas

concentration and type of gas in there.

It wasn't always that pretty;

some of our initial plasmas were

pretty dirty, very unstable.

If you look at a lot of old plasma literature before they even named it a plasma, they commented on how difficult it was to contain this energy, and understand it.

So, these are some of our initial discharges.

Lots of impurities on some of the materials that we use for the anode; striking different discharges; a lot of instabilities in the plasma.

And what we wanted, we eventually wanted it to look like this. Right?

This is a very simple plasma, which entails a simple anode on the left, and a cathode on right, and this is

basically a 1D plasma where you're striking a discharge between these two electrodes.

You can adjust the gas pressure, the gas type in this, as well as the voltage in this system.

Fairly straightforward.

This is a top view of SAFIRE;
it's not as straightforward
as the plasma tube.

This is looking down on SAFIRE
from Monty's model here,
and as Monty listed previously,
all the instruments that we have,
we have them there
for a reason,
and every single run we use all the
control instrumentation for the chamber
as well as driving all the
detection that Monty mentioned.

So there's a number
of detectors on here
as well as the fundamental
control of the chamber.

So, through a lot of data
acquisition and controlling,
we're able to now control that plasma
chamber and carry out experiments.

So, one of the first things we had
to confront is how to drive it
and understanding the gas input like this
is just one aspect of the gas input here.

This is the gas and

vacuum control system.

We also had to

understand our SOPs,

to implement safety procedures

when you're working with

2,000 liters of hydrogen at

high temperature, right?

So, we had a number

of things to control,

in addition to wanting

to control the plasma.

So, we looked in a literature and we

talked about it and we said okay,

well learning to drive this, let's

concentrate on plasma experiments

that are well documented and that's

why we came up with Paschen's law.

We decided to choose

Paschen's law to understand

the plasma ignition in

the SAFIRE apparatus.

So, Paschen's law describes a point of current

flow at a particular electric potential

through an ionizable gas, or gas

between two electrodes, okay.

So, fundamentally we have two

electrodes, positive and negative;
you have a gas, you have a
certain pressure of that gas,
usually conducted under vacuum,
and you have a distance between those
electrodes and you strike a voltage
and there's no current flow initially,
until you get to a certain point
where that voltage can overcome
ionized gas and conduct a current.

Now, when that occurs,
(there) is a certain voltage.

Okay, so we decided
to do that in SAFIRE.

So, this is a classic
Paschen curve in hydrogen.

The other gases also have other
curves that are very similar.

They exhibit the same minimum;
so if you notice here in the
graph, or X-axis here,
being a term of PD,
pressure and distance.

Notice it's in a
logarithmic scale.

So, it's a reduced variable, you have

both pressure and distance in one axis.

In our Y-axis, we have our voltage
that we strike to obtain a discharge.

So, if you go ahead and do a bunch of plots at
different pressures at different distances,
you'll end up falling on a curve
like this for your electrodes.

So, what we did in SAFIRE we went
ahead and did a SAFIRE apparatus
with a spherical anode and our two cathodes
at various distances, equidistant.

As much as we wanted to vary both
of them, we kept them constant.

And we discovered already SAFIRE
is acting very differently
than a typical plasma
discharge apparatus.

We had to use a modified version of
Paschen's curve which you see there,
of the law, and we also found that the gamma
term which is in that lower denominator,
in the denominator, that did
adjust with different distances,
and so that's something
new that we're exploring,
and we hope to get a

publication out of this.

So you'll notice that

already we have a departure
from regular plasma physics in a
regular anode-cathode discharge;
say a discharge tube.

Another reason why we did this
is, okay we ignited the plasma,
but what is the
morphology of the plasma,
what does it look like at
these various settings?

So it's kind of an experiment with
killing two birds with one stone,
in that we determine the
ignition characteristics,
which we needed to
control the plasma,
and we also explored the
morphology of the plasma.

So, that was a very powerful
thing: we were able to pursue
some various regimes and then
establish our Design Of Experiments.

So, we discovered that
the configuration

is a significant departure
from typical plasma apparatus,
that you may have from its
typical anode and cathode.

So then we went into the
Design Of Experiments.

We decided on where we're going to look,
what kind of plasma regimes we want,
because ultimately we want to dial
in stability for experiments.

There's no use in doing
experiments for double layers
if they appear for one
microsecond and then go away.

We wanted them nice and stable.

Now to obtain stability
in any system,
whether it's in SAFIRE or whether
it's in your kitchen, baking bread
we, need reproducible results.

But that only comes from
understanding your factors;
factor is another
word for variable.

So, to understand those factors and
variables, you need more experiments, right?

Traditionally this is called
the Edisonian approach:
you have more factors, you do more
experiments, you get more data.

The problem with that is, that just
because you do more experiments,
you might not be
increasing the resolution.

In other words, the
signal-to-noise.

The signal-to-noise that
you're looking for;
you need to increase that
signal from the noise,
so you get reproducible results,
and you know you're stable.

And what Design Of Experiments
does, it's a methodology.

It increases the resolution,
but also it decreases the number
of experiments you have to do.

So, I urge many of you who are
experimentalists, or who are curious,
to look up Design Of Experiments
and to learn the techniques.

Because it is extremely valuable

in both saving time and resources
and it greatly increases
your resolution.

Now, again I won't
go into why that is.

I discuss a little bit of it in my past
presentation and you can read about it online,
but basically what you're doing
is, you're conducting experiments
where you're making sure
your points are orthogonal.

So, in other words two factors
are always opposite each other;
you're making things symmetric
in your design space.

Just an example of what
that does for you:

on the on the right column here,
you can see the efficiency.

That's a measure of the
experimental variance.

You can actually calculate the
variance in your experiment,
prior to even doing
experiments with your design.

Now OFAT is stands for One

Factor At a Time.

That's how traditional
experimentation is done;
that's how the Edisonian
approach is done.

And so, you can see here, it's comparison
between a traditional number of runs,
where you're kind of a shotgun
approach to experimentation,
and what's called a
full factorial DOE.

There are many types of DOE's out there, but
this is just the most basic taught DOE.

You can see that just with
three factors, right?
say pressure, type of gas, and
distance of the cathodes, right?
that's three factors, three
variables

with the number of runs for
OFAT you need 16 runs,
that gives you a certain experimental
variance, or efficiency, of 2.

But you're half that number of
runs with your full factorial DOE.

And as you get upwards, now you say, wow

128 runs, that's still a lot of runs.

But as I said, there are other DOE formulations that you can pursue to help with this, to help decrease that number more and still maintain that experimental efficiency, without having to do 512 experiments.

So, in a nutshell that's really what DOE is.

We explored this first in phase 1; this is our phase 1 setup.

Very simple; we had an anode in a bell jar surrounded by a cathode; we had a voltmeter did add some other instrumentation crammed in there.

But for the purposes of this, this was a just a snapshot of one of the bell jar experiments with a small anode.

And really what we determined through Design Of Experiments is these various regimes that the plasma goes through.

So, we were already kind of dialing in the anode, even in a small bell jar, so logic would assume we could do

that when we scale up as well.

And actually it does, when
you use the right approach,
when you use Designs
Of Experiments.

So, we're really happy
with our various regimes.

This is a snapshot of, I would say,
the main regimes we work with.

That's not to say that there
aren't others in between there.

So, I'll just go through here a
little bit and show you close up.

I call this a dark
quiescent phase;
this is right on the edge, very small
changes here, this is not stable.

Very small changes in either voltage or
current, can lead to this extinguishing.

But there is still a plasma layer
around the edge of the anode.

Now as we increase our current,
we obtain what we call "tufts"

These are anode tufts.

These have been
experimentally seen before,

but we can now control them,
we can control the number,
the concentration in a square area, and
they're always equidistant from each other.

As you increase the energy, and as you
increase the current in the system,
they start to grow in size
and also squeeze together,
until you reach a point where
they actually start to coalesce.

And this is what we refer
to as moving tufts.

This can also be adjusted in
terms of pressure and current.

So, as these things start to
move, they actually spin more,
and eventually what comes into
being is this double layer phase,
multiple double layers, that are controlled
by current and gas pressure.

So this was probably the most
double layers we obtained,
I would say, with a
three inch anode.

This is a 3-inch anode.

This is a 3-inch anode so those tufts, I

think we reached up to about 7 or 8 tufts

at least in the Design Of

Experiments that we got.

Monty: "Yeah they're big",

and they're stable

and also we have

quiescent phase:

this looks familiar, doesn't it?

We even got some holes in that,

arising from something,

we don't know.

And that layer is

fairly significant.

It stands off the

surface of the anode,

and we also have these asymmetric

double layers that occur over time.

Time is also a factor, but we

weren't able to quantify it yet

because what happens over

time, is your anode heats up.

Thermionic emission happens,

it changes the properties

so that's the one factor that we

have to dial in a little bit more.

As we don't understand the effect

of time on this anode yet,

but we know it affects it.

And also the Zeppelin high-intensity,

kind of let it loose phase.

So, those are stable

regimes, all right,

so to dial in the plasma, also we

want to work with different anodes,

different size anodes.

The top is a 1.5 cm [errata: inches, see 26:16]

anode, the bottom is a 3-inch anode.

You'll notice that we're

obtaining the same regimes;

a little bit different shapes, but for the

most part we're getting the same numbers,

and at proportionally

the same current.

And what do I mean

by proportionately?

Well, when you're impinging a 1.5-inch

anode compared to a 3-inch anode,

the current density is a

lot higher on that, right?

So, we had to adjust our current density

properly to obtain the same response.

So, that's what we did in this experiment,

and these are just some numbers.

If you want to have

fun with the numbers,

we're calculating that we're getting

about 85 W/cm² in the top discharge,

but you can see in the bottom

one, where we throw in 22 Amps,

we're getting a little bit less

wattage there with the calculation,

but within error

you're almost there.

So we're tracking very well with scalability

of the plasma between different sizes

and as you can see, the

current is the main driver,

that's what has to be adjusted.

Now you say here, I may say

indications of a transformer.

Well that's only in a way.

That's why we have it in quotes right?

Transformer.

So, as double layers form,

plasma resistance decreases and

current flow is less impeded.

Michael alluded to that earlier:

electrons are more intense or more

concentrated in these double layers.

Why is that?

We want to study some more.

But now is where we get

into our statistics.

What you see on the graph is

an actual by predicted plot.

This is what comes out of

Design Of Experiments, okay?

It may just look like a straight line

to you, but this is very powerful,

because what it enables you to

do is to predict things, okay?

So, the top graph here has,

as you can see on the Y-axis

or the vertical axis

(thank you),

on a vertical axis you

have voltage actuals.

So that's the voltage

we actually measure

and what do you see here?

voltage predicted.

So, when you read papers

scientific papers,

or any kind of reports that have prediction

values, that's what they're referring to.

They're building a model and they're seeing how well the model can predict the voltage, or whatever response they're studying.

So, we can look here that the equation of the line is pretty darn good, considering the fact that we're working with a plasma, okay?

it's R-Square

value is about 0.92.

You look at the error, it's only plus or minus 10 Volts in that prediction.

We had a number of responses, or a number of observations in this set of experiments, 31 experiments.

So, we have sufficient degrees of freedom, when we're only looking at three or four factors, to determine which of the factors do what.

We want to know, is pressure a factor, is the number of double layers

a factor, current, right?

And that's what this is, so you
can see here the green circle.

The parameter estimates are what
you'd back out of statistics.

That tells you the most
important factor in your model,
and what is this telling us?

It's telling us the pressure is
actually a pretty darn important thing
in this Design Of Experiments.

So, your pressure is leading those
significant changes in your voltage.

Kind of
makes sense, right?

Followed by your number
of double layers.

Now double layers, and we're
struggling with this right now,
double layers can either be a response
or it can also affect the system.

Just like $V = IR$, the typical

Ohm's law $V = IR$

what is your response and
what is your factor?

It depends on how you set

up your measurements,
and it depends on what
you're measuring.

So, our current though, is also an
important factor, as you can see there:
parameter estimate of about 10,
but you see these other
things down here.

The pressure is multiplied by
the number of double layers
and the number of double layers
is multiplied by current.

These are what's known as second-order interactions,
higher-order interactions right here.

And what that means is that
they also have an effect
and they're needed to
explain the model.

They're significant enough to
be needed to explain the model.

Actually I left this last one in
here; you see that 0.14 p value
p-value is a measure
of statistic.

That one is below 0.05,
that means that that parameter is

significant, it's real in a model.

You should definitely include it

so that one's 0.15-ish and so

that's not a significant factor.

I just left that in there,

just so you could see,

but all the other ones are

significant, they're below 0.05.

So, pressure exerts the largest

effect, followed by double layers

and the second-order interactions

decrease that voltage response.

Again, what happens, what

can we do now with that?

That's just a bunch of numbers.

How do we visualize what

happens in a dynamic system?

And that's where modern software

and modern computers come in,

because they enable us to do

these Designs Of Experiments.

So, as we create double layers,

what you see here on this graph,

you have three factors which are

your X-axis which you can vary now.

We have a model that's

about 92% accurate,

and we also have a voltage, our
predictive voltage in our system.

So as we change these factors we can
observe what happens through the voltage,
so if you keep your eyes on
the number of double layers
I'm going to increase the
number of double layers here.

Now what happens to
the other curves?

There's slope changes right?

I'm going back and forth here.

So, if the slope changes, that means
that there's a second-order interaction.

There's a higher-order interaction
between all these factors.

What it also means is that this model
says, that if we change our current,
or our pressure,
does the voltage change?

No, it doesn't according
to the model.

Now one statistician said
“all models are wrong,
but some are useful”.

So, that's where

we're at right now.

But you can also see

something else.

You can see the unfortunate

area here that says,

hey you've got to do more

experiments there.

That's a confidence interval,

it doesn't have enough data to give

you a smaller confidence interval.

So this curve could actually

come down a little bit

as long as it's within

the confidence interval.

But that's the power of

Design Of Experiments:

you wouldn't be able

to plot this out

if you were to do one factor at

a time in a shotgun approach.

So again, I changed

another factor here.

I decrease the current so you can see

the spread in the confidence interval

across all these guys here.

So we have a little

bit more work to do.

That's the end of a kind of plasma,
physics, stability and spectroscopy.

I don't know; you feel

like keep it going,

or you want a question and

answer session for a little bit?

Okay, let's move on.

Monty: Let's move on,

well, predictions in thermodynamics,

like Paul was saying,

what did you say about models?

All models are wrong,

some are useful.

Yeah, all models are

wrong, some are useful.

I stood up here two years

ago, we spent a lot of money

developing and designing SAFIRE,

predicting the kind of thermal

responses we get out of this.

Because we knew we had a lot

of energy, of 180 kilowatts.

That's what the design was

predicting at the time,

and the thermodynamics model is based
on what's called total heat flux.

You heat up the core, okay?

And I'll show you a
picture of that.

Well the thermal response
is 120 degrees Celsius,
but basically we
heat up the core
and we put an certain amount of
energy in there that heats up the gas
and other things are starting to
respond, but the final response,
based on the design, is a 110
degree chamber temperature,
and the temperature in and
around the core here...

I think I can do this,
there it is.....

would be about 2500
degrees Celsius.

And this also is telling you
how fast the gas is moving.

It's moving quite slowly, and
that's what we were predicting.

Now the people who are working on this,

would be guys like Dr. Lowell Morgan,
Tommy Mello who actually
develops the coding
for what's called
computational fluid dynamics.

This is really high-end stuff,
it's stuff that we use to develop
to do analysis on, rocket engines and
jet engines, and so many other things.

And we're very good
at what we do.

This is how we kind
of make a living.

However you're going to find out
that our predictions were wrong.

So, we did another model and this here,
what you're going to look at here,
right in this area here,
this is our analysis of
putting in one of our probes
and see what the kind of
thermal response that we get,
and what the model is telling us is that
the temperatures of the gas,
just off and around the
surface of the anode,

should be around 2,300 to
2,500 degrees Celsius:
well within the constraints or you might
say the operating limits of tungsten,
which is what the tips are made
of, our Langmuir probe tips.

But what really happened, and
you want to watch this video.

Show you here, what you're
looking at here is the probe tip
and we're going to play this video
and this is a very low-power plasma

[Laughter]

So, where you say,
“now you see it,
and now you don't.”

Langmuir probes are about
8,000 bucks a pop,
and I had to make a telephone
call because we pull it out.

Before I get into that, I just want to let
you know the actual power at that time
was 182 Watts, that's a 182
Watt light bulb imagine, okay?
and we're going like,
what is going on.

So when we opened up SAFIRE,
we discovered what was left,
and this is what the tip looked
like after it vaporized.

This is just the residual tungsten you
see here, on that kind of nodule.

That's what was left of it, and everyone
who knows anything about tungsten,
it takes about
6,600° C to boil it.

To vaporize it, you
need more energy,
and in thermodynamics, some
of you probably already know,
there's a time domain
associated with it.

How much heat is lost
in the system as well.

So, it's not just 6,600 degrees;
if you're gonna
vaporize it that quick,
it would typically point to temperatures
that are much higher than that,
not the 2,300 degrees
we predicted,
because you know the tungsten

should have heated up,
might have started glowing a little
bit, but it should have lived in there.

Well, obviously it didn't, and
this is what a tip looks like
at the top, before and after.

Now, the white stuff is alumina
and its melting temperature
is about 3,600 degrees Celsius.

So, I made a call.

Actually, I should back up a little bit
here because I got a story to tell you.

I called a company,
a great company.

I'm not going to
mention who it is.

We had gone into great
detail with them,
as to what kind of process
we were going to get.

And they said, "We have
the probe for you."

And so we bought two of the
probes and we put the one in
and I showed him, he talked to me
and I said, "this is what happened"

we showed them what was left of the probe tip and he came back and said, "Your plasma is too hot".

I said, "Really, you think"?

I said, "You guys knew and understood the plasma we have, and we went over this with you guys in detail" and I'm thinking, "What am I going to tell Scott?"

Then these guys say, "Let me know when you like to buy a new one".

So, I called Scott and I told him, "We just vaporized a Langmuir probe and we did it with only 182 Watts, and we don't understand what's going on in SAFIRE; it shouldn't have done this."

And Scott says, "Wow, you know what that means?"

I'm thinking, I just lost my job.

"Yeah it means that our thermodynamic modeling is wrong."

I'm thinking "I'm out of my job",

and he says,

“Well, yes, maybe,

but what's amazing, it means that you have a

lot of energy impinging on the probe tip.

You might have an effective

way of boiling water”

and then he said, in his

deep voice “Do it again”.

I'm going nuts: the (probe) guy

just said, my plasma is too hot.

The boss is saying, do it again

and I'm thinking I'm gonna have to

spend another \$8,000 on probes.

These things like eight thousand, I

said eight thousand bucks a pop,

we got to get control

over this thing.

Because otherwise you know we're going

to burn through money pretty quick,

so we decide to make a new one.

Bigger, stronger.

I'll put higher pressure nitrogen

into the core and cool the core

and make all of it ceramic to

withstand the temperatures.

That's going to work,

so that's it.

That's the new and improved Langmuir
probe, much bigger, thicker tip
we figured that, since the
plasma is so intense,
we don't have to worry
about the small wire.

We'll put something in thicker
and even get some measurements.

What really happened... again.

So, I'm going to
play a video here,
and this is where we got some serious
questions and Lowell got involved.

Just watch what happens here:
this is a macro lens.

Everything looks wonderful
and good; we're happy.

Adiós!

Yes, that's what we said.

Well, we've lived so far; that's
good, let's just keep it going....

The motion I can see in the probe, is
from the forces that are in the plasma
and then it really did
some amazing stuff.

So, we were happy,
it actually survived
but the thermionic emissions
which we're going to get into,
that's what you call
thermionic emission.

That's not, you might say, the plasma;
the plasma has gone out by now,
so this is just a radiation.

This is like when you light
a tungsten light bulb.

This is what you get, so the
radiation here just grows immensely.

We don't know right now
why the color changes,
we know that we're obviously
getting other emissions in here,
probably from the tungsten, and this
is happening in like nanoseconds.

So we go from this beautiful
violet color to these colors;
we don't know what this stuff is
that's flying around in there.

We think it could be copper
and/or iron or whatever.

We were able to capture

some of these images,
but we would have to say that the
atmosphere in SAFIRE is somewhat hostile.
What was interesting is the
crater on the side of the anode.
So, we decided, well you know what,
let's take a closer look at this thing,
because we were still getting information
back from the tip, which is good news
and so this is what tungsten looks like
after it's been machined with diamonds.
It has a kind of a sintered
look to it, a powdery look,
and this is what the tip looked like
after we pulled it out of the chamber.
So, we're seeing some cracking within the
alumina a little bit; we weren't too concerned.
The bright blue color was
kind of interesting,
but we had a closer
look at the tip,
and we were seeing the grinding
marks from the diamond wheel.
We didn't see any physical
deterioration of the tip,
and that was just

great news for us.

And we thought, okay we've got something
that looks like it's going to survive;
and we took a look at the alumina and
it looks like it will start to melt,
so we knew that the temperature was around
3,600 degrees, maybe a little hotter,
but still in good shape.

And then what I did,
is I just took my pliers and
we changed the probe up;
we just retained and I put my
pliers and pull it out, and it crumbled.

If you know anything about tungsten
it doesn't normally just crumble
and I thought well we you know
we've got a bit of a problem here
so I put it under
the microscope.

I looked at it and I said that
doesn't look like tungsten;
comparatively to the two, there's
been a huge change in its structure,
but not on the outside.

The surface on the outside just
looked like it was when we put it in.

So, we started taking
a closer look at this
and it was like, what is
all this white stuff.

And you can see the fracture in the
tungsten is very sharp; it's very clean;
it's not like we've bent it
or anything, it just broke.

So, we decided and this
one Paul got involved;
he says, listen I know some guys
on the University of Toronto;
let's get this thing and get some
scanning electron microscopy done.

So, we did and I'm going over
the material in the tungsten.

If you know anything about materials,
what you're looking at here,
well the black stuff,
could be contamination,
but the kind of geometrical
shapes that you see there,
above that other stuff that
looks like shale, is tungsten.

It looks like it was
getting melted.

That shale isn't how
it normally looks,
but this is on the
inside of the tip.

On the outside of the tip it
wasn't being affected at all.

Not at all.

When we did the scanning, when we did the
SEM, it was coming back it was tungsten.

the molecular structure, the crystalline
structure, looked just like it should.

We looked inside and this is what
we found, and we found a lot more.

So, we took a look at the anode,
that big crater that
was left on the side.

There's some interesting stuff.

It was kind of like, okay there's an intense
plasma discharge kind of steel material.

So, we thought okay,
this is kind of like,
you know, it's
really cool artwork.

We didn't see anything that was
kind of, you know, too outrageous.

We saw this area here and I thought,

well let's take a closer look.

I don't know why, I

just picked a spot,

and I thought what the

heck is that nodule

at center of the top of that

mountain that's in the crater here?

And this is what the scanning

electron microscopy showed up.

Now, if you know anything about this,

when you have really bright spots in SEM,

it usually means you have really heavy

materials in there, heavy elements,

and they start to emit.

So, now I'm going to

head back to Paul,

and he's going to go through SEM

and tell you what we found.

Thank you, Monty.

So, scanning

electron microscopy.

There's also an additional

technique on here:

energy dispersive spectroscopy

and what I'll do is I'll

show you a quick slide on

where that energy dispersive
spectroscopy comes in.

I should have had a slide on the
scanning electron microscope as well,
but if you picture just a regular
optical microscope that you can find.
You look through the top and it
goes through a series of lenses;
the light comes up from the bottom,
through your sample and you can see it.
And really the way SEM works, is that you
replace your eye with an electron source,
an electron gun that gets shot
through a series of magnetic lenses,
which then hits your sample, which is
mounted and again this happens in a vacuum,
and then a detector
is off to the side
to detect the electrons that
bounce off your sample.

So, not only do you get a secondary electron
image if you will, an emitted image,
but you also get other stuff
coming off of that as well.

So, if you have the right detectors
in your electron microscope,

you can detect other things.

And in this case, energy

dispersive microscopy,

is where the beam

hits the material

and more of the inner core

electrons get excited,

and then relax back

and emit the X-rays.

So, you see these characteristic X-rays,

it's just a depiction of an atom,

that electron gets excited, gets

bumped off and then relaxes down

and emits that

characteristic X-ray.

So, each element

has a fingerprint,

much like spectroscopy that

Michael was speaking about.

It's another technique

to look at elemental

quantities in materials

in an electron microscope.

So, clean iron: this is

just the iron anode.

We're going to look at both the iron

anode, as well as the tungsten tip here.

So, what do you get

from clean iron?

You get a slide here;

this is the probe tip.

You can adjust that to be a line graph, or

an area; you can integrate over an area.

In this case, we were just looking to see

what was there, so we did the probe tip.

And you can see that

the composition,

the oxygen comes from surface

oxygen absorbed on it.

You have your silicon

and manganese as well,

which are impurities in your

iron, but mostly iron.

You can see there:

almost 98% iron.

And you get that from these

characteristic X-ray energies.

These energies are in

Kilo Electron Volts,

and again each atom, each element has a

characteristic series of frequencies

that it will emit at certain

electron impingement energy levels.

So, another clean iron spectrum.

We did a series of these, just to look,
kind of get a feel for the average here.

In this case, there's a lot of oxygen on
this one, which is not too surprising.

Sometimes you get
lots of oxygen.

So, going back to Monty's
original optical spectroscope:
here you can see this nodule;
and the secondary electron image
here, you can see this lighting up.

It can either be
heavier, it can also be
something that doesn't
conduct electrons very well;
so it brightens a lot.

It can emit electrons;
it charges.

So what Monty did actually, Monty
did all this microscopy here.

He put the probe actually
on that nodule first.

And what did we see?

We see some of these other elements here,

namely aluminum and oxygen, a lot more oxygen,
so that's kind of in line
with aluminum oxide.

It could be something
from the probe.

It could be something, some dust particle
from the probe that's embedded in there.

But there's also these
other amounts in there.

We saw manganese before.

There's titanium,
there's also cerium.

Cerium might be an impurity
from that probe housing.

But then, when you increase
your magnification
and you go look at the morphology
of the crater around this material,
it gets a little bit unusual,
in that we are finding barium,
significant amounts of barium.

We also saw the other
materials as well,
that you would associate with
the alumina from the probe tip,
but it's also dispersed

in that crater.

But, nonetheless a lot of elements
there that weren't originally there.

Now, in the same way we can
look at the tungsten probe tip
and we look at the
clean probe tip:

the aluminum, the silicon,
probably from the housing, right?

It's got alumina around
the actual metal.

We also detect sodium
and potassium.

I put in a question mark, because
that could come from contamination;
it could come from whatever
the preparation was.

And then we have ytterbium (Yb).

That was also a shoulder
peak on a few of these.

So, it might be peak overlap, or it could
be real; we need higher resolution.

Then we start to see some other
elements here, such as cobalt, tin.

Copper is probably from the cathode, but
this is the inside of the tungsten probe.

So, it could be contamination, or it
could be there from other mechanisms.

We don't know, we got
to do more experiments.

Electron microscopy
is very selective:

I spent many years doing
electron microscopy
and you can find anything you want in your
sample, to make your professors happy.

Not that I did that, but
I was very careful,
because that's exactly
what they taught me.

They taught me, listen you don't just take
a few pictures, you got to take a lot.

You got to go through it, so that you're
representing your sample honestly.

And that's something
that we did:

we looked at a
lot of parts of this.

We still need to
do more experiments;
one set of experiments
is never enough,

especially when you're
doing elemental analysis.

So, obviously, we need
some more verification
and we got to think of where these
impurities could come from.

But looking back
at this micrograph
you see that this area
here is sintered.

And as a reminder,
like Monty said,
the melting point of
tungsten is around 3,600° C
- well, melting really.

Boiling is 6,600 right, yeah.

Now, our anode was
only at 1,000 C.

So, we have some temperature
disparities here.

We also have sintering
of the material;

we have stress fractures
here, along the grain boundaries
and we have this weird sintered kind of
explosion from the inside of the matrix.

So, again: impurities maybe?

Calcium, aluminum could arise
from alumina materials.

As far as we know there is no barium,
cerium, titanium in the chamber.

You look at all the
materials that go in;

the next step is looking at the
processing of the materials we use.

Maybe there are impurities in the
processing of materials that we use.

Highly likely not, because a lot
of these materials are very pure.

So we know what's in the chamber,
we know there are impurities.

What we see in this analysis, we see
something that is not accounted for.

Now I'll go out on a limb here, I
mean there's a lot of data out there,
and take it for face value in the Low
Energy Nuclear Reaction (LENR) community
that has done a number of
studies on transmutation.

A lot of the craters that they observe and
that they see transmutation occurring in,
have the same kind

of characteristics.

They actually come out from
the lattice of the material.

Now they work a lot with palladium
and platinum and noble metals
that are highly
loaded with hydrogen.

So, they load these
things up with hydrogen
and then they observe these reactions that
occur over time, and they're very minute.

Very small changes in the overall
concentration of materials.

Nonetheless they are real, because
they can pinpoint these craters,
they can analyze the materials they're in,
and they see these changes happening.

So, these are just a few select
papers, recent ones that came out
with some transmutation reports.

Commercial enterprises have
repeated this as well.

Mitsubishi, and recently Toyota
replicated Mitsubishi studies
here with some of
their R&D investment,

seeing that there's transmutation
in certain complexes.

So, validation of results.

As I said, one data

set isn't enough,

especially when you're dealing
with certain kinds of reactions.

At the University of Toronto

I am going to follow up,

using laser ablation-inductively
coupled mass spectrometry.

So, that's pretty much the SEM.

But now instead of just doing a probe and

looking at the X-ray energies coming off

you're actually going to laser

ablate, or laser vaporize materials

that are in certain areas

that you highlight,

that is then analyzed with a mass spectrometer,

a very accurate mass spectrometer.

So, this is a technique that the Toyota

folks used to validate Mitsubishi's results

and will hopefully eventually return,

and do augmented studies on,

not only the anode but possibly

other parts of the reactor.

We're about to pause

now again, if we want.

Yeah, go ahead, yeah, sure,

you need the microphone,

you need the microphone.

"We know that in the Sun will happen,

in the nuclear reaction that happen is,

hydrogen the main

fuel in the top,

and reach a million degrees

in the solar corona.

So, what do you aim,

what temperature do you aim

to reach in the container.

What kind of container?

Is it going to be a

magnetic container,

like the one that they use,

or are trying to use now?

We were actually going to

talk about that,

because the temperatures that we're seeing

right now, there are two responses.

And why I was talking about

the thermodynamics,

is because right now, standard

thermodynamics cannot
answer for why we're
getting some of these, for
what you would see, for what
we call, "thermal responses".

So, think of your
microwave at home.

In fact, the energy you are putting in there
isn't thermal, like a convection oven,
but you can still heat up
materials that are in there.

So, the kind of energies that
we're going to be getting into,
we're going to be talking
about this very shortly,
would be analogous to
that kind of thing.

So temperature,...
... that's a whole discussion and
we can get into what temperature is
in the context of plasma physics,
which isn't, you might say, standard,
thermal or black body radiation
kind of responses that you got.

So, the temperatures that
we're seeing here, would be

looks like (they are) orders of
magnitude beyond what we predicted,
in layman's terms.

But in real terms
it's not a thermal
temperature in that context.

We're going to be
getting into this.

Okay, another question?

Well presumably, you were going to use
your probe to test different things,
but then your probe
got destroyed.

Does that mean you've
been kind of sidetracked
into to figuring out what's
going on to the probe,
before you get on to what you're
going to use the probe for?

Well, obviously, you have
to look at the failure mode
to determine what it is you're
going to be doing next.

And we're already looking
at that, so

we take a look at the actual time component

that it took in order for this to happen.

So, the amount of time it took for
the probe to see this much damage,
is about 15-20 seconds,
which if anybody who knows anything
about TIG (Tungsten Inert Gas) welding,
that's not a very long time,
because normally some of the arcs
that you get in TIG welders,
and this is type of
tungsten we're using,
you could weld for half an
hour, or maybe even an hour,
before you have to take
the tip out and grind it.

But we weren't seeing any
deterioration on the tip.

This is internal.

We got big questions here; this
shouldn't be happening in that context.

So, those temperatures, in
some of the TIG welding,
the arc itself can
reach 19,000 degrees.

So, [we could be seeing], the responses that
we're getting here are an indication of

much higher temperatures.

So now, what does that mean?

Well, we did get the tip

and in we did get it out.

And it was in one piece, and

we were still getting data.

So, what we have to do now, is come

up with a way to get a controller

that, as we move it down through those

double layers, and back out again,

we can collect the data and bias the probe

quickly, we are talking milliseconds,

and grab that data and get the heck

out of Dodge before she gets smoked.

Okay, that's what we have to do,

and that's not going to be easy,

because you get into floating potentials,

and other types of technologies,

which to do that, there's

going to be some challenges.

One more?

Yeah, okay maybe one more.

It might be a quick question,

may not be long one.

It's really quick.

As a control, did you look

at the probe by SEM before?

I know you looked after,

but did you look before?

Yeah, we have one shot of

the probe tip in there;

the standard tungsten,

like I showed.

No, I see tungsten;

we didn't show the

graph, but we did do it.

Yeah, we use different types

of tungsten you can get,

with thorium and a bunch of other

types of elements that are in there.

Though this was just

a pure tungsten tip.

So, I mean 99.5%

or 99.9% tungsten.

Okay, let's move on.

So, now we're going to get into the

measurement of the plasma and double layers.

Data that we were able to get

from the probes once we got them

to a place we could use them.

So, we found quite by accident

what appeared to be a small voltage

drop, just off the surface of the anode
and according to our research
objectives, we were supposed to find.

But it wasn't much at all.

We saw initially about a 30 Volt
drop, just off the surface,
but it got us to thinking that maybe
the probe tip is just too long.

And so, these are
the double layers,
and this is not scaled properly,
but just to show
you how it works.

So the tungsten tip that you see
there, between the two red marks,
is the length of the tip
that's exposed to the plasma.

And that's actually what picks up
the electrical characteristics
of the plasma that's
measuring it.

So, as you can see right here
between the two red lines
there's a few double
layers that are in there.

And what happens

in effect is that,
because the tip is long and it's
measuring a few double layers,
we think what we get is more of an
average of what the voltage is.

It's measuring across those.

So, we decided well let's
just shorten it down.

And so, we did,
and when we did, basically,
this is what we saw:

and the voltage drop here
was almost 300 Volts.

It was 270 Volts, I think
or something wasn't it?

And the distance was
0.03 millimeters.

It's really thin, okay?

But it's a very
powerful double layer.

So, we've done the test a number of times and
we validated this particular measurement;
this sharp voltage drop.

The actual curve coming off of
the back, can vary a little bit,
but the sharp voltage

drop that you see here,
is typical of all the plots
we're seeing in SAFIRE.
So, we can confidently
say today,
in fact there is a sharp voltage
drop that Dr. Donald Scott predicted
and that is in fact
what we're seeing here.

And it's pretty big.

So, with that, this is where
Michael is going to take over,
because he was doing
some analysis on this
and this is getting into
his area of expertise.

You get all the fun stuff.

I do.

So, we can look at global
properties of the plasma,
the discharge,
electrical properties,
or we can also look at properties at
a particular point in the plasma.

So, what Monty just talked
through with the Langmuir probe,

that's because we're trying to get measurements
at particular points in the plasma.

But it's also worthwhile
knowing and analyzing
what's going on with a
discharge as a whole.

So, here's plots of current and
voltage across the whole discharge
and you can see in the bottom
some pictures of what's going on
in the chamber at that point.

So, at Point A, we have a
pretty quiet discharge,
with a few anode tufts on there.
Then we crank up the current.

What happens?

The plasma responds by increasing
the voltage drop across the plasma,
and by creating a lot more
of those little tufts,
and actually eventually
sending them into motion.

Then at point B you can see
that red line shoot up again.

That's because we cranked
the current knob;

so, we pushed more current
through the plasma.

And in response, you can see the voltage
goes up again across the plasma,
and we create a lot of double layers;
six or seven double layers there.

That wiggle in the blue line,
we don't know what that is yet.

That's not our power supply,
so to be looked at later;
and I'm not actually going to talk much
about what happened at the end there.

We had a big release of energy, but I can't
talk much about what was going on there.

Okay, then you can also look at
the resistance across the chamber
and the power consumed by, or
transformed by the discharge.

So, the green Line is the resistance
across the whole discharge,
and the black line is the
power consumed or transformed
and it's those same regimes,
same A, B, C and D.

So, the first thing that happened,
when you created all the little tufts:

that green Line drops way down.

That's the resistance

of the plasma.

It goes way down, when

those tufts are created

and there's that initial

increase in the power consumed.

Then, at point B they've

cranked the current more,

the resistance goes down even more,

as we're creating double layers

and the power consumption

goes way up.

So, the plasma is responding

to how we're pushing it

and one of the ways, and we can repeat

again and we need to study more, is

it responds in ways to

lower its resistance

and greatly increase the amount

of power it can transform.

We designed SAFIRE to be able

to vary voltage and current independently.

This particular run, we were

just varying the current,

but no one knows yet, in a cosmological

setting, what the driver is.

Whether voltage primarily drives things, or current drives things, or some combination of them.

So, we have built in the flexibility to control them independently.

And this may seem

like basic research,

but it is, and it's

so needed because,

even though we know double layers are

everywhere, they're over our heads right now,

they're in the magnetosphere,

they're in solar flares etc.,

there's not that much known about how

to write down the circuit diagram

for double layers in astronomy.

There is almost nothing

known about that.

So, this research

that we're doing here

is entirely done largely to help give

direction to future astrophysicists,

so they know what to look for in

magnetospheres and solar flares etc.

and how to interpret what they're seeing

in terms of electrical circuitry.

This is absolutely

fundamental, what we're doing.

So, let's switch then to the

point measurements, okay,

so now we're not talking about the

global plasma, we're talking about

that point where the

Langmuir probe is.

And we go up close, the left-hand

side is close to the anode.

The anode actually starts at

the number 1, not at zero,

the surface of the anode,

and then we move

out to the right

and we go out basically to

the end of the chamber.

The red X's are the floating

potential, with our new probe.

That means you stick

a probe in there,

it's going to raise up to a certain

electrical potential on its own,

just from being

inserted in the plasma.

We measure that, we move it out
and we take measurements,
that's the red line.

And you can see that it goes
from 300 Volts down to zero.

Totally makes sense:

we had our anode of 300 Volts,
you move the probe all the way out to the
end of the chamber, it goes down to zero.

Then the fun starts
and you can calculate other parameters in the
plasma, like the electric field strength.

So, electric field strength is
how much your electrical
potential changes with distance.

And so, if I had a chamber that
had a 300 Volt anode here,
and the end of the chamber, which was
a meter away, went down to zero,
you would say that the change in the
electric potential is 300 Volts per meter.

Okay, that's how you
describe electric fields:

300 Volts per meter,
is the change.

But what we found very

clearly from this data,
and I'm sorry I didn't label
the vertical axis better,
but that green peak,
that's the electric field,
that peak has nothing to do
with those numbers on the left.
That green peak is at about 8,000 Volts
per meter, not 300 Volts per meter,
which you might think, if you
just looked at the rough numbers.
So, this is great because it's showing
us that these discharge plasmas,
they have the ability to sustain within
them, much more intense regimes,
much more intensive is going
on than you would ever guess,
if you just were stepping back and
looking at your power supply, right?
If you look at your power
supply, you would never guess
that there was 8,000 Volts per
meter electric fields in there.
The black line is charge density,
so these double layers exist
because charge is positive and negative

charges build up next to each other.

So, we can see we're starting to be able to measure those charge density fluctuations.

It's the left hand side

there, the black line

when it gets a little bit closer to

the anode, it drops way, way down.

I didn't include

it on this graph.

I couldn't get that on there

but just so you know that

that black line drops way down,

if we get one fraction of a

millimeter closer to the anode.

And then the blue one is the

resistance of the chamber.

So, since we have a designed a double

probe also, we didn't show you that one,

we can stick those

two wires in there

and measure the resistance of the plasma

across that little gap between the two wires

and so you can see the resistance is basically

infinite, as you get closer to the anode,

drops to almost zero, climbs back

up, falls back down and that last

rise at the end there
of the resistance line,
I'm pretty sure, is heading back up to
essentially, you know huge, huge numbers.

I love this graph.

I'm very proud that we
were able to make this,
because you don't often see so many
plasma parameters, all taken together
and displayed together and, similar
to what I was saying about
the overall plasma electrical
characteristics is so needed for astronomy
so you can start making
circuit diagrams,
this sort of ability to see all these
different parameters in the plasma,
at the same time,
on the same graph,
is what we need in order to start
digging into what's going on,
what's the physics inside
of this plasma here.

And since a lot of these results
were done pretty recently,
more analysis kept coming in the

day, we were supposed to submit it.

Lowell gave me this graph,

okay, I'll put this in there,

before we hit "send", he

sends me another graph.

Okay, I'll put

this one in there.

This is the electron temperature

in the different areas, that plasma close,

we're getting close, to the anode, okay?

So it's going up and down;

see how, that close to the

anode there, it's at 7.

Okay, that's Electronvolt,

7 Electronvolt electrons.

That's pretty hot for

earthly conditions.

If I had a jar of 7 Electronvolt electrons,

and you stuck your thermometer in there,

it would read about 81,000 degrees.

That would be the effective

comparable temperature to it.

So, we have in SAFIRE tens of thousands

of degree fluctuations in temperature

taking place over millimeters or centimeters,

safely, no one's being hurt, right?

Not yet, and we can control
it, we can reproduce it,
and as we saw with the probes,
we're starting to see how
to release that energy.

But we'll talk more about that very
soon; about the release of the energy.

Now, it's important to
point out that the team
does have a paper published
from previous work.

This was written by Lowell
Morgan and Montgomery Childs.
It was published in the Plasma Sources
Science and Technology journal.

This looked at
previous discharges,
mostly from the point of how
much light was being emitted.

So, a really good analysis
by Lowell on this one.

One of the main
conclusions from this,
we're trying to answer, how
do these double layers form.

Believe it or not, no one really knows

how these double layers form, okay.

it's pretty interesting;

Lowell's idea was, that the production

of negative ions and electrons,

creates instabilities

in the plasma,

which leads then to the

segregation of the charges.

If you want, we can certainly

get you this paper,

that you can dig into

his analysis on that.

Again to remind people, I'm

excited by some of our results,

because we're seeing fluctuations

in these parameters,

that are comparable to the sort of fluctuations

we need to have to be able to say, yes

we're looking at astronomical

quantities here, comparable quantities.

We should just take a breath in,

before getting into radiation.

So everybody breathe.

We were talking about the ITER,

Tokamak experiments, you know

and see the sheer amount of

money that's going into them.

And it seems like we're trying to force
nature to do something it doesn't want to do,
with these magnetic confinement
fusion experiments.

And you know, you put another
50 million dollars into it,
and then you get much stronger
magnetic fields to try,
and it still just doesn't work.

You can't make the plasma do it
and I don't know if you can
see it from the videos,
but we're in the lab
working on this plasma.

We're not actually driving it so hard,
we're not forcing nature to do anything.

That's certainly how I feel it.

It seems like, we turn it up
and then the plasma responds,
and everybody's happy, we're not
forcing anybody to do anything, right?

So, I feel that's one of the things that, it
feels to me like we're on the right track,
because it doesn't have that feeling of forcing
something that nature doesn't want to do.

Plasmas are certainly Dr.

Morgan's specialty.

We said, could you please,

take a look at this.

Take a look at why, what

happened to our tungsten probe.

Okay, from what you know, can

you please dig into this.

So, we spent some

time looking at that.

Radiation trapping.

So we're going to talk

about that really soon.

How to envision that.

So, I knew that biology had

complicated chemistry.

Biochemistry, is

complicated stuff, right?

Light and life, it has all these

things and I'm starting to realize:

plasma chemistry is really also equally

complicated, and it makes me wonder about

what sort of chemistry

is being done on stars.

It's really complicated stuff.

So, Lowell came back with... right,

this is not a result of thermodynamics.

traditional temperature

that melted this probe.

You have to look at radiation

hydrodynamics which, he explained to us,

is really one of the most complicated

areas in Applied Physics.

There's not much that you could

say is more complicated;

it's why Livermore and Los Alamos

labs always have the best computers,

because you need supercomputers

to do these analyses.

I wrote down this

quote from him that

"nuclear weapons have very little

to do with nuclear physics

and a lot to do with

radiation hydrogen dynamics"

Okay, let's talk about radiation trapping

and slowing of the speed of light.

Imagine that this whole room

is the SAFIRE chamber, okay.

The stage is the anode, and all

of us are hydrogen atoms, okay.

And being hydrogen atoms, like we said that

every species of bird has its own song,
so we can all talk to each other, for all
hydrogen atoms, we can exchange thoughts
and tell each other things and exchange
photons and energy, stuff like that;
and the anode is up here, and electrical
energy is being pushed out
to all of us, from
the stage here.

Okay, so you got the
picture, right?

Now imagine that that
whole side of the room,
you're now all
helium atoms, Okay?

To the rest of us, that side
of the room just went dark.

We can't see them anymore,
we can't hear them anymore,
because we are now on
different wavelengths.

We cannot exchange energy
with them anymore.

Okay, so we'll leave
them for a second.

We'll just focus on this side.

Electrical energy comes
off of the stage
and let's imagine that it gets absorbed
by two people on the front row, okay?
They hold on to it for a
while, they get excited,
they're bubbly, they can't
sit still in their seats;
they're getting all
kind of pumped up,
but they hold onto the energy, hold onto
the excitement for a while; maybe 30 s.
While they're holding onto it,
two more people on the front
row get some of this energy.
They get all excited,
they can't sit in their seats they
can't wait to tell somebody something.
After about thirty seconds, those first
two people finally can turn around
and they communicate their
excitement to somebody behind them.
But then that person who gets that
excitement behind him in the second row,
they also have to hold
on to it for a while.

They can't just turn around and
tell the person behind them.

So, there's this slow
progression of this excitement.

If it were a different scenario,
if you weren't hydrogen
and I wasn't communicating to
this specific frequency of light,
which I'll mention soon, then
as soon as you got excited,
you would just turn around and
talk to the person behind you.

As soon as you told, they
would just turn around
and tell the next
person behind them,
and that excitement would go out through
the hall at the speed of light, right out.

But that's not what happens.

There's a specific resonant
frequency that hydrogen has.

It's 122 nanometers;
that's pretty hot stuff.

That's the level of energy that we
see coming off of solar flares,
coronal loops, things like that.

That's how we see that

level of intensity.

When hydrogen gets that, it

holds on to it for a while.

In fact, it holds on to it

thousands of times longer,

than it takes to just exchange the

information with another hydrogen atom.

So it's that particular way

that hydrogen manifests

that slows down the speed of light, the

progression of light, by thousands of times,

and ends up building a huge

amount of energy in that region.

We didn't forget

about the helium's.

So, the helium's they don't see

anything going on over here.

It's dark, they can't

hear anything,

and one of you gets the bright

idea: let's build a probe

and we'll put it across

the aisle and we'll see.

So it's like a couple of guys go

running back to the breakout room,

they take apart some

of Ricky's paintings.

They get the wood frames,

they stick some dried sage that I saw

over there on the table in that,

and two guys put the probe

across the center aisle

and it touches into that

region and bursts into flames.

Ashes fall on the floor.

So that's how they know: that look, we

couldn't see it, it wasn't visible to us,

but as soon as we put our

probe in there, it got fried.

That's radiation trapping and

slowing down the speed of light.

That's what we have going

on in our chamber,

and that's my....

Now you know all about radiation

hydrodynamics that you need to know.

How'd I do Lowell,

was that okay?

... yeah and you know what's interesting

also is that this whole arrangement is...

You could call it electrostatic.

We just have a battery, we
just have 300 Volts.

So it's an electrostatic
machine we have.

So we have an electrostatic machine that can
trap photons, high-energy photons.

We have an electrostatic machine that
can slow down the speed of light.

We have an electrostatic
machine that can release
in an instant very large
quantities of energy.

And we're controlling it.

We can predict how to
get to these regimes.

This is a plot of the expected
temperature the probe tip would get to.

And so, you can see
under certain regimes,
which are the left and right axes there, of
hydrogen density and electron temperature,
the red area there:

10,000 degrees predicted.

When that poor probe goes
into the hydrogen section,
you could expect that much

energy to go into the probe,
raising it up to about
10,000 degrees.

Now, does that explain
everything we saw?

I don't know,
but it certainly is the right way
to start analyzing this problem.

Monty: A lot going on this year
and we were really getting concerned
towards the end of the project,
whether or not we were
even going to do this.

We started getting the analysis back,
and we sure were
getting really excited.

There was actually hope, even though
thermodynamics can't resolve for these things,
radiation hydrodynamics can;
plus a lot of other things.

So, we see ourselves as, now that
SAFIRE, I would say, is stable,
we can get these stable plasmas,
we're now in a place where I would
say, with pretty good confidence,
that we can start to actually do a number of

experiments and get really good data back.

But these results are,
in my view spectacular.

The chemistry changes:
(we) don't know.

We shouldn't have barium
in there, or titanium,
no idea where the
stuff came from.

We can be guessing, but
we should find out.

Variations in electron density comparable to the
photosphere, heliosphere and nuclear bombs.

Those are the only places that we see
these kinds of intense, dense plasmas.

Electrical confinement
of high-energy photons.

That's a lot.

And what we're saying here in effect is
that, and what Michael was talking about,
and the transformation characteristics
of the plasma, the double layers,
those double layers, when Paul's talking
about second-order interactions,
what we're talking about, it's
like an audio feedback loop

that just keeps getting bigger and
bigger except that in a double layer
it gets to a point that the
double layer forms,
and the plasma now
becomes stable.

Up to that point, electrically you
can see a lot of activity,
but when the double layer forms,
it goes stable and
it it's very robust.

So, it'd be like the
double layer,
and I'm going to jump out
here a little bit too,
because I think we're
really at that place,
where we have our atmosphere
in the Earth, 350 miles up.

Conventional science says, it is gravity
that holds our atmosphere here.

But mechanical engineering, I mean, we
have big machines that try to contain,
or get vacuums that aren't
even close to space vacuums.

What I'm trying to say in effect

is that only 300-mile distance,
we've got a space vacuum that can
suck your eyeballs out of your house.

I mean, out of your head (it has
been a long day), out of your head,
and yet there's no mechanical
device retaining our atmosphere.

And what we are seeing, what
we forgot to mention actually,
is we do have a pressure
delta in SAFIRE.

That's a big deal because I think
Langmuir predicted theoretically,
that we should see this.

I mean that's what Lowell is....

What we're saying in effect is,
when we get a vacuum in a chamber,
a gas would fill this
room, or the chamber,
and the pressure in itself would
be equal throughout the chamber.

But when these double layers form,
that's not what's happening.

So, we do actually have
higher pressure
inside these double layers than

we do actually have outside,
in the greater
part of the chamber.

So, you actually have
a plasma force field
that actually can contain
these molecules, these gases.

That's a big deal.

So, the core of
SAFIRE is cooler.

The highest temperatures we thought
we saw was maybe around 1,000° C;
and obviously the temperatures,
or the effective temperature,
or you might say, the response temperatures
we are getting with the probes,
are many orders above that.

Way, way, way above that.

So these are things that we're exploring
with SAFIRE and I think that's really it.

These questions we are going
to leave on the screen here
and I guess we're open for
questions and answers.

[Applause]

Other way

that's good!

eighty-five

"So the temperature of the anode

right now in the hydrogen is 600"

"It has been at 600, even though we had

like kilowatts going through there.

Yeah,

that's good."

"..a lot hotter with

the nitrogen.."

Shortly after the 2017

Phoenix conference,

the SAFIRE team discovered a

unique process that initiates

and sustains the

plasma double layers.

This was a major discovery,

because it is these

plasma double layers

that produce both the extraordinarily

high energy densities

and the electric field that contains

these energies within the plasma.

This new advancement in plasma

science demonstrates a process,

that consistently creates, contains

and controls the plasma double layers
in stable exothermic
plasma reactions.

Although the energies
and densities
are comparable to the Sun's
photosphere and nuclear bombs,
the data shows no harmful side
effects, such as radioactivity.

But the science of what is actually happening
at the molecular and atomic levels
is not yet fully understood.

Understanding these reactions,
will give valuable insight
into the way the Sun's
atmosphere functions,
and provide the foundation by which these
energies can be beneficially harnessed

This research will be the
top priority of 2018.

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the Electric Universe,
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The following presentation is an
adaptation of the Mel Acheson article
Error Probes, Truth
Probes, and Space Probes.

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

Christiaan Eijkman discovered that a
bacterium in polished rice caused beriberi
and an antitoxin in the
coating cured it.

Eijkman verified his theory with a
massive study of 280,000 people.

He ruled out the possibility
of other causal factors;
sanitation, hygiene and so on
and he cured victims by
feeding them unpolished rice,
just as his theory predicted.

He was awarded a Nobel
Prize for his achievement.

Gerrit Grijns followed

in Eijkman footsteps

but Gerrit was a crackpot,

that is, he had an

altogether different idea.

He imagined beriberi was caused

not by something in the rice

but by something not in the rice.

He began looking for data that would

raise doubts about Eijkman's theory.

Beriberi was also associated

with diets of tapioca root,

foods other than rice

polishing could cure it.

And no one could find

Eijkman's bacterium.

Both theories

explained the facts.

Both theories predicted the cure.

Both theories were verified.

But Grijns's theory could be applied

to a much larger assemblage of data

and had benefits far beyond the

domain of rice diets and beriberi.

Today, astronomers attribute the

non-Newtonian motions of stars and galaxies

to an infection of dark

matter in the universe.

Gravitational theory which has been
experimentally verified many, many times
can explain the observed
motions only by assuming
there's some unseen matter
swirling around outside what we see.

The cure is in the
galactic polishings.

Now along
comes a crackpot idea:
perhaps the non-Newtonian motions
aren't caused by something out there
but by something not out there.

Perhaps gravity is not out there.

An abundance of anomalies raises
doubts about gravitational theory:
galaxies that are supposed to be astronomically
far from each other are interacting.

The primary distance indicator,
the cosmological redshift is quantized
in sharply delineated bands;
matter is collimated into extremely
thin, long, and coherent filaments;
concentrations of matter that should be pulling
everything in are spewing everything out.

And the quantity of dark matter needed
to explain those anomalous motions
turns out to be over
90% of the universe.

Douglas Allchin's paper 'The Epistemology
of Error', discusses the episode of Eijkman
Grijns, and beriberi.

He emphasizes that the important
distinction for characterizing knowledge
is not the conventional
"dichotomies of fact/artifact,
true/false, and right/wrong."

Rather,
"...key epistemological distinction is between
empirically unresolved questions or uncertainty,
and resolved questions."

"Grijns's challenge was not to show ...
that beriberi was a nutrient deficiency.

Rather, he had to show
first how initial evidence
consistent with a bacterial
interpretation was ambiguous.

Then ... it could indicate something else."

Allchin identifies

"...uncertainty as
the primitive state.

Fact an artifact co-emerged from undifferentiated perception."

He goes on to assert that simply confirming a theory doesn't provide reliability.

Verification must be accompanied by a search for alternate explanations, which he calls — 'error probes.'

He presents the idea of error probes in a rather static way:

a theory, such as Eijkman's which is verified, is later shown to be "erroneous"

But in moving from one to the other, a dynamic process occurs.

One can't assume, as the term 'error' tends to do, that the process stops with the second theory.

The later theory may eventually be shown also to be erroneous.

The concept of "domain of validity" fits better with an ongoing process of discovering alternative explanations.

The domain of Eijkman's theory was the data then available about rice diets and the

effects of polishings.

Within the boundaries of that domain, Eijkman's theory was true.

Verification, then, is a 'truth probe' that probes no further than a theory's frontier.

Eijkman's efforts were limited to truth probes.

He neglected to perform an error probe because he assumed (albeit unconsciously) that the domain of the bacterial theory was infinite.

You can't learn anything new if you limit yourself to verifying what you already know.

Presumably, Eijkman was not in a position to be able even to imagine a cause bigger than bacterial infection.

But his work began the process of differentiation that prodded Grijns to imagine a bigger concept.

Similarly, Newton was not in a position to imagine anything bigger than gravity.

His error and that of his mainstream followers down to the present day was the assumption that the domain of validity

of gravitational theory is universal.

Newton didn't know about plasma or galaxies or redshifts or error probes.

His followers, however, don't have this excuse of simple ignorance.

Their efforts to preserve the theory at the expense of the phenomena are culpable.

To establish what Allchin

calls 'deep reliability',

it's necessary to investigate possible alternative explanations.

He states,

"Reliability hinges on a dual process of confirmation and ruling out error."

Today there are a number of alternatives to the Newtonian idea of universal gravitation.

Tom Van Flandern developed a theory of "limited action" gravity.

Fred Hoyle and Jayant Narlikar have proposed a variable mass version of gravitation.

And there are several proposals of electrical and plasma dynamics that largely or entirely replace gravity.

All these theories

explain more data

and have further reaching implications

than the mainstream theory.

Their domains are larger.

Their potential

benefits are larger.

Their promises of increased understanding

of the universe are larger.

Universal gravitation suffers

from "shallow reliability"

that extends no further

than verification.

Even that is eroding

as space probes discover anomalous

details to once confirmatory data.

Ambiguity is increasing.

Knowledge heretofore

assumed to be secure

is slipping back into the

primitive state of uncertainty.

It will re-emerge transformed

by a new resolution.

The error probe, when finally it's forced

on a stubborn and blind establishment,

will find the error to be Newton's.

Welcome to Space News from
the Electric Universe,
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A discussion with Wal Thornhill on the
"accelerating expansion of the Universe."

A few weeks ago, a
new scientific study
based on data from the Hubble
Space Telescope was published
which affirms what many other
papers have reported in recent years
and that is that the so-called
expansion of the universe,
after the hypothetical Big Bang
explosion, appears to be accelerating
much too quickly to explain
through any kind of known physics.
Now, of course it was decades
ago that scientists on Earth
first noticed this
kind of discordant data,
while this problem led to the
invention of a new type of energy
— called dark energy — which we are now

told, composes about 75% of the universe.

Well as we've reported previously
many times on Space News,
even taking into account the
invention of dark energy's influence,
the Hubble data has only
deepened the problem.

There is a discordance between the apparent
expansion rate of the so-called early universe
and the later universe.

Let me briefly read to you from a
phys.org report on these findings,
"This discrepancy has been identified in
scientific papers over the last several years,
but it's been unclear whether the differences
in measurement techniques are to blame,
or whether the difference could
result from unlucky measurements.

The latest Hubble data lower the possibility
that the discrepancy is only a fluke
to 1 in 100,000.

This is a significant gain from an
earlier estimate, less than a year ago,
of a chance of 1 in 3,000.

These most precise Hubble
measurements to date

bolster the idea that new physics may
be needed to explain the mismatch."

Now as members of the electric
universe community have always known,
Plasma Cosmology in the Electric
Universe have always proposed
that there was no Big Bang.

The overriding issue in astrophysics
is not just the raw data
gleaned by telescopes
and by spacecraft,
but rather how is
that data interpreted.

In fact, Plasma Cosmology and the Electric
Universe have challenged the underpinnings
of astrophysicists' methods of assessing
the age and distance of celestial objects.

Objects that appear very
distant and very bright
and thus very huge, could actually
be very close and very faint.

And there is an abundant body of credible
scientific evidence that this is indeed the case.

So today we're going to
discuss all of this, and more,
with the chief science advisor to The

Thunderbolts Project, Wal Thornhill.

Wal, why don't you begin by sharing
what the official NASA report
on this new Hubble data says,
and what your thoughts are.

The NASA report dated
April 26, this year, states,
"Astronomers using NASA's
Hubble Space Telescope
say they have crossed an important
threshold in revealing a discrepancy
between the two key techniques for
measuring the universe's expansion rate.

The recent study strengthens
the case that new theories
may be needed to explain the forces
that have shaped the cosmos."

They go on to say,
"...scientists have run into
an intriguing difference
between what they predict
and what they observe."

But this has been a pattern
throughout the Space Age,
and the basic
problem boils down to

the origin of the Big Bang Theory and
their notion of an expanding universe.

Now science is a cultural
activity and unfortunately,
students are not taught the
historical context to any degree,
which gives them some idea where
these original ideas came from.

But fundamentally, the Big Bang
Theory is a direct outgrowth of the
dominant cultural Western
Judeo-Christian religion myths
and as a result, it had to
have its own creation story.

This is a feature of
all cultures on Earth
that they have their
individual creation stories.

None of it has been understood
until recently by some scholars
who had not been recognized,
but the fact is that the
story that has been concocted
has no more anything
to do with science
than the books relating the

creation myths globally.

In fact, it's only by understanding the origin of those global creation myths that you understand the universe, because they are trying to tell us something that we desperately need to understand.

Well Wal, it's interesting that one of the most common comments we receive in response to Space News, is from viewers stating that they can no longer stand to watch any mainstream documentaries or TV shows on cosmology because they're just too painfully aware that a more promising alternative exists with no acknowledgment from celebrity science personalities.

When it comes to the Big Bang Theory, to me it does seem incredible that we still see this posture that it remains the best and most plausible story of the origins of the universe, despite its intractable problems which

only continue to grow with discovery.

So if I were to ask a cosmologist, why he or she still believes in the Big Bang Theory, in your opinion, what response would I be likely to get?

I find it difficult to watch science programs particularly those based around cosmology these days, because so many so-called facts are presented which are not facts at all but merely conjectures.

The idea of the expanding universe was picked up by Einstein who thought it was a very neat idea, it seems, and of course it gave him room to produce his own theory of the expansion of the universe involving his gravitational theory and that was picked up by Eddington.

And Eddington, who was also a Quaker, and had strong religious views associated with his science was the one who championed Einstein's ideas.

In fact if it wasn't for Eddington,
Einstein may have withered on the vine,
because his papers, as
they are presented now,
would not pass
peer-review these days.

The expansion of the universe
is based on Hubble's work
and of course, they say that he
discovered the expansion of the universe
through his measurements of
redshifts of distance galaxies.

But that's not correct.

His view was that the expansion
idea was the least likely
answer to this discovery of the
redshift-distance relationship,
and that there would be
some new physics involved.

But no one ever tells you that, so
we now have the Hubble telescope
in honor of this
so-called discovery,
and I'm sure he'd be
spinning in his grave
if he heard the sorts of things that are

attributed to his research these days.

The very idea of the expansion
of the universe makes no sense,
because we understand
space in three dimensions,
and it is a concept of
locations in three dimensions.

There is nothing about space, physical, which
can be expanded or contracted or twisted.

It is merely a mathematical
concept by adding extra dimensions.

What has to be made clear is that the
dimensions that are used in mathematics
have nothing necessarily to do
with the three physical dimensions,
we both observe and
existing in this universe.

Those dimensions are merely
degrees of freedom
and those degrees of
freedom; the more they add,
the more dimensions they add,
the more freedom they have, the
mathematicians, to invent whatever they like.

And this is what's happened.

Well as I alluded to in my opening, one of

the things that physicists have invented
in response to unexpected
discovery is dark energy.

But as I also alluded to, the whole
idea of an expanding universe
depends on the validity of the
redshift equals distance assumption.

We've talked many times
about the importance
of the late astronomer Halton
Arp's research into that question.

So why don't you
explain the reasoning,
why an expanding universe is actually not
necessary in light of science discovery?

The NASA
report states,
"...measurements of the galaxies' light that reddens
as it passes through a stretching universe."

But of course, the idea of a
stretching universe is non-physical
and makes no physical sense.

"The reddening is used to calculate
how fast the cosmos expands with time,
a value known as the
Hubble constant."

But Halton Arp, the notable astronomer
who was dubbed the modern-day Galileo,
because those who believed in the
Big Bang refused to look at his data,
said that he had discovered
that the light from these highly redshifted
objects occurs in discrete values,
which means that there was something
going on in the matter within the quasar,
and not with space.

But of course, this is one reason
why his work was not looked at
and Subrahmanyan Chandrasekhar
even scribbled across
the top of his submitted paper,
which was rejected of course,
'this exceeds my imagination' and for that
very reason should have been published.

So then we read in the report,
"The Hubble tension between
the early and late universe
may be the most exciting
development in cosmology in decades,"
said lead researcher and Nobel laureate Adam
Riess of the Space Telescope Science Institute
and Johns Hopkins University,

in Baltimore, Maryland.

He goes on to say,

"This mismatch has been growing
and has now reached a point that is
really impossible to dismiss as a fluke.

This disparity could not
plausibly occur just by chance."

In other words this is
saying, just send more money!

And then we can invent more unobservable
particles and mysterious energies.

No one at any stage in any of this has
suggested that we go back and have a look
at the origins of the notion that
Einstein's theory of gravity
actually explains what
we see in deep space.

Because the simple answer
to that is, it doesn't.

Galaxies do not behave or rotate
as if they're responding to gravity.

What's more, Einstein's theory did
away with the force of gravity.

So you've got
to ask the question,
what is it that I feel when I hit the

ground when I'm not supposed to be falling?

There are so many problems with

Einstein's view of the universe,

it's amazing that people have

actually taken it seriously.

And I would suggest that more people

have read about his theory of relativity,

and fewer people have understood

anything at the end of it

than any other

book on any shelf.

The reasons for this I can point out is,

that the idea that all of his observers are

equivalent and have inertial frames of

references that are equivalent, cannot be so.

Because, as Newton found

with his bucket experiment,

it seems that the water

in his rotating bucket was

aware of the matter in

the rest of the universe.

In other words, if the rest of the

universe was rotating around that bucket,

and the bucket was stationary, the water

would rise just as it was seen by Newton.

And he understood that,

but somewhere along the line
people have forgotten that,
and in the days of classical physics
when real physics was being done,
it was recognized that there had to be
a connection between the matter on Earth,
and the matter in the rest of the universe
which is referred to as the fixed stars.
But that's been lost, and as a result we can
no longer define mass, length, time, energy.
None of these things are defined
in any physically sensible manner.
It requires that we set
the context for physics,
otherwise you
stop doing physics.

The report continues,
"In this new study, astronomers used
Hubble to observe 70 pulsating stars
called Cepheid variables in
the Large Magellanic Cloud.
A special class of pulsating
star called a Cepheid variable,
which brightens and dims at a predictable rate
that corresponds to its intrinsic brightness.
Once astronomers determine that value,

they can measure the light from these stars
to calculate an accurate
distance to the galaxy."

Now this behavior, a Cepheid variable
relies on an extremely complex model
that has never been tested.

It is far simpler to explain both the change
in period and the brightness of a star
by an electrical
model of the star

which modulates both the apparent size and the
brightness of a star's photosphere together.

It should be pointed out that,
the standard gas model of stars
has so many special conditions
and assumptions built-in
that it could be tweaked to
reproduce almost any observations.

I should note that a Cepheid variable
is a type of star that pulsates radially
varying in both
diameter and temperature
and producing changes in brightness with a
well defined of stable period and amplitude.

A strong direct relationship between
a Cepheid variable's luminosity

and pulsation period established them as important indicators of cosmic benchmarks for scaling galactic and extragalactic distances.

As for the Large Magellanic Cloud, it's a member of our local Group of galaxies.

It's only 180,000

light-years away,

the second closest galaxy

to us in the Milky Way.

It has a low redshift interpreted as

a velocity away from us, of 278 km/s.

You put it in terms

of the redshift z ,

it's about .001 which is

probably a true Doppler shift.

But you cannot simply assume the high

redshift of the more distant galaxies

is due entirely to the Doppler

effect of the velocity away from us.

There is this assumption that the

Cepheid variables will be operating

under the same conditions in

distant galaxies at high redshift.

The Electric Universe suggests that the fact

that these objects are highly redshifted

shows that the energy
contained within those objects,
and therefore the masses of the
protons and electrons in the atoms,
will be different.

They will be lighter and the frequencies,
the energy being emitted will be lower,
which gives you, in
effect, redshift.

What's more, being an atomic
phenomenon it will be quantized.

And yet this hasn't been
recognized, it's quite remarkable.

That means that you cannot use Cepheid
variables simply as a distance measurement,
because any redshift involved
must also take into account
possible quantized redshift which is
intrinsic and not Doppler shift.

When Halton Arp did that, he figured
that the universe appeared to be static,
which was a puzzle,
if you just assumed that the
universe was operating gravitationally
because the whole thing
should collapse inwards.

But he found that this meant that
gravity must also be a balanced force
that can repel as
well as attract,
and this was the puzzle that the Electric
Universe set out to solve some time ago.

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

info. The following presentation is an adaptation of the Mel Acheson Picture Of The Day article “Conceptual Chromatography.” The link to the article may be found in the description box of this video. Is the Earth at the center of the universe after all? Or is the expanding universe an artifact of conceptual chromatography? Chromatography has been quite a useful invention. The high-school science demonstration of it is to place a drop or two of ink in a beaker of water and to suspend a length of filter paper over the water, with the bottom of the paper barely immersed. The various pigments in the ink will travel up the paper at different speeds, producing a “spectrum” of colors. This technique can be used with various mixtures to detect the particular compounds composing them. But an analogue of this process can occur with theories, and the results can be misleading,

instead of enlightening. Let's start with an example from cosmology: the "paper" of the Doppler effect is dipped into the "beaker" of redshift measurements of galaxies and quasars. The Doppler paper imposes a distance proportional to redshift on the measurements. Low-redshift galaxies don't get far.

High-redshift quasars "chromatograph" into the farthest reaches of space. Hence, what could be a relatively nearby cluster of mixed galaxies and quasars, becomes a "spike" or "finger" of objects stretching away from the Earth. What does this have to do with reality as we imagine it? Halton Arp in his book, *Seeing Red* plots all the galaxies in the Virgo cluster at their Doppler interpreted redshift distances.

The galaxies stretch out in a long narrow strip, exactly along a radius vector from Earth. If quasars were to be included in the plots, the entire universe would like spokes of a wheel, with Earth at the hub. Well, that was an amusing exercise.

Let's look for some more "paper" theories.

Time, some wag has said, is what keeps everything from happening all at once.

But what if some things did happen all at once and a geologist came along with a quote "geologic record?" Single episodes of flooding have been known to build up many layers of sediments, sorted according to fluctuations in the velocity of the water. Afterward, "dipping" the concept of geologic record into the strata, would stretch out each layer in time, marking off thousands of years at each stratum. Obviously, the flood would have to be slowed considerably. Equally obviously, the easy way to do that would be to freeze it. Our conceptual chromatography has created an ice age.

But this is just idle speculation right?

Well, there is the matter of the Bretz floods in eastern Washington. It took a long time and much careful argumentation, but it's now accepted that Eastern Washington was shaped by monstrous floods instead of by ice. One entire lobe of the Ice Age has been conceptually

melted. Now I hear talk of similar floods
coursing into the Atlantic from Central
Canada. The conceptual climate of the Ice
Age just got a bit warmer, and a few
things have started happening all at
once. What if we “melted” the entire
ice age and recalled the mythical
stories of the collapse of the World
Mountain or Tree which resulted in
global floods from the north? This is fun.
Let's play the game with plate tectonics:
instead of counting to a million years
with every magnetic stripe on the
Atlantic seafloor,
let's use smaller numbers. Just to up the
ante, let's use smaller units, too. How
about a few minutes! We'd have to imagine
SOMETHING ripping the Americas away from
Europe and Africa all at once. It would
have to be something so big that the
continents and the energy to move them
would be small potatoes in comparison. it
would have to be something
of astronomical proportions. Velikovsky
already proposed other planets sweeping
by and causing somewhat similar

commotions. Let's take a clue instead from the Electric Universe: instead of moving the Americas, we can leave them be.

A "thunderbolt" - an interplanetary electrical discharge just a bit more energetic than that alleged to have machined Valles Marineris out of Mars' surface arcs along the Earth from pole to pole. It blasts out and lifts large chunks of lithosphere along each side of the more sinuous central channel. It melts the bottom and leaves stripes of reversed magnetism every time the oscillations in the discharge channel reverse polarity. The pinching of the discharge channel confines the excavation to a parallel-sided gouge in the Earth that afterward fills with water. A few thousand years later, a geologist comes along with a strip of geologic record.... If modern theories of astronomy and geology are vulnerable to chromatographic suspicion, can biology be far behind?

Speciation and extinction color large areas on the paper of evolution. Natural

selection works slowly but surely to
bleed colorful moments into pastel
millennia. A bit of color has been
restored to moments of extinction with
proposals of impacts from asteroids and
comets. it's fairly easy to kill off
large populations suddenly, but building
up those populations surely takes time.
the J-curves in S-curves of population
growth have long initial tails. Gestation
times and birth rates (for mammals-
reproduction parameters in general) keep
initial increases low. That is, if you
start off with only a few individuals. If
it all happens at once - replacement of
one population with another - the new
population must be created ex nihilo.
But what if the parents were another
species? There have been several
proposals for mass mutation. But their
requirement for some direct linkage
between genetic and environmental
parameters is too Lamarckian for comfort.
As long as we have chromato-
graphic evolution, we don't need Lamarck.
But if natural selection is augmented

with forces of extinction that can be confined to extraordinary events of short duration, why not also augment the forces of speciation? The direct linkage between genes and environment would become a kind of “driven” genetics in which active groups of genes are “switched on and off” by extraordinary environmental changes. This leads to something like metamorphic evolution: if butterflies do it today, why not other creatures under other conditions? 90% of our genes don't seem to do anything. What are they waiting for? A full moon? Let's perform one more thought experiment with this conceptual chromatography. Modern linguistics postulates a development of language gradually over thousands of years. A band of “oral color” spreads out before the band of “written color.” But the earliest expressions contained in this linguistic “spectrum” testify that both utterance and symbol were given all at once by the gods. In the beginning was the word, and it was both an audible and a visual emanation from a planetary

deity. Perhaps a prior language was
obliterated and forgotten in the wake of
the terrors and traumas accompanying the
"sacred word." But linguistics is not
concerned with the forgotten; it's
concerned with the remembered. And
languages remember "sacred sounds" that
are tied to "sacred symbols" by way of
"sacred stories" which memorialize an all-
at-once creation witnessed by and
imposed upon humankind. Linguistic
chromatography dissociates the sound
from the symbol and misses the story.

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[Music]

Between the Borrego Desert and the pine- covered peaks
of Cleveland National Forest in eastern San Diego county,
California there's a domain of solid granite
called the In-Ko-Pah mountains. The
In-Ko-Pah's have nary a tree, only course
manzanita chaparral that springs from
chinks in the rock like the hair of an
armadillo. It's a bare and broken land,
forsaken to brooding hoodoos, rodents,
snakes, and decomposing granite.

Place names give its mood, Valley of the Moon, Devil's
Canyon, the optimistic Boulder Park and Coyote's Flying Saucer
Retrievals and Repair Service. Most notable is the Desert
View Tower in In-Ko-Pah Canyon. The tower is made of the
native granite and stands Tolkienesque, commanding a view
of the Wizard's Cauldron around it. As a child, I remember
the tower had a coffee shop. We never stopped because
we're almost there - there being still two hours away. I
wistfully watched its golden glow suffused with coffee
and sweet roll smells passed from the back seat of a
50's Cadillac, 60's Lincoln and two 70's Ford LDT's.

It presented a glowing warrant for the
traveler, standing high above the road in this stark,
alien landscape. As it happens, I'm living here now in a
rural mountain community called Potrero, which lies in this
cauldron or granite region where I've taken the opportunity

to look at the rocks. What I conclude from observations is that these granite boulders are bubbles of boiled sand - not hollow bubbles, but solid drops of granite formed as boils at the surface of a hot fluid matrix. 'Cauldron of Granite' is an accurate description as the energy came from below, and by electrolysis in thermal convection, boiled through layers of sand to the surface, liquefying the sand in the process like one would melt metals in a cauldron. As exemplified in these photos, many boulders look like the kind of candy made with drops of molten sugar, a viscous thick material that quickly cools to form a skin that holds its drop shape while the inside remains hot and liquid. The shapes are like frozen beads of molten glass. Bubbles and drops take a cellular form due to surface tension that forms the skin around the fluid and a pressure density differential across this membrane. The bulging rounded shape suggest these formed in atmospheric pressure, rather than deep underground as consensus science tells us. There had to be a lower pressure and density surrounding these drops as they form to allow the free-form shapes found only by surface tension in the skin. We'll observe multiple other points of evidence that these boulders are electrified boils, including evidence of how the mountains were formed and how they became electrified to boil boulder fields. In this, part one of a two-part series,

we'll discuss the boulders. In part two, we will discuss the cauldron and what caused these mountains to boil. As we review the evidence and discuss the potential causes and processes, bear in mind the situational context of Earth at the time. Earth was in upheaval due to some cosmic disturbance. The atmosphere and ground, all through the crust, was charged. In some places, saturated zones eroded away, electronically machined by sputtering and arc discharge. Other areas had lower levels of saturation, where charge diffused through the ground and caused secondary and tertiary events at the surface that aren't easily identified with something purely electrical. Thermodynamics, chemistry, fluid dynamics, all conspire to increase the complexity of nature's products. The Granite Cauldron is a display of such complexity. Examination of the rocks, and the region as a whole, leads me to conclude that the granite was boiled as a consequence of electrolysis in an underlying aquifer, where oxygen and hydrogen became segregated and channeled through layers of sand and water. The oxygen channels reacted with elements in the layers of sand, creating blossoms of hot boiling silicon compounds that solidified in contact with the atmosphere, suddenly cooling, recombining and recrystallizing as granite, but still in the shape of fluid drops. The evidence to back my theories, is in the shape of the boulders, which precisely

conform to the shape of fast-cooling drops and clusters of drops. In fact, the boulders conform to shapes made of melted glass - silica dioxide - which is what these rocks are largely composed of. They do not conform to the expectations of conventional erosion. There is also evidence in the topography of the coastal mountains which display the clear patterns of a large discharge current from the Earth. This differs from the consensus theory which has granite form deep in the Earth as a volcanic flow that didn't erupt or surface, but became trapped under extreme pressure and temperature for eons as its crystals grew. Then an accordion-like action in the Earth's crust, triggered by subduction of the continent, caused these granites to be shoved 5,000 feet above sea level, where they have been lashed by wind, rain and freeze for millennia, to produce the polished and rounded, but sometimes square, granite boulders that we see. At least the consensus and I agree - there was extreme heat from within the Earth. My boiling drop theory suggests things pretty much happened all at once though, due to a high voltage electrical impulse, diffusing through a sandstone aquifer. Evidence that boulders formations are boiled, is their shape as depicted in the images previously shown, where singular drops formed and froze. While some retained an ovular shape, they dehydrated and contracted as they cooled, which often left conical or flattened drops. Well, this is exactly what one expects

from a hot molten drop that cools, dries and solidifies quickly. More often, however, one finds clusters of boulders that were once co-joined, like bubbles in a foam. In a foam bubbles and drops conform to each other, matching shapes across cellular membranes. It's very obvious, the bulges shown in the next set of images, are clusters of drops that have dried and fallen apart, leaving matching surfaces where they were once co-joined. Steam and other gases exited the rock as it cooled. The expansion of gas and steam at the surface contact with the atmosphere likely helped cool the surface faster, increasing the surface tension in the skin, and causing shrinkage of the drop. As the drop shrank, it separated into lobes, which further shrank and broke apart. Comparing the boulder cluster shown, to the bubble clusters in the next group of images, one sees the same polygonal interfaces, the same segmenting, and the same interstitial bubbles, wedged between larger bubbles. The only difference shape-wise is that boulders are solidified drops, not bubbles, and they shrank as they dried causing segmented lobes to separate and fall apart. When bubbles and drops cluster, those on the interior of the cluster tend to be polygonal shapes. Because the internal pressure between cojoined cells in a cluster is more or less equalized, internal membrane walls experience no pressure differential and are flat. Outer

cells in the cluster however have a differential between interior pressure in the atmosphere and therefore they bulge outwards. That is exactly how these boulder clusters are structured. If one makes a symmetrical cluster of five bubbles, the one inside the other four will be a perfect cube. There are several examples of polygonal bubbles in the images shown. Singular boulders tend to be rounded, while boulders in clusters tend to be polygonal, especially the ones in the cluster center. The squared shapes and flat surfaces between boulders is proof they formed as drops in the atmosphere. This granite has no grain oriented in a certain direction, or any other internal structure that would cause them to break in a particular way, as a result of earthquake or erosion. The only explanation presented by physics, is if these rocks were clustered drops.

A child can make a perfect square with soap bubbles; I challenge any PhD to do so with erosion.

Surface tension had to conform to the volume reduction.

So, one of two things happened. If the skin had cooled and recrystallized, it became rigid and further shrinkage of the hot interior caused the hard shell to break, leaving a sharp crack. If the skin was still plastic and viscous when the drop shrank, the skin conformed around it and the fluid interior, leaving rounded edges. Most, if not all, rock structures display one or both consequences of shrinkage.

Separations that occurred from shrinkage after the skin set into a hard shell, couldn't conform and broke, leaving sharp edge cracks, as shown in these photos. These breaks tend to form an s-shaped curve; not orthogonal segments.

Drops in clusters with membranes still soft and pliable however, show rounded edges and concavities where drops separated and shrank. These cellular segments tend to break parallel and orthogonal, at specific angles particular to each cluster. The angles or dip of the horizontal surfaces vary widely. It seems likely some force was pushing some clusters over, like the wind or perhaps gravity, was making them topple.

The angles from one cluster to another are not consistent, which suggests variable winds or something perhaps expected over a boiling cauldron. Another compelling evidence these boulders are boils, is the columnar geometry of the largest structures. The segmenting is cellular as already discussed, caused by cooling, shrinkage and surface-tension-related skin effects. The columnar shape however, indicates convection.

Vertically elongated clustered polygonal columns are a known effect of heat convection called, what else, convection columns. And what is boiling? It's a process of heat convection. Flat surfaces are left where bubble walls were pressed in tall squarish columns and then fell apart after cooling, shrinking, cracking and segregating.

Everywhere boulders are co-joined or conforming to each other in shape, interfaced with puzzle-piece concavities and bulges, because they were fluid and plastic during formation. The granite boulders are visually patterned, precisely as one would expect a viscous frothing fluidized matrix to look, if it were frozen in mid-boil.

Compare these formations to viscous drops, bubbles, foams and boils of various fluids, and you can find analog formations with these shapes and features.

Look at the sequence of images below, and it's apparent how these bubbles separate. It begins with a thin crack, where a shrinking drop begins to segment into smaller drops. Look at the top left and bottom pictures in this grouping. Then the drops begin to separate and the edges round off along the seam in a fluid-manner, like a bubble. And then they separate completely, like water balloons. These are examples of shrinkage when the skin is still plastic and molds around the coin drop of molten material. Another evidence for boils are top hats - one boulder stacked directly atop another. Consider a viscous mold and drop where the surface rapidly cools and crystallizes the semi-solid crust.

And then more hot fluid pressures up inside, but the bubble's crusty skin can't expand, so fluid gushes out the thinnest skin of the bubble at the very top, thus creating a new bubble stacked atop the old. In the case of a cluster of bubbles,

they can stack into these columns. A similar feature is the necklace, where interstitial drops seep out around the base of larger drops forming, a beaded necklace.

And one evidence I consider irrefutable is the 'water balloon' effect. The next group of images is of the same rock structure from different angles. I'll just point out the obvious: the top segmented rocks were once fluid sacs, like viscous water balloons that erupted out the top of an older boil and flowed down its back before shrinking, segmenting, and solidifying. Opposite the dripping side of the balloon is a concave site, where drops in the cluster pressed against other drops that have since fallen away.

Wind, I suspect, flattened and pressed these bubbles together, forcing the concavities instead of forming the more typical orthogonal cracks and separations seen in the majority of older clusters. The inner folds of the concavities have fluid ripples, the actual impression of turbulent waves and ripples in the separating skin between bubbles.

I interpret this as an indication that wind, seismic, or some other cause, was vibrating the bubble.

In the following gallery are several more examples, where drops in a cluster pressed together, leaving these concavities beneath overhanging water balloons.

There are multiple other patterns in the rock that display fluid-drop-bubble behavior.

Large waterfalls of rock can be found

where a molten mass erupted from the flanks of a mountain and sheep flowed down its side like a volcanic lava flow.

Close examination of sheep-flow patterns show even more evidence, such as the appearance of standing waves. They look just like river waves flowing over a rock. The pattern of a viscous river shows where flows join to form standing waves.

Look at the foot of the granite flow and it resembles the foot of a glacier or of a lava flow.

Perhaps the most compelling, singular example - this rock formed as a boiling fluid and suddenly froze when exposed to the atmosphere as shown in the next example. Liquid rock has poured out the side of the pillar and froze like a faucet of running water. And here's another example of the same thing - a pouring outflow from a standing column.

Like injection molds, the rocks have nubs and tubular pore spouts, where fluid passed between cellular structures.

And there's something to be said about the regularity of how rocks section in proportion to their volume. As if there were a frequency causing a harmonic response in the body of the rock. It could be a seismic vibration from the fluidized boiling cauldron itself, or it could be from sonic shock due to atmospheric winds. It's also possible that the piezoelectric effect of current in the crystallizing skin of the boils, cause vibration. However, there's harmonic resonance that seems to play a role in how these drop segment and separate apart. There are many questions that remain to be

answered, about how this rock formed. The atomic and chemical reactions are complex, given the unknown amounts of current and potential involved; the perfusion of elements involved; and the unknown state of Earth's atmosphere.

Even Earth's orbit and what it orbited around at the time these rocks formed, is unknown.

One thing is for sure, however. These rocks formed in atmospheric pressure. There is no possible way these shapes were produced while confined deep underground. Nor is it possible they were produced by any form of erosion. Forms were caused by a viscous plastic fluid confined only by surface tension.

Their shape is self-evident. There is no argument that can be made to deny it. They look like drops and bubbles because they are. There's a reason boulders boiled from the Earth east of San Diego.

To understand how this happened, part 2 of the Granite Cauldron will look at the mountains in cells and how they formed.

Thank you and cheers!

[Music]

[Music]

We first began exploring the crisis in cosmology in 2021.

Since then, it has only gotten worse. The word 'crisis' as we use it here, does not refer to crisis in the traditional sense.

Such as a natural disaster or physical danger.

I am referring to crisis in the Kuhnian sense, meaning a stage at which a leading scientific paradigm breaks down due to the accumulation of anomalies and contradictions that the prevailing model cannot adequately address, as well as an unwillingness to question the existing model and/or explore alternatives. Now, since I began the series, I have received numerous messages from individuals in other fields, such as archeology, geology, biology, virology, and even history, telling me that the same thing is happening in their field as well. This suggests that model breakdown is presently widespread and is happening beyond cosmology and beyond the hard sciences.

While it is not possible to explore each of these crises individually in the scope of one video, it is possible to conjecture a possible underlying cause for all of the crises. Arguably it has to do with the nature of predominant paradigms. Thomas Kuhn's work revealed that once a paradigm becomes deeply entrenched and institutionalized, it becomes dogmatic, hegemonic and unyielding to falsification and change. However, his work does not deeply explore why this happens. In today's show, we will begin to explore the why and the how. Drawing on my background in critical

discourse analysis, I posit that a predominant paradigm, meaning an institutionalized paradigm that is officially entrenched and accepted, functions as a form of power, insofar as it operates as a dominant discourse.

In order to flesh out what this means, let's define our terms. Generally speaking, 'discourse' refers to the communication of ideas. As a noun, discourse is defined as any form of written or spoken communication or debate. And as a verb, discourse means to speak or write authoritatively about a topic. There are four traditional modes of discourse. They are 'narration', 'description', 'exposition', and 'argument'.

To define these briefly, narration is story-telling. At its simplest, 'description' tells us what things are like according to the five senses. It is a form of describing what is observed. 'Exposition' is the kind of writing and speaking that are used to inform.

The final mode of discourse is 'argument'.

The purpose of argument is to convince through logic.

Argument is typically expressed as a theory or hypothesis and involves persuasion. Now, while there are several definitions of paradigm, the most common is quote "a framework containing the basic assumptions, ways of thinking, and methodology that are commonly accepted by members of a scientific community or field", end quote. By this definition, a paradigm will

necessarily contain each of the aforementioned modes of discourse. In this way, a paradigm can be understood as a type of discourse. Indeed, the word 'paradigm' and 'discourse' are often used interchangeably.

And a predominant or entrenched paradigm therefore can be understood as an official or dominant discourse.

As the name suggests, dominant discourse is the language and actions that appear most prevalently within a given society on a given topic. It is the official and officially recognized narration, description, explanation, and communication of a particular idea or topic. Dominant discourse entails the ultimate emergence of one discourse as dominant among other competing discourses, and this requires power. In critical discourse analysis, we know that dominant discourses or dominant paradigms, reflect the beliefs and ideas of those who have the most power in society. This is partly because the meaning-making apparatuses are traditionally in the hands of the powerful. Simply put, those with the most power are able to define the narrative. And once this narrative becomes deeply ingrained and institutionalized, it is taken for granted as true, or obvious. According to CDA, a problem with dominant discourse is that it can become so ingrained within a society that few people challenge it. Without these challenges, quote, "...few new ideas enter the mainstream. The society thus may stagnate

and fail to progress.” End quote. Because it has the power to define the parameters and move the goal posts, a dominant discourse or paradigm narrows and limits the response to the discourse, and furthers the uncritical participation by individuals within it. While a dominant discourse may be brought in scope, such as in the case of a broad scientific paradigm for instance, it narrows and/or reduces the public's options for dealing and interacting with it.

In addition quote, “...even when people want to challenge the dominant paradigm, they may fail to do so if they lack the power to get their message... far enough into the public eye.” End quote. Now it cannot be overstated that the power to widely disseminate ideas, especially new ideas, is linked to money and funding. This is especially true in the field of cosmology.

As plasma physicist Eric Lerner points out in an open letter on cosmology published in the new scientist on May 22, 2004, the development and dissemination of alternative cosmological theories and models has quote,”...been severely hampered by a complete lack of funding. Indeed, such questions and alternatives cannot even be freely discussed and examined. An open exchange of ideas is lacking in most mainstream conferences.” End quote. Lerner goes on to lament that quote, “...virtually all financial and experimental

resources and cosmology are devoted to Big Bang studies.”

End quote. In addition, all peer review committees that control funding are quote “...dominated by supporters of the Big Bang. As a result, the dominance of the Big Bang within the field has become self-sustaining - irrespective of the scientific validity of the theory.” End quote.

The American theoretical physicist and philosopher Sean Carroll published a response to Lerner's letter only one week later, on May 29, 2004. In his response he brazenly maintains that funding alternative research is a waste of time, since the Big Bang theory is so well established. Carroll states that quote, “...at what point does a scientific theory become so well - established that it's no longer worth listening to alternatives. There's no easy answer. Scientific theories are never ‘proven’ correct; they simply gather increasing evidence in their favor, until consideration of alternatives becomes a waste of time.” End quote.

And when exploring whether or not the scientific community should devote a fraction of funding to consider alternatives to the Big Bang, Carroll responds with an emphatic no, stating that funds are finite and quote, “...we have to use them the best we can.” End quote. He maintains that the chances that the basics of the Big Bang model are wrong, are quote, “...so infinitesimally small that

it's just not worth the bother." End quote. Now, given the growing inconsistencies with the Hubble constant and the contradictory observations that are coming back every day from the James Webb Telescope, Carroll may have been forced to temper his stance somewhat if he were writing this today. Returning to Carroll's letter, in response to Lerner's point about the lack of alternative ideas allowed at major conferences, Carroll boldly admits that quote, yes "...young people who disbelieve in the Big Bang are unlikely to get invited to speak at major conferences, or get permanent jobs at research universities." End quote. Carroll's response to Lerner is a perfect example of dogma and gatekeeping in science, and sounds more like something one would expect a politician to say. In order to be truly empirical and to honor the principles of falsifiability and open debate which (if we recall from the previous show) are supposed to be the driving principles of science, a scientific community should, as a general rule, allocate a percentage of funding to exploring alternatives to the prevailing model, and/or testing the veracity of that model. This is why Carroll's comments and the candid nature with which they are delivered, are so shocking. How can a scientist claim that we have come to the end of the road with respect to our quest for empirical knowledge and

exceptionalism and superiority of the Big Bang mirrors claims by politicians and political theorists about politics and governance. For instance in the book, "The End of History and the Last Man" American political scientist Francis Fukuyama argues that liberal democracy has proven to be a fundamentally better system than any of the alternatives. As such, liberal democracy represents quote-unquote, "the end of history." In other words, liberal democracy is the best and final political paradigm and thus there can be no alternatives, ever. Talk about circular arrogance and self-interest. How can anyone who call themselves a political scientist, declare that history ends with their particular model of government? The irony of the claim that Western liberal democracy is the best and final form of government for all countries everywhere, is evidence of the reality that many Western liberal democracies are presently in a state of utter chaos and societal collapse or decline. For instance, the United States, with its exemplary and enviable constitution, has been in decline for decades and is currently plagued by the chaos and confusion of government-sanctioned identity politics and relativism run amok. In addition, the U.S has one of the highest poverty, unemployment, incarceration, mental health and addiction rates in the western world. These are all signs of a culture in deep crisis and let us not even begin to

mention the role of the mainstream media in all this.

As is the case with standard cosmology, rather than address crisis and breakdown, those presently in power in the United States tend to double down on a broken and failing model. Whether we are talking about the crisis in cosmology or the crisis in Western culture, reluctance to question a broken model or system, reflects the dogmatic, hegemonic and unyielding nature of institutionalized ideas and predominant paradigms, including within the institution of science.

As the American economist Thomas Sowell once noted quote, "Some things must be done on faith, but the most dangerous kind of faith is that which masquerades as 'science.'" End quote.

Sowell has also observed that oftentimes, what makes an idea or theory correct is the fact that people's careers depend on it not being wrong.

And he has stated that quote, "It takes considerable knowledge just to realize the extent of your own ignorance." End quote. One can also argue that it takes considerable wisdom. The Philosopher Socrates was once told by the Oracle at Delphi that he was the wisest person in all of Athens, to which he replied something along the lines of, "Nobody knows anything and I know that I know nothing. Thus, if I am wiser than others, it is only because I recognize my own ignorance."

This statement by Socrates can more or less be interpreted as, "The wisest person is the one who knows that he knows nothing." It is similar to a Chinese proverb that translates to quote, "The wise man knows he knows nothing, but the fool thinks he knows it all." End quote. Now, we can probably assume that Socrates did indeed know that he knew many things and was very wise, but the implication or lesson of his statement is that we should never stop learning, and never stop seeking. That just when we think we know, there is so much more to discover. Another way to say this, is that we don't know what we don't know. And this is why we must never stop seeking, especially for those who claim to be scientists. So, how do we go from the humble wisdom of ancient philosophy to the dogmatic arrogance of present-day science and social science? The answer is very complex and cannot be explored in one show, but much of the problem lies in industrialization and the related specialization of knowledge and science. Since industrialization, science and scientific peer review, funding has become increasingly specialized and linked to capitalist enterprise and big business. This growing government-science-business alliance demands and forces specialization and acquiescence to particular dominant ideologies and interests. For instance, the unquestionable greenhouse theory of atmospheric change

currently directs everything from city planning to corporate investment. Some examples are the city planning initiatives known as green cities, and more recently, 15-minute cities. These are official initiatives that aim to make municipal developers and businesses conform to particular social environmental interests.

Now, when policy demands consensus in science and dictates what type of science is acceptable, and when institutionalized science is happy to oblige, then we are no longer dealing with objective science.

This suggests that there's a growing relationship between institutionalized science and institutionalized power.

If scientific change was merely about gradually shifting scientific perspectives that come about due to model falsification, as Austrian-born philosopher Karl Popper and others have claimed, then why was Galileo imprisoned for life for his new perspective on cosmology? And why was Italian philosopher and cosmologist Giordano Bruno burned at the stake for his? Both of these men promoted alternatives that challenge the cosmological narratives of the catholic church, which was the dominant power structure at the time.

It should be noted that many believe that Bruno was executed for his views on religion and not cosmology. But it stands to reason that his oppositional cosmology did not help his case. Now, while predominant paradigms and

power structures no longer burn opponents at the stake or sentence them to house arrest for life, they do still demonize and mock opponents and critics. For instance, in his response to Eric Lerner's critique of Big Bang cosmology and the lack of funding for alternative theories and models, Sean Carroll goes as far as to call Lerner dumb and quote, "...a crackpot who claims that the Big Bang has no empirical successes." End quote.

It should be noted that, in addition to Lerner, the open letter in cosmology was signed by 33 scientists, the first among them being Halton Arp. Halton Arp was an American astronomer and critic of the Big Bang, along with other observational astrophysicists, Arp maintained that redshift observations of galaxies and quasars contradict the Big Bang theory's hypothesis that redshifts are caused by universal cosmological expansion. This is one of the hallmarks of the crisis in standard cosmology. Many of its assumptions and suppositions are contradicted by observational data. Now, are we to believe that a credentialed and highly regarded astronomer and observational astrophysicists such as Halton Arp is dumb or a crackpot? Of course not. What Arp and others are actually being condemned for, is daring to criticize and oppose the predominant cosmological paradigm.

When a scientific paradigm and its

gatekeepers appear far more interested in self-preservation and forced consensus than empirical observation and debate, then we are no longer talking about science and are firmly in the domain of predominant power.

However, despite the present state of science, and cosmology in particular, there is reason to hope.

If we recall from previous shows, in the 'Paradigm Shift' cycle, crisis is followed by 'Model Revolution' and eventually 'Paradigm Change'. While it may take decades, or even centuries, for the change to happen, once a prevailing model is at the crisis stage, Revolution and Paradigm Shift are inevitable.

Indeed, it is the crisis that triggers the eventual revolution. In this respect, one can argue that the crisis in cosmology is actually an opportunity. As one viewer pointed out in a comment to the previous show, the Chinese word for crisis is a combination of the words [danger] and opportunity.

According to ancient Chinese philosophy, opportunities often arise from crisis. With respect to science, this suggests that crisis or model breakdown, is also an opportunity for innovation and breakthrough.

The current cosmological model has given us a hundred years of darkness: dark matter, dark energy, black holes - these still unproven concepts have done little to help us understand the nature of the universe.

While theories like general relativity have helped to usher in an acceptance and celebration of paradox and absurdity. Both within cosmology and in the broader culture.

The Standard Model ultimately views the universe as dark, random, disconnected and incomprehensible. As such, it offers little hope or meaning. So, how might a different cosmological model impact society? The answer to this question depends on the nature of the new model and its world view.

One alternative that presently exists, and which has a radically different perspective than the present Standard Model of cosmology, is the Electric Universe model of cosmology. The EU model posits that electricity is the driving force in the cosmos and also that countless electromagnetic fields connect all things in the universe at all scales in a complex dynamic structure. This notion of an integral connectivity is especially interesting and thought-provoking.

The idea of a force that permeates all things from the most infinitesimal to the most massive or galactic and connects all things, is one that should pique our interest. Not least because it hints at a far more cohesive universe than we are led to believe exists. This has both practical and philosophical implications.

It is impossible to know which model might one day replace the Standard Model. But one thing we can say for certain is

that we have not reached the end of history with respect
to cosmology and our understanding of the universe.

Far from it. Like Socrates and the ancients,

it may be wise to concede that there's still so

much that we do not know and so much to discover.

It is an interesting and exciting time to be alive.

[Music]

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

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

Our world was once a
vastly different place.

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

In these discourses, we've followed the
evolution of a planetary configuration
close to Earth stretching
across the ancient sky.

Centered at the north celestial pole, it
remained stationary for an extended
period at this position. That's the
underlying nature of the primeval Sun
remembered around the world.

We've noted that the named
planets progressively emerged
from a dusty plasma cloud,
identified in mythic accounts as
the great sea of primeval chaos.

The differentiation of the planets, and
their observed movements in relation to
each other, and the electrical
activity between these bodies

provided the core content of
ancient creation mythology.

In the original accounts, creation meant
events visible to humans on Earth.

We've named three planets in the mythic
Great Conjunction based on recorded
astronomical traditions that trace to the
birth of astronomy in ancient Mesopotamia.

Saturn as the overarching luminary,
named as the primeval Sun;

Venus as mother goddess and radiant eye,
heart and soul, and

Mars as the dark,
reddish innermost body, the
child in the womb of the goddess,
the pupil of the feminine
eye of the primeval Sun.

We've followed the emergence of a
triangular form, recalled as the first
form, the luminous seed of creation.

And we've identified this unique form
as the concrete celestial referent
for the popular 3-fold goddess,
three faced goddess,
or three goddesses in one. We've noted as
well the explosive discharge activity

associated with this triangular form,
and the essential role of the discharge ejecta
as the mythic primeval matter of creation,
the very material from which, in the creation stories,
the gods were said to have constructed
a great citadel in the heavens,
the legendary homeland of the gods. Through
local storytelling and re-enactments across
the centuries, this celestial dwelling came
to be remembered as the ancestral homeland
of every nation recounting these events.

These core themes of an archetypal
memory have taken us to the critical
moment at which a bright crescent,
appeared on the gas giant Saturn
due to light from the Sun.

This moment provides an extraordinary
test of the reconstruction as a whole.

Once we place the named bodies in
3-dimensional space,
centered at the celestial pole, and allow
for an illuminated crescent on Saturn,
an inescapable conclusion will follow.

The crescent must have rotated visually
with the rotation of the Earth, in a precise
relationship to a cycle of day and night,

with no counterpart and no analogy
in anything occurring today.

A star in the center
of a rotating crescent.

The image is recorded around the world.

A crescent which, given the circumpolar
placement, must have turned around
the polar center in a daily cycle
of brightening and dimming.

No ambiguity, no compromise allowed.

When seen with eyes wide open, how
credible are the popular claims of
historians, archaeologists and
comparative mythologists
when they identify the symbolic
crescent as our moon?

By what reasoning would ancient
skyworshippers have extravagantly and
irrationally placed our little crescent
moon into a configuration never seen,
but recorded independently
by humans around the world?

Always keep in mind that the mythic
crescent does not stand alone.

The great star of Venus in the center of
the crescent is just one enigma

in a crowd of unsolved mysteries.

A particularly powerful addition
comes from the mythic world mountain,
a column of fire and light
rising along the polar axis
to pierce the crescent.

That's what gave the
crescent its mythic identity
as the cleft peak, the horned peak,
the twin arms or twin pillars
of the sky - a subject we'll
review one theme at a time.

In its juxtaposition with
the revolving crescent,
the polar mountain adds crucially to the
midnight appearance of the crescent in
the most celebrated moment in the archaic
daily cycle. No contrived reconstruction will
ever account for this symmetry. And
that's why a radical break from common
understanding is so essential, as we intend to
make crystal clear in the episodes to follow.

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

In a recent Space News episode, we reported on two 2016 scientific studies that each serve potentially fatal blows to the hypothesis of dark matter.

The first of these studies, reported in September of last year, found that the acceleration and the rotation curves of both spiral and irregular galaxies could be explained by visible mass alone with no Dark Matter necessary. Professor of physics and astronomy David Meritt says of the findings: "Galaxy rotation curves have traditionally been explained via an ad-hoc hypothesis that galaxies are surrounded by dark matter. The relation discovered by McGaugh et al. is a serious, and possibly fatal, challenge to this hypothesis, since it shows that rotation curves are precisely determined by the distribution of the normal matter alone. Nothing in the standard cosmological model predicts this, and it is almost impossible to imagine how that model

could be modified to explain it, without discarding the Dark Matter hypothesis completely." Another study reported in December presented a statistical analysis of mini spiral galaxies, and found a so-called "unexpected interaction" between dark matter and ordinary matter. A co-author of the study states: "Most dark matter, according to the most credible hypotheses, would be non-baryonic or WIMP. It would not interact with ordinary matter except through gravitational force. Our observations, however, disagree with this notion." In this episode, physicist Eugene Bagashov analyzes additional recent studies that raise even further doubt of the Dark Matter hypothesis and he explores the growing scientific case for dark matter alternatives. Following the recent Space News episode featuring astronomer Barry Setterfield,

I'd like to briefly review some of the other recent studies regarding the dark matter hypothesis. First of all, there have been news from several experiments that

theoretically could detect processes involving dark matter particles. For example, the team of researchers working with Fermi Space Telescope indicates that there are no signs of dark matter particle annihilation nor decay. These processes should take place if dark matter particles could interact not only gravitationally but also perhaps through weak nuclear force. The gamma-ray flux, measured by the Fermi telescope from low Earth orbit, over the course of several years, so far have not shown the evidence for any significant Dark Matter presence. Experiments on and below the surface of the Earth have also failed to detect any specific Dark Matter processes. There have been news from PANDA X experiment in China. They've used 300 kilograms of liquid xenon to detect the collisions of its atoms with the supposedly present dark matter particles and over the course of at least 66 days, haven't detected any single event. At the same time the article published by the team of experimenters, claims that this laboratory at present is

the most sensitive to dark matter on earth. Another similar experiment called LUX is also using liquid xenon and it also have recently reported the complete absence of events of Dark Matter candidate detection. 20 months of observations, from October 2014 to May 2016, had yielded zero observed events. Third experiment, using the same technique, is Xenon 100. 477 days of data taking have not resulted in a detection of a single dark matter particle interaction. The Large Hadron Collider, which once was a big hope for finding lots of what is called new physics, has also not produced any new findings in the recent years. What it does now is basically refining the previous measurements with more and more statistics and putting more and more strict constraints on the theoretical physicists' proliferative imagination; speaking of which I would like to remember a story from the end of 2015 when there was a message from experimenters at LHC stating a

possible detection of a two-photon peak at the energy of around 750 Giga electron volts. This was quickly followed by literally hundreds of papers submitted by theoretical physicists, each stating his own hypothesis on what this peak might stand for. Some of the versions included possible Dark Matter connection, but perhaps the most embarrassing was the fact that this peak just disappeared a few months later after accumulating more data. It turned out to be just a statistical artifact. But the social phenomenon of these theoretical physicists to rush has itself turned into the object of public and scientific attention, including some jokes and sarcastic publications. In the previous episode of Space News on dark matter, Barry Setterfield has already made the point that there is a more or less suitable mathematical alternative to the Dark Matter hypothesis, the Modified Newtonian Dynamics or MOND for short. In the recent years other theories have also appeared. Some

of them are quite eclectic, trying to tie various physical concepts with gravitation. I think the most interesting of them is the so-called entropic or emergent gravity. It seems that a few people were developing it even earlier but the most popular version of it nowadays is the one proposed by Erik Verlinde. In his paper, published in 2010, he states that the amount of information associated with matter and its location could be measured in terms of entropy. Changes in this entropy, when matter is displaced, lead to an entropic force which, as he shows later, takes the form of gravity. So its origin lies in the tendency of the system to maximize its entropy and is thus thermodynamic in nature and isn't actually a result of any fundamental force of nature. I'll remind that, today, four forces are considered to be fundamental and that is electromagnetism, gravitation, weak and strong nuclear forces. In case of Verlinde's theory, the fundamental interaction that leads to emergence of gravity would most likely

be electromagnetic. He also gives examples of other emergent forces such as osmosis and similar entropic forces in colloidal systems where the fundamental interaction is clearly electromagnetic since all the mechanical forces, such as pressure or elasticity, are electromagnetic in nature. Now I'll try to explain, in simple terms, how I interpret the basic idea of Verlinde's theory. Let us consider, as an example, the system of two point masses, A and B. We always might draw a sphere centered on one of those, for example A, with the radius equal to the distance from A to B. In this case, the mass B would lie on the sphere. Such a system might be treated in informational sense. That is, for example, the position of the body B with respect to A, might encode some information. Let's say we'd divide the whole sphere in 100 sectors of the same area and each sector would correspond to some number. Then the current position of the body B on the sphere would point at one of

those numbers, thus giving us the
according information. Let us now
consider another case when the body B
is slightly closer to the body A. Now we
might repeat the same drawing procedure
but soon we would find that the number
of sectors, that we might divide the
sphere in, is actually less. If we try to
keep the same area of sectors it is
obvious that we couldn't fit the same
amount on the smaller sphere. So the
amount of information that we might
encode in this the smaller system became
less. Thermodynamically, this means that
the entropy has increased and the system
now might provide less ordering. So the
system with masses situated closer
together is thermodynamically more
stable and it is in this
direction that the evolution of the
closed system would go. And there is an
effective entropic force that arises to
guide this evolution. It is possible to
formally derive the according equations
and Verlinde does that in his
paper. In my opinion, the idea is quite

interesting and, at the very least, deserves a careful and thorough analysis. However, there are some problems and perhaps the weakest part of this theory is its reliance, at least in mathematical terms, on the so-called holographic principle and AdS/CFT correspondence. Both of those are pretty specific theoretical conjectures and are highly speculative in nature. Anyway, what interests us here in the given context is that, based on his own approach, Verlinde seemed to have succeeded in acquiring equations that are practically identical to Milgrom's MOND equations for large-scale gravitating systems such as galaxies. And more than that, in December of 2016, there appeared a publication that claimed incredibly accurate confirmation of Verlinde's predictions for the case of gravitational lensing. Of course, the very phenomenon of gravitational lensing is somewhat doubtful though Verlinde's theory could actually shed more light on its nature. If gravitation is not even a

fundamental force but some emergent effect, maybe this would also concern the propagation of electromagnetic waves. That way or another, the theory is there and the publications that seem to suggest its practical value are starting to appear. So now, not only we don't register any dark matter particles but we also have at least three alternatives to Dark Matter hypothesis itself. First one comes from plasma dynamics, the second one is MOND and the third one is Verlinde's emergent gravity. In my opinion, it is a very good situation for science as such and one should try to encourage the existing controversy since it is the controversy that is the real life of science.

This actually brings hope for the academia as a whole with its dogmas of settled science and possibly could even serve as a sort of a pivotal point for the scientific revolutions in other areas in the coming years. With the current political situation in both the European Union and the United States, as

well as the imminent stock market and banking system crisis, it is entirely possible that they would spark major scientific debates in the areas that only recently were considered to be totally settled. But as the scientific institutions would try to adapt to the new reality and shifted financial flows, the situation would become different. In my opinion this provides a certain opportunity for many alternative schools of thought, including the Electric Universe paradigm.

For continuous updates on Space News from the Electric Universe, stay tuned to Thunderbolts.info

[Music]

"The plague of 1348 A.D. was
the greatest, most universal
and mortally devastating
that ever ravaged this globe!
It never had a parallel either before or
since". Thus wrote scholar Thomas Short
in his historical scientific treatise
of 1749 A.D. He remarked,

"We have a more particular history
of it, than of any that preceded it;
for as it visited every inhabited corner of
the Earth, so every nation or people that
understood letters, kept records". Its
spread was implacable, relentless and
devastating. Short minutely details the
cataclysmic death rates that followed it
from nation to nation and town to town.
Death rates varied but collective data suggests
that in the final mortality count, perhaps
as much as 80 percent of the world population
perished. Hear this typical quote "In some few
places it was as favorable as to leave a third
part of men alive, in others it took fifteen out
of sixteen." Compare this to one of the most
devastating of modern human infections, the

Spanish flu epidemic circa 1920. In this recent event, some 50 million perished out of a world population of around 2,000 million or around 2 percent worldwide. The bubonic plague of 1348 A.D. where Short alludes up to 80 percent of all peoples perished was by comparison a horrendous scenario.

More modern sources believe it was more like 30 percent of the world perished, but the comparison is still vast. So, what made this plague, normally attributed to the bacteria *Yersinia pestis*, so virulent, highly contagious and invasive? In modern times this same bacteria is still deadly, but the death rate is comparatively mild. Why this modern comparative lack of virulence?

We have much evidence to examine, for as Thomas Short notes, the event is well documented. For instance, the prices of all foodstuffs, the treatments, incubation times, localities, death tolls, spectrum, vulnerable victims and numerous well-recorded data of let's say the obvious, more mundane type. But what is more baffling,

interesting, and highly contentious,
are the accompanying geophysical dramas.

These clues, I contend, lead us to a
deeper understanding of the tragic
virulence of this, and indeed other related
catastrophic, but less virulent,
plagues that followed.

Let us look at some of these intriguing
observations that raise questions as to how unusual
the events of that time were, compared to the
relative stability of today's placid environment.

Thomas Short draws from the chronicle of
Magdeburg and numerous sources, to illustrate the
accompanying phenomena, in
the 1348 A.D. bubonic plague.

It began in Cathay in Asia. By reason
of an igneous vapor or sulfurous fire,
breaking forth from the Earth or falling from
heaven, which utterly consumed men, beasts,
houses, stones, and trees to the very ground.

And stretch forward, rolling on smoking balls
of stinking pestilential fire for 60
miles of the continent, killing insects
and vermin. This plague killed
men in two or three days.

In Greece and Italy earth-

quakes swallowed many cities,
castles and towns. Mountains in
Cyprus were thrown together as one.
Famine was everywhere with terrible floods,
storms and tempests. Fearful meteors of
flames and fire in the air, succeeded
by excessive drought and want
of water, with the destruction of most animals
and vegetables. The fens of marshes dried up.
A great comet, called Negra, appeared, during which
followed great earthquakes, tempests, great thunder
and lightning. Several towns, villages, mountains
and thousands of people were swallowed up.
The courses of rivers were stopped, and
great chasms in the Earth opened up,
and sent forth bloody liquids. Strangely,
women spontaneously aborted in all countries.
The rivers gushed crimson, comets, meteors fire
beams, and the heavens were on fire. To our
modern skeptical ears much of
these lamentations seem ridiculous.
But remember, these are not from just
one isolated witness, but from many
sources of many countries, and the death toll
supports what one would otherwise read as
something out of Dante's inferno. However, let

us take at least 50 percent of these testimonies as valid. They strongly suggest electromagnetic phenomena that are seen even today in volcanoes, earthquakes and tornadoes and the electric phenomena observed in dramatic weather. However, these historical observations in 1348 A.D. suggest a grossly more vigorous scenario.

As we contemplate these extraordinary factors, let's dwell on what we can reasonably deduce the overall controllers of weather, volcanoes, earthquakes, and tsunamis are, and their relationship to causative cosmological factors. The Sun, planets, meteors, comets and the broad spectrum of electromagnetic wavelengths, such as gamma rays, cosmic rays and relativistic radiation, are all implicated as moderators of life on Earth.

Least we forget, the effect of the plasma environment in the solar system and beyond and its support of electrical and magnetic phenomena such as Z-pinches.

The rigorous foundational work of Danish physicist Professor Henrik Svensmark at the Division of Solar System

Physics convinces us that the Sun with its

CMEs, solar flares, and various radiations,
has much control over Earth's cloud cover,
via their moderation of cosmic ray effects.

Svensmark comments, "There is a beautiful
correlation between the number of cosmic rays
hitting the Earth and its cloud cover." He notes,
that it is apparent that the Sun moderates that by
means of Coronal Mass Ejections
(CMEs) and other phenomena.

Thus the Sun directly influences Earth's
weather. Noted meteorologist Paul Dorian
sums this up. "Over the long term
the Sun is the main driver of weather
and climate on Earth and it is also connected
to such phenomena as the Aurora Borealis. It
controls the upper atmospheric high- latitude
blocking, and the influx of cosmic rays into
Earth's atmosphere. The influx
of cosmic rays into the Earth's
atmosphere from outer space tends to
increase dramatically during solar minimum".

Interestingly, there is evidence
that solar activity plays a role in
volcanic activity on our planet.

In fact, in times of low solar activity
such as the current solar minimum, volcanic

activity tends to rise. The Tambora volcanic eruption in Indonesia during 1815 is connected to the unusually long period of low solar activity known as the Dalton minimum, 1795-1823.

The following year of 1816 was unusually cold throughout much of the world, and it is now referred to as the year without a summer. Yet another study suggests that the increasing cosmic rays during times of low solar activity, actually causes an increase in volcanic activity.

Another theory suggests that solar flares may cause changes in atmospheric circulation patterns that abruptly alter the Earth's spin. It's now recognized that earthquakes are heavily influenced by electrical factors, whether from distortion of rocks and the subsequent generation of electric currents, or by telluric currents from within the Earth that are probably linked to the Solar-Earth axis. Similarly, volcanoes have a high incidence of lightning discharge, often explained by friction between gaseous particles, radon or, in my opinion, directly from solar influences. The influence of electricity on

living forms, and more particularly, on viruses, molds, and bacteria and other possibly pathogenic organisms.

For instance, an atmosphere of largely positive ions encourages bacterial growth.

The influence of sunspot minima is characterized by weakening of the interplanetary magnetic field near the Earth which allows for the entry of cosmic rays.

Additionally, Svensmark notes when galactic cosmic rays collide with the atmosphere, they produce a cascade of secondary particles, including neutrons and muons that continue to penetrate the atmosphere.

The cascade continues until the particle energy becomes so low and cosmic rays are effectively stopped.

This happens around the 16- to 20- kilometer mark.

However, under more intense bombardment, or lack of moderating solar influence, significant neutrons, and other electromagnetic radiation, reach ground level and increased mutation rates along the mitochondrial axis. This could dramatically affect the virality of any microbe, or cell for that matter.

Modern studies also reveal the carriage of

bacteria, viruses and micro particles at very high altitude vectors above the Earth, making them more vulnerable at sunspot minima to the effects of all radiations, including X-rays as they descend back to Earth.

This combination of what I regard as electrical phenomena, lends a powerful case to its effect on biological growth of all organisms, but not only with phenomena such as death from drought and famine, but at a molecular level.

I postulate the very large electromagnetic influence from comets, the Sun, and extraneous electromagnetic invasions, influenced the Earth's electric status and led to chaotic growth and virulence of the plague bacteria.

Both in 1348 A.D. and in preceding and future events, such as the little ice age with its Wolf, Spörer and Maunder chaotic weather minimums. These were also times of sunspot minima. These world-changing weather patterns were not only extremes in temperature, but more particularly a collection of chaotic, as distinct from predictable seasons. For instance, crop destroying rains at harvest time, pollen destroying super winds, long hot droughts

bringing famine and pestilence, rainy summers,
encouraging mold, destroying fungi.

Nature often uses triggers

based on hard to pinpoint factors

when losing its newest progeny.

We see swarms of termites loosed under precise
signals, bad weather or clever triggers.

We see inexplicable mice plagues seasonal

flus, wars and lotus swarms. Many and varied

are nature. But what if nature relies on

electromagnetic signals and these become chaotic.

I suspect the devastating 1348 A.D. bubonic

plague illustrates just such a black picture.

[Music]

The Electric Universe

The Electric Universe

-- The Essential Role of Plasma --

What does it mean to say we

live in a plasma universe?

And why is the plasma universe,

an Electric Universe?

We typically describe matter

as solids, liquids, and gases.

But across the cosmos, plasma is the most
pervasive and fundamental state of matter.

It's the electrical behavior of plasma
that assures us there's no empty space,
in space.

No domain anywhere is entirely free
from electric and magnetic fields.

That's the reason for our
oft-repeated mantra:

There are no islands in space.

The continuous electrical
conversation occurs everywhere.

if we're better at detecting this
energetic conversation today,
that's because advanced instruments
give us a much closer view
and not just across the sliver of

visible light on the spectrum.

It's freely moving charged particles that give plasma its electrical characteristics, including its conductivity.

Electric currents are essential to comprehending the new picture of space.

Electrified plasma creates surprisingly lifelike responses, and it creates similar behavior at all scales.

From microscopic up to galactic dimensions, the responses to an electrified environment are fractal-like: plasma in the lab, plasma in computer simulations of charge, and plasma structures in remote space show virtually identical geometries.

So, it's the plasma universe that makes our Electric Universe possible.

Now, it's the job of astronomers, astrophysicists and mathematicians to take up the challenge.

How far can the discovery of the Electric Universe take us in our understanding

of events in space?

Events close to home and in the
farthest reaches of the cosmos.

One thing you can

count on is this,

the story at the Electric

Universe will continue

at Thunderbolts.info

[Music]

Dave Talbott and myself have been collaborating on a historical reconstruction for over 40 years now.

I thought the audience might be interested in a walk down memory lane and a bit of ancient history.

The following video is the first of several that will attempt to outline our principal findings.

In 1979, shortly after the publication of the archaic Sumerian hymn, 'The Exaltation of Inanna', I wrote an article arguing that Inanna as the planet Venus was best understood as a comet-like phenomenon.

I was inspired to investigate the Inanna traditions by the eccentric writings of Immanuel Velikovsky whose 'Worlds in Collision' had caused a scientific uproar when it was published in 1950. It was Velikovsky's claim that Venus presented the appearance of a giant comet during the mid-second millennium BCE, and that this catastrophic event could be used as a benchmark to launch a revolutionary new approach to ancient chronology. Shortly thereafter, while attending a Kronos-sponsored symposium in Princeton, New Jersey, I was informed of the recent publication of 'The Saturn Myth' by one

David Talbott. Talbott, it will be remembered, was the publisher of the seminal and hugely popular *Pensée* series during the early 1970s, examining the scientific basis of Velikovsky's writings. Upon contacting Dave by phone, I learned that he too had arrived at much the same conclusion vis-a-vis the cometary origins of the Inanna traditions. Finding a kindred spirit in Dave, we eventually agreed to jointly author a series of articles for *Kronos* on the Venus comet. The basic thrust of our findings was that yes, while Venus did indeed present the appearance of a comet-like apparition in the distant past, since the catastrophic events in question were already attested in the earliest Sumerian and Egyptian texts dating to the third millennium BCE, such events most likely occurred during the prehistoric period, and thus could not be used as a linchpin in any reconstruction of biblical or Homeric chronology as per Velikovsky's thesis. During the 80s and 90s, Dave and I continued to fine-tune and bolster our historical reconstruction, this while authoring dozens of scholarly articles on comparative mythology. We also traveled about the U.S and Canada presenting our findings. In the mid-90s Dave and I were regular participants on such internet fora as [talk.origins](#) and [sci.astro](#), where we argued our case and debated top astronomers and other

scientists. Suffice it to say that during the decades in question our arguments fell on deaf ears, both within the catastrophist community as well as within the scientific community at large.

In 1994 Dave published 'The Great Comet Venus' in *Aeon*, a masterful analysis of the cometary imagery attached to the planet Venus in ancient sources. In 2001 I published 'The Many Faces of Venus', offering a cross-cultural analysis of Venus mythology.

Other books fleshing out the evidence pertaining to Venus's recent catastrophic pass followed in subsequent decades. From my perspective the jury is in. During a relatively recent prehistorical period, the planet Venus was involved in a series of extraordinary catastrophes, involving the planet Earth and other neighboring planets, during which it moved on a different orbit than at present and presented the appearance of a long-haired comet-like apparition.

Short of a shared delusion, how is it possible to explain the confidence that Talbott and I have in the general accuracy of our historical reconstruction? The short answer is the compelling nature and apparent universality of the human testimony pertaining to Venus's former comet-like behavior. Briefly, Talbott and I analyzed the mythological and linguistic traditions attached

to Venus in archaic cultures around the globe, in order to discover whether common patterns could be found. Those patterns, which were otherwise inexplicable by reference to the present solar system, were of a special interest and, in our judgment, sealed the case.

Very early on, Dave and I noticed that Venus was directly connected with a cosmic tie or band of some sort.

In ancient Mesopotamia for example, the planet Venus was intimately associated with the royal headband marking the king as a universal sovereign. The Sumerian word for the headband in question is 'mus', a word which is written with the very pictograph denoting Venus in the earliest Sumerian script. Quote, "Numerous texts mentioned the 'mus' as a kind of headband or diadem, which is tied on deities and kings...", end of quote. As more than one scholar has noted, the pictograph in question certainly resembles the pre-scientific picture of a comet. As we have documented, analogous traditions will be found around the globe. In ancient Meso-America for example, the planet Venus was specifically associated with the verb k'al = to tie, a term used to describe the tying on of the royal headband during coronation rites.

Venus's apparent connection with the tying on of the royal headband in turn, corresponds precisely to Inanna's function in Mesopotamian royal iconography, where she

is said to secure or tie on kingship. Already during the third millennium BCE Inanna Venus is said to tie on the kingship for an early king. Quote "When Inanna had tied the lordship with the kingship for Lugalkiginnedudu, she let him exert lordship in Uruk", end of quote. Now, here is an interesting, albeit unexpected and improbable finding. What in the world could the distant planet Venus possibly have to do with the royal headband and the origins of kingship?

As Talbott and I suggested in our very first article together, the Venus tie had reference to a celestial band that at a decisive juncture in Earth history appeared to encircle, or otherwise crown or adorn, the planet Mars. A classic example of this motif occurs already in the pyramid text, wherein Isis Venus was credited with tying on a headband on Horus, the latter identifiable with the planet Mars. Quote, "She who tied on the headband on her son Horus as a young boy in Akhbit." End of quote.

The Egyptian word for headband here is mdh.

The Egyptian hieroglyph depicting this royal tie in turn is virtually indistinguishable from the pictograph employed to denote the planet Venus in the early Mesopotamian script. The fact that both ideograms were employed to describe the head-banding

of the king during the sacred coronation ritual confirms their fundamental affinity, and suggests that their spiraling volute-like form traces to a common celestial prototype. Egyptologists have long noted that Isis Venus was celebrated as a kingmaker. Witness the following observation of Jan Assmann, renowned Egyptologist. "As mother of the Horus child, Isis is the bestower of legitimate kingship...Isis is the 'kingmaker' par excellence..." End of quote.

If the historical reconstruction offered here, is based upon an accurate reading of the ancient Egyptian and Mesopotamian sources, it follows the Venus's crowning of Mars as a decidedly extraordinary celestial event and as such was likely witnessed around the globe. It stands to reason therefore, that such memorable events would be reflected in the sacred traditions of other ancient cultures. This, despite the fact that this particular conjunction of planets is impossible in the modern sky. As a superior planet Mars cannot appear in front of Venus in order to be crowned by it.

Is there any evidence then that ancient cultures conceptualize the planet Venus as a crown?

The ancient cultures of Mesoamerica had a long history of astronomical observation, and as a

result more than one of their few remaining codices attest to a detailed knowledge of astronomical phenomena.

Maya astronomers took a keen interest in Venus and succeeded in calculating that planet's period to within a fraction of its true value: 584 days.

In this instance, as in various other astronomical achievements, the Maya rivaled anything achieved by contemporary astronomers of the old world.

How curious then to find that certain hieroglyphs believed to represent the planet Venus, are occasionally depicted as crowning kings and gods in these same codices. Plate 45 of Codex Borgia for example, depicts a denizen of the underworld with a Venus crown.

According to Bruce Bylan, a noted authority on the Codex, the enthroned figure wears a Venus star as his head-dress. Maya monuments elsewhere represent the planet Venus as a half star. In light of this fact, it is notable to find that the half star elsewhere

appears as a crown-like headdress. As Talbott and I have emphasized since our first writings on the subject, it is important to underscore the formative nature of these astronomical events involving Venus and Mars.

In ancient Mesopotamia, as in the New World, it is the tying on of the Venusian headband that makes the king.

A Sumerian text describes the situation

exactly. Quote, "Ninurta put on a crown
as a sign of kingship, tied on a lapis lazuli
'mus' as a sign of enship." End of quote.

According to the Sumerian King List and
other early texts, kingship descended
from heaven. There is much truth in this archaic
belief. Indeed, Sumerian texts make it clear that
it is the planet Venus who endows the
local king with kingship. Thus, it is the
mythical king and Murkar announces in an
early hymn, quote "My kingship the starry
lady gave me." End of quote. The word
translated as 'starry' here is mul-mul-e,
to shine, or radiate, a verb formed from
the Sumerian word for star, mul, and
hence referring to the luminous splendor of
Venus itself. The clear import of this passage
accordingly, is that kingship itself is a gift of the planet
Venus. Far from being figurative in nature, the language of
this early hymn is best understood in literal fashion. It is
the planet Venus who makes the king by investing him with
a luminous headband or crown of glory. What is true of
the rights of kingship is also true of the primary rights
surrounding marriage, the founding of temples, the layout
of ancient cities, and other rudiments of human civilization.
Simply put, human civilization as we know

it, would not be recognizable without the
extraterrestrial stimulus provided by mind-altering
catastrophes associated with the neighboring planets.

[Music]

[Music]

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

The Electric Universe theory
proposes that electromagnetism, not
gravity, is the predominant
organizational force in the cosmos.

In the Space Age, countless discoveries; from
the networks of filaments connecting
objects across vast cosmic distances, to
the pervasive magnetism seen at all
scales in the universe, to the structure
and motions of galaxies themselves; are
all better explained from an electrical,
rather than gravity-centric, viewpoint.

However, this is not to say that the
Electric Universe denies gravity's existence.

For more than 40 years, the
leading proponent of the Electric
Universe, physicist Wal Thornhill has
worked on an explanation for gravity
that actually links gravity
and electromagnetism.

In recent years, retired nuclear

engineer Dr. Raymond Gallucci
discovered Thornhill's electrical
theory of gravity.

Today, Dr. Gallucci presents the
simple mathematical modelling he has
performed to test the
theory's plausibility.

I first came across the EU
Theory back in 2011 and I don't recall
if I first came across the
electromagnetic gravity theory at
one of the early conferences or via the
website but it doesn't really matter
because I did come across Wal
Thornhill's theory, I know he's presented
it at the conferences and
there's some videos of it.

And given that there's 39
orders of magnitude between the
strengths of electromagnetic and
gravitational forces, it makes one wonder
just what's going on, plus the fact that
electromagnetism can have a
repulsive aspect as well, at
least with coulombic forces.

So EU Theory has asked

the question: is it even conceivable that
these two could somehow be related given
such vast differences in their strengths?

And the EU theory says yes.

And so, my background is a nuclear
engineer, I'm not up too much on
electromagnetism so what I try to do
with my papers is, I tend to take other
people's theories and I try to look at them
for plausibility from an independent aspect.

And so I figured that
maybe this electromagnetic gravity is
something I could tackle without
having, you know, too much electrical background.

So I went ahead and gave it a try, and
I'll just read, this is from the
Holoscience.com website--Electric Gravity
in an Electric Universe, and this is
Wal's theory that gravity is due to
radially oriented electrostatic dipoles
inside Earth's protons,
neutrons and electrons.

The force between any two
aligned electrostatic dipoles varies
inversely as the fourth power of the
distance between them and the combined

force of similarly aligned electrostatic dipoles over a given surface is squared. The result is that the dipole-dipole force, which varies inversely as the fourth power between co-linear dipoles, becomes the familiar inverse square of gravity for extended bodies. The gravitational and inertial response of matter can be seen to be due to an identical cause. The puzzling extreme weakness of gravity, and again we're talking about 10 to the 39th power with electromagnetism or electrostatic force, is a measure of the minute distortion of subatomic particles in a gravitational field.

And there's that nice diagram on the Holoscience and the Thunderbolts website, that shows the three atoms in a vertical line and the slight off-center of the charges of the protons and electrons which, EU Theory alleges, may be what gives rise to gravitation.

Continuing with the EU theory on gravity, the 2,000-fold difference in mass of the proton and neutron in the

nucleus versus that of the electron
means that gravity will maintain charge
polarization by offsetting the nucleus
within each atom. And that's what's shown
on the diagram. The mass of a body is an
electrical variable--just like a proton
in a particle accelerator. Therefore, the
so-called gravitational constant, the G ,
with the peculiar dimensions of length
cubed over mass times time
squared is a variable!

That's why G is so difficult to pin down.
And so, that's just the background which
I guess, anybody can find if they look
under the electromagnetic gravity,
slides from Wal Thornhill.

So what I tried to do,
and it's shown in my paper, is I took the
diagram from the Electric Universe
theory of the three atoms, I took three
hydrogen atoms for simplicity and
they're shown vertically on the EU website.

I turned them horizontal, so I
put them, I spaced them, I said: three
hydrogen atoms of radius R are aligned
and equally spaced, at distance of three R ,

R being the radius of the hydrogen atom from center to center.

We are interested

in a distortion on the leftmost, which is the reference atom, due to its two neighbors; that is the net electrical force from each neighbor's proton which is shown in the diagram as a gray circle, and the electron which is shown as a dotted orbit.

This is a classical representation of the atom, it's not a quantum representation, it's the Bohr atom with the electron orbiting.

On average, the electron spends half its time in each hemisphere, as it's going around in its orbit, in each of the neighbors, with the average position being along the alignment and it turns out, if you do the math, the distance is $0.6366 R$, so it's about almost $2/3$ along the radius, i.e. it's the average position when it's in each of these hemispheres.

And again, that can be seen on the diagram.

Both the reference

proton and electron will be subject to

six forces: attractive one of opposite

charge, repulsive one of the same charge,

and that's because on the diagram, you'll

see that relative to the reference atom,

I have two atoms that are to the right

of it and each of those atoms has a

proton, so that's two of the other forces,

and then I've shown the average position

of the electron in each hemisphere on those two

atoms, and that comprises the other four positions.

So I'm basically

looking, I've taken what's a dynamic

situation, I've tried to make it static

so I could do some calcs.

And I'm showing the reference atom,

its electron, its proton being

affected by

basically, six other charges, two of those

being the stationary protons, the other

four being the average position of the

rotating electrons in each

hemisphere on the other two atoms.

The vector sum of these six forces will

constitute the net electrical force on

the reference proton and electron and indicate the degree of distortion imposed on the reference atom from its two neighbors.

Remember that the EU theory is that there is a distortion due to the presence of other atoms, and this very slight distortion is what accounts for the gravitational force.

Based on symmetry, the center atom should experience no distortion, that's the atom, the hydrogen atom in the middle, it has two, one on each side of it, so it's a symmetric position, so it wouldn't experience anything in this diagram that I'm showing.

The rightmost atom should experience the exact opposite distortion to the reference atom, my reference atom is the one in the far left and so the one on the far left and the one on the far right, I can analyze for either one of them being affected by the other two, and just for convenience, I worked on the left atom. So I did some trigonometry and I came up with this formula that shows the distance between

the electron's position and
the reference electron position and the
position of each of the other average
positions of the electrons
in the other atoms.

And after I've worked out that
formula, and I had to do some
calculations, and I set up a
spreadsheet to analyze each of 360
degrees as the electron on the reference
atom goes around in its orbit at each of
those three hundred and sixty degree
positions, I calculated the distance
between it and the other reference
electrons and protons, and knowing those
distances, I was then able to calculate
the net force on that electron from each
of those positions and do an averaging
over time in order to get the, you know,
the average net force on that electron
to show whether or not there would be
the distortion that is part of the
Electric Universe theory.

And I have a graph that shows this in
the paper, after one performs all the
calculations to derive the net force on

the reference electron, which is a vector,
so direction must also be addressed, it
is, fortunately it's, I'm dealing in two
dimensions, not three dimensions, I'm not
looking at an electron cloud, I'm looking
at electron in a circular orbit,
again, the classical view.

The results can be
plotted as shown, they are presented in
terms of the near, the closer hemisphere
to the middle atom and the far sides, the
farther hemisphere from the middle atom.

For the electron as it circles the
proton, to simplify the presentation, I
scaled the results by $4\pi\epsilon_0/q^2$, which I put everything relative
to that and I set the radius of the atom
equal to 1 for the purposes of scaling,
so I could do my diagrams, and what I
have here on the figure on the
paper, it shows that when θ equals 0
when the electron is in
the same line as the three protons
from its reference atom and the other
two atoms, we have the reference electron
at both the farthest and nearest

positions to the neighborhood atoms.

Here, the difference between the net forces, which is shown as a solid line in the diagram, is maximum and it's labeled there as the maximum location.

This is also the only position where the directions of the two force vectors are exactly aligned.

This difference decreases as the electron positions get closer, until they are equal at $\theta = 90^\circ$ where the near and far side positions coincide.

So on my diagram, if you put the electron that's orbiting the reference proton at the top or the bottom, it's the same distance from the other six electron positions and the two protons in the neighborhood atoms.

I observe that the difference between the net force peaks at around $\theta = 45^\circ$, so when the reference electron is about 45° degrees, either upwards or downwards from its nearest, nearest position to the other atom(s), that's when the difference between the net force directions is peak.

Having said

all this and shown the diagrams again,
which one needs to look at to really
understand this, the key observation is
that over the entire orbit of the
reference electron, the net force from
the neighboring atoms is repulsive.

This means that the electrons in the
neighboring atoms push more on the
reference electron than the protons in
the neighboring atoms pull, so you
don't have symmetric forces between
pulling by the protons, the attractive
forces between proton and electron, and
the repulsive force between the other
electrons and the reference electron,
there is a difference between those two
forces, and the net force is a repulsion.

As a result, there should be some
displacement of the electron orbit and
distortion given the asymmetry between
the forces acting on the two hemispheres
away from the neighboring atoms and
opposite to the direction in which the
reference proton is pulled.

The figure again, shown in the paper, this

illustrates the effect on the orbit of the reference electron and what's shown in that figure where I had to scale it up because the distortion is very, it's on the order of like 0.01% so I scaled it up a little so you could see it, it shows that the circular orbit of the electron and the reference proton actually gets pushed inward a little bit on the right side which is the side nearest to the other two atoms. So it's not a pure circle, it's a slightly flattened circle.

Now, I also looked at the effect on the reference proton, because now we see that according to EU Theory, we're talking about a dipole being set up, so the electron is being displaced slightly in its orbit.

Does the proton also get displaced a little bit?

The net force from its neighbor atoms for the proton on the scaled metric is a pull, an attraction of about 0.02 scaling to a value of one.

This exceeds the push on the reference electron over the entire

far side of its orbit, but remains less than that over most of the near side of its orbit, with the amount by which the exceedance over most of the near side exceeds that over the far side, being greater.

So while the reference electron has its orbit pushed away from the neighbor atoms, the reference proton actually experiences a pull towards them.

So our reference, as shown in the diagram that Wal presents, clearly not only do we have the reference electron being pushed away slightly from its other atoms, we have the proton on the reference atom being pulled a little bit, so we have kind of a double distortion, in the setting up of the dipole, that might account for the gravitational force due to electro-magnetism.

And so, it's not only the distortion of the electron but there's a slight distortion of the proton position, not as much because the proton is more massive.

The reference hydrogen atom no longer is symmetric with a circular electron orbit

about a centered proton; that thereby suggests the creation of an electric dipole which is what was postulated by Electric Universe theory.

So I do have a caveat that I put in here, and the caveat basically is in my calculation, this is a very simple model, I assume that the electron's orbital speed is that of light.

There are some references that show electron orbital speed dropping might be maybe 10% or 1% that of light, I don't think anybody really knows how fast the electron goes, certainly not in a quantum mechanical model; I mean, it's just a probability state, anyway.

So this is again talking about the Bohr type of atom where you have the classical but, if the electron slows down enough, like down to 1% that of light, then the distortion would be off-scale in my model.

So my simple model is valid so long as the speed of the electron is very close to that of light.

So after injecting some mathematics, and this is my conclusion, greatly simplified--I have to admit, into

EU Theory that gravity can be attributed to an electromagnetic effect, although almost inconceivably smaller, again, we're talking about that 10 to the 39 th due to the distortion of atoms by their neighbors into electric dipoles.

The possibility of an electromagnetically induced distortion to create an atomic dipole appears plausible.

So again, my goal was to take the EU theory and try to do an independent math-physics calculation to see if it was at least plausible, and it turns out that it certainly is plausible, and that's what I was trying to show in my paper and I also was able to show the ratio of the displacements between the electron and proton around the orbit of about 1 to $10,000$.

So again, you've got much more distortion on the electron than the proton, but the distortion is about 1% of the Bohr radius itself, so the electron doesn't get distorted very much, and the proton is about a factor of $10,000$ smaller, so

we do have this very very small distortion that is postulated, but it may be enough to actually give rise to the gravitational force being the result of electromagnetic electrostatic forces in atoms themselves.

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

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

Our world was once a
vastly different place.

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

The Labyrinth

Dancing ground of the goddess and warrior

In taking up the myths and symbols of
the labyrinth we face a mystery that has
enchanted investigators
for thousands of years.

And yet despite an impressive
library of evidence, even the best
experts struggle to find a plausible
explanation of this mythic archetype.

In these Discourses, we've introduced a
radical perspective on the ancient
cultures and we've offered a
comprehensive interpretation of archaic
myths and symbols based on an unusual
and at times catastrophic solar system history.

Our subject is an ancient
gathering of planets extremely close to

Earth and remembered around the world.

We've proposed that with this referent in front of us, hundreds of ancient ideas including all of the mythic archetypes become predictable in terms that would not be possible, not even conceivable in the absence of the natural provocation we've outlined.

The first mythical character we meet in investigating the labyrinth is the legendary warrior and hero Theseus who earned his reputation by doing what all of the great mythic heroes did-- vanquishing chaos monsters and unifying a legendary homeland.

In the case of Theseus, the story was localized on the peninsula of Attica said to have been the site of a vast fortress--

The Labyrinth constructed by the legendary king Daedalus.

Within the towering walls of the labyrinth, locked away in its central precinct, lived a devouring Minotaur, part man and part bull, usually sewn as a bull's head on a mostly human body.

From this starting point, we can ask whether a persuasive explanation of labyrinth mythology could now be possible.

The answer to that question will require us to follow several converging threads in the labyrinth story.

For many years, in our discussion of Venus mythology, we've emphasized the planet's centrality and its repeated connection to intense electric discharge giving rise to its mythical identity as the animating female heart of heaven displaying explosive radiance and anciently described as the radiant eye of heaven and the glory of the sky.

In the course of these explorations, we've also observed that electrical formations linked to Venus acquired varying numbers and varying configurations of discharge streamers, all associated with the axial center of the sky.

So the first place to look for clues is the center of the labyrinth itself from which the explosive discharge or celestial glory radiated outward to become the winding

paths of the labyrinth itself.

An overriding archetype to be explored in connection with the labyrinth is the prototypical conjunction of the mother goddess and the ancestral warrior, the two most dominant archetypal figures in world mythology.

Most significant was the emergence of a whirling aspect from the three-legged Triskelion to the swastika along with more complex variations of the symbolic whorl, so it's not surprising to find these varied forms repeatedly connected to the central source of the labyrinth's entwining paths.

From these symbolic connections, we would naturally look for an explicit identification of the chaos goddess with the centerpiece of the labyrinth and that is precisely what we find in the example scene here, where the head of the terrifying Medusa with her snaky locks is indeed the heart of the labyrinth but also directly linked to the whirling triskelion formed from the goddess's disordered hair, as we should expect.

We can also understand the mythic interpretation that saw the winding paths of the labyrinth as a dark cavern entered by the warrior who then appears to be trapped within the so called 'intestines' of the labyrinth or otherwise engulfed by entangling serpents, marking out the same complex pathways.

A closely related theme involves the intricate windings of the rope or thread or an elaborate knot.

In the following analysis, we intend to show that the mystery of the labyrinth can be fully explained by concrete, highly electrified plasma formations in the ancient sky.

To simplify a complex story, three well-documented phases of this activity can be analyzed.

One is radial discharge, the first witness to the evolving plasma formations.

The events include changes in both the number and the morphologies of discharged streamers, which plasma science explains in a direct relationship to the energies

driving the activity.

The emerging symbolism of a four-fold discharge included a diversity of mythical interpretations as four etheric spokes of the so-called 'Sun wheel,' four rivers of paradise, four directional winds and four pillars of the sky, all discussed at length in my book 'The Saturn Myth.'

With that global language in front of us, there is no stretch needed to connect the center of the labyrinths to the electric discharge activity that gave rise to the labyrinth itself.

Second, the whirling aspect first arising from primeval chaos in the form of a three-legged triskelion.

The discharge configuration eventually displayed a more complex whirling form, sometimes interpreted as a world-threatening whirlwind or whirlpool.

Its most familiar form was the swastika, anciently occurring thousands of years before any of the familiar 20th century adaptations of the symbol.

Additional, more complex forms can also be named and the connection of such symbols to the dynamic center of the labyrinth will be crucial to our understanding of the labyrinth's historical origin.

As in virtually all stories of the warrior hero, there is a chaos monster close by.

The builder of the labyrinth of Knossos, Daedalus was said to have constructed the palace-like fortress to imprison and protect the Minotaur.

The Minotaur was half-man, half-bull and was kept in the labyrinth by Minos, ruler of Crete.

In mythic terms, the monster can be compared to the bull of heaven slain by the hero Perseus, the legendary founder of Mycenae, or similarly the bull of heaven slain by the Sumerian warrior hero Gilgamesh.

By placing the emphasis on the celestial context where they belong, such story elements become valuable complements to the Theseus legend.

It was also said that the king's daughter Ariadne fell passionately in love with the hero, a theme placing the story squarely within the archetypal tradition, hero consorting

with the daughter of a famous king.

It was also said that before Theseus

entered the labyrinth

to fight the Minotaur,

Ariadne gave him a ball of thread which

he unwound as he entered the labyrinth

enabling him to find his way back by

following the thread.

This juxtaposition of themes makes it relatively

easy to see the unwinding of a coiled thread in

its proper relationship to the events by

which the labyrinth itself acquired its unique form.

Our explanation begins with

planets close to Earth and aligned in

the ancient polar configuration along a

single axis, when four symmetrical

discharge streamers radiated explosively

from the planet Venus.

In this phase of instability the discharge took on

a whirling appearance, a form that numerous

ancient cultures recorded alternately as

a swastika, then a more elaborate whorl.

Eventually, the displacement of the

aligned planets produced an irregular

more complex streamer pattern

as Venus and Mars visually

danced around the polar
center in unstable motions.

In that dance, the labyrinthine windings of
the discharge streamers acquired the
appearance of a towering Citadel in the
heavens recorded mythically as the labyrinth.

This will explain why the
towering structure was celebrated as the
dancing ground of Theseus and Ariadne,
literary echoes of the prototypical
warrior hero and mother goddess,
Mars and Venus.

In archetypal terms, the labyrinth
signified a fortress which the hero, be it
Gilgamesh, Heracles, or Theseus, was
required to enter to complete a specific
task, test, or labor.

The investigative value of the labyrinth in this Discourse
and in the episode to follow, is that it
offers an uncompromising test of
predictive ability,
while inviting the goddess and the
warrior to open additional doorways to
broader archetypal symbolism
yet to be explored.

It's rather tough, following two
such accomplished story tellers.

The story that I want to tell though
is one of elegant simplicity.

It was that, a title I
suggested to David Talbott
when I looked at the picture
that was emerging from
an understanding of gravity,
which I spoke about last year,
and as I worked on it I understood that
the universe really is much simpler
then anyone could
have considered.

But then, at the same time, there was
something that occurred in Canada,
a presentation which I
watched with dismay,
called the elegance or the
simplicity of everything.

I'll see if I can get this to..

it says the connection is lost..

Here we go.

So The Elegant Simplicity
of the Electric Universe.

How come so many clever

people can't see it?

Only in the last few months

that I've found out why.

It's an understanding that's

important for everyone,

including all of you here.

Today specialization is

the enemy of science.

It produces more complication

than simplification

because experts mislead

each other with things,

as Tom said: "they don't

know they don't know."

The result is a useless

reflection in a shattered mirror.

So, who am I to be speaking to you about

the elegant simplicity of the universe?

Looking back I can see how

I got into this position,

how I became a boundary

writer of science,

as the science editor of the Canberra

Times dubbed me some years ago.

From the earliest age I was

curious about how things worked,

or read books and investigated
things on my own.

Other kids did the same so I didn't
consider myself exceptionally clever.

Looking back, it seems the event
that separated me from my peers
was being inspired by an extraordinary
story of planetary chaos
by Immanuel Velikovsky and his
book "Worlds in Collision".

This happened while I
was in high school.

So, I began to question many of
the things I was being taught
and when I got to university I think
I was the only physics undergrad
who used to haunt the Anthropology
shelves at the library,
checking to see whether Velikovsky
had cherry-picked his sources
or whether he had made a
real case to be answered.

And I came to the conclusion that he had
made a very good case to be answered.

So what had Velikovsky done?

He'd thrown down a gauntlet

to astronomers that
they rejected by having his
best-selling book burned.

So, book burning didn't
finish centuries ago.

It happened last century.

Velikovsky's heresy
was to publish that
electromagnetism played a dominant
role in the solar system,
particularly during periods
of planetary chaos.

Many years later and shortly
before Velikovsky's passing,
I visited him at his home in
Princeton and discussed this issue
about the electrical
nature of gravity
because this was perhaps the
single most important thing
that the astronomers
threw at him.

That his mechanism
disobeyed Newton's laws.

Once again this is the certainty
that there's only this law,

there's no "what if?" There is some
other aspect to the mechanism?
So, it has taken me all of the intervening
years since then, there's quite a few,
to overcome the education
I received as a student,
to find the few true
pioneers of science
and to relate this to
everyday experience.

I firmly believe that the
Electric Universe is simple
and you could begin to teach
it in primary school.

It's an amazing and engrossing
story which fires the imagination
and the explanations relate
to everyday experience.

The Electric Universe is a cultural,
as well as a scientific, revolution
that has been
millennia in coming.

It allows us to understand,
for the first time,
the obsessive fear of
the planetary gods

and their doomsday weapon,
the mighty Thunderbolt.

The phenomenal thunderbolt of the planetary
gods is the link between our human story
and the science of the
electric universe.

Some of the renowned scientists of the
past like Newton and Faraday,
predicted that electricity is the
secret to understanding gravity
and therefore the universe.

But in the early 20th century,
following the madness of World War,
we reverted to the ancient geometric
religious mysticism of Pythagoras and Plato.

In fact mathematicians were
formerly called geometers.

And wartime established a fire hose of government
funding of science that hasn't ceased.

It has had the
unintended consequences
of paralyzing progress within
huge bureaucratic institutions
and fostering censorship in the
form of anonymous peer review
which stalls even

minor advances.

Paradigm shifts come from individuals and
are resisted vigorously by authorities.

The wartime command to large groups of
scientists to shut up and calculate
has become, with the advent of
computers, shut up and simulate!

Simulations' pretty pictures are routinely
used to persuade non-expert audiences.

Science is now in show business
producing CGI virtual reality
entertainment on big screens.

But computer models can only
reflect back what you put in.

As a scientist, one must attend
to what lies beyond any model.

Here is M74, a perfect example
of elegant simplicity.

It's called the perfect
spiral galaxy.

Cosmologists can't explain
its formation or rotation
without inventing weird stuff like
dark matter and a central black hole.

But adding arbitrary patches to a model
to make it work on a computer screen

is not simplifying and it's

certainly not elegant.

It's generally a sign that your model

is incomplete or just plain wrong.

You'll notice on the picture

the strings of red spots in M74.

They are star birth regions that

are brought out in this image.

I'll discuss this later because

they confirm the Electric Universe.

The definition of elegance for a scientific

theory or solution to a problem is

well-designed, pleasingly

ingenious and simple.

Symmetry and balance are

also often important.

But assessments of ingenuity

and simplicity are subjective,

like an individual's

response to modern art.

Paul Gauguin wrote:

"The history of modern art is also the history

of the progressive loss of art's audience.

Art has increasingly become the concern of the

artist and the bafflement of the public."

So where are the art

critics of modern science
when presented with a chalkboard
covered in mathematical symbols,
most of which are undefined
in any real sense?

Critics of this art
of branded deniers,
as if consensus constitutes
a religious truth.

Only a belief can be denied
and if it's a consensus
belief it ain't science
as Michael Crichton said in
one of these famous speeches.

The late astronomer Halton Arp lamented
that investigative journalism,
or in other words art
criticism, in science is dead.

The Big Bang is the antithesis
of elegance and simplicity
with its random explosions and collisions and
its multiplicity of forces and particles.

Despite this, he is an
authority who said publicly
that everything is not just
simple but astonishingly simple.

Neil Turok, director of the Perimeter Institute
for Theoretical Physics in Waterloo, Canada
speaking on October the
seventh last year..

The astonishing
simplicity of everything,
but that implies you
know everything.

But I will show you that there
are many very basic things
that experts don't
know they don't know.

Neil Turok defined simplicity:

"Simplicity means
concepts which unify.

They bring together disparate
ideas, disparate knowledge,
make sense of them
and simplify."

I agree.

But adding fudge factors like
dark matter and dark energy
is the antithesis of simplicity.

What other disparate
knowledge was canvassed?

Certainly not Halton Arp's

observational research

that shows the universe

is not expanding.

Certainly not peer-reviewed

plasma cosmology

that explains it simply and

predicts so much in cosmology.

Simple concepts are those that

explain as much as we possibly can

with the least possible

number of assumptions.

And I agree, that's a good test.

The problem is how little theoretical

physics actually explains.

Quantum physics has no explanation,

gravity has no explanation

and the two are incompatible.

Theoretical physics, as it

stands today, is very limited.

But as British astrophysicist

Mike Disney shows,

the number of free parameters (assumptions)

in the Big Bang exceeds the measurements.

So consensus Big Bang cosmology fails

this test at the starting gate.

A recent massive supercomputer simulation

produced the universe of galaxies

that seems to match

observations.

Despite using concepts

that are invalid.

So what good are

computer simulations?

With all the free parameters it could

have produced a platypus or koala bear.

Nevertheless, simulations are offered

as experiments and proof of theories.

After describing the

Big Bang, Turok said:

"The universe has turned out

to be stunningly simple.

It's simpler than any of

our models can explain."

But hang on a minute, if none of the

models can explain the simplicity,

surely all of the

models have failed.

Now, here's the astonishingly simple

equation of all known physics.

I would ask, where is life and

consciousness in that equation?

You'll notice that Peter Higgs gets a

mention, the second from the right.

Turok said: "They've
found the Higgs boson"!

No, they didn't!

If the Higgs mechanism
explains masses
it should be able to calculate the mass
ratio of the proton to the electron.

It can't.

And who in this audience
thinks that's simple?

That it allows them to
understand everything.

But here we come to an
important qualifier.

"The grand unified theory is compact
and elegant in mathematical terms."

Turok then launches into numbers,
Pythagoras' theorem, imaginary numbers,
allowing the solution
of any equation
and an enthusiastic endorsement of
mathematics for the rest of the lecture.

But unless each symbol and
operator can be defined..

pardon me,

defined in real physical terms, an
equation is physically meaningless.

Mismatches with theory cause the invention
of ever more particles and forces.

Which violates the claim of
simplicity and elegance.

In fact, mathematics is an art often
applied unscientifically to science.

Unless you have all of the
correct physical concepts
and definitions in your
mathematical model,
the conclusions cannot
be relied upon.

The art becomes surreal.

The genius Johann Wolfgang

Von Goethe wrote:

"Mathematics has the completely false
reputation of yielding infallible conclusions."

So we come to art and surrealism

and the celebrity, Kip Thorne,

Feynman emeritus professor of

theoretical physics in Caltech

who has this to say

about simplicity:

"Simplicity is the touchstone

in finding new physical laws...

if it's elegant, then it's a rough rule
of thumb: you're on the right track."

Thorne was the executive producer
of the sci-fi film Interstellar.

The film blurb says: "His
math guided the creation of
the mesmerizing and the most
accurate simulation ever
of what a black hole
would look like.

And it was the product of the year of work
by 30 people and thousands of computers."

Kip Thorne said: "I think the thing
that makes this film different
is that the science is woven into this film
and into the story from the beginning.

And woven in deeply.

Real science."

Quite the reverse is true, cosmology has
become science fiction entertainment.

There's nothing scientific
about the slide on the right
from Thorne's Wolfgang Pauli
lecture in Zurich in 2011,

"A black hole is made from warped

space . . . and space and time."

But as Steve Crothers has

shown, black hole theory

makes no sense mathematically,

let alone physically.

How do you make a material object out of

two immaterial concepts, space and time?

As science teacher [Evan Camp]

Evan Camp's student asked: "How can

smart people believe this stuff?"

Recently I found the answer

and it shows that our education systems

damage our ability to do science.

The first thing to do, I think Tom touched

on this, is to first know yourself.

The distinguished

doctor Iain McGilchrist

is a psychiatrist, doctor, writer,

former Oxford literary scholar

who wrote: The Master

and his Emissary,

subtitled: The Divided Brain and

the Making of the Western World.

His shorter e-book is: The Divided

Brain and the Search for Meaning,

which I recommend to you.

There are also some
excellent Youtube videos,
interviews with him and
also an RSA animation
from which I will
have a few images.

He points out: The brain is profoundly divided
and this organ is profoundly asymmetric.

And he asked the question:

Why would nature divide brains if
there wasn't some use for that?

He said: It's not true
that one part of the brain
does reason and the other does emotion.

Both are profoundly involved.

It seems the main function
of the corpus callosum
that join, joining fibres between
the left and right hemispheres,
is to inhibit the
other hemisphere.

Something very important
is going on here.

The right hemisphere reacts faster
but inhibits less strongly.

I should point out too that

physically they are different.

One hemisphere is slightly
smaller than the other
and the left hemisphere
is slightly rotated
and the surface convolutions
are different..

And even the chemical signaling
is different on both sides
so they have a different
job to perform.

This is a slide from
the RSA academies,
the Royal Society of Arts
academies in the UK.

I presume you've probably
all seen the animated
swift drawing while
somebody is lecturing.

This is from the YouTube video that
I recommend you to have a look at.

In this he shows that the left hemisphere
is narrowly focused and attends to detail
while the right hemisphere
is more broadly focused,
it's alert and open to

what's going on around.

And he gives an example
of the chicken.

He said: the left hemisphere in the chicken
is looking for the seeds amongst the dirt,
the right hemisphere is making sure the
chicken doesn't become somebody else's lunch.

And I think that's a
good way to look at it.

In other words the left hemisphere is survival,
the right hemisphere is a broad picture
of what's going on around you.

I wrote to Iain McGilchrist and I sent him
a copy of the paper, PDF of the paper
which had actually studied the left and
right hemisphere and image the activity
that goes on when you ask physics
questions, of a student.

And you'll notice that the left hemisphere
lights up like a Christmas tree
and the right hemisphere
is rather passive.

The different colors just referred to different
characteristics of what's being asked.

Algebraic equation representation
is red, the green is periodicity,

energy flow is blue.

This brings me to: we've all
heard of cognitive dissonance,
as if you're presented with something
that you just cannot handle,
it just doesn't make
any sense to you.

And it seems that it's a
result of the differences
between the two
hemispheres of the brain.

The left hemisphere, as I said, has narrow
focus, only sees what it expects to see
and has automatic
machine-like responses.

It's about survival.

Education in science reinforces the
bits rather than the whole picture.

So the left hemisphere is
involved in the training.

It's a vicious cycle because it
focuses on aspects we expect to see.

You get stuck in a
certain way of thinking.

Also the left hemisphere
needs to be in control.

And the left hemisphere people,
that's those who have dominant
left hemisphere, exhibit denial.

We can all think of many
examples of this, I think,
Michael Shermer's visit to our
last meeting as an example.

The right hemisphere: meaning comes
from understanding the whole.

In other words, it's trying
to take in the whole picture.

And being comfortable, and this is important,
with not being able to grasp everything.

You don't need to understand
the creation of the universe.

What's more, he said,
happiness comes from understanding your
connectedness and engagement with the world.

I would say the universe
because that's what the Electric
Universe is about, connectedness.

Left hemisphere, Big Bang cosmology is
consequently, I would say, hope-less.

McGilchrist's e-book is subtitled:
"Why are we so Unhappy?"

And this is an, this is the whole

thing about the Electric Universe,
there is no subject that it shouldn't
touch on if it is a real cosmology.

He says, happiness comes
from social connectedness
and a sense of purpose
beyond the immediate.

I would say that seems to
characterize our conferences.

There is a great
sense of purpose.

Modern goal-oriented
education, on the other hand,
and its constant audit
and inquisition,
turns off the intellectually
adventurous teachers and students.

We don't understand the world by
putting it together bit by bit.

Quite the opposite, in fact.

So, Left Hemisphere Training

The knowledge that is mediated by the left
hemisphere is within a closed system.

This is typical of the scientific
approach of course, you isolate
the small part of something and

then try and analyze that.

It has the advantage

of appearing perfect

but the perfection is bought

ultimately at the price of emptiness.

So you see, the Big Bang

is a closed system.

The universe expanded from a non-physical

point thirteen and a half billion years ago

and increasing entropy

and disorder is expected

but we see increasing order.

The universe is not

a closed system!

Geology is a closed system.

So geologists could simply

extrapolate things seen today

back a few billion years and

make up any story they fancied.

Biology is a closed system.

Each organism is self-contained.

Brain circuitry will

explain consciousness.

Sheldrake and others

show this is invalid.

The closed mechanical

model is wrong!

Einstein's inertial frames

are closed systems.

They have lost all

external references.

You gotta ask, the speed

of light, you know,

inertial reference frame

with respect to what?

Some arbitrary observer.

So modern science is

empty of real meaning.

Left hemisphere dominance

is the safeway.

A way that minimizes risk and

provides a way forward that seemingly

is a more secure and logical

approach to decision making.

The Machine metaphor reduces

things to isolated bits

and loses sight of

the connected whole.

Stars are isolated objects,

galaxies are isolated objects,

we are isolated individuals.

It's chickens, picking

at seeds in the dirt.

Of course, when you're tied
up with this narrow view
you end up with a whole
of mirrors effect.

The more we get
trapped into this,
the more we undercut the things
that might have led us out of it
and we just get reflected back
into more of what we know,
about what we know, about what
we know, about what we know...

So the greatest problem becomes the
things we don't know we don't know.

More information, we
have it in spades
but we get less and
less able to use it,
to understand it, to be wise.

These are Iain

McGilchrist's words.

Instead we go searching in the
crap for signals we expect to see.

That's my words.

"There's a paradoxical

relationship",

Iain says, "as I know

as a psychiatrist,

between the knowledge of the parts

and wisdom about the whole.

It's the machine model that is

supposed to answer everything

but it doesn't."

In other words the

theory of everything.

This is a perfect example

of a hall of mirrors.

This is the large hadron

collider control room.

Experiments are done on computer

screens, it's virtual research.

In our computerized world the virtual

makes something seem more real.

As one scientist said,

sexy images sell!

We see that all the

time in the media.

The picture, however, has become

fragmented and surreal science fiction.

Mistakes no longer mean going

back to the drawing board,

mistakes now need

to be de-bugged.

It creates a classic hall of

mirrors reflecting a single model.

Signals buried in noise become

statistical discoveries and proof.

The computers are programmed to find, deep

in the noise, what they expect to see.

I think the,

the LIGO and the gravitational wave

experiment is a prime example.

Images on a screen become

real discoveries or proof,

the Higgs boson,

gravitational waves.

It illustrates group-think and

left hemisphere dominance,

a blindness to alternatives.

...Sorry...

But paradigm shifts come from

individuals using their mind,

not large teams using computers,

the ultimate black boxes.

They invent new forces and particles

to reclaim control of the model.

The quark, the gluon,

dark energy, dark matter.

So big science is failing.

There have been no fundamental

advances for a century.

It's accepted that the

basis of what we now...

what is now known is

more or less correct.

A Copernican revolution is totally

unthinkable within the current system.

There are not many

differences between

the modern academy and the universities

in the 16th and 17th century

which conformed to the church

and to Aristotle's text.

The symptoms?

Science is non-predictive.

There are continual surprises.

Counter arguments are

ignored or unpublished

and the history of science is sanitized

to give the impression of progress.

What's the remedy?

Evan Camp is a teacher, an

8th grade science teacher

who ran an Electric Universe

group after school.

He presented an outstanding

talk at EU 2013,

Exciting Students with

Unsettled Science.

It's available on the

Thunderbolts.info YouTube channel.

He said: "Every mile you go in the wrong

direction is really a two-mile error.

Unlearning is twice

as hard as learning."

In fact it's much harder than that because

at the end of the first mile you are lost.

Because what you have learned

inhibits new learning

and accelerates forgetting.

This requires an active

remedial process.

It requires a conceptual mediation

program as early as possible.

Such a program has been tested

by Dr. Harry Lyndon in south

Australia, with encouraging results.

He says, the primary goal of science

educators involves helping young people

to acquire scientific knowledge
with greater facility.

To achieve a deeper level of
understanding in their studies
and for these understandings
to be lasting.

It has been
established, however,
that a universal
problem in schooling
concerns the fact that science learning
is evidently difficult for most students.

A general conclusion that
even students who are
successful in examinations
are unable to retain and
apply scientific concepts.

When students move into high school,
many experience disappointment
because the science they are taught
is neither relevant nor engaging
and doesn't connect with their
interests and experiences.

When new information or
ideas disagree or conflict
with what the left

hemisphere already knows,
the left hemisphere inhibits
or denies the new information
and causes accelerated forgetting
of the new knowledge or skill.

It protects all prior knowledge.

Old learning disables
new learning.

According to Lyndon, it's
why old habits die hard.

Old Way/New Way Learning where the old
and the new are repeatedly contrasted
is a method developed by Dr.

Lyndon and a colleague
and it's an innovative
teaching method.

It's a system where the students
actively and repeatedly
contrast the old and the new until
the inhibition is overcome.

It forces the student to
think about thinking.

This is important for
what is to follow.

Because it will help those who
follow the Thunderbolts movement

to understand the
problems others face
when confronted with
a paradigm shift
of the magnitude of the
Electric Universe.

And also some areas of
your own personal denial.

So, cosmology must address the
infinitesimal as well as the infinite.

So let's go to the
heart of the matter.

Because, incredibly,
mass is undefined!

In every textbook
and encyclopedia
the amount of mass is confused
with the amount of matter.

Perhaps because they both
begin with the letter 'M'.

This means that no scientist
understands $E=mc^2$

This confusion allows
particle physicists
to talk of creation and
annihilation of matter

which is impossible without
understanding what matter is.

It's not physics.

$E = mc^2$ is simply

telling us that

that mass is a measure of the
amount of energy held in matter.

Particles have no
mass, we're told.

And with this ignorance the
standard particle model says,
subatomic particles have no
intrinsic mass which is nonsense.

Are they saying protons and electrons
have no rest mass, no energy?

It seems so.

In the standard particle model
mass is provided externally
by a kind of cosmic trickle
of imaginary Higgs bosons.

The total cost of finding
something dubbed the Higgs boson
at the Large Hadron Collider ran over
13 billion dollars in July 2012,
at the running cost of a
billion dollars a year.

That makes it more than 17
billion years, billion dollars
wasted, chasing the green
of the Cheshire cat.

The LHC operates like smashing
countless jumbo jets in the mountains
and picking over the debris
to see how they fly.

But the whole is more than the
sum of the bits, we can see.

We are not dealing
with closed systems.

Even worse, it's like asking
one of Douglas Adams'
telephone hygienists to
do the investigation.

The investigators are
not properly trained.

Energy is undefined.

What you will find in textbooks are
examples of different forms of energy.

The Big Bang is supposed to have
originated from pure energy
which is nonsense when energy only makes
sense in relation to matter in motion,
with respect to

all other matter.

But matter hasn't been defined

in any physical sense

involving sensible

internal movement.

The quantum realm is weird.

It's admitted by leading physicists that

no one understands quantum mechanics.

It's incompatible with Einstein's postulate

of no instantaneous information transfer

and it seems to involve even

the experimenter's thoughts

in the outcome of

some experiments.

Once again, any experiment

is not a closed system

as physicists like to assume.

That is why the quantum

realm appears weird.

Light and the electric force are mysteriously

transferred through empty space.

We have all experienced the

force between two magnets.

What's happening in the

space between them?

The pioneers of electromagnetism

knew there has to be a medium

to transfer the electric force.

They called it the ether.

The ether has to be an electrically

polarizable medium that fills the universe.

In that way you can daisy-chain

the electric force directly.

It's a longitudinal force.

And applying the speed of light limit

to that makes no sense whatsoever

because light is a wave motion.

I think I've said before that's like the

difference between pulling on a rope

and feeling the tug at the

other end almost instantly,

and waving one end of the rope and waiting

for the wave to get to the other end.

Light is a slow process

in the universe.

So if we have this ether that fills

the universe, space is full.

There's no such thing

as a perfect vacuum.

Einstein knew there has to be an ether but

his postulates somehow did away with it.

He admitted that his theory

of relativity would fail

if the Earth's motion through

the ether were detected.

That's because his inertial frames of

reference would not be equivalent.

It would be like having one observer

experiencing a gentle breeze from the ether wind

while another might be

suffering a howling gale.

As it turns out, Dayton Miller repeated

the Michelson-Morley ether experiments

far more rigorously and

at different elevations.

He found an ether drift.

Sadly, left hemisphere training

denied and quickly forgot this fact.

So let's have a look at the

standard particle model.

An atom, once a promise of

fundamental simplicity,

is really a nucleus within a hazy

probabilistic fog of electrons.

The nucleus is some protons

and neutrons held together

by the mysterious short range

nuclear or strong force.

The particles in the
nucleus have a hidden,
unknown number of weird
undetectable bits inside.
These bits are appearing
and disappearing
in defiance of a principle of science
that miracles are forbidden.

Meanwhile, a recent report
from the Large Hadron Collider
suggests new findings that
don't fit this model.

Here's a snapshot of a proton
by Professor Matthew Strassler.

He writes: "...imagine all of the quarks
(up, down, and strange -- u, d, s),
antiquarks (u, d, s with a
bar on top), and gluons (g),
zipping around near
the speed of light,
banging into each other, and
appearing and disappearing."

So, a proton is said to be some
quarks held together by some gluons
which are themselves the quantized
manifestations of the strong force.

There is no mention of how a
force manifests as a particle.

It gets much worse.

A gluon is really one of
several colors of gluon.

But it also has the simultaneous
property of anti-color.

Gluons mediate the
interaction between quarks
but they also mediate the interaction
between themselves and quarks.

That's right, gluons
are the strong force
but they also experience
the strong force.

Happily for the physicists, quarks
are unobservable in principle
because they only exist
inside the nucleon.

It's very convenient..

This is simple?

You can forget elegance.

This is extreme, narrow, left
hemisphere focus on a model
with no basic definitions to make
sense of the words being used.

Andrew Pickering, the author
of "Constructing Quarks",
it is a sociological study
of particle physics
and it's interesting book, says:
"There's no obligation on anyone
to take account of what 20th
century science has to say.

To listen too closely to scientists may
be simply to stifle the imagination,"
that is the right hemisphere.

"Worldviews are cultural products, there
is no need to be intimidated by them."

We come to the Electric
Universe model of the atom.

The electrically neutral atom
is made of charged particles,
positive and negative
in equal numbers,
together with a number of neutral
particles called neutrons.

Stating the obvious.

All subatomic particles are real
with real locations in space,
it's not a probabilistic fog.

There is a polarizable ether which transmits

force and carries electromagnetic waves.

The universe is full of an electrically
neutral perfect fluid of neutral particles
which passes through atoms and celestial
bodies practically as if they weren't there.

Neutrinos fit this description.

So, the Electric Universe then defines
what it means by energy and mass.

Energy is matter in motion relative to
the matter in the rest of the universe.

It used to be said, in
relation to the fixed stars.

This is not a closed
system approach.

It is a unifying relational concept
first articulated by Ernst Mach.

So we define mass:

Mass is a measure of particle
distortion instead of acceleration
in response to the electric forces
from all other matter in the universe.

It's a bit like pushing a
balloon full of water.

It will tend to distort,
rather than move.

And it's the same with these orbital systems

of electrons and protons and so on.

Once again, this conforms
with Ernst Mach's principle.

Neutrons may not exist
in the nucleus.

If so, only two particles are necessary
to build all of the elements.

This idea came from Edwin Kaal
who I'm pleased to say is here
and will be presenting
in the breakout room.

And the problem for physicists
is how do you hold together
all of the positive
charges in the nucleus,
they should repel one
another very powerfully.

The repulsion of those
positive charged protons
should prevent it from
forming in the first place.

However, atomic nuclei seem to
require neutrons for stability.

That's because when a
radioactive atom nucleus decays
neutral particles are sometimes

observed to leave the nucleus
and exist for a few minutes
before further decaying into
an electron and a proton.

So it was assumed, such a neutral
particle pre-existed in the nucleus.

The "what if" question
wasn't asked.

That maybe that wasn't so.

This is an assumption that
still does not explain
how the positive nucleus
remains cohesive.

So a special short-range strong
nuclear force was invented.

The proliferation of
forces and particles.

Edwin Kaal suggested
a simpler solution.

If the electrons remain as
discrete particles in the nucleus,
they will tend to
arrange themselves
to, on average, seat equidistant
between the protons;
because the distance between

the protons is greater than
that between each proton and
a neighboring electron,
the attractive electric force
between the proton and electron,
sorry if it's too fast,
will be four times greater
than the repulsive force.

This simple hypothesis removes the need for
an extra strong force within the nucleus.

It's much simpler.

And then it seems that
neutrons are short-lived,
metastable resonance of a closely
bound proton and electron.

This is simple.

The Electric Universe simply proposes
structure within structure, repeated pattern.

To understand magnetism and gravity
we must go to the heart of matter
a similar approach to that
of Andre Marie Ampere,
Carl Friedrich Gauss, Wilhelm
Weber and Walther Ritz,
who considered the behavior of positive and
negative charged particles of different mass

with great success but were
ignored for political reasons.

Chiefly, they weren't

English, I think.

Here's a simple hypothesis.

The electron and

proton have stable

resonant orbital structures

of smaller charged particles.

In that case,

the positron, that is the antiparticles,

and anti proton are mirror particles.

They're not antiparticles,

they're mirrors.

There is no antimatter, no

creation or annihilation.

But this requires that

there be an ether

of composite neutral particles of

vanishingly small mass, the neutrinos.

Neutrinos must be quite complex

inside but totally collapsed

so that they can accept energy and

then become a particle and its mirror.

But there's nothing,

it is just assumed that when these

particles seem to disappear,
that they're annihilated,
the matter has disappeared.

That's not so.

So the ether must be not matter
of vanishingly small mass
composed of all the sub particles needed
to split into an electron and a positron
for example, when subjected to the
appropriate energy, electromagnetic energy.

For stability,
and this is one of the
stumbling blocks, of course,
for particle physicists
to go this way,
is that the electric
force must act
between the tiny particles
within the atom instantly.

No speed of light delay.

The two stable particles --
the electron and the proton,
if we assume the neutron is
just a metastable particle,
form 254 stable nuclides
plus another 85 metastable,

that is radioactive nuclides,

for a total of 339.

So from this simple resonant systems

of structure within structure

we have all of the

materials we need to see,

to make what we see in

the world around us.

When those nuclei combine with the

requisite number of negative electrons

to form atoms and molecules, the

possibilities are boundless

in the living world.

What does this mean?

Only a single force is necessary, the

powerful instantaneous electric force.

The phenomenal strength of the

naked electric force can be

judged by the simple

illustration in the lower left.

This shows that if the charge; passing through

two 120 watt light bulbs in one second,

were to be transferred

equally to two metal plates,

the repulsive force between those

plates would equal 1 million tons.

So it's critical that the electric
force is a balanced force,
attractive or repulsive.

These two propositions are the epitome
of elegant simplicity balance.

The little diagram
there on the left,
extreme left at the top, shows the
attraction between positive and negative
and the repulsion
between like-particles.

There are two forms of the
electric force that we experience.

One is the electrostatic, we have
separated charge some distance apart,
and the electric dipole where the distance
between the two charges becomes so small
that the field is altered and
you get a different effect
called the dipole field.

So it just depends on the degree of
separation of a positive and negative charge.

It's a difference in scale.

On our scale we experience the dipole
field of atomic electric fields
and subatomic electric fields in

the form of magnetism and gravity.

They are dipole fields.

So, both forms of the electrostatic

and the dipole field

occur between atoms and is

responsible for chemistry.

The e-force operates between all of the

particles and sub particles within each atom.

In close proximity this can

result in distortion of the atoms

to form electric

dipoles themselves.

Which can result in the

attraction to form a molecule

or they may enter a new resonant dance

by sharing an electron as chemistry.

The dipole distorting action on electrons

and protons produces dipolar magnetism.

The diagram there is actually,

I made a mistake, the positive and negative

on the left and right should be reversed.

But this just shows

that if you...

just try this thing here...

if you have an electric field

operating on a particle here,

charged particle here,
and accelerating it
and on the opposite
side decelerating it,
the result will be an elliptical orbit
with the nucleus at one of the focuses.

And the result of this is that
you get a transverse dipole
and that transverse dipole is
shown there as the magnetic force
because if you have two
current-carrying wires,
where the electric field in the wire is
causing this distortion in electrons,
then the dipoles are aligned
so they tend to attract
and we know that current
flowing down two wires
in the same direction attract,
in the opposite way they repel.

OK, so. And the other
thing is that,
I mentioned the ultra-week
dipolar gravity.

And this is the diagram, what
happens to an atom in that case.

The gravitational field
cannot be shielded from,
so the gravitational force
operates on the heavy nucleus
so that it falls towards one
of the focuses of the ellipse.

This time it's oriented radially
towards the surface of the body.

But the interesting thing
about that is that
once you've said that,
this means that
the body like the Earth and the
Moon, which are shown here,
the negative poles on both
bodies are facing outwards
which means they're
repelling one another.

So it means that the, it's long-range
repulsive, short-range attractive.

We, on the surface of the earth, are
like iron filings. We don't care
which magnet, we go to adjust,
the nearest one will do.

The gravitational mass of the distant
galaxies has a fundamental influence

over the motion of the
bodies in the solar system
and this is actually shown by precession
of the perihelion of the planets
which is tied to the distant stars and
not to the Sun or general relativity.

Because general relativity doesn't
have a reference frame like that.

Short-term changes in the
Earth's magnetic field
that occur over periods
of just years or decades
have now been shown in new
research to have a very close
relationship with
changes in gravity.

The two are very
similar, similar forces.

There is no gravitational
collapse in space,
no black hole
swallowing everything.

It is the electromagnetic force alone
that coalesces matter in deep space.

So the assumption that gravity was the controlling
force on the large-scale is incorrect.

There's no need for a Big Bang to
separate everything initially,
gravity is a balanced force like
magnetism and cannot form neutron stars
or other fanciful super-condensed
celestial objects.

A planet's gravity is established at its
birth by powerful electromagnetic forces.

Once the body is formed and the
charge on the surface is established,
the gravitational field is set
by both the surface charge
and the initial coalescence
by electromagnetic forces.

So the outcome of
all that is that
all matter in the local universe is
connected by the electric force instantly.

That's Mach's principle.

The origin of mass and
quantum spooky connection.

Because this force is instantaneous, this
so called, entanglement and non-locality
suddenly has a
simple explanation.

And energy is a measure of motion with respect

to the matter in the rest of the universe.

Mass is a measure of the energy stored
in the orbital motion inside a particle.

And simultaneity means there is a universal
time and three-dimensional space.

We return to the sanity and
simplicity of classical physics.

These matter resonances
are interesting too
because having an
orbital structure
allows resonant instantaneous
connections and complex interactions
which explains weird
quantum behavior.

The important thing is that
the electron and proton
have an orbital charge
structure like atoms
which explains their internal
energy and their magnetic moment.

And distortion in an electric field appears as
an increase in mass rather than acceleration.

Quantum tunneling

In transistors electrons face a barrier
like the illustration in the diagram.

It's like having to carry
a weight over a hill
but in a weird quantum
phenomenon called tunneling
the electron passes through that
barrier as if there's a tunnel.

The Electric Universe model
of the electron and proton,
having an orbital structure of
oppositely charged particles,
allows us to see that the hill or
the repulsive electrical force
between similar charges can instantly
disappear or become a downhill race.

The reason is that the force
between two similar particles
can become attractive
instead of repulsive
if you get the particles together
at just the right moment.

In chemistry this resonance is achieved
by the use of heavy metal catalyst
which has numerous internal
subatomic resonances.

The same catalytic process is available,
in my opinion, for nuclear fusion.

So called warm fusion is
possible by nuclear chemistry,
catalyzing the nuclei to
attract instead of repel.

So catalytic chemistry is
possible, in my opinion,
in the photospheric
plasma of all bright stars
where the nuclei are
separated from the electrons
and can actually come close
together in the presence
of the heavy elements
we see in the spectrum.

And you've gotta ask the question then,
is this the path to the future power?
Like the Sun.

But only "unlike the sun" that
is believed by present science.

In this way all-stars generate the
heavy elements in their photospheres
where we detect them
in their spectra.

Rare exploding super novae are the most
ineffectual production means imaginable.

Because having produced it you

then disperse it into deep space.

There's also an unsuspected resonant
means of connection in living systems.

The morphic field of Rupert
Sheldrake, the mind-body connection,
consciousness, subtle energies.

The Electric Universe model
explains biological transmutations
at body temperature as demonstrated by Dr.
Louis Kervran.

His is a clear demonstration
of this simple process.

Is light a wave or a particle?

If so, what's waving?

Einstein did away with
a medium to waive.

Or is light a
particle, a photon?

It can't be both, a
wave and a particle.

You'll notice they merely mouthed a
term that it's particle-like, they say.

It's a meaningless
use of language.

If so, according to Einstein, to travel at
the speed of light it must have zero mass.

But a particle of zero

mass has no energy.

You can't multiply $0 \times \text{infinity}$

and get a real number.

And if it's got 0 mass it

can't be affected by gravity

so there can be no

gravitational lensing.

Lensing occurs as a simple atmospheric

diffraction effect in the ether.

It's like an atmosphere

around the body.

Evidence from stars at the galactic

center show no gravitational lensing

as expected from

standard theory.

Clearly, we depend on light

to observe the universe

but we don't understand light.

Photons don't exist.

Light is a transverse electrical

disturbance in the ether.

And the ether must be a dielectric medium

to transfer an electrical disturbance.

The wave carries energy

through the medium..

..catch up here..

..and the energy is absorbed by the first atom that is in instantaneous resonance with the sending atom.

It gives the appearance that a photon has traveled between the sender and the receiver.

It's appearance only.

Talking about light brings us to cosmological redshift.

Hubble found, the fainter and smaller a galaxy appeared -- the higher was its redshift.

In the diagram you can see the spectral lines of hydrogen move progressively to the red end of the spectrum as the distance is thought to increase.

The redshift was simply assumed to be due to velocity away from us by analogy with the Doppler shift of sound.

Hubble's law is considered the first observational basis for the expansion of the universe.

But ironically, Hubble thought
it the least likely explanation.
He felt, it more likely
indicated some new physics.
So it was Hubble's professional
astronomer assistant,
Halton C. Arp, who later
proved this to be so.
If the redshift is not
simply a Doppler effect,
Hubble wrote, the region observed
appears as a small homogeneous
but insignificant portion of the universe
extended indefinitely both in space and time.
Recently and surprisingly more distant
galaxies seem to be accelerating away from us.
This discovery won the Nobel
Prize and gave rise to the need
for huge amounts of mysterious dark
energy to power the acceleration.
I read about that discovery
on October the sixth 2011.
The discovery of the acceleration
of the expanding universe
is an interpretation based on total
ignorance of the real nature of stars

and the standard candle which
was used as the measurement
to determine the distance away.

So it's gratifying to find support once
more in a report this month titled:

"Could a new type of supernova
eliminate dark energy?"

It has been found that the near-UV
light from the most distant supernovae
is brighter than
the closer ones.

In other words, there's something going
on at the atomic and subatomic level.

Of course, this is
unexpected and unexplained.

The diagram on the left shows the
difference between the Big Bang universe
and the Plasma Universe.

It's easy to see which
one is simpler.

Intrinsic redshift and Dr.

Halton Arp

(Hubble's assistant who was
dubbed the modern Galileo).

He found redshifts, quasars, physically
connected to and in front of,

high redshift quasars rather,
physically connected to
and in front of low
redshift active galaxies.

This observation of a quasar between
the galaxies NGC 73 19 and the Earth
is impossible if the quasars are over
90 times farther away than the galaxy.

So, Hubble was right.

Something is wrong with physics.

Arp showed the redshift happened
in small jumps or quanta
which indicates a
subatomic effect.

But subatomic, these
quantum effects
are supposed to only occur
at the subatomic level,
here we've got occurring
on the galactic.

This requires, once again,
the electric force to be operating at
ultra-high speed, instantaneously.

So, quasars are born at high
speed and with low redshift.

This is Arp's diagram, you see

the parent galaxy in the center.

This is one here.

And the high redshift quasars, and the redshift decreases as they move away.

Initially their

velocity is very high,

they are faint,

highly red-shifted

and traveling at the fair

fraction of the speed of light.

Over time they gain in mass.

This is interesting.

That means that energy is being

supplied to the matter in the quasar,

the mass is increasing.

So that eventually they

can actually become

a turnaround here and

become a companion galaxy.

This is an example of another

path that they can take

where you end up with another

Bi Lac objects as it's called,

producing multiple

galaxies here.

So there is a genealogy,

if you like, of galaxies.

The idea that the

Andromeda galaxy

is going to crash into our galaxy

in the future, is rubbish.

It's based on the idea that

Andromeda's blue shift,

with respect to us, means

that it's approaching us.

No, just means that

it's older than us.

So the Electric

Universe explains this.

Quasars are born at high

speed and with low mass.

They escape the forces of the

electromagnetic galactic nucleus,

that's the parent

galaxy, as neutrons.

And because the neutrons

have no charge,

they can escape the intense

electromagnetic forces

that hold that plasmoid in

the center of the galaxy.

They have enough time

to get away from the,
those powerful forces and then they
decompose into electrons and protons
which are the forerunners
of hydrogen.

So, as the electrical energy pours into
the quasar its mass and brightness
increases and it slows down
to become a companion galaxy.

So this was an explanation, the only
explanation for Halton Arp's observations.

Quasars are not the brightest and
most distant objects in the universe.

They are among the youngest
and closest, so they..

the objects in the mirror really
are closer than they appear.

The visible universe is smaller
than we have been told.

So the universe, the real
universe, is in balance.

It is not expanding.

This is important for
understanding of gravity.

Gravity cannot be simply
an attractive force.

The universe is of
unknown age and extent,
the origin of the
universe is unknown,
there is a universal now and space
has three physical dimensions.

This brings everything back down
to, as Tom was pointing out,
conditions as we
experience it on Earth.

Dark Matter Galaxies

Galaxies are treated as
isolated objects in space
produced somehow by attractive
gravity in an expanding universe.

Their rotation and structure
remains a mystery.

They're made of eighty percent
invisible dark matter.

Tom got a good introduction to
that story about dark matter.

Dark matter has been described as
an invisible elephant in the room.

You know it's there by the dent
it makes in the floorboards.

Dark matter is only inferred theoretically

by using our experience of gravity on earth
and projecting it onto the
rest of the universe.

Once again it's the
geocentric problem.

We look at the gravity on earth and
then we just extrapolate outwards.

Because that's all
mathematicians can do.

It needs an impossible gravitational
black hole in the center,
black holes exist theoretically in
asymptotically flat space in an empty universe.

You cannot superimpose any other matter
in such a hypothetical universe.

Black holes don't exist!

Yet some sport long thin high-velocity
jets over intergalactic distances.

There's no satisfactory theoretical
explanation for these jets.

This is the standard, taking
the standard approach.

Electric Galaxies

On the other hand,

Plasma Cosmology shows
experimentally and observationally

that galaxies are governed
by electromagnetic forces.
Tony Peratt said that
they introduced gravity
into their super computer runs and
it made no difference whatsoever.

Spirals rotate as
simple Faraday motors,
that's why that curve is flat.

It's as if you've got a plate and
you're just spinning the plate.

Stars are born in and trace
the spiral power lines.

Where there is a higher
density of gas and dust,
it's typical of an electrical
discharge, where the density of the
material becomes greater, the
discharge becomes more filamentary.

Stars form along those
pinched current filaments.

There are no black holes.

It's a compact high-energy
plasmoid and this
comes down to peer-reviewed

Plasma Cosmology.

Their apparent mass is due to the
relationship between mass and energy.

If $e = mc^2$, if you got a high concentration
of energy in that tiny plasmoid,
it will exhibit a
considerable mass.

It's certainly not a black hole.

The other thing is that galaxies
lineup axially showing the electrical
connectedness because they're threaded
like Catherine wheels on a wire.

And that wire is one of these intergalactic
Birkeland current filaments.

So let's look at stars.

We've done galaxies,
let's look at stars.

Eddington, Arthur Eddington
had the temerity to say,
"it should not be too difficult to
understand something as simple as a star".

This is typical left hemisphere.

His quote is typical.

Isolate, simplify and
ignore a global view
because if you look at coronas, sunspots,
flares, magnetic cycles etc.

his gas model doesn't

predict any of them.

And the alternatives

are not explored.

He dismisses electrical

aspects in a few paragraphs.

The failure of this approach is

shown by continual complications

with each new discovery.

It's treated as an isolated

gravitating ball of gas.

Conventionally, it's a body

that satisfies 3 conditions.

It's made of hydrogen

plus a few impurities,

having core of the lightest element

is the most fanciful assumption.

It's needed to allow the thermonuclear

energy model to be viable.

That also requires a hypothetical

extreme conditions in the core.

It's only required by the thermonuclear

theory and is completely untestable.

It also has,

I mean that's unverifiable,

and also the sequence of nuclear

reactions that take place in the core

cannot be verified.

They're very complex and requires quantum

tunneling which I referred to earlier,

and what's more, there's a more complex

different story for different stars.

It's certainly not simple.

It's an explosive model

because one of the reactions

is sensitive to the temperature

to the fifth power.

It also needs an

unknown radiation zone

to break down the x-rays

from the nuclear core.

There's no body known

that has a radiation

or the energy transferred through

the body, through a radiation zone.

So this is hypothetical.

And also from the point of view

of life on Earth and so on

it has a restrictive and variable

'Goldilocks zones' distance from the star.

It's not the best place to

nurture life in the universe.

Impossible Stars

Formation by gravitational
accretion doesn't work.

It's never been explained
satisfactorily.

It has hydrogen, the lightest
element in the core,
the model doesn't predict the
observed features of behavior,
has different models for white
dwarfs, neutron stars, etc
and the life story of stars is
super complicated and untestable.

And some stars do strange things,
they switch from one place to another
without going through
the transition stages.

Renowned scientists like Eddington
who made grave mistakes
about the Sun and Einstein's
general relativity,
he went out explicitly to prove Einstein
correct -- not to test his theory,
continue to haunt us today.

It gives the light to the belief
that science is self-correcting.

It is, oh sorry, it is not, given the way in which science is done today.

As Eddington said, if there's no other way out we may have to suppose that bright line spectra in the star are produced by electric discharges.

The clues were there but "what if" was not followed through.

Herschel reveals a ribbon of future stars.

This was reported on March the 30th this year.

So this is a very recent picture.

Stars and planets are formed by powerful electromagnetic forces like pearls on a cosmic string.

This is a quote from an earlier report.

Gravity can be ignored.

In Plasma Cosmology there's no gravitational accretion.

There's no way you can form a string like that using gravity.

Gravity is a central force and material tends to come in to a center.

It doesn't form a string.

But this recent report says,

this is important,

stars are shot out of the filaments

by a slingshot mechanism.

And there's a diagram here which

shows the filaments moving around

like those in the plasma

ball, they snake about.

The stars having been formed in

this filament are left behind

as the filament moves on

and these stars are shot out.

And it's interesting because plasma..

Tony Peratt described to us

once the effects seen in high

energy discharge experiments

as these plasmoids

scattered like buckshot.

Now it's not only stars

that are formed here,

it's all solid bodies

including planets.

And they may be captured by the

stars to form the weird assortment,

over three-and-a-half

thousand of them, so far,
of exo-planetary systems
that have been observed.

New stars also may fission to produce
hot Jupiters in very close orbits
and achieve electrical stability with
their changing electrical environment.

The movement of the filaments, as I
said, is like those in the plasma ball.

Heavy elements convect
into a cool core.

This is interesting because these,
those blue filaments you saw before
are the coldest part of the cloud and
this is where the stars are forming.

The traditional view is that the stars
had to form by gravitational collapse
and not lose any of the
heat of the collapse,
otherwise they couldn't
start their nuclear fires.

This doesn't require
any of that.

It was one of the
surprises for theorists.

Is that the,

the blue filament I mentioned is
the coldest part of the cloud
and contains eight hundred
times as much mass as the Sun.

This is not a surprise
for plasma cosmologists.

So, all stars have a
cool planetary core.

Stars and many planets
are born together
along the same electrical
umbilical cord.

Other planets and moons are born later
in electrical fissioning events
and capture events.

Hydrogen and helium tend to
form the outermost atmosphere.

This is a diagram showing the
actual form of the filaments.

You'll notice the pattern there.

This is showing an experimental pattern
of a discharge on an insulating plate.

And this shows a Martian
electrical scar.

You can see the similarities.

As the cosmic

lightning bolt fades,
stars and planets are captured
into planetary systems.

So, electric stars,
they remain a gaseous
electric discharge phenomena
like spherical searchlights,
following their birth.

In fact some of the
characteristics of the
photospheres are like
that of a searchlight.

All bright stars catalytically
produce heavy elements
in the photospheric
plasma discharges.

Red stars have gigantic
anode sheaths.

Sorry, got the right
picture there.

Plasma discharges adjust to their
environment by moving electrical barriers
called plasma sheaths or
misleadingly, magnetospheres,
because they trap the
magnetic fields inside.

If Jupiter's plasma
sheath would lit up
it would appear the size of the full
Moon in the sky, at opposition.
And its Galilean moons would be
orbiting comfortably inside it.
So red dwarfs are not dwarfs
and their bloated glowing anode sheaths
are the cosmic wombs for life.
Because inside that
radiant red sphere
all satellites receive uniform heat
and light over their entire surfaces.
It doesn't matter how they're moving
or rotating, that will be the case.
Of course this poses a
problem for the SETI project
because radio waves cannot penetrate
the glowing plasma sheath.
So if these are the
wombs of life,
we don't have any way of radio
communication with them.
But of course, gravity
can pass through.
White dwarfs are not dwarfs at all, they're

just stars with no bright photosphere.

And a faint white

coronal discharge.

These are some of the planetary
systems that have been discovered.

You can see that it's
quite a shambles.

So as I said before, at the galactic
scale electromagnetic forces
form these gigantic Birkeland
currents and they dominate.

At the planetary scale, inside the
star's protective plasma sheath,
gravity dominates.

So you have to choose the
region you're talking about
when you talk, when you try to apply
your model to stars, galaxies and so on.

In fact, the inside the
star's protective sheath,
with gravity dominating
and it dominates because it
cannot be electrically shielded
so the impact from all of the
other stars in the universe
is acting like a

pressure in on the,
the planets moving
around the Sun.

In fact this repulsive force
from the rest of the universe
can reverse the Earth's motion
about the Sun in 6 months.

That is 6 sextillion tons
by 140,000 miles an hour.

So it gives you an
idea of the impact.

Then the Thunderbolts of the
Gods operate to modify masses..
oh, sorry..

In planetary systems the electric force comes
into play only when plasma sheaths collide
because then the electrical
insulation breaks down.

And the electric current flows
between the two bodies.

Then the Thunderbolts of the Gods operate
to modify masses and change orbits
and to quickly
reestablish order.

This is one of the problems
that Velikovsky faced,

how do you explain events,
within the memory of mankind,
of chaos in the solar system and
it looks like clockwork today.

This is the answer, you have to
apply the electric model of gravity
to be able to do this.

So Velikovsky was right.

Electricity and magnetism
are involved in the
celestial mechanism.

Changing the surface
charge on a planet

Change modifies the strength of
the internal electric dipole
which is responsible for the
planet's mass and gravity.

And the changes to both bodies, which
I've shown in previous YouTube talks,
tends to move the two bodies
apart, which is very convenient..

This overcomes the objections
of the Harvard book burners
to Velikovsky's

Worlds in Collision.

However, it doesn't detract from the

title to say that Worlds didn't collide.

It was an electrical
clash of the titans.

There's Velikovsky
with his great book.

So what we have now in science
is a mythical journey.

It is a rehash of
a creation myth.

The Earth was born and for four-and-a-half
billion has remained roughly where it is now.

Long ago the Earth had a few
massive impacts to birth the Moon
and almost wipe out life
on Earth at intervals.

Ironically, planetary collisions
have been found essential
66 years after Velikovsk's book
Worlds in Collision was burned.

Thousands of exo-planetary
systems don't fit the story.

There are stars that shouldn't exist, hot
Jupiters that orbit the star in hours or days,
backward orbits
and polar orbits.

Life on earth remains

unexplained.

The odds against random events producing
life are practically infinite.

The rest of the story is once-upon-a-time,
fragmented, boring and non-predictive.

We are an isolated and
improbable accident.

That's why we have difficulty imagining
life elsewhere in the universe.

Alan Alda complains, everybody
is ignorant about science.

Alda was 11 years a host of
Scientific American Frontiers on PBS
and he helped inspire the creation of
the Center for Communicating Science
at Stony Brook in 2009.

Is it any wonder?

When this is the face
of science today.

There is no real
meaning or morality
in modern mechanistic science to
engage students or the public.

Everyone thinks it
is all mathematics.

It saddens me to see so much talent

wasted in the pursuit of myth,
hunting for dark matter.

Their heads have
been filled with it.

Our REAL journey.

You're looking for the nearest
exoplanet -- we're standing on it.

Pay attention to the oldest
stories of the celestial gods
who created the skies
and land we see today.

Yorro Yorro is a
research book about the
Kimberley region, Aborigines
in western Australia.

And they, some of their
stories are so close to
the reconstruction of the
Saturnian polar configuration
that it's almost scary.

And these are the words from the elders and
they were very precise in their words.

It says, in the beginning
people saw before the Ice Age,
that the Moon, Sun and some of
the stars had been on Earth.

In other words, they
were very close.

One song told about a flood,
long before the last,
that was brought on by
a star with trails.

The symbols that testify to these
events are still in the Kimberley.

The Wandjina creator-figure,
which is the one you can see on
the front of the book there,
that features are explained.

All rings around the head
represent clouds and lightning.

The big spirit Wandjina
have large eyes.

This is the eye-god motive that David
Talbott has explained at length.

They never have a mouth nor ears
and the line between the eyes
indicates where the power flows
down and it's not a nose.

And it has, it looks
like a hollow tube,
which, in the plasma column scenario of
the Saturnian story, is accurate.

Wallanganda, the
Creator of Wandjina,
did not create with his hands, only
through his voice, with power.

It reminds me of, "in the
beginning was the Word".

Andy Hall has recently explained that the
overpressure from supersonic shock-waves,
that is from the electrical blast
that striked the surface of the body,
are powerful enough
to form mountains.

Rock flows until the overpressure drops
whereupon it solidifies instantly
but retains an imprint
of the shock-wave.

Those shock-waves would have
produced harmonics and overtones,
a global sound like a
symphony of giant trumpets.

There's many traditions about the
creation being associated with sound.

This little book I bought in Central
Australia on a visit to Uluru,
that great red rock which looks
just like an asteroid has landed.

And it also tells a story by
these people in the Kimberleys
but is illustrated by children
and it's very quaint.

Yet the story is by David
More Jolly, who's the elder,
It tells of two suns in the sky
who lived in hollow
logs, plasma columns.

There is a period of
intense heat from them.

Then one sun is attacked with
a spear, the thunderbolt,
and is bitten by a
snake, cometary Venus,
who lives in the sky.

The little sun gets snagged in
the fog of a celestial tree
which is the Axis Mundi thing.

The Tree of Life,
the Celestial Tree.

So this is an extension of the forensic
technique that Velikovsky introduced.

He never referred to the
Australian Aborigines
but some of their memories

are, seem to be so accurate
that they are a better source
than some of the more,
so-called, advanced
cultural reports.

All of these story elements
makes sense to mytho-historians
and to the leading plasma cosmologist and
colleague of Hannes Alfvén -- Tony Peratt.

Accept the best evidence
regardless of its fit
with modern consensus science
and man-made theoretical laws.

It is better to adopt the
forensic science approach
to the evidence for past
events that cannot be repeated
than to rely on theoretical science
which is based on sets of beliefs
and a geocentric perspective.

Use that evidence to develop
a more holistic science
that brings a phenomenal
real journey to light.

To be real and useful,
science must be holistic.

The Electric Universe

is a holistic science

that applies seamlessly from the

galactic to the earthly to the biosphere

and on down to

subatomic particles.

Humanity's dramatic experience of the

electrical nature of celestial mechanics

would make an awe inspiring

and frightening IMAX movie

that would make science fiction

seem a pale shadow in comparison.

But in my opinion, once understood,

there will be no irrational urge

to revisit doomsday upon

each other and the earth

under the unrecognized banners of the

prehistoric warring planetary gods.

Planets bear the scars of their electrical

birth and past encounters on their faces.

Apollo astronauts commented on the

fresh appearance of lunar craters,

the event that caused the great

gush across the face of Mars

appears in stories

from ancient cultures.

These are just yesterday

in geological time.

I recommend you to see episode

II Symbols of an Alien Sky,

The Lightning Scarred

Planet Mars.

We may understand our history and place in

the electric universe for the this time.

This is singularly important

for our sense of well-being.

It gives dramatic new

meaning to our lives

in a sense of responsibility

for our jewel of a planet.

Without this sense we probably

have no future on Earth.

Also in the event,

myth becomes science.

There was a unique myth-making

period and all surviving cultures

required their stories to be

faithfully transmitted for millennia,

such was their importance.

We look at these enigmatic rock art

figures from the remote Kimberley region

in Western Australia and see only their

strange, haunting and artistic beauty.

And it was rather ironic

that just a week or so ago,

and David Novak was there

to see it too I think,

they had the vivid

festival in Sydney

where they project images

onto public buildings

and of course the Opera House's the

the most public building in Sydney

and this was a presentation

of Wandjina figures.

I mean they are haunting and

I think they probably evoke

some kind of a

subconscious connection

but how much more would they mean if

people really understood their origin.

We need to give more credit

to the indigenous people.

Now Even Camp said that

one of the unique aspects of the Electric

Universe theory is that it's good storytelling.

It answers all three questions,

what if..

What if the sky was
different in the past?

What if Saturn was
worshipped as the Sun?

What if there were electrical
discharges between planets?

What if there were electric
discharges between planets?

Today, we have
meteorites from Mars.

What if Lichtenberg figures explain
the scars on Mars and Earth?

Show students pictures of
cratering on different bodies
and asks students to explain
them from two points of view.

The Standard Model needs
different explanations for each.

The Electric Universe, on the other hand,
has a single explanation for them all.

Then, there is the story
of the dissidents.

If only Birkeland
hadn't been ignored.

Hannes Alfvén had
been listened to.

Halton Arp's research

hadn't been dismissed.

A pixar rule for storytelling

number 16: what are the stakes?

Give us reasons to

support the character.

What happens if

they don't succeed?

Stack the odds against them!

What of the future

if this goes on?

We continue wasting money and careers

looking for things that don't exist.

We cripple students by not

training them to think.

We may have no future

on this planet.

As Evan Camp says,

"The power of eliciting engagement is to get

people to come to their own conclusions."

Thinking is going to be

the future of education.

So, our Electric Universe Future.

Mahatma Gandhi said,

"There is a force in the universe which,

if we permit it, will flow through us

and produce miraculous results."

The Electric Universe

is an inspiring story

that motivates students both

conceptually and artistically,

and that is what's needed for left and

right brain hemisphere development.

Education, classical science and the

arts, left and right hemispheres

Many principles of the Electric

Universe were foreseen

by scholars in the past--

Newton, Faraday, etc.

A release from existential fear.

Velikovsky's The Bonds of

the Past, a documentary.

There is a collective inability to face the

truth that prehistoric mankind faced doomsday.

For millennia, sciences

preached stability and order

but as amnesiacs we

have a compulsion

to instinctively repeat the

catastrophes of the past

destroying each other and the earth

from the sky with apocalyptic weapons,

like the planetary gods of old.

This was one of Velikovsky's
greatest fears.

But we have, on the other hand, the
possibility of an unparalleled renaissance
with the Electric Universe, bringing
everything together seamlessly.

Understanding ourselves
and our past,
can heal the wounds and provide a more
universal sense of connection and purpose.

Understand the electric
force of nature.

Power "like the Sun."

And Gravity.

Quantum Interactions.

All three rely on understanding
matter interactions
by the instantaneous
electric force.

Understanding living organisms, the
mind-body connection and beyond.

Also understanding the dangers of genetically-
modified organisms and manufactured food.

There's no thought
given to the effects,

the unintended consequences
of fiddling with these things
when our basic knowledge
is so lacking.

And the idea in an Electric Universe is to
live in tune with the Earth and each other.

Resonant Connection

On the most general level,
the Electric Universe is
a new paradigm of universal
resonant connection.

The arbitrary inertial frames
of reference of physics
are not equivalent when everything
is connected in real time.

How and where you are makes a
difference to your energy state.

For example, the GPS system is
supposed to prove relativity theory.

It doesn't.

The atoms in orbiting clocks have a different
energy from identical clocks on Earth
so engineers simply count a different
number of ticks to compensate.

Time is universal,
unchanging and unchangeable.

Clocks are not.

Think of the relationships between all things connected by the universe electric force and consider that the electric force must act instantly otherwise no information transfer is possible between resonant tune systems.

Spacecraft using slow speed of light transmissions, require constant retuning of receivers on Earth to compensate for their motion.

Obviously living systems could not function if moving parts of the body lost contact with the brain.

Acknowledging this simple fact will explain quantum weirdness and open up science, particularly biology, to amazing possibilities that are presently forbidden.

And understanding gravity and magnetism as balancing electric forces will change forever our view of the heavens and the earth under our feet.

As the morphic resonance experiments of the biologist Rupert Sheldrake have shown,

the things that are learned by one organism are
immediately available to others like them,
anywhere on earth.

The universe learns.

Resonance between molecular tuning forks
allows instant information transfer,
the mind-body
connection and beyond.

Life is structured water.

This was said to me
by Gerald Pollack.

The experiments, or his
experiments, show that structure of
electrically polarized water molecules
gives rise to water's amazing properties.
It allows information to be stored and
transferred within a living cell.

The memory mechanism
of homeopathy.

It suggests that the electrically
polarizable ether particles may also
participate in information
storage as well as transmission.

The Electric Universe resonant
electrical model of matter
and the all-pervasive

neutrino ether,
suggests that resonance and
structure within structure
can store unlimited information
and transfer it instantly.

There is more to life
than meets the eye.

We've always known
that instinctively.

The Electric Universe suggests that
the information needed for life,
forget the gene -- that's just
the factory floor, is universal.

So life can take hold wherever
conditions arise that allow it.

We see evidence for that
in the great changes
immediately following catastrophic
mass extinctions on earth.

We see it in organisms living in
anoxic conditions over volcanic vents,
on the ocean floor and at
great depths in rocks.

Just as gravity
cannot be shielded,
since all matter participates

in force transfer,
so it is with this universal
information bank.

There are no islands in space.

We are Earthlings in the complete
resonant connection sense
in a meaningful
Electrical Universe.

The fact that we exist suggests
the purposeful universe.

Our lives have purpose.

We don't manifest
as a blank slate.

So, children should be observed and
supported in their individual passions,
not suppressed and molded
to have desires for them.

We are born with a purpose but many
need help to discover that purpose.

In answering the question:

Why are we so unhappy,

Iain McGilchrist says: "True happiness
is based on connections with others
and a sense of purpose
beyond the immediate."

True happiness is one

aim of this conference.

The new panorama of an amazing shared
history and kinship must change the world.

In the search for meaning, the
Electric Universe paradigm can,
as Iain McGilchrist

says, change the world.

Elegance, harmony and
simplicity of concepts
are the Electric Universe
guiding principles.

Thank you.

welcome to space news from the electric
universe brought to you by the
thunderbolts project at Thunderbolts dot
info with scientists around the world
puzzling over the astounding findings of
the rosetta mission to comet 67p yet
another comet discovery has left
astronomers searching for answers on
February 19th

NASA's Soho Observatory captured images
of the sungrazer comet Soho 2875 to the
surprise of comet scientists the
supposedly icy body did not disintegrate
on its close approach to the Sun and
actually brighten as it moved away from
the Sun indeed so-called sungrazer
comets that survived perihelion
extremely close to the Sun is a
long-standing puzzle for comet science
consider the case of Comet Lovejoy whose
perihelion brought it to just 140,000
kilometers above the sun's surface of
course astronomers never expected the
comet to survive its journey it after
nearly one hour in the intense radiant
energy of the Sun the comet emerged

intact

if comets are really the icy fluffy

bodies that conventional theory

describes and how can they withstand

such close approaches to the Sun in

reality observations going back

centuries reveals that a comet's

activity has little or nothing to do

with solar warming comets sometimes

flare or fragment at impossibly vast

distances from the Sun in 1976 the comet

West shocked the astronomy world when it

suddenly split into four fragments

without ever approaching closer than 30

million kilometers from the Sun in 2000

the comet limiter suddenly disintegrated

while still well over 100 million

kilometres from the Sun in contrast the

perihelion of the great comet of

December 1680 was less than 100 thousand

kilometers from the Sun but the comet

did not split noting these facts dr.

Carl Sagan and Andrew Ian wrote in the

book comet the gravitational tides of

the Sun or unequal heating cannot be

soul causes of the splitting of comets

we still do not know why comets split

in a paper published in the 1960s the astronomer dr. Brian G Marsden wrote on the anomaly of Comet fragmentation discussing the Sun grazing comets he noted that two instances the great comet of 1882 and the comet IKEYA's Seki in 1965 appeared to split apart at their farthest distance from the Sun while beyond the orbit of Neptune and far above the ecliptic plane moreover the relative velocity of their separation was far greater than could possibly be due to solar heating Marsden wrote although most of the Comets observed to split have done so for no obvious reason one really does require an explanation when the velocity of separation is some 20% of the velocity of the comet itself a collision with some asteroid illogic at 200 au from the Sun and 100 au above the ecliptic plane even though would only have to happen once is scarcely worthy of serious consideration thus

Carl Sagan and Andrew Ian wrote in 1985 that the problem of comet fragmentation

is quote left unsolved in recent decades
it has only become more evident that
cometary activity including comet
fragmentation cannot be due to solar
warming or gravitational forces rather
the electric comet theory says that
comets are rocky bodies that were
electrically machined from planets and
moons the most dramatic comet displays
will typically involve highly elliptical
orbits during its time in the outer
reaches of the solar system the comet
will acquire a negative charge with
respect to the Sun as it approaches the
inner limits of its orbit accelerating
through the sun's weak electric field it
will begin to discharge the plasma
surrounding it
producing the familiar bright coma and
tail comet Jets are electric discharges
to the nucleus the Jets electrically
machine the comet's surface in a process
similar to the industrial process known
as spark discharge machining a critical
prediction of this theory appears to
have recently been fulfilled by the

Rosetta mission

Rosetta's ion and electron sensor has measured surprisingly high densities of plasma close to the comet nucleus. The electrical nature of comets explains the remarkable effects we've observed when comets have approached planets. Let us look back to the summer of 1994 when the comet Shoemaker-Levy 9 approached the planet Jupiter. At the time, astronomers predicted that the encounter would be as trivial as pebbles falling into an ocean. However, the energetic effects of the comet fragments were astronomically greater than anything comet scientists had anticipated. As reported by sky and telescope, when fragment A hit the giant planet, it threw up a fireball so unexpectedly bright that it seemed to knock the world's astronomical community off its feet immediately after the impact. Of comet fragment A, the telescope detected unusual and energetic auroral activity, radiation belts were disrupted, and were unexpectedly bright X-ray emissions at the time of impact, and yet

another mystery was never explained
satisfactorily early impact events were
hidden from the earth behind Jupiter's
limb

however the Galileo spacecraft was
positioned 150 million miles away from
Jupiter at an angle that gave it a
ringside seat for these events but
earth-based observatories saw some of
the impacts start at the same time

Galileo did reminiscent of the advanced
electrical flash prior to the impact of
a copper projectile into the comet

Tempel 1 mission scientists said at the
time in effect we are seeing something
we didn't think we had any right to see
it seems clear that something was
happening high enough to be seen beyond
the curve of the planet radio

astronomers had expected radio emissions
from Jupiter at high frequencies to drop
because dust from shoemaker-levy 9
fragments would absorb electrons from
the radiation belts for the electrons
emit synchrotron radiation instead
observers were surprised to find that

emissions around 2.3 gigahertz rose by
20 to 30 percent

Michael client of JPL said never in 23
years of Jupiter observations have we
seen such a rapid and intense increase
in radio emission extra electrons were
supplied by a source which is a mystery
a similar event was seen recently with a
comet siding spring fateful encounter
with Mars the MAVEN spacecraft measured
the effects on the Martian atmosphere of
sighting Springs fly by within about
87,000 miles according to a NASA report
debris from the comet added a temporary
and very strong layer of ions to the
ionosphere the electrically charged
layer high above Mars it is more clear
than ever that comets do not behave like
icy bodies moving through an
electrically inert vacuum until
institutional science seriously
considers the electrical theory of
comets the list of Comet mysteries will
continue to grow for continuous updates
on space news from the electric universe
stay tuned to Thunderbolts dot info

welcome to the thunderbolts picture of
the day review for the week of January
13 2014 this new feature will offer
brief summaries of the original articles
published every Monday Wednesday and
Friday at Thunderbolts dot info links to
the articles discussed may be found in
the About section of this video Monday
January 13 touching ground Comparative
mythologists Ren's van der Sluis
explores a recurring motif found in
nearly every creation myth around the
world the description of a sky that
rested much closer to the earth than it
does today
van der Sluis states the excessively low
height specified and many of these
accounts is striking bordering on the
absurd yet the team is solidly embedded
in a web of internally consistent ideas
van der Sluis elaborates the concept of
the proximate sky as a low hanging
ceiling morphs into another staple of
traditional cosmologies the notion that
the sky used to be a solid firmament the
transition of this to the present

condition is related in the ubiquitous
tales of the lifting of the sky or the
separation of sky and earth how might
modern science explain these ancient
descriptions of a sky so different from
ours today Wednesday January 15 star
forces picture of the day managing
editor Stephen Smith explains the
fundamental differences between the
standard model and the electric universe
interpretations of the interstellar
medium mainstream astronomers imagine
stars generating so-called winds that
shove gas and dust into a theoretical
bow shock however Smith explains instead
of treating the interstellar medium like
an inert medium the electric universe
model sees it as a magnetic electrically
charged material that is affected by the
plasma sheaths around stars known as
magneto spheres stellar plasma and the
interstellar medium are different
plasmas so they develop Langmuir plasma
sheets or double layers between them
stars are where khalatun k-- electric
discharges are focused so the double

layers form virtual cathodes smith also notes NASA scientists astonishment over the data from the Voyager 1 spacecraft as an approach to interstellar space as one mission scientist stated the models that have been thought to predict what should happen are all incorrect we essentially have absolutely no reliable roadmap of what to expect at this point

Friday January 17 why the lower corona of the Sun is hotter than the photosphere retired professor dr. Donald Scott explores one of the most enduring mysteries of solar physics while mainstream scientists have attempted to explain the mystery using magnetic mechanisms dr. Scott suggests that strictly electric forces occur within a plasma region called a double layer above the sun's surface he writes of all the ideas offered up as being an explanation of the extreme temperature more than two million Kelvin measured in the lower corona of our Sun the simplest is an electrically accelerated high-velocity positive ions are

colliding with relatively static ions
and neutral atoms in that location on
the mysterious nature of the sun's
temperature profile Scott writes it is
clear that the electric Sun model
straightforwardly predicts the existence
of the observed temperature profile and
demonstrates how it occurs if there were
no temperature discontinuity this would
pose a problem for the electric Sun
hypothesis to read these articles in
their entirety visit the links in the
About section of this video and stay
tuned for new Thunderbolts pictures of
the day every Monday Wednesday and
Friday at Thunderbolts dot info

Welcome to Space News from
the Electric Universe,
brought to you by The
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In early September of 2017,
dramatic weather and seismic events
reminded human beings around the world
of the awesome power of nature.

On September 7th, an 8.1 point earthquake
struck off of the Pacific coast,
the largest quake in
Mexico in a century.

Just one day previous, hurricane
Irma, a tremendously powerful storm,
that originated near the
Capo Verde islands,
reached its peak intensity with
winds of 185 miles per hour.

The hurricanes Katia and Jose
followed on Irma's heels
and less than two weeks
after the Mexico quake,
a second tremor, this one 7.1
magnitude, struck the region.

Only two days after the

second Mexico quake,
additional significant earthquakes
occurred at the pacific island of Vanuatu
and just off the north east
coast of Japan, respectively.

Are such clusters of natural disasters
on our planet merely a coincidence?

The key to answering
the question

is an understanding of the dynamic
electromagnetic relationship
between the earth and the sun.

Increasingly mainstream scientific
research has shown a dramatic connection,
completely unexpected
in standard reasoning,
between intense solar activity and
atmospheric and weather events on Earth.

For instance, in 2014, we reported
on a scientific study which
showed intense and sustained increased
lightning on Earth, following solar storms.

Is it then a coincidence
that in early September
the sun erupted with its largest
solar flare in 12 years.

For the past several years,
Thunderbolts colleague Ben Davidson,
the founder of Suspicious Observers,
has produced voluminous
research on space weather
and its link to numerous
geophysical phenomena.

More recently, Ben and
scientific colleagues
have worked to develop models
of disaster prediction.

And in 2015, Ben and coauthors Kongpop
U-Yen and Christopher Holloman
coauthored a peer-reviewed
scientific paper on the connection
between solar activity and
very large earthquakes.

In the first of this
two-part presentation,
Ben begins discussing the evolution
of its own investigation
and the growing body of
evidence of the sun's effect
on climate, weather
and earthquakes.

[Ben Davidson] It was really

quite the start of September,
a bit of a bitter-sweet one which
is not something we're not used to
when it comes to forecasting natural disasters
when every time you have a success,
it is also a somber reality
of what has just happened.

Back in 2011, 2012,
2013 and 2014,
a number of patterns between
solar and other cosmic phenomena
and eathly phenomena, both
meteorogical and seismic,
began to come together in a way that
was not just obviousto a few people
but obvious to tens of
thousands of people
who happened to be watching
someone who got lucky enough
to pick 3 interesting things they
wanted to show every day and that is;
what the sun was doing, what
the earthquakes were doing
and what the weather was doing.
And sort of by accident, all of these
patterns started to just show up.

In 2015, a few papers were published, and we are doing continued research still, but we are finding that things are moving along and progressing in the understanding of how the sun is, for lack of a better phrase, electromagnetically forcing short-term weather events and seismic activity in a number of different ways.

It's progressing so fast that really the only way we could think of to share and get this out there for people to understand and improve, is just to continue reporting on the stuff every day and letting people know what the patterns are that we think they see and that we think that we have seen as well..

Back in 2015, we were able to really bring this to the forefront because after the sun had been relatively quiet, for quite a long time and it was to say somewhat lackluster start to the tropical season.

We had really an incredible uptake in solar activity in a span of just about a week. It caused level 4, which is the second highest you can have, level 4 out of 5 geomagnetic storms, they actually shut down the airspace over New Zealand at that time and for only the second time in recorded meteorological history, 6 tropical cyclones spun in the Pacific. Really just, you know, to the world it was a great coincidence but when it continued happening, you know throughout the rest of the year into September and then again in November and then in January as well, we began to look back in time and say, hey this actually holds true! And it's not just that the sun is having really grand activity, it's that there is a change in the solar activity and so during solar maximum, which happens every

11 years or so,
the sun is producing a lot of
sunspots and a lot of solar flares
and if you are in the middle of that, maybe
a drastic run of solar flares is normal
for that month or
that year in time.

But when you look back to these
periods where you have, you know,
these unexpected uptakes
in solar activity,
or you are in a period where you
expect to have high activity
and you have low activity for a
while and then it picks back up.
It's that sort of ramping back up
of that distribution of energy,
not only from the solar flare X-ray
emission throughout the solar system
but from those, you know,
charged particle plasma cloud
shockwaves that I mentioned earlier,
that travel throughout the
solar system that are
powerful enough to create those
incredible displays, take out satellites,

affect telecommunications,
internet, things like that, and so
you have to really look
at the energetic change
that is taking place throughout
the solar system and
that is precisely what we had happen
again, just at the beginning of September.
It actually began in the middle of
August, when after literally weeks,
I would say maybe months without too much
going on in terms of sunspot production
and definitely not much going
on in terms of the solar flares
and the big blasts that go
throughout the solar system.
We had a flurry of
sunspots being produced
and the solar flares began to come back in the
middle of August, right around that period.
It was not long after that Harvey, sort
of, formed and took that run at Houston.
And then we had a little
break in solar activity
and then we had a little break in
the tropical systems but then,

just as fast as the break came, we had another sunspot that was born out of nowhere, and it was born on the Sun on the Earth-facing disk while a very large and mature sunspot sat very calmly and quietly and silently in the northern hemisphere.

This thing was born on the south, and it turned into a monster very very quickly, fired a number of solar flares including the fourteenth largest, officially, that has ever been seen and this is one of the largest upticks that I have ever reported to be sure and the last time we had a solar flare this large was 12 years ago.

We had another level 4 geomagnetic storm event, these things are quite rare to be honest, and wouldn't you know it, on the heels of that we have 3 systems spinning in the Atlantic.

Now I know that that's not comparable to the 6 systems we had in the Pacific but you have to realize how small the Atlantic is by comparison

and in that you cannot
have 6 systems lined up
at tropical cyclone strength in
the Atlantic ocean at one time.

And so, here we see
something interesting,
the sunspots really getting produced
back in the middle of August,
when they started flaring, those
sunspots disappeared out of view,
the day that hurricane Harvey shut north
and the solar flare making sunspot
that was on the southern hemisphere
during this triple hurricane,
set up what we had in the Atlantic
basin, just at the start of September.
When it disappeared out of view, hurricane
Irma ran north that day at Florida.
Now we got very, very lucky because
it appears that about 24 hours later,
as the sunspot was out of view, it released
a solar flare that was so powerful,
we were actually able to detect it from Earth
even though the sunspot was not visible.
It had turned over to the back
side, the far-side half of the sun

where, you know, Earth can't

see from our perspective.

And as far as I know, this is the first time
actually that one of the shockwave clouds,
blasted out via solar flare on the
far side of the sun, has hit Earth.

It wasn't much, you

know, terrible

because as I said the sunspot

blasted it out on the far side

but the shockwave was so

broad that it had effects

basically all throughout

the solar system.

[Michael Goodspeed] In the following
episode, we will discuss in greater detail

how and why it may be possible

to predict earthquakes,

particularly the largest quakes, major storms

and other dramatic environmental effects

based on a new understanding of the

Sun-Earth electromagnetic connection.

For continuous updates on Space

News from the Electric Universe,

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Welcome to Space News from
the Electric Universe,
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So, continuing our discussion
on the so-called crisis in
cosmology, let's talk more about
this latest announcement from
the Keck Observatory which
describes the latest verification
of the anomalous accelerating
expansion rate of the universe.

For the first time, scientists
have attempted to estimate
the expansion rate using a new method
involving gravitational lensing.

Now, the concepts behind
the standard ideas about
gravitational lensing is
something that's been discussed
at some of the annual
Thunderbolts conferences.

For example, Dr. Edward
Dowdye is a laser
optics engineer and, in fact, he was a

NASA physicist and he's presented his case on the importance of plasma in understanding the phenomena that scientists attribute to so-called lensing in space.

So Wal, fundamentally, why don't you explain the Electric Universe interpretation of the effects that astronomers do observe and which they describe as "gravitational lensing?"

The concept of gravitational lensing is faulty at the very beginning because it assumes that gravity has an effect on space.

It doesn't; it's an electric force, it's a dipolar force just like magnetism, and if that dipole electric force were able to warp space or, with the powerful magnets we have today you should be able to see distinct lensing effects using magnets, we don't.

Gravity doesn't affect light directly but it can, by modifying the density of the ether; the ether is all-pervasive,

it's the substrate of the universe, it's the medium through which light travels, it's the medium through which the gravitational and magnetic forces and the electric force travel.

It behaves like any medium in the presence of the gravitational field because it's a material medium and has to be material, of vanishingly small mass, which indicates there is possibly neutrinos involved--they will respond to gravity just like any other material medium, and in this case like a gas, and form an atmosphere about a celestial object, and that atmosphere can refract light, so that you will get lensing but it's got nothing to do with gravity per se, it's the effect of gravity on the environment of that body.

So yes, you can get gravitational lensing, but the concept that they're using is invalid.

And principally, because of this idea that redshift indicates that these objects that they're seeing near a low redshifted galaxy, are far away, is incorrect.

All it means is that they're younger than the

object that's in that center of that view.

And what do we find most often

close to galaxies? Quasars,

redshifted quasars, and they are, in

Halton Arp's research, the offspring of an

active galaxy, galaxies beget baby

galaxies, and they form initially as a

quasar of low mass and high redshift and

low brightness, and their brightness,

their mass and their redshift, all change,

become closer to their parent over time,

and as a result, they become

companion galaxies of various kinds.

So he gives a genealogy,

he shows almost

biological aspect to galactic

formation and so, when

we see these objects in distant, or

so-called lensed objects, what we must be

looking at is an active galaxy surrounded

by some of its redshifted offspring.

Because they're fired off

in episodes, they often

have different, slightly

different, quantized redshifts.

If they've misinterpreted, which they're

being done here by these people, they can be interpreted in a way which may appear to give some credence to the distance scales but the distance scales, as Halton Arp has shown, are completely haywire in modern cosmology, right, the redshift--distance relationship is mythical.

Arp wrote on the subject of gravitational lensing, he said, "...you must remember that it was invented for extra galactic objects because that was the only escape from observations which required the physical association of objects of much different redshift. The low mass particle masses..., which I've talked about,... give rise to a lower luminosity. That gives a rough, higher redshift--fainter apparent magnitude relation for galaxies of different age at the same distance. And he notes here also and this is something that I picked up. "This should also apply to the

supernovae within the galaxies.

Of course, this fainter than expected
supernova discovery gave rise to
the idea that the universe is expanding
more rapidly, it's accelerating!

But that's sheer nonsense,
it means that you don't
understand supernova explosions
either, which is not a surprise
when you think they don't
understand gravity.

Wal, speaking of Halton Arp
and our earlier discussion
about the nature of quasars,
let's talk now about one of
the more remarkable discoveries in the
space sciences in recent months.

In September of this year, in a paper
published in the Astrophysical Journal, a
team of scientists reported their
observation of "six quiet galaxies
shifting into quasars" in a period of
time that is literally thousands of
times more rapid than standard
cosmology can explain.

I'll read to you briefly

from a Science Alert report,
"In a spectacular fashion, six galaxies
have just undergone a huge transformation
in a matter of mere months. They've gone
from relatively peaceful galaxies to
active quasars-the brightest
of all galaxies, blasting
vast amounts of radiation
out into the Universe.

...such changing-look transitions
are usually observed occurring
between different types of
Seyfert galaxies... These Seyfert
transitions were what the
team set out to study."

Now, one of the authors of the study
states, "Instead, we found a whole
new class of active
galactic nucleus capable
of transforming a wimpy
galaxy to a luminous quasar.

Theory suggests that a
quasar should take thousands
of years to turn on, but
these observations suggest
that it could happen very quickly. It

tells us that the theory is all wrong.

We thought that Seyfert

transformation was the major

puzzle. But now we have a

bigger issue to solve..."

And of course, as we reported

previously, this isn't the

first time that scientists have observed

"impossibly rapid changes in quasars."

So Wal, why don't you tell us,

generally speaking, why these kinds of

incredibly rapid cosmic

scale transformations

are actually expected in

the Electric Universe?

I point to the research of

plasma cosmologists, which

shows that the active galactic nucleus

that ejects the quasar, are in fact

plasmoids, the most compact form

of high-energy storage known.

The electrical energy

poured into the plasmoid

from the spiral arms, forms a

tiny doughnut-shaped object.

At some point, the energy

density closest to the axis of the
plasmoid forces the electrons and
protons to collide and form neutrons.

Having no charge allows the
neutrons to escape from
the electromagnetic galactic
nucleus in axial jets.

It seems the neutrons
are nature's Houdini's.

They only exist as a dance
between an electron
and a proton for the short time
required to escape from the
electromagnetic prison of the nucleus of
an atom or the nucleus of the galaxy.

But in doing so, they give birth to either
a new element or a new galaxy, respectively.

Nature never does
things the hard way.

When the neutrons do decay, the freed
electrons are held back by the galactic
magnetic field more strongly than the
heavier protons, which now form a quasar.

I proposed that an initially
positively charged quasar is
therefore followed by a beam

of electrons from its parent
galaxy, which would explain
both the observed quantized
redshifts and the increase
in mass of the quasar,
as a result of increasing
charge polarization
within the matter in the quasar,
as the electrons arrive.

Of course, the bursty
nature of these
outbursts from active galactic nuclei
suggests that the electrons may also
arrive in bursts, just like the ejections
themselves, which would predict and
explain seemingly impossibly
sudden changes in quasars.

Sudden changes on the galactic
scale, and even on the stellar
scale, are expected in the
Electric Universe, simply because
we are dealing with a
coherent, connected, electrical
system operating in real time, in the case
of a galaxy--across the entire galaxy.

And this is because the

electric force is instantaneous

and the release of stored

electrical energy takes place

like a sudden lightning bolt

followed by an exponential

decay, as that energy

dissipates into space.

And this is behind all sorts

of phenomena that are puzzling

researchers at present, where they're

getting gamma-ray bursts and fast radio

bursts and all sorts of things from

seemingly nowhere, and this is another

point that Hannes Alfvén made; plasma

currents that are flowing through space

will produce double layers and these

double layers can, if the current density

gets too high, actually shut the current

off, and the result is that the energy is

suddenly concentrated at that point, and

there's a sudden burst like a lightning

bolt and it can happen in apparently

empty space, because these double layers

are often in dark mode

discharge as it's called.

In the case of galaxies,

the plasmoid itself in the laboratory, it's known that the plasmoid forms and the energy that it concentrates, when it gets to a certain point at very high density, the electrons and the protons which are held in that plasmoid, when they're traveling down this core of the doughnut, is where they're closest together, and that's where the breakdown will first occur.

And that breakdown forms a beam of neutrons. In the laboratory, plasmoids are known to be the most copious source of neutrons when they break down.

So all of this can be tested in the laboratory, which is one of the big advantages of the Electric Universe cosmology over Standard cosmology.

Well indeed, and when it comes to cosmological phenomena, I've always felt that the most significant type of discovery is the evidence for physical connections and interactions of

objects over unfathomable distances.

I've said before that

the model of the Electric

Universe might be: "There

are no islands in space"

and we see this verified

more and more frequently.

A few months ago, we reported

on the discovery of a vast

radio-emitting filament which

is connecting two galaxy

clusters across 10 million

light-years and this seems like

a dramatic confirmation of a prediction

that Anthony Peratt made decades ago,

that cosmic scale currents exist in deep

space connecting these types of objects.

And now, just in the last few weeks, we've

seen the report that distant galaxies,

which are separated by tens of millions

of light years, have been found rotating

in synchronicity with one another; a

Science Alert report on that discovery

states, "The discoveries could force us to

rethink our understanding of the Universe."

An elite author of a paper on

this discovery says, "The observed coherence must have some relationship with large-scale structures, because it is impossible that the galaxies separated by six megaparsecs directly interact with each other."

But I think what the scientists should have said is that the phenomenon is "impossible" under the assumption of an inert and disconnected universe.

So Wal, why don't you shed some light on why, like countless other discoveries, this is not impossible, nor surprising in the Electric Universe?

The Electric Universe has no problem with the synchronization of galaxies over colossal distances simply because they are all being driven electrically by the same Birkeland current filaments, and the spiral galaxies tend to be strung along them like Catherine wheels on a wire.

Both the rotation and the

form of a spiral galaxy
is explained experimentally and
theoretically by plasma cosmologists, and
the fact that has been discovered
recently, that the rotation of galaxies
seems to be somehow strangely similar, is
all tied up to the fact that they're all
being driven electrically by these
circuits, and it's just like electric
motors in the home, if they're connected
to the same circuit, they will all tend to
be synchronized in some fashion, either
by the number of cycles per second of
the power supply, but in
the case of galaxies, all
this can be tested and
proven in the laboratory.

A critical failure
of modern cosmology
is to assume that gravity is the only
force operating on a cosmic scale.

Plasma cosmologists, for the last 50 years,
have shown that this is incorrect.

Electromagnetic forces dominate
on the cosmic scale.

Supercomputer simulations

have shown that introducing gravity into their electromagnetic models has no effect.

This should be no surprise given that, compared to the electric force, the force of gravity is effectively zero.

This should have been obvious to theorists given that spiral galaxies rotate like the solid disk of a Faraday motor and not a gravitational system where the outer satellites rotate more slowly than the inner.

Once again, our Earth-centric view has held back science.

Plasma cosmologists showed that spiral galaxies form like Catherine wheels along spiraling intergalactic Birkeland current filaments.

It explains both their axial alignments and their rotation.

Of course, these recent discoveries should force a rethink of the fundamental

understanding of the universe.

It should have done

so, decades ago, but those

doing the research have not been

trained to see the alternatives,

which have been available

since late last century.

Cosmologists are taught

that yes, there is

electricity in space but

it doesn't do anything.

They are also taught a basic form of

plasma physics, which the Nobel

prize-winning plasma cosmologist Hannes

Alfven showed, is invalid in space, and

the tunnel-vision, induced by

their training, prevents modern

cosmologists from attending

plasma cosmology lectures.

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

That the planet Earth has been subject
to catastrophic events is beyond dispute,
but the nature and timing
of these events is not.

One of the clearest testimonies to
ancient upheaval is our planet's craters,
which consensus scientific theory proposes
are the result of meteoritic impacts.

But we have never directly observed
a kinetic impact from space
producing such a crater.

The Electric Universe has
proposed for many decades
that laboratory experiments with
high-energy electrical discharge
provide the clearest analog for craters seen
on rocky bodies throughout the solar system.

In this episode, Thunderbolts Picture of
the Day managing editor Stephen Smith
discusses some of the clearest evidence
for the electrical scarring of our planet,

including some of the most famous
so-called impact sites on Earth.

One of the principal tenets
of Electric Universe theory
is that sometime in the recent
past, there were catastrophic events
involving the planets of our
solar system, including the Earth.

Exactly when those events
took place is uncertain,
because we're so far
removed from them in time.

However, forensic
evidence is available,
including ancient
archaeological sites,
land-based geological formations,
ocean basins, and other structures
that often reveal anomalous data.

Information from those sources indicates that
there were multiple catastrophic occurrences.

Indeed, it seems as if pre-catastrophic
and post-catastrophic conditions
are what 99% of the human race
has experienced over its existence.

Times of peace and plenty are

rare in the historical record.

Many articles on The Thunderbolts Project website describe various regions around the world where manifestations of those catastrophic events are visible.

The list of articles is extensive, describing places on Earth that are difficult to explain using conventional theories.

Places like the Norwegian fjords, the Brandberg Massif in Africa, the Great Trango Tower, the Grand Canyon, Lake Victoria, the Himalayan mountains, along with the principal topic of today's discussion, the Sudbury impact structure and its attendant anomalous elemental deposits.

Most, if not all, large craters in North America are thought to have been caused by asteroid impacts.

In fact, it was an asteroid that's thought by consensus geologists to be the event that

wiped out the dinosaurs,
although that idea is no longer
as hard and true as it once was,
proving the asteroid
theory is not easy,
because rocks where the evidence
is found can't be accurately dated.
The fossil record is also indeterminate
when it comes to causal issues.

Was it a catastrophic event
or a gradual decline in species?
It appears that some marine
species died out millions of years
before the so-called
impact event.

According to an article in
the science journal Nature,
platinum group element anomalies are found in
sedimentary deposits all over North America.

No one is sure where the
additional heavy elements came from,
but there are several
ideas proposed.

- 1) a comet or meteorite storms
- 2) debris from
collisions in space

3) volcanoes

4) mantle plumes

The time of the mostly platinum enrichment is thought to be the Younger Dryas period between 12,900 and 11,700 years ago.

Some of the elements include platinum, osmium, gold, ruthenium and copper.

It's also called the

Younger Dryas cooling event

when the Northern

Hemisphere monsoon declined.

How that period, called an ice

age, began and ended is a mystery

although it's often trucked out as an example of massive and rapid climate change.

One of the reasons for the warming

at the end of the Younger Dryas

is thought to be the impact from a massive comet or a huge number of meteors.

There are many large

craters in North America

and most of them look like they

come from a similar time period.

The Weaubleau-Osceola structure,

the Decaturville and Crooked

Creek Missouri formations,
the Flynn Creek and the
Wells Creek Tennessee craters,
might belong to an anomalous chain of
craters stretching across the United States,
called the 38th parallel anomaly.

Most of them exhibit unusual features
such as flat floors, steep walls
and lightning-like patterns of trenches
and gullies that extend from their centers.

Geologists speculate that tremendous
shock waves from the collisions
caused earthquakes and dense pulverized
rock fallout all over the world.

Modern theories about a
post-war nuclear winter
are relevant to the
dimming of sunlight
and significant cooling
trends from atmospheric dust.

The question no one's asking however
is, what if there was no rock?

As mentioned, Sudbury Basin in Canada is a
large crater, more than 63 kilometers long,
31 kilometers wide,
and 15 kilometers deep,

the second largest

crater on Earth.

Ejecta from Sudbury was found more than

800 kilometers away near Lake Superior.

The area around Sudbury is

shattered into multi-megaton blocks

that were pushed away and

piled up along the crater rim.

Some of the largest fragments were thrown

over a hundred kilometers in all directions.

Gneiss deposits were fused

into a glass-like compound

that covered the floor of the crater

and splashed up and over the crater rim.

The molten glass inundated several hundred

square kilometers of the surrounding terrain

with a thick layer

capping chaotic breccias.

Platinum family minerals are

found throughout the region

including sperrylite,

froodite,

michenerite and sudburyite.

Some records indicate that 1,600 million

tons of nickel, copper, platinum and lead,

have been extracted from Sudbury

over the last hundred years.

There are so many anomalous
formations in North America
that it's impossible
to count them all.

Even the Great Lakes possess characteristics
that could point to an electrical foundation.

The gigantic bowl of hardened limestone
in which they rest, for instance.

In a gradual curve north of the
Great Lakes are Lake Winnipeg,
Lake of the Woods,
Lake Athabasca,

Great Slave Lake, Great Bear Lake and
many other smaller bodies of water.

Near the largest of them are gold mines,
lead mines, radium and uranium mines,
along with mines producing
platinum, silver and palladium.

Unusual concentrations
of heavy metals
could mean that transmutation of
local elements might have occurred
because of the intensity of
the electrical discharges.

That idea has been

suggested in the past
as the cause for hematite
blueberries on Mars.

Electric arcs transmuted
silicon into iron.

That same phenomenon
could have created
some of the strange conglomerations
of minerals seen on Earth.

In an Electric Universe, asteroids
are not a primary cause for anomalies.

Instead, electric arc discharges are
suggested as the sculptor of earth terrain.

As I said earlier, where those arcs came
from, can't be determined at this late date.

Were they from charged
celestial bodies

encroaching into the electric fields of
Earth and other planets like Mars and Venus?

Was it a plasma cloud from
outside the solar system?

Was it a solar flare that
charged up Earth's ionosphere?

Those questions whose answers
can only be guessed at today,
await further investigation.

The Electric Universe hypothesis offers another perspective on observations.

Several factors come into play that are not available to the consensus theories of geophysics, because the lexicon of descriptions available to them doesn't include electric arcs or travelling subterranean electric discharges.

There are of course many possible explanations for craters, canyons, escarpments, mountains and ocean basins, but once the electric force is included in the search for those explanations, an entirely new way of seeing the world becomes possible.

In this realm, that of deep background in the origination of basic theoretical foundations, those viewpoints must be considered diametrically opposed to the gradualism that dominates science today.

Rather than basing opinions on the slow steady familiar processes of erosion, temperature changes, rain,

windblown sand, ice and snow,

the proponents of

Electric Universe theory

are attempting to reclassify

geophysical processes

as rapid, catastrophic

and world-changing.

In many cases, the almost

unimaginable must be acknowledged.

Gigantic formations like the Grand

Canyon or Manicouagan crater

were created in a time period that encompasses

the historical memory of humanity.

This new paradigm means

words like 'crater' for example

must be stripped of all previous

assumptions that are stimulated by it.

One almost immediately thinks volcano

or meteor when the word is used.

Catastrophism should be part

of a new way to see the world

and volcanoes or meteor

strikes are indeed catastrophic,

but geological theory consigns them

to the rare or infrequent category.

When was the last time a volcano blew out

a 100 kilometer-wide crater, for instance?

Considering the presumption

of an electric discharge,

a better description might be

circular formation, rather than crater.

Lake of the Woods for example,

one of the long arc of lakes

stretching northwest of the Great Lakes,

certainly displays those features that

have been described elsewhere as electrical.

Concentric rings and radial force

patterns are immediately evident,

as well as the scalloped edges

of the southwestern shoreline.

A primordial characteristic of

electric arcs is that they spin.

They are composed of multiple

independent plasma current filaments

in a collimated beam.

The independent filaments are attracted

to one another in a linear relationship

but are prevented from coalescing

because of electrostatic repulsion,

which also causes the filaments to

form twisted pairs or Birkeland currents.

Electrical engineers use

twisted pairs of wires

because it's the most efficient means
of transferring electrical energy
with the least loss.

A spinning electric arc will machine down
through the strata like an auger of fire.

In the case of Lake of the
Woods, the three lobed bays
that twist in a northerly
direction are intriguing,
as are the many islands
that follow multiple chords
like outwardly expanding
waves across a wide area.

Lake of the Woods is a 110 kilometers
long and up to 95 kilometers wide.

It has an area of approximately
4,400 square kilometers
and more than 14,000 islands.

So it's by no means small.

Due to its location,
it could be considered among one of
the lesser cousins to the Great Lakes
and could have been formed alongside
them in a single cataclysmic event.

The Great Lakes, Sudbury, along with

but not detailed in this presentation,
Manicouagan and Hudson's Bay,
reflect just a few of the ways
that an Electric Universe paradigm
can completely
change a worldview.

In a recent video, I've discussed how stars can become stressed, expelling vast amounts of material outwards. In other scenarios the stars are thought to explode, causing the entire system to malfunction, creating repeating discharges that travel across the plasma which acts like a transmission line. There are a number of different ways that stars are thought to explode, or nova. And although mainstream has an idea of how these scenarios can occur, there seem to be many exceptions that break these. So, let's explore some of these strange explosions.

Strange Novas. A nova is a sudden explosion of bright light from a two-star system. The mainstream concept is that these are created in a binary system, where one star is a white dwarf which pulls material from a companion star. Over time, the white dwarf draws enough material which heats up and causes an uncontrolled reaction that releases a burst of energy. This in turn shoots matter away at high speed.

These events are therefore long-lived and usually fade over a couple of weeks or longer.

On the 12th of June 2021, the Nova V 1674

Herculis underwent what appeared like a nova event with a sudden brightening which made it visible to the naked eye.

By the next day it had already faded.

When astronomers studied the emissions, they discovered that it seemed to be pulsing.

Every 501 seconds, there was a sudden change, or pulse in the light and X-rays.

Even after the light faded this 501-second wobble was still present.

When they went back and studied the emissions just prior to nova, they discovered that this wobble was present even before the outburst and remained through the brightening event and afterwards.

Supernovae are more energetic and leave little or nothing behind, unlike a Nova.

Ten years ago, supernova SN 2012Z was spotted in the nearby spiral galaxy NGC 1309.

The event should have been the final swan song of the star. The galaxy has been observed for a long period of time, so it was possible to use this to work out exactly which star went “bang” by looking for the now empty space. They were expecting to see that the star was

either completely gone, or maybe that it should still be there, meaning that the star that they observed was not the one that blew up. What they discovered was something that they did not expect to find. The star had survived, but it had somehow become brighter. This was not the first time that they had observed a star surviving a supernova and was another star which would be added to the growing pile of stars that defied the supernova.

Even when they die, some seem to defy even this process. In a recent analysis, astronomers used the data from the Hubble telescope to document the demise of a giant star 35 million light years from Earth.

These seem to show something very unexpected: the cool, yellow star had no hydrogen outer layer. In theory, if a star explodes without hydrogen, it should be extremely blue, meaning it is really very hot. It should not be possible for a star to be this cool without having hydrogen in the outer layer. The scientists examined every single mainstream model, and they all required the star to have hydrogen

which they knew from the supernova it didn't have.

When they looked back to the images before the supernova, they saw a very normal hydrogen-free star, but the star did not match with the type of supernova they observed.

They suggest that maybe the star shed its hydrogen shell years prior to the event, but it remains a mystery. In theory these large supernova explosions should be final. The energies involved should rip the star apart, but even here, scientists have discovered a rather remarkable star that seems to be able to repeatedly supernova.

In 2014, scientists captured a fading supernova near the constellation of Ursa Major. At first it looked like every other supernova. Over half a billion light years away in a galaxy so far, it's little more than a smudge, a star exploded. Not just once, but over five times over the course of two years. In the process, it ejected a vast amount of material equal to 50 Jupiters and emitted more energy than 10 quintillion (that's 10 to the power of 18) suns.

Five months later, when they went back to

examine the data, someone spotted something strange. When they looked at a plot of the emissions over the last 137 days, it appeared like the explosion was getting brighter.

So they decided to look at the spectrum of light from the star. This seemed to indicate that the nova was only 30 days old, and yet they had concrete proof that it had in fact been going on for months.

They continued to study it and followed the supernova as it brightened, then faded, then brightened again.

It hit five peaks of brightness before finally dwindling out in the summer of 2016. At 600 days old, it was already the longest-lived supernova ever observed.

They now turned to the historical archives and found that the same portion of sky had been observed in 1954 and 1993. In 1993 no supernova was evident, but in the 1954 image there was a noticeable bright spot in the galaxy.

As the galaxy is far away, it is not possible to make out individual stars.

So, there is a small possibility that the 1954 explosion is caused by another star.

No mainstream model of stellar evolution can fully explain these observations. The energy released in the 2014 explosion is greater than their models predict. An analysis of the light coming from the explosion indicated that its chemical composition is different from what astronomers would expect. These findings question how much mainstream astronomers really know about supernovae. Maybe it's time for a new model.

Thank you.

need to know what my topic will be a day
you might have guessed it's Astro
mathematics and I can tell you that I'm
not a proponent of Astro mathematics my
purpose today is to reveal to you some
of the methods of this very secret craft
now the first thing I'd like to tell you
is that there are different types of big
height black holes and big bangs
there are actually four types of black
holes that are alleged and there are
three types of big bangs that are ledges
whenever you hear a proponent of black
holes and big bangs talking to you about
them do they ever tell you which black
hole in which beg bang never they never
do

so you left guessing provided of course
you know that there are four different
types of black holes and three different
types of big banks to begin with if you
don't but whether you're in a real be
disadvantaged further now there's a
thing here that a couple of things here
that I'd like to quote from lineweaver
and Davis which was published in

Scientific American in 2005 they're tell us here that the space between the galaxies is expanding okay this the Big Bang happened everywhere in the room in which you are reading this article in a spot just to the left of Alpha Centauri everywhere

thus we can conceive of the early universe as a pile of overlapping grapefruits that stretches infinitely in all directions correspondingly the idea that the Big Bang was small is misleading the totality of space might be infinite well Weinberg Steven Weinberg is a well-known physicist and he tells us that all spaces in this context may be either infinite universe or a finite universe so they're telling us what Big Bang well they put all together at once so if you're in doubt make altogether the case so if you always guess now they're talking about grapefruit so is it fruit I thought to myself we thought it's they're telling us it's grapefruit and all along we thought it

was fruit in general so we must have
made a mistake
why nominally name this the pH C B this
is the principle of hedging cosmological
bets
now let's have a look here at the
defining characteristics of black holes
and big bangs I put five up there
they've quite generic all types of black
holes have mentioned there are four
types they all share these
characteristics and the three types of
BIGBANG's that are alleged have this
characteristic let's compare them
they're very simple all black hole
universes are spatially infinite they're
eternal verities they're static or
stationary they contain only one mass
they are not expanding and they're
either asymptotically flat or
asymptotically curved that might sound a
little hairy theory but it doesn't
really matter if you don't know if you
know of an asymptote with a hyper for
example the hyperbola against the x and
y axis that's all it is now when we

compare this to all the alleged Big Bang universes we find that the Big Bang universes are either spatially infinite in one case or sorry spatially finite in one case or spatially infinite in two different cases well it doesn't match the black hole characteristic then they're of a finite age that means the non static or non station they tell us now that they're about 13.8 billion years it's crept up every now and then from the bits of increments 13.8 billion well the black hole universe is eternal the Big Bang universe is contained radiation and many masses there allegedly expanding and they're not asymptotically anything so how can you have a black hole universe in a Big Bang universe when they're diametrically opposed by very definition you can't but they do they put them all together and they never tell you which ones they're putting together now another point here is the Big Bang universe is from my previous slide you might have seen or characterized by K values I'll call them

k curvatures there's three types minus
one zero or one well we come to this one
again we see no alleged Big Bang
knowledge black hole universe has a big
bang knowledge black hole universe has a
big benkei curvature then or even the
same types of universes so but they
still put them together so we see that
black hole universes and Big Bang
universe are mutually exclusive they
can't coexist even by the very theory
that these people use
yet they put them together and construct
multiple black holes in a Big Bang
universe they never specify which Big
Bang universe and they never tell you
which black hole they're talking about
so you can see that it's quite a
nonsensical here's a little example
rather of the principle of superposition
violations it relates to what I've just
been talking about let's say X is a
black hole universe it doesn't matter
what one any one you like and we have a
wise a Big Bang universe then we have X
plus y is not a universe in Einstein's

theory why because X plus y is a linear combination and generally theory is what we call a nonlinear theory so you cannot make a linear combination of solutions the first and the second thing is we see that x and y pertain to completely different sets of Einstein field equations so they have absolutely nothing to do with one another so how do they get them to match or put them together linearly they can't but they do because they just decided that's what they want to do but that doesn't work it violates the general relativity the fear of generality itself so you can't do that but they do it all the time here's a quote from Martin Rees he's the astronomer royal he tells us that black holes are all over the place and their consequences of Einstein's theory well in what Big Bang universe he doesn't tell us but he does think it's in the Big Bang universe you can see that it doesn't make sense now all Big Bang universes contrary to what you might be led to believe are one

massing of vs. because they model the universe as being fully completely filled by a single indivisible homogeneous distribution of matter and so if that's the case how do you account for gravity all experiments show that gravity is an interaction between two or more masses well you can't get that from a model that models a whole universe as a single mass can't be divided up in the bits nonetheless they divided up into bits and tell us that the great big bang universe has got lots of black holes some of them are primordial sizes of black holes don't change types they're not types it's like human beings we've got different races but we've got big ones and small ones on a small one but you know so we've got different types different races same with black holes big ones and small ones are not types they just sizes whatever you got here now I can't read without my glasses and I haven't got good ones so what do we got here

oh yes well how do they get these black
holes and big bangs to go together they
apply the principle of superposition we
saw earlier that you can't do that
because generative is a nonlinear theory
you have two different solutions and you
add them together you haven't got a
solution right you can't do that you
have to solve a set of equation
specifically now this is not a NASA
photograph you can tell it's not a NASA
photograph because on the right hand
side written in vertical small print it
says an artistic impression this is a
standard method of presenting
photographs or images of black holes and
big bangs now we have an astronaut here
this is called spaghettification if you
don't know about it you get stretched
like a piece of spaghetti
well the astronaut on the left is a very
happy little Vegemite he's standing on
the earth
you see smiling now this one on the
right he's falling into a black hole or
maybe a star because black holes and

stars distinctly described by the same
alleged solutions so he's being
stretched why well which way is he
falling
you can't tell is he falling headfirst
or is he falling feet first let's say
he's falling headfirst the black hole
was star must be above his head
so he's falling in he gets stretched
like a piece of spaghetti because they
tell us that the tidal forces
gravitational forces on his head are
stronger than those on his feet and so
he gets stretched as he falls into this
black hole the trouble is in general
relativity
gravity's another force we see here
quote from a paper boy well him to see
there was a famous Dutch astronomer and
he tells us what we already know anyway
that in general relativity gravity is
not a force so you don't have a force of
gravity so why do they invoke forces of
gravity to spaghettify astronauts
falling into black holes in other words
they're using Newtonian ideas or forces

to describe gravitational forces where
in general there are no forces
because what's what's gravity
it's a curvature of space-time so we
would have to say the curve
to a space/time on his head he's bigger
or stronger than the curvature of
space-time on his feet in some hair
another he gets a lot more curved
stretched at such well apples are fruit
aren't they
you take you go to the you go to the
grocery remember the old days you go the
grocery store and you would go to they
have a grocer would have a a pen in a
spring balance you put your apples in
the spring balance and it stretches the
spring and you read off the gauge is
that's two dollars or whatever it cost
for the apothem apples well how do you
weigh apples using general relativity
you know it's a curvature of space-time
the what's in the spring it's a force
it's stretching the spring we know
that's forces it's very simple physics
you cannot why apples with general

relativity you can't buy anything with
general relativity so if you've got a
theory of gravity that can't account for
weighing apples at the grocery store
what kind of theory of gravity have you
got mm-hmm tell me here is a black hole
universe this is not this is based on an
earth on a NASA photograph I drew it but
it's based on a NASA photograph this is
the kind of presentations you get so I
thought I just put that in as let you
know now what do we got here let's say
that the top line the horizontal line is
flat space-time and the horror in the
vertical line goes off to the
singularity where it's infinitely curved
space-time well as you move away from
the center by the radial distance you
get closer and closer but you never
actually touched the top line horizontal
one year close this is called asymptotic
flatness or asymptotic curve it as if
it's a curved space-time right so this
is a part of the definition the black
hole it goes off to infinity and
encounters no other masses because

otherwise you wouldn't have the definition of a black hole so let's compare this now we'll compare this to two black holes well in this diagram I've got the two black holes here next to one another and a little insert there with lots of black holes we see here that in between these two black holes are they asymptotically flat no what about the left black hole and the right black hole will the left black hole encounters it's not as importantly flat between them and it encounters in curvature where the other black hole is well similarly the right black hole it encounters non it's not a knot no Kurt no no asymptotic flatness in the middle or curvature in the middle and it encounters a infinite curvature at the other black hole but by the definition of black holes they must be asymptotically flat or asymptotically curved that's not possible can't be because let's have a look at what this fellow

Daniel Stone he's a lead author on the
wide survey for NASA
they reckon they've got black holes
cornered he tells us that they found 2.5
million black holes with a wide survey
well that means each one of these black
holes that he talks about encounters two
million four hundred and ninety nine
thousand nine hundred and ninety nine
infinite curvatures all around it that's
a long way from being asymptotically
anything so that violates the very
definition of a black hole you can't
have black holes all over the place
black holes are one mass universes that
doesn't describe anything here's a real
gem I really like this one this is about
escape velocities this is what here we
find in the dictionary of geophysics and
astrophysics a black hole is a region of
space-time from which the escape
velocity exceeds the velocity of light
similarly we find in the import by
Hawking in his book the theory of
everything he tells us that you can't
escape from the event horizon white

hovers forever on the edge of the black
hole it doesn't even get out and there
here's my favorite one Professor Joseph
Lee and Hawthorne at the University of
Sydney at the Institute for astronomy he
was on television at this on the ABC one
not long ago he tells us that the escape
velocities of black holes is the speed
of light therefore light can't escape
think about that light the speed of
light is the light travels at the speed
of light the escape velocity is the
speed of light wouldn't life at escape
he tells us no it doesn't escape this is
on national television now I put a
little annotation here because it seems
to me that astrophysics has stumbled
upon a solution to a long-standing out
along outstanding anthropological
problem failure when typological problem
on the left its Homo erectus on the
right its cro-magnon man
the paleoanthropologist tell us that
hi my reckless didn't have the brain
capacity to make such contributions and
cro-magnon men they tell us had the read

the grain capacity to spot such
contradictions but somewhere in between
there's a brain capacity that can make
contradictions and never realize it
that's the missing link you all you you
know so I reckon so
so Charles Dawson and his co-accused
they didn't have to go out and get
themselves an ape-man the bull and fall
down the tooth and die there and rub
them in the closet Piltdown they get
their missing link all I had to do is
interview a few astrophysicists and
astronomers at the time they would have
found them there okay now here we got
some magical material sources this is
Einstein's field equations I've included
the cosmological constant that's a
second term there on the left
these are really ugly customers so we're
going to turn it into words but thing on
the left with the G that's one Stein's
tensor the thing with a λ
that's the cosmological constant the
thing on the right hand side is the
energy momentum tensor

well it's turned that back into some
meaningful words' space-time curvature
equals a constant times the material
source is why because space-time
curvature is the gravity gravitational
field that it's induced by the presence
of the material sources this is what
Einstein's field equations do they couple
the gravitational forces or the
gravitational field because there are no
forces to its sources okay so the
space-time curvature is induced by the
presence of material sources let's take
these two examples on the Left we've got
case one let's make the material sources
disappear like Einstein does he says
 $\Lambda = 0$ and we make the letter
 Λ equals another cosmological
constant naught as well his field
equations reduced to this thing it's
called the Ricci tensor well it's
nothing other than a statement that says
energy momentum tensor equals the Ricci
example is the Schwarzschild solution
it's a solution for that that's
supposedly a black hole solution or a

star solution on the right hand side
we've got energy momentum tensor equals
zero but the cosmological constant
doesn't equal zero so we've got the
Ricci tensor equals a cosmological
constant term and his momentum tensor
still equals naught because T is not
this is de Sitter's empty universe it's
well known
why is it empty because it doesn't
contain anything let's have a look at
this on the left hand side material
sources are naught but there's a
material source on the right hand side
energy momentum source in momentum tensor
is zero there's no material sources but
it's not empty universe so by the very very
same constraint you have matter present
and absent how can that be
it's nonsense it's impossible of course
unless you're an expert Mathematician
you can do it now the principle of
equivalence Einstein here I just taken a
little bit from it the point of it is if
you read this thing you see that his
principle of equivalence is defined in

terms of the AR priori presence of multiple masses and photons well we've just seen that black hole universes are one mess universes and we've seen that Big Bang universe is one messy reduces but in fact black hole universes are empty universes because we saw in the previous slide that there's a contradiction between these two things managing momentum tensor is zero and you have matter both present and absent that's impossible so you cannot have multiple masses in either of these two models Einstein's principle equivalence is couched in terms of the presence of multiple masses and photons so black hole universe and Big Bang universe even violate the principle of equivalence that Einstein said why should I didn't even realize himself that he was violating his own principles when he wrote these things down oh these are really nice we put some grandpoo bars of gravitation called maizena Thorne and wheeler they wrote a book is the size of a telephone book and they tell us in

that that let's read it one crucial
assumption that's at the heart or the
basis at the standard big hot Big Bang
model the universe began in a state of
rapid expansion from a nearly
homogeneous isotropic condition of
infinite or near infinite density and
pressure well I asked the question how
close to the infinite must you get to be
near infinite is it infinite minus one
maybe it's infinite minus opinion you
can never know
well he's not the only one worried Kraus
got on TV on us in Australia you
actually get on television in Australia
Larry and he tells us this that he can
get an almost an infinite number of what
universes well they are how close does
Larry have to get to an infinite to
infinity to have almost an infinite
number again is it infinity minus one
you know this seems to be a code of
practice with Astro mathematics that
you're not allowed to use common
parlance so I've got to refrain from the
vernacular so I'll translate it into

what and that's a scholarly language
have you ever heard a bigger crock right
austere Kasturi
in your life those of you who know Latin
will know what I mean those who don't
just look it up it's on you can google
it okay here's another thing they do
black holes have singularities Penrose
and Hawking tell us that they found
these singularities in all black hole
solutions well there are two types of
singularities there it's either a point
or the circumference of a circle I don't
mean a circle I mean the circumference
of a circle right and they're supposed
to be infinitely dense will you tell me
how a point or a circumference of a
circle can have mass well it doesn't
have volume so they divide the mass
which they pulled onto the circumference
or the point and they divide it by zero
and they tell you that the answer is
infinity is that real first infinity is
not a number in the second thing is you
can't by divide by zero as you know from
primary school that's not allowed it's

undefined but they do and they say it's
infinity and then they assign physical
properties to it they call them
singularities or event horizons but it's
nonsense yeah well this is just the
follow up in the previous slide these
guys Carol and Asli theis that it's not
a mathematical artifact you can divide
by zero it's not a mathematical artifact
the other guys tell us it's not a
limiting function and not a limiting
fiction so it's not like a limit in
elementary calculus you take the limit
now they're dividing by zero and it's
true you can divide by zero get
infinity 1 1 is what school I went to
I'm only glad I didn't go there
okay the infinite hotness of nothing
here's walking telling us that the
universe began and it's had a zero size
but it was infinitely high
well what's temperature it's all these
particles jiggling around isn't it don't
you have to have space to have particles
and don't they need space to jiggle
around but Hawking tells us it was zero

sighs but he's got an infinite
temperature
you've got no jiggling so he can't have
a temperature and how fast would they be
jiggling to be infinitely hot the mind
boggles you know now Larry Krauss on
television he's he's got a lot of gems
this guy he gets in television and he
tells us that he's got no there's no
space there's no time there's no
particles and they're ready he says this
is a good approximation or nothing in
other words nothing's a good
approximation to nothing you know I can
ask you is zero a good approximation to
zero so nothing is not nothing I was
another one from Larry he tells us that
he would argue that nothing is a
physical quantity it's the absence of
something can you believe it I thought
to myself does that include the absence
of neurons
here we come again he's hilarious he's a
big timer the second coming of Kraus I
couldn't resist it the universe came
again from nothing there's no radiation

no space no time no nothing etcetera
etcetera that's the reason why it's hard
he got chopped off there you can read
the transcripts someone chopped him off
they must have a cigarette but what does
hawking tell us energy cannot be created
out of nothing they just told us the
universe came out of nothing but walking
tells us no you can't Energy's not
created you can't create energy out of
nothing

what's there dark energy isn't it energy
didn't they create that out of nothing
yeah but you can't do that talk about
contradictions

here's numerical methods well they think
you can now solve for multiple black
holes while numerical methods because I
know that they can't get an analytic
solution for two or more masses with
Einstein's equations so what do they do
they pretend they've got two or more
black holes and then they applied the
numerical methods to them they haven't
given us a numerical salute or a set of
equations to solve to define the two

black holes or more black holes they
just say oh we've got these black holes
let's make numerical methods to make a
merge so it's numerical methods on
nonsense what do you get from that more
nonsense ah this is Lucy she's my
favorite blonde we talk physics when we
go walking in the park she's three years
old she's a semi and she's beautiful I
love her very much this is the
Australian grass tree it's very
interesting you see this tree it's very
ancient and fascinating it has a base
like a trunk that bright black trunk
there grows tall and you see the grass
is called a grass tree because these
grass comes out of the head and it has a
spear growing up through the center and
another top of the spear is a kind of a
spear head and it's a really ancient
thing really fascinating unfortunately
don't have time to discuss it so we'll
have to move on
now let's if you take a glass of water
and put inside a microwave oven and turn
it on tell us something does the water

reflect or absorb the microwaves if
you're an astronaut the magician you
don't know the answer but if you've ever
used the microwave oven you know that
the water absorbs the microwaves doesn't
it does it reflect them would you what
if you put a block of ice in there and
do the same thing what if you put your
head in there and you turned it on would
you do it I wouldn't do it
why because you absorbed microwaves and
your heads full of water so water
absorbs microwaves what are we know from
physics physics tells us that anything
that's a good absorber is also good
emitter right so if water absorbs
microwaves in emits microwaves that's
very important we know that from a
microwave oven
hmm now here's water some water
molecules water molecules are very
interesting the water molecule itself
can be considered as a monomer then if
you have two of them join up together
with a hydrogen bond you have a dimer
and then many of them join up by

hydrogen bonds each water molecule can form four hydrogen bonds right and this core it forms a kind of fleeting polymer structure and these hydrogen bonds are the other responsible actually for the emissions of microwaves from water so this is a very important thing to remember about water why what is the mechanism you need an oscillator of some kind to generate emissions in water it's this now absolute and differential instruments these wmf was what we call differential instrument and Coby furious was an absolutely instrument in a kind of way what the Furious satellite did it compared the sky signal to an onboard calibrator so it's still kind of a differential instrument but it's called an absolute instrument whereas W map for instance had to say two horns the signals come in and if they're the same you cancel the signals by comparing them together if they're the same signal that cancels everything out right anything that's not the same in that in the two horns is left behind as difference data

so

you have some remnants if they're exactly the same they will disappear when you subtract in signal now with the Furious instrument you have a calibrator set at a temperature that you can modify they take the sky signal and then they modify the temperature to match what they think is a sky signal and then if they get what's called a null a difference between the two is zero then this hour the sky signal is exactly what our collaborator is because now we get a zero white can separate different in the two well with W map they remove what's called the monopole seed with the mean temperature of the so-called Cosmic Microwave Background and they're left with little bits that aren't the same in the two horns so that's called the anti so trapeze right so this is the difference between the two the Planck satellite however was a bit different it's capable of an absolute the detection and it's also capable of a differential measurement right so the

question is what did these satellites
measure well the first thing is when you
take a real microwave image let's think
of what it's composed of think of
transparencies piled upon one another
right the top one we've got here the
Galactic foreground that's noise you got
to get rid of that it's a lot of noise
coming from the galaxy it's a meeting in
microwave how do you get rid of that
data processing then after that we've
got a monopole signal this is around
about three Kelvin the foreground is
about millikelvin
then we've got a dipole signal it's due
to the motion of the satellite against
the Galactic group or the local group
it's in nearly Kelvin as well and behind
all of these we have what are called
multi polls higher orders it's because
it's made into an infinite series
mathematically it's an infinite series
in spherical harmonics okay so we've got
to get rid of the Galactic foreground
the dipole signal and what's left our
mean temperature well then we want to

get rid of that and we can get the
dipoles so sorry I'm the multipoles
now balloons and Rockets went up into
the atmosphere so they measured stuff in
the atmosphere

well when we've talked about water in
the microwave what about the earth is
not covered in water the Earth's about
70 percent coated in water covered in
water water emits microwaves these
microwaves are going up into the
atmosphere they're getting scattered
around Coby didn't have a shield for
microwaves only RF and thermal so what
is it's 900 kilometers

it's getting microwaves from Earth
because they're bouncing over the shield
of deflecting over the shield all of
these balloons and satellites which
rather balloons and rockets up into the
atmosphere the Earth's atmosphere is
full of microwaves from water reservoirs
the atmosphere is full of water too so
we have a look now where these
satellites are located here is Kobe
furious very close to the earth 900k is

up right and this is not the scale of
course so it's getting microwaves from
the War of the earth it's going up into
the Furious horn by diffraction right
they think it's cosmic but it's not it's
getting it from the earth right because
watery mids and they couldn't protect it
from this here is an inner fury Graham
from the Kobe theorists team see the top
trace this is where they say they get a
null between the sky and a temperature
about what seven point two point seven
three five two point seven five nine is
it yeah I think so and then you look at
the second trace this is a sky it's a
near Nile at two point seven some other
one and between the two calibrates that
they had on board well this is very
deceptive you see the top trace in the
bottom trace they're on the wrong
they're on a different scale the Kobe
Furious team published this if you read
that you think oh they must go to a null
they didn't they didn't get a null in a
way because the top and bottom traces
three two fight they had their amplitude

suppressed by a factor of three to five
compared the middle one so if you
amplify these two traces of top and
bottom they didn't get to know anywhere
but they claimed they did not even at
that temperature they claimed it was a
two point seven to five that it doesn't
even appear in their data so that's a
pretty shifty looking graph here's
another one notice that this is a
blackbody curve it differs from the
perfect one by nothing it's the the
error bars are 400 times smaller than
the width of the width of the curve and
what do you find here let's count the
divisions from the from zero one two
three four is something wrong three this
graph has been shifted to the left
there's a division missing where does it
start
they haven't told us where it starts
that's very convenient now we might
analyze that and try to figure out where
it's
make some sense of it but they presented
this as a data that's the data for their

blackbody curve so the separative graph
it seemed properly labeled why did they
do that well they didn't get a graph
that didn't get an inferior gram that
got him a temperature with a null and I
present this is a perfect null
doesn't add up here is a monopole signal
it fills the sky that's the one that's
the so-called mean temperature of the
CMB it fills everything right that's the
one that they say is the temperature of
the universe here is the DMR or the
differential microwave radiometers from
Kobe notice that there's a big strip in
the middle red that's the Galactic
foreground why is it present because
they couldn't zero the foreground so
they present here an anti Sacopee map
with the foreground the foreground is
anisotropic the monopoles disappeared
because the two horns cancelled and
remove the monopole because it's in the
same the same in each horn but here
we've got the bits that differ including
the glycan ik foreground well it appears
because I couldn't get rid of it they're

trying to look through the galaxy to
find these little bits that are 1
million times smaller than the mean
temperature of the so-called CMB well if
you can't get rid of it with data
processing you use scissors see they cut
it out I didn't do this
this comes from George Smoot he did it
with scissors
can you believe it well here's a really
interesting thing I'd like to read it to
you so I'll come over here so I can read
it properly this is from some smut and
his colleagues we were confident that
the quadrupole was a real cosmic symbol
by late January and early February the
results were beginning to gel but they
still did not quite make sense
I tried all kinds of different
approaches plotting beta in every format
I could think of including upside down
up down backwards just to try a new
perspective and hoping for a
breakthrough and I thought why not throw
out the quadrupole the thing I'd been
searching for all those years and see if

Nature had put anything else there why
by puzzled did I have to remove the
quadrupole to see the wrinkles well
quadrupole is one of those multipoles I
talked about before
he thinks they're real right well
professor Robert has got a really really
neat answer to this the answer to this
question is one of data processing when
smart and his colleagues impose the
systematic removal of signal they
produce the systematic remnant in
essence the act of removing the
quadrupole created the multipoles and
the Associated systematic noise repeat
once a quadrupole has removed the
multipoles appeared as extremely
consistent variations on the maps parent
and isotropy must not be generated by
processing so in other words George
Smoot and his colleagues couldn't tell
the difference between data and data
induce spots before their eyes they
think that's data here is where l_2 is
see the earth l_2 is 1.5 million
kilometers away from Earth

that's where W map was and where the Planck satellite was there's no monopole signal out there W map couldn't detect it because it was a differential instrument Planck has never reported the finding of a monopole why because there is no monopole the monopole signal with a mean temperature is from Earth from the water in the atmosphere and that's what Kobe detected it didn't have a shield remember the microwaves diffracted over here is some comparative maps well look at this on the left Piper corner that's the K band this is these frequencies in which W map sampled look at that how red is that it was full of so much noise it was useless the one next to it's not much better so what did they do decide to do well they combined all of these maps and then they played around with it and they waited the V band why because it looks the best we don't like that one up in the left-hand corner we'd better not use it so they gave it really low weighting and they did this to get themselves a map of the

universe that looks like this magically
all that noise from the flight before
ground is gone yeah but remember it's
1,000 times weaker than the Galactic
foreground well we know from laboratory
experience if you're trying to extract
the signal that's 1,000 times weaker
than the noise you can only do it if you
have one of two things satisfied you
either they have up
your knowledge of the nature of the
source or the ability to manipulate the
source if you can't do that you can't
extract that signal that noise is too
overpowering so how did they do it data
processing on nonsense this is the
Planck receiver low-frequency instrument
they compared the sky to another onboard
calibrator right just like ferris did
right but it's a more sensitive
instrument goes in they compare the
thing in that box right now let's have a
look at there see this this is their
calibrator or their load notice on the
bottom how they connected it they
connect the dead load their so-called

black body by bolting it to the high
frequency shield the high frequency
shield was maintained at 4 Kelvin right
this is supposed to be a black body
comparator in other words this should be
a meeting around about 4 K into the horn
as an emitter but it's got one those
those connectors there are stainless
steel washers you got conduction so
they're conducting heat out of this into
the shield they're not this doesn't have
to meet a single photon in other words
they're black bodies on board don't even
work so Planck this is a serious design
flaw Planck cartridges anything without
the 4 K loads there's no monopole adèle
- they can't they can't find anything
how do they do it well it's just the
data procedural issue the main you know
none of its real so my final fliers is
believe it or not it is now being
alleged that alignments between the
dipole and the multi poles of the
fictitious CMB or generated by data
processing form an axis of evil
seriously and this axis of evil right

tells us that we are at the center of
the universe we're going back to
medieval times with epicycles and the
earth is at the center of the universe
can you believe this that's what now the
CMB is being useful right now I had a
lot of jokes about this but the truth of
the matter is it's serious but it's so
ridiculous that you can't help but laugh
at the
physics is now become intellectually
decrepit so I will conclude there by
telling you why what the parallax effect
on short here really is well according
to the grand poobahs again it's a Baldy
pipe why because black holes they don't
have any hair that's the reason why I
gave that title thank you very much

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

August 26, 2017 will mark
the 5-year anniversary
of the inaugural episode of
the science video series
Space News from the
Electric Universe.

The Thunderbolts project created
this series as an opportunity
for its chief principals and many contributors
to offer analysis and explanation
of space science discoveries
in the world today.

For many years previous members of
the electric universe community
have become increasingly aware of
the remarkable predictive successes
of electric universe theory versus
those of the standard cosmology.

But it's also apparent that a
disturbing disconnect exists
between science discovery and the

direction of the theoretical sciences.

Many of the most significant
space discoveries,
completely unexpected
in standard reasoning,
seem to rarely, if ever, force any meaningful
reassessment of foundational theory.

Other discoveries seem to
have been forgotten entirely
disappearing down a memory hole and never
mentioned in science literature again.

Therefore, we shall now begin
a comprehensive summary
of the amazing content we have
covered in the last 5 years
and, as you will see, at every
scale throughout the universe.

The ability of the
Electric Universe theory
to both predict and explain discovery
has never been more evident.

In recent years there have been
unprecedented opportunities
to learn about the nature and origins of one
of the most mysterious objects in space,
the comet.

The Electric Universe has always offered
an interpretation of comets
that radically differs
from standard theory.

Comets are not dirty snowballs,
the primordial icy leftovers from
the solar system's formation
four-and-a-half
billion years ago.

Comets, as well as asteroids and
meteoroids, were born far more recently
formed by electrical discharges from
the surfaces of planets and moons.

Because comets are
not icy bodies
they do not slowly sublime
due to solar heating.

Comet activity, including the production
of comet jets and the cometary coma,
is electrical activity.

The detection of signatures of
water molecules in cometary coma
is due to electrochemical
reactions at the comet,
as we'll explain further,
later in this episode.

In fact the findings of increasingly
ambitious comet missions
have overwhelmingly confirmed the
predictions of the electrical model.

Combined, the list of surprises amount to the
clear falsification of standard comet theory.

One of the many game-changing
surprises came as far back as 1996
when the Ulysses spacecraft
encountered the ion tail of Hyakutake.

At the time the spacecraft was more
than 360 million miles from the comet
or roughly four times the distance
of the Earth from the Sun.

The belief in electrically
neutral objects in space
has prevented mainstream scientists from confronting
the obvious conclusion of this discovery.

In order to remain intact over
such a stupendous distance
rather than dispersing
like a gas in a vacuum,
the comet tail must carry
an electrical current
to confine the material
and prevent its dispersal.

Electric currents in space, traveling
through the conductive medium of plasma,
take the form of twisted filaments,
known as Birkeland currents,
which look a bit like
braided copper wire.

In fact, in decades subsequent to
Ulysses' counter with Hyakutake
the Birkeland currents and comet tails
have been imaged in ever finer detail
clearly confirming their
electrical nature.

The emission of x-rays from Hyakutake
also shocked comet investigators.

As dr. Michael J Mumma
wrote about the discovery,
"Astronomers...decided to look at Hyakutake
and they were shocked by what they saw.

ROSAT images revealed a crescent-shaped
region of x-ray emission
around the comet 1,000 times more
intense than anyone had predicted...

We had no clear expectation that
comets would shine in X-rays."

Comet scientists responded
with the ad-hoc notion

that the Sun was entirely
responsible for the x-rays,
suggesting that the solar wind scavenges
electrons from a cometary atmosphere
resulting in a recombination sufficient
to generate the observed x-rays.

The surprises in comet science
continued and intensified.

In 2001, the NASA
spacecraft Deep Space 1
captured the finest image to
that time of any comet nucleus.

What scientists saw bore no resemblance
to the dirty snowball of Standard Theory.

The leader of the mission's
imaging team said at the time,

"It's mind-boggling
and stupendous.

These pictures have told
us that comet nuclei
are far more complex than
we had ever imagined.

They have rugged terrain,
smooth rolling plains,
deep fractures and very,
very dark material."

Scientists were also
stunned when they found
that the flow of ions around
the comet's nucleus was
"not centered on the comet's nucleus as
scientists expected before the Borelli flyby."

But none of these findings
forced any real reassessment
about the nature of comets prior
to NASA's Stardust mission in 2004.

In fact a microchip, riding
on the Stardust spacecraft,
was inscribed with the following
pronouncement from Fred Whipple,
the father of the dirty
snowball comets model,

"Today we know that comets
are black and cold,
consisting of ices and dust that
coalesced from an interstellar cloud
as it collapsed to
form the solar system."

So it's no wonder that scientists
who subscribe to this concept
were completely baffled by the
Stardust finding at comet Wild2.

The surprises began with the
Comet's visual appearance
which was desiccated,
complex and rough,
rather than icy and smooth.

A major shock was the presence of so-called
impact craters on the comet nucleus.

As reported by New
Scientist in 2004,

"That is completely unexpected
because comets are believed
to be loose aggregations of dust and
ice that would shatter on impact...
if the pits are craters,
the surface of the comet nucleus must
be much stronger than experts thought."

NASA's Ray Newburn
said of the discovery,

"I don't think any of us ever really
considered the possibility of impact craters..."

It may be a well-
cemented rubble pile,
but it's definitely not
a loose powdery surface."

When scientists on Earth tested
the Wild2 dust samples,

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 grain,
the Wild2 dust grains were
much larger than expected
and contained minerals such
as anorthite and diopside
which required 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.

Unfortunately, neither these nor the many
previous astonishing comet discoveries
seemed to force any
reevaluation of comet theory
prior to the Deep Impact mission

to comet Tempel 1 in 2005.

Scientists still assumed that
comets were dirty snowballs
that accreted four and
a half billion years ago.

But the chief principals of the
Thunderbolts project felt confident
that the NASA mission would only provide
support for the electric comet model.

Prior to the July 4 2005 impact
date for the Tempel 1 probe,
Wallace Thornhill and David Talbott issued
a series of predictions for the event
which were published on the
Thunderbolts.info website.

Because of the comet's
low eccentricity orbit,
they wrote that electrical interactions
with the approaching probe,
"May be slight, but they should be
measurable if NASA will look for them...

The most obvious would be a
flash shortly before impact."

And they predicted that temperatures
associated with the event would be,
"much higher than expected

from impact heating."

They also predicted, "More energy will be released than expected because of the electrical contributions of the comet."

And they predicted that the impact crater, left by the NASA probe, would be smaller than expected because the comet is rock, more similar to an asteroid than a loose conglomeration of ice and dust.

These predictions, as well as several others on the comet's composition and surface terrain, received stunning confirmation.

Moments before the 800-pound copper projectile struck the comet nucleus, NASA scientists were amazed by the bright electrical flash shortly followed by an explosion much larger than they anticipated when the impactor contacted the surface.

As NASA investigator Peter Schultz said at the time, "What you see is something

really surprising.

First, there is a small

flash, then there's a delay,

then there's a big flash and

the whole thing breaks loose."

Nor did the projectile leave nearly the

dramatic impact crater scientists had predicted.

Just one piece of evidence

that the comet nucleus

was much harder than

NASA had expected.

As reported by Universe Today,

"Swift scientists have seen a quick and

dramatic rise in ultra violet light,

evidence that the Deep Impact

probe struck a hard surface,

as opposed to a softer,

snowy surface."

In 2011, when the Tempel

1 nucleus was reimaged,

scientists had to explain why the

crater left by the projectile

was much smaller than predicted.

The Deep Impact team then

made the extraordinary claim

that ejecta exploding

off of the comet
somehow fell back down
and refilled the crater
in the near zero-gravity
environment of the comet.

As reported by space.com
at the time,
"Tempel 1's man-made crater
partially healed itself
as the ejecta settled and
refilled part of the depression."

Like every other comet
nucleus image to date
Tempel 1 appeared
desiccated and rocky
nor did the projectile
produce the expected release
of theoretical subsurface
water on the comet.

As noted by astronomer
Charles Qi in 2005,
"The material that came out
was a surprise to scientists:
a cloud of fine powdery
material emerged,
not the water, ice and

dirt that were expected."

Nor did close-up images of the
nucleus reveal the theoretical vents
from which comet jets
are supposed to emanate.

As reported in the journal *Icarus*
in 2007 by P C Thomas et al,
"It has proven difficult to identify
specific landforms that can be identified
as the 'vents' discussed for many
decades in classical comet literature,
as it is difficult to locate
them on Borrelly and Wild2."

Nevertheless, when we
fast-forward to 2014,
scientists with the European Space
Agency's Rosetta mission to comet 67P
appeared to offer no meaningful
revisions of comet theory,
even in the face of all
previous surprises.

The mission to land a
probe on a comet nucleus
was based on the notion of
comets as icy snowy accretions,
left over from the solar

system's formation.

But the major surprises

for investigators

began long before the Rosetta

spacecraft reached the comet.

One early puzzling detail was

the comet's double-lobed shape,

a mystery also found on

several other imaged nuclei.

Eventually, Rosetta scientists

settled on the hypothesis

that the comet's strange form

resulted from two comets

improbably colliding in

a vast region of space

and somehow sticking together

rather than disintegrating.

But as we noted in many

Space News episodes,

the double lobe form is important

from an electrical perspective.

As electrical engineers

have always known,

peanut-shaped spherules are common

products of electrical discharges

as seen in this example

by physicist CJ Ransom,
compared side-by-side
with comet 67p.

As the probe drew closer, the comet's
complex desiccated rubble-strewn terrain
which was, in the words of
one Rosetta investigator,
"dry like hell", drew increasing
expressions of amazement
from scientists around the world.

The amazement was understandable,
given the complete refutation
of the standard predictions
for the comet's form.

Consider this side-by-side
comparison of images
revealing the failure of
comet theory over the years.

On the left is an artist's rendition of
the expected appearance of comet Halley
before the mission
to Halley in 1986.

We see a smooth snowy surface,
exactly what one expects
if comets are icy accretions
whose dramatic displays result

from sublimation of ices.

In the middle we see

a slightly modified artistic rendition,

forged leading up

to the Rosetta mission,

a surface that is still

covered with snow and ice

but modified to reflect the

completely unexpected images of dry,

rocky and complex comet nuclei.

On the right we see the

actual nucleus of Comet 67p

as imaged by the Rosetta mission.

It wasn't just the dryness of 67P's terrain

that startled mission scientists.

Closer and closer images

revealed greater mysteries

as the topography of the nucleus

revealed numerous planetary features,

an explicit prediction

of the Electric Universe;

including mesas,

rubble and large boulders,

cliffs, sharp edges,

wind streaked rocks

and incredibly,

even sand dunes.

There was also

stratification of material

and evidence for complex

geological layering.

If comets were electrically

excavated from planets and moons,

as proposed by the chief principals

of the Thunderbolts project,

all of the observed

features are to be expected.

Consider again this side-by-side

comparison of a region of the 67p nucleus

and the Sawtooth

Mountains on earth.

The electric comet model also

predicts that comet activity

is generally driven by the comet

experiencing voltage spikes

when it moves from the relatively negatively

charged outer regions of the solar system

towards the Sun's more

positively charged domain.

This perspective predicts and

explains many of the Rosetta findings

including the "surprising discovery

of fast-moving electrons
and electric fields very close
to the comet nucleus"
as well as the discovery of
negatively charged fluffy dust grains
lofted from the nucleus.

Electrical discharge activity on the comet
also explains the formation of sand dunes
and other unexpectedly dynamic
changes on the comet's surface.

As we explained in
several Space News episodes,
the initial observation of sand dunes was met with
complete disbelief by scientists around the world.

As blogger Emily
Lakdawalla wrote,
Other features are odd
because they look familiar
and yet have no right
being on a comet.

I've called them 'rhythmic ridges'
...but to pretty much
everyone who looks at them,
they look like sand dunes.

Which are just plain impossible on
a body that has neither atmosphere

nor much of any gravity."

In multiple Space News episodes,
we presented experimental footage, as shown
here by researcher Billy Yelverton,
showing that sand dunes are
easily created by electric fields
which produce ionic winds
and organize dust material.

In fact, the scientific mainstream has finally
begun recognizing the electrical cause
of dust raising events on comets
and other solar system bodies.

In a 2016 NASA funded study
the researchers suggest an electrostatic
mechanism for dust transport on many bodies
including the Moon,
asteroids, and comets.

A Phys.org report on the
study stated that,

"Electrostatic processes may be
responsible for the Rosetta detection
of fluffy dust particles released
from the surface of comet 67P."

But when considering the
nature and origins of comets,
one pathway that comet investigators

must be willing to explore

is the explanation of comet water

production by electrochemical means.

In recent years, Dr.

Franklin Anariba,

a specialist in electrochemistry at Singapore

University of Technology and Design,

has been presenting his thesis at

annual Thunderbolts conferences.

In a five-part Space News

presentation in 2015,

Dr. Anariba proposed that a process

of electron stripping releases O₂,

OH and other chemical species

into the cometary coma.

The discovery of an electron density in the

vicinity of the 67P nucleus is important.

It can mean that the chemical O₂ can absorb

a negative charge through charge exchange

which is then followed by a process called

protonation via solar wind at the comet.

Water formation can then be

explained via a series of pathways

as Dr. Anariba has outlined.

This explanation, never pursued by comet

investigators in the scientific mainstream,

could eliminate the need for any imaginary
reservoir of subsurface comet water ice
and it explains many
comet mysteries,
including the amazing
desiccation of comet nuclei
and the overabundance of so-called water
production found in many cometary comas.

It was a puzzle to
67P investigators
why the comet was already
producing an abundance of water
and surprisingly rich molecules,
even while hundreds of millions
of kilometers from the Sun.

But recent scientific papers may be moving
the investigations in the right direction.

A major shock for scientists on Earth was
the detection of abundant molecular oxygen
and so-called outgassing
from the 67P nucleus.

If comets are really leftovers
from the solar system's formation,
scientists had long excluded any
possibility of molecular oxygen
being trapped in the so

called primordial bodies.

As reported in India's

national magazine Frontline,

"The detection of

O₂ was unexpected...

all the primordial

oxygen molecules,

which would have been there in a comet's

evolution around 4.6 billion years ago,

should have disappeared by now...

the Rosetta's discovery of O₂ in

67P/C-G is an astrophysical enigma."

In a paper published in the

journal Nature Communications,

scientists Yao and Giapis

essentially proposed

that water molecules coming off the

comet become electrically charged.

Then the solar wind accelerates the charged

molecules back to the comet's surface.

There they pick up an oxygen atom from

the surface from materials such as sand,

forming the detected O₂.

As investigator Giapis stated,

"We had no idea when we built

our laboratory setups

that they would end up applying
to the astrophysics of comets.

This original chemistry mechanism is based on the
seldom-considered class of Eley-Rideal reactions,
which occur when fast-moving
molecules, water in this case,
collide with surfaces and extract atoms
residing there, forming new molecules.

All necessary conditions for such
reactions exist on comet 67P."

However, even with the
dirty snowball theory now,
in the words of Nicholas
Thomas "blown out of the water",
scientists continue to assume that
comets are primordial icy bodies
that formed over four-and-a-half
billion years ago.

Following this brief
summary of comet missions,
in our next episode we will explore
many landmark comet discoveries
all of which seem to affirm the
electrical nature and origins of comets.

For continuous updates on Space
News from the Electric Universe,

stay tuned to

Thunderbolts.info

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

In a recent Space News episode, we
began the first of a series of reports
that challenge the very underpinnings
of consensus scientific theory
on the nature of stars,
including our own Sun.

Ever finer technological data continues
to provide increasing opportunities
to test the respective predictions
of the Electric Universe theory
versus those of the
Institutional Science.

As Wal Thornhill explains in the
first of this two-part episode,
new discoveries all point
toward the perhaps
inevitable confirmation of
the Electric Star theory.

Scientists don't
understand stars.

Not a single feature of

the Sun is predictable,
based on the standard
model of the Sun.

We can't see inside the Sun except for a peep
through the holes punched in the photosphere
we call sunspots
and there we don't see energy trying
to escape from inside the Sun.

It's cooler down there.

That's why the
sun-spots appear dark.

But as usual, a model once adopted
as a standard becomes a belief.

Stars are believed to be isolated
thermonuclear campfires in the sky
that eventually burn out.

All data must be fitted somehow to
the model or discarded as an error.

The operative word is "somehow."

No alternative
model is possible.

That is how we, fallible mortals,
apply the scientific method.

Many who are familiar with the
Electric Universe have said to me
they can't watch

astronomy programs

because the blatant

misinformation makes them angry.

The programs begin with a litany of

"facts", most of which are baseless.

For example, a popular online lecture

in physics enthuses, and I quote,

"A star is born when nuclear

fusion ignites and produces heat.

The star is formed first when

matter falls in gravitationally,

matter attracts each other, and falls in and

heats up to tens of millions of degrees

— then nuclear fusion produces

energy and the star is born.

Our sun was born about

5 billion years ago."

So goes the myth!

There is not a single

fact in any of this.

It ignores the recent evidence of

stars being born in molecular clouds

along glowing current filaments.

It doesn't match the story!

The discovery shows dust and

gas is efficiently scavenged

over many light-years towards
the current filament.

Unlike weak

gravitational collapse

which is limited in range and directed
radially inwards, towards a center of mass.

Any rotation of the cloud inhibits gravitational
collapse, giving time for the heat,
generated by matter spiraling
inwards, to be radiated away.

Nuclear fusion in stellar
cores, composed somehow
of the lightest element hydrogen,
is the improbable claimed result.

The fusion model of stellar energy was
grasped at, more than a century ago,
simply because it seemed like the
only option for an isolated star
producing prodigious energy
for unimaginable time spans.

Yet, as our project manager and chief
engineer of the SAFIRE experiment,
which is designed to test an electrical
model of stars, pointed out,

"The steady shining of countless stars
in the night sky requires they be lit

by a simple controlled process."

The hydrogen bomb model applied to stars
is not simple, stable or testable.

If it were the answer, a night sky
should resemble a fireworks show.

Meanwhile, our experimental attempts to
force nature to conform to our beliefs
have led nowhere in the
quest for fusion power
— like the Sun.—

Clearly, scientists
don't understand stars;
their birth, how they shine
and their supposed death.

Recent reports highlight
this obvious fact.

Phys.org's reported on September
12 last year and I quote,

"Stars form within the dense regions
of diffuse molecular clouds,
but the physical processes
that determine the locations,
rate, and efficiency of star
formation are poorly understood.

Recent thinking envisions an
approximate two-step process:

first, a network of dense filaments
form, due to large scale turbulence,
and then fragmentation into cores
occurs as gravity starts to dominate.

In the dense gas, the structure
formation is affected by motions
induced primarily
by three processes:

supersonic turbulence, self-gravity,
and magnetic fields."

The words "Poorly understood" are
code for, "We have no idea."

There is no known way that supersonic
turbulence and magical magnetic fields
can produce the many light-years
long, constant-width,
glowing filaments and their
structured magnetic fields.

Astrophysicists are ignorant of Hannes
Alfven's prediction, made decades ago,
that stars would be formed
precisely that way,
by powerful scavenging of matter
along magnetically pinched
galactic current filaments
inside molecular clouds.

The reason given by

one astrophysicist;

"We know there's electricity in
space but it doesn't do anything."

Such is the dysfunction of
narrow specialism in science.

So a star is not formed when
matter falls in gravitationally
and matter doesn't fall in and heat
up to tens of millions of degrees.

The electrical accretion process
stratifies elements radially,
according to their
ionization potential.

It produces cool cores of heavy
elements, like beads on a string.

But nuclear fusion in a cool,
heavy element core is impossible.

So it makes far more sense that stars
are a cosmic electrical phenomenon
involving their photospheres.

Fusion occurs on the

Sun, not in it!

All stars produce the heavy elements seen
in their spectra by warm plasma fusion
and neutron capture in

their photo- spheres.

In contrast of the brute force
approach of particle physicists
requiring incredible pressure
and millions of degrees.

Earlier in May last year, there
appeared a groundbreaking paper
in the journal Astronomy

And Astrophysics,
which showed a slingshot effect in a
star-birthing filament of the Orion Nebula.

These glowing filaments snake
about inside the nebula
like the radiant filaments
in novelty plasma balls.

The stars are formed while
moving with the filament
but as the star gets more
massive it is slung out,
ready formed and switched on as the
glowing filament accelerates away.

This may help explain the
size limit of stars.

Stars are the electromagnetic
offspring of electric galaxies.

So nearby stars have rotation axes

that line up closely with each other
because they are all spun up along the
same, rotating, electrical umbilical cord,
known as a Birkeland Current.

Do we have evidence for the alignment of
spinning stars born in the same event?

Yes we do, and as usual it
has mystified researchers.

On March 14th this year, John Ross in the
Australian national newspaper reported,
"Australian astronomers studying
stars' internal upheavals
have opened a new fault line in theories
about the universe's formation.

Researchers monitoring 'starquakes'
— the stellar equivalent of earthquakes —
have found a startling symmetry in dozens
of swollen stars known as red giants.

The findings open a new mystery around
the formation of clusters of stars
from swirling clouds
of molecules and gas.

Co-author Dennis Stello said these gas
clouds rotated on their own internal axes.

Astronomers had assumed the initial
spin orientation would become scrambled

by the colossal turbulence generated when
they coalesced into families of stars."

"The results were
unexpected," said Dr. Stello.

"We found that the spins of most of the
stars were aligned with each other.

Previously it had been assumed
that massive turbulence
would have scrambled the rotational energy
of the clouds where the stars were born,
and prevented this alignment."

This statement shows characteristic
blindness toward earlier evidence
that also doesn't fit the
accepted story of star birth.

So the published paper doesn't refer
to the filamentary star-birth paper,
where the answer to the
mystery clearly lies.

Specialists tend to ignore other
specialists, even in their own field,
when findings are off the
edges of their belief map.

Such is the dysfunctional
state of modern science.

For continuous updates on Space

News from the Electric Universe,
stay tuned to
Thunderbolts.info

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

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

Our world was once a
vastly different place,
to experience this won't hurt you,
and there is nothing to fear.

The Separation of Heaven and Earth

A mythic archetype is a
broadly distributed pattern
of ancient storytelling
and magical re-enactment.

In the past century cross-cultural studies
have identified hundreds of archetypes,
and our own study has added
many themes to the list.

Of all the named archetypes, one
of the most recognizable is
the towering God holding aloft
the great sphere of Heaven.

Greek poets and philosophers named
this Heaven bearing giant Atlas
but almost all of the early cultures seem to
have remembered a similar mythic personality.

And how curious that this

archetypal quasi-divine power
was said to have separated
Heaven and Earth,
dividing a world above
from a world below.

What natural phenomenon could have
provoked this remarkable theme
-- the separation
of above and below?

Our claim in these Discourses is
that extraordinary natural events
occurring just prior to the emergence
of the great civilizations
sparked an outpouring of creative
activity and commemorative rites,
all encoding a universal
human experience.

Hundreds of cross-cultural
themes or archetypes
traced to the beginnings
of human history
and to the early experience of what
we've called the polar configuration.
In earlier Discourses, we introduced
the role of the world mountain,
a visible pillar rising along

Earth's rotational axis.

In response to this awe-inspiring presence,
the early cultures consecrated sacred hills
and holy mountains as special symbols
of a formerly witnessed cosmic column.

And they invested massive labors
in monumental construction,
all commemorating the celestial home
and resting place of an ancestral God.

In fact, the theme of the world mountain
converges globally with another theme,
the cosmic giant bearing
aloft the sphere of Heaven.

By following this theme back
to its first expressions,
we uncover the original meaning
of the phrase above and below,
a radical meaning that is essential to the
story of the world mountain or cosmic pillar.

Egyptian texts and art depict
the Heaven-supporting God Shu
as a pillar-like form
with upraised arms.

The priests declared that these arms
created the separation of above and below.

We explain this relationship by the

role of the illuminated crescent.

In visual terms the crescent suggested
two extensions of the pillar,
and it divided the vast sphere of the primeval
unity, Atum, into upper and lower regions.

With this connection
in mind, we can avoid
the fatal mistake in common
treatments of the Atlas theme
-- the assumption that Atlas
bore the Earth on his shoulders.

That idea is directly contradicted
by the Greek chroniclers themselves,
who consistently recognized the celestial
nature of the burden Atlas carried.

"...And he, no other, holds the tall pillars
that keep the sky and Earth apart."

- Homer

"Atlas through hard constraint upholds the
wide Heaven with unwearying head and arms."

- Hesiod

"Does not even now great Atlas struggle
to bear up the weight of Heaven?"

- Pindar

Many additional citations could be given to
make this point, but in these Discourses,

we're not just calling for a correction
of one popular interpretation.

Those who followed earlier episodes will
not be surprised by our identification
of the upraised arms of the Egyptian
Shu as a crescent-form appearing as
extensions of a single pillar reaching
upward along the polar axis of the Earth.

As detailed in previous episodes, the twin arms
of Shu trace to the role of a visible crescent
upon the giant sphere of Saturn in
the ancient sky close to Earth.

The language takes its meaning from the
early phase of the polar configuration
as it emerged from the undifferentiated
ambient glow of an earlier time.

In this earlier phase, the dusty plasma medium
through which the gathered planets moved,
diffused and softened our Sun's
natural illumination of these bodies.

The arrival of this crescent
was a widely celebrated event.

It meant the beginning of a daily
cycle which the mythmakers themselves
designated as the coming of
the first day and night.

Our identification of the polar column
with the activity of the planet Mars
constitutes a prediction as to the prime player
in the so-called separation of Heaven and Earth.

Classical authors recognized in the
Egyptian Shu their own archetypal warrior;
the Greeks named the God either as Heracles,
a name they gave to the planet Mars,
or as the warrior Aries - the
most common name for Mars.

The Romans followed suit, naming
their own far-famed warrior as Mars
and identifying their semi-divine
ancestor Hercules as that very planet.

When viewed as a mythic image of
the crescent and polar column,
the explanation leaps out
from the historical material.

The crescent arms of the Heaven- supporting divinity
being the upright crescent form of the configuration,
visually extending the mythic
function of the pillar itself
and most dramatically so in its
symmetrical midnight position.

That was the most celebrated
moment in the ancient day.

This archaic day began at
sunset when the sky darkened
and the planetary configuration
continue to grow brighter,
reaching its peak
brightness at midnight.

Thus, it is that from earliest
times in ancient Egypt,
we see the arms of Shu raising
up the primeval sun-God Atum
from the darkness of the abyss.

So when Atum declares, "I do
not fall on account of Shu",
it is the pillar and twin arms of Shu that
give concrete meaning to the language;
the cosmic perch and resting place
of the primeval sun-God Atum
as noted in our previous episode
is the pillar of the sky,
its function emphasized
by the twin arms of Shu.

The two extensions of the cosmic pillar,
or in the two peaks of the world mountain,
mean precisely the same thing.

As presented in Egyptian sources, the
creation story focuses on the separation

or holding apart of two regions typically

mistranslated as Heaven and Earth.

Egyptian priests knew Atum as the primeval

unity meaning the one -- the all.

In the creation events

through the activity of Shu,

this unity gave way to profound

differentiation into a duality.

What was then seen from Earth as

the extended upright arms of Shu

produced the visual

appearance of a division

-- a formerly unified whole divided

into regions above and below.

Thus, our explanation of the pillar-

God's two most vital functions;

as the stable support of Atum

and as the ancient power

that created the so-called

separation of Heaven and Earth.

Egypt: The Ka-arms of Shu

separated above and below

We identify both functions with the

visual contribution of the planet Mars

to the emergence and evolution

of the polar configuration.

Specifically, the World

Pillar or World Mountain.

Egypt: "I am raised aloft on my perch

above yonder places of the Abyss."

Egypt:

"I do not fall on account of Shu."

Of course, distance from

these events over time

allowed the concepts to drift

away from things originally seen.

And yet many centuries later,

we still see the God Shu standing

upright as the pillar-God

filling the space between the arching

form of the Goddess Nut above,

and the recumbent form of

the male power Geb below.

When presented in this

way as opposites,

the Egyptians named the domain marked

out by the crescent above as Pet

-- equated with the Goddess

Nut in the emerging duality;

and the region marked out by the crescent

below as Ta -- equated with the God Geb.

But in the absence of anything

presently observed in the sky,
the translators render the upper region of the
sphere as Heaven and the lower region as Earth,
introducing contradictions that could
only confuse these Egyptian concepts.

For any reliable interpretation,
the reference must be considered
in their archetypal original
and testable contexts.

For us the objective contexts mean concrete
forms in the sky and concretely experienced
natural events reconstructed from the
deepest cross-cultural agreement.

In fact, as we intend to show
in the episodes to follow,
every archetype relating to the so-called
separation of Heaven and Earth
will fall into place as predictable themes
within the context of this reconstruction.

As you follow these Discourses, you can
assess this testability for yourself
as we continue surveying the entire panorama of
ancient myths, symbols and sacred practices.

The most critical
themes are firstly,
an original undifferentiated

condition or absence of form;

and secondly, an emerging geometry of creation

with specific regions above and below;

and thirdly, a central role of the archetypal

warrior hero as the cosmic pillar personified,

filling the role of the Demiurge -- a primeval

power executing a divine or intelligent plan.

Thus, the role of the cosmic

Warrior was paramount.

The separation of above and below was, in

fact, the Warrior-God's first achievement,

even before he had earned

his title as Warrior-God.

on the 4th of July
the world's TV screens were filled with
high-fiving
astronomers celebrating the deep impact
missions direct hit on comet Tempel 1 it
was an extraordinary achievement and
fully merited the celebrations a few
weeks later though when the cameras had
gone the astronomers were left
scratching their heads in confusion the
Deep Impact team had hoped that when the
impact of spacecraft hit temple 1 it
would kick up a relatively small cloud
of dust expose an area of pristine icy
material underneath and release a cloud
of dust and ice this is exactly what
didn't happen the electric universe
model of comets on the other hand
successfully predicted the results of
the Deep Impact mission years before
including the initial flash before an
unexpectedly energetic outburst that
prevented the mission from achieving its
main goal of imaging the crater now we
have the Rosetta mission to comet 67p
churyumov-gerasimenko and the ESA

scientists are once more left scratching their heads in confusion the comet was much rougher and more oddly shaped and anticipated and when they feel a lander bounced off the surface it was admitted by team members that we failed to explain the rebounds and the higher strength material was a surprise to us the firm belief that comets are primordial and the source of the water on earth requires that our eyes are deceiving us as one of the first a team said it's rocky like but not rock such as the Selective blindness induced by prior beliefs there is an opportunity for the Rosetta mission to fulfill a far greater purpose than merely establish a myth of planet formation because if comet 67p is a rock it is telling us two fundamentally important things first it tells us that our belief that comets formed the planets is wrong and that the reverse is true the planets formed the Comets because rocks and clay also found by the Stardust mission in Comet dust require planetary processes in their

formation and second the low density of the comet measured by its gravity tells us that we don't understand gravity or the structure of comets or possibly both the electric universe model has comets born of by electrical discharge which overwhelms gravity by many orders of magnitude and in a simple garage experiment it was found that the discharge melted hematite powder used to mimic the red dust found on Mars and formed spheres like those found in abundance in the Martian soil significantly some spheres were found to be Hollow and some joined in pairs to form a dumbbell shape with a narrow neck so Comet 67p may be hollow to some degree which isn't possible according to the standard model but perhaps of most significance is the implication for basic physics and our understanding of nature and the universe because nowhere will you see it acknowledged by physicists that they don't understand why matter has mass in fact the confusion extends to textbooks and

encyclopedias where the words mass and matter are used interchangeably

Wikipedia is explicit and I quote mass describes the amount of matter in an object end of quote

but one of the key messages from the equation everyone knows but no one understands $E = MC^2$ is that mass is a property of matter and that therefore it is an energetic variable I

should mention that no physicist can define energy in terms of the nature of matter you will read of its

classifications conversion from one form to another and its conservation but its physical nature in matter is a

mystery our fundamental ignorance is complete and exposed in this simple

equation so the mass of the comet cannot tell us how much matter it contains if

it looks like rock is safest to assume that it is rock we have had plenty of

forewarning after visiting a large number of comets and asteroids and

finding it difficult to distinguish

between them by their appearances yet we

believe asteroids are rocky and comets
are not it's become a modern myth this
is shocking news
we can't therefore say what stars and
planets are made from modern cosmology
is revealed as another mythology dealt
to us by a new age of astronomer priests
rosetta is sending scientists a stark
message when astrophysicists use mass in
their equations they don't know what
they're talking about that's why we have
the Big Bang
black holes dark matter
dark energy and weird neutron stars and
looking for the origin of particle mass
by our hypothetical Higgs boson is
futile and a colossal waste of resources
both particle physics and cosmology are
a theory Laden computer-generated
Fantasyland each discipline has led the
other on in their wild speculations we
have wasted a century on both of them so
it remains to be seen if Homo sapiens
ignoramus can decode what comet 67p this
modern rosetta stone in space has to
tell us

you

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

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

Our world was once a
vastly different place.

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

The mythic archetype of a
great ancestral warrior or hero
is surely the most popular
mythic theme of all time.

And yet, thousands of years after the
first expressions of the archetype,
can anyone rightfully claim to
have penetrated the mystery?

Even today, despite countless
volumes written on the subject,
a convincing answer seems
entirely out of reach.

What human experience could have inspired
a worldwide image of a superhero
rescuing the world, from chaos monsters?

That's just one of the globally repeated mysteries.

Why the birth of this great ancestor
from the womb of a revered mother goddess?

Why the exposure or abandonment

of the hero at birth?

Or the murder or displacement of his father?

Why was the god himself so

frequently identified as an

unerring arrow, sword, spear or hammer, a weapon

that turns out to be a cosmic thunderbolt.

Yes! A thunderbolt, but with no similarity

to lightning in our sky today.

Absolutely nothing makes sense

under any familiar references.

And yet the themes are so fully

connected that one archetypal

attribute leads seamlessly

to another, then another.

There must be an explanation, and yet

common beliefs will not permit an explanation.

That's the logical contradiction arising

from today's accepted stories of human history

and planetary history. The problem lies in an

unsupported theoretical assumption.

The assumption is: As today, so before.

Well, that's a trap;

It holds our attention on today's

uneventful solar system,

even as the human record

speaks with a thousand voices
for a violent and catastrophic
planetary history.

In popular accounts, the prominent heroes
are quasi-divine, big and strong men
who rescue humanity from chaos monsters.

One astronomical tradition after another
names this warrior figure as the planet Mars.

The farther back we go the more the
divine or celestial character
of the hero stands out. Such Egyptian
warrior figures as Shu,
or Horus, or Amon were originally
celestial figures beyond a shadow of a doubt,
but later localized through
regional storytelling.

The same can be said of the ancient Sumerian
and Akkadian counterparts, Damuzi
or Tammuz, the Mars gods Ningirsu
or Nergal, and even Gilgamesh.

Eventually, localized cult practices
transformed such figures into legendary
ancestors of those recounting the stories.

Our answer to the dilemma
lies in a testable reconstruction of
things never imagined in our time.

The reconstruction leads us back to a gathering of planets close to Earth, all the events occurring prior to the present organization of the solar system.

Planets have not always moved on their present courses.

Our subject is the ancient polar configuration, where the warrior-hero finds a full and complete explanation in the activity of the dark, reddish, innermost sphere.

The planet Mars was the centerpiece of the cosmic thunderbolt.

The testability of this reconstruction lies in the contribution a visible forms and explicit sequences of events; all testifying to the global substructure of human memory.

What will happen to our understanding of human history if it can be seen beyond any reasonable doubt that the warrior-hero archetype requires celestial events having no parallel in natural experience today?

What does it mean when
the warrior-king on Earth
symbolically dons, as his crown, the
revered glory of heaven.

That even meant the king's conjunction
with, and marriage to the archetypal star
goddess, identifiable as the planet Venus.

Many parallel symbols are equally
important. Just one example is the
identification of the exploding radiance,
the essential quality of the star
goddess, as the warrior-king's
shield, mythically his
gift from the goddess.

That identification magically confirms
the local king as an incarnation, or
avatar of a celestial prototype, the
warrior king as mythic protector and
owner of the terrifying glory. That's
what the word hero literally means.

Name any broadly repeated theme
attached to the hero archetype,
observe it's place in the reconstruction,
and you'll find additional themes
that are just as explicit.

No room for ambiguity or for simply

making up explanations.

Ask the question. Does

any popular explanation

actually work? In the context of our

reconstruction, the required patterns

must show up. Globally.

If the events occurred.

We'll follow that logic to further conclusions

in our next segment.

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you, there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt

you, and there is nothing to fear.

The Labyrinth and

the Gordian Knot

In our previous Discourse, we

introduced the story of the labyrinth,

a story with many links to the wide-ranging

archetypes we've previously explored;

mother goddess, warrior

hero, and chaos monster,

all with a displaced sovereign power

looming as a shadow in the background.

A fascinating counterpart to the

labyrinth is a fabled Gordian knot.

That tradition was localized in the

ancient Phrygian capital of Gordium,

in modern-day Turkey.

There it was said that a far-famed

knot had once yoked a notorious wagon

owned by Gordias, the

mythic father of King Midas.

As the story goes, the complex
knot was impossible to untie.

But in 333 BC, when the warrior king Alexander
the Great led his army into Gordium,
he encountered the old Wagon
said to be held in place quoting here
'by several knots all so tightly entangled
that it was impossible to
see how they were fastened.'

Hanging over this incident was
an ancient oracle declaring
that the man who could
untie the complex knot
was destined to rule all of Asia.

But frustrated in his
attempts, Alexander announced
it makes no difference
how they are loosed.

He then stood back and sliced the knot in
half with a single stroke of his sword.

As an echo of this story,
the phrase 'cutting the Gordian
knot' entered the popular lexicon
as a shorthand solution
to a complex problem.

Historians also cite an
alternative version of the story
in which Alexander simply
removed a linchpin to loosen the knot.
Tellingly, in this interpretation
the event was said
to have been accompanied
by thunder and lightning.
Having pleased the gods, Alexander
went on to conquer Egypt and much of Asia.
It should go without saying that in
the absence of a concrete referent,
such storytelling will appear to
have no believable interpretation.
But if we tentatively grant the presence
of a natural provocation in the ancient sky,
the story elements
will be expected,
even when a self-serving local
variant fails to convince us.

Fortress of Intestines

According to the Babylonians, amongst
the oldest storytellers in the world,
a great giant named Humbaba
was the guardian of a towering edifice
called the Fortress of Intestines.

Well, the idea that a great fortress
would be composed of intestines
couldn't be more ridiculous.

But only ridiculous, until one grants a
concrete visual form in the heavens
to prompt the mythical language.

In fact, more than one author has
proposed the mythical fortress of Humbaba
was a prototype of
the labyrinth theme.

But it seems that other crucial
associations are too easily overlooked.

A swastika at the center of
the labyrinth for example,
occurs not just in Cretan,
in Attic, and in Roman art,
but even in the Americas
amongst the Hopi Indians.

Well, that's not a small matter.

In fact, it's precisely this whirling
aspect of the equal length cross
that substantiates the
electric discharge activity
from which the
labyrinthal form arose.

One scholar who did not overlook the

connection of the swastika to the labyrinth
was the distinguished
authority A. B. Cook,
author of the massive three
volume scholarly work 'Zeus'.

From his extensive study of the
labyrinth theme, Cook concluded,
"it seemed certain that both Attic and
Cretan art presupposed the swastika
as the earliest ascertainable
form of the labyrinth."

Cook's observation is critical though he clearly
did not know that the identical linkage
appears even in North America.

Such connections
invariably bring us back
to the archetypal substructure
of mythological expression.

Our own research suggests that the
global reach of the labyrinth theme
could never be explained without
simultaneously illuminating
the cross or swastika placed
strategically at its center
in opposite regions of the world.

One theme leads

inexorably to another.

Labyrinth, intestines, goddess,
warrior, and central swastika.

As a matter of fact, the swastika is
broadly connected to the whirling dance
of the archetypal goddess
and prototypical warrior hero,
when the world
slipped into chaos.

How this broader archetypal
context arose historically
is a mystery the experts
haven't even begun to explore.

It's known that one of the more common
dance patterns in ancient times
was not just a
whirling performance,
but more specifically, a dance
along a path marked out by a labyrinth.

That's why in classical times the
word labyrinth often meant dance.

A. B. Cook for example
relates the labyrinth simultaneously to a
symbolic imitation of the Sun's movements
and the patterns of
imitative spiraling dance.

If that conclusion is correct, it's no surprise
that archaic labyrinth and dance patterns
echoed into more modern times
as the Troy dance and
similar children's games.

Not to be overlooked is the fact
that the dance of the hero Theseus
was also in conjunction
with the goddess Ariadne.

And that is why, as noted by Cook, the
labyrinth and dance was indeed archetypal.

In fact, said to be the first occasion
on which men and women danced together.

Here, as it is so often the case,
we see the tell-tale signature
of the celebrated first form
to which all imitative or sacred practices
in the ancient world direct our attention.

Over the years, in exploring
ancient Egyptian symbols,
we found innumerable counterparts
to the global archetypes
and the dancing
warrior is no exception.

One of the key Egyptian images
is that of the red Ab-Heart of Ra

called the Heart of Carnelian.

Egyptian texts identified the Ab-Heart

and such warrior heroes as Shu,

or Anhur, or Horus.

All identified as the planet

Mars in our reconstruction.

Egyptian symbolism presents this innermost

masculine heart as the Ab and Hati,

the heart of the warrior within the

enclosing feminine turquoise Hati heart

meaning the eye, heart, and soul,

of the primeval Sun God Ra.

In other words, there is no surprise in the

hieroglyphic image showing the Ab-Heart

as a male figure in a dancing posture virtually

identical to that of the Hindu Shiva

who similarly stands in conjunction

with the Hindu mother goddess.

But few, indeed, have noticed that

the swastika itself symbolized

the whirling, dancing, masculine,

reddish part of the ancient Sun God

whom the world's first astronomers of ancient

Mesopotamia named as the planet Saturn.

And until the underlying

equations are recognized,

such obvious clues
as the swastika,
the very swastika displayed as
the heart of the Greek Apollo,
will mean virtually
nothing to us.

Of course, none of the connected
themes has anything to do
with the movement of
the Sun in today's sky.

In fact, the relationship of the
swastika to the warrior hero
will virtually always go
unnoticed by the specialists.

And the closer we look, the more extraordinary
the confirmed traditions become.

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the Electric Universe,
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The current standard cosmological model
tells us that roughly 96% of the universe
is composed of strange
invisible dark stuff.

About 73% of the total mass
and energy in the universe
is said to be composed of
so-called dark energy.

The concept of dark energy
was invented in the 1990's
when scientists studying type 1a
supernovae discovered that the supernovae
appeared to be accelerating faster, the
farther away they were from the observer.

Today, cosmologists say that the mysterious
force of dark energy is responsible for
accelerating the expansion of the universe
since the hypothetical Big Bang explosion,
although they admit they have no
understanding of what dark energy is,
nor how it really works.

But a new scientific study has only made dark energy more mysterious. Scientists that attempt to measure the so called cosmic expansion rate have discovered that the universe again appears to be expanding much too quickly, even taking into account the invention of dark energy's influence.

The study leader states in a recent Scientific American article.

The bottom line is that the universe looks like it's expanding about 8% faster than you would have expected based on how it looked in its youth and how we expect it to evolve.

We have to take this pretty darn seriously.

Charles Bennett of Johns Hopkins University also stated;

"Basically is there something going on in cosmology that we don't understand, or is there something going on with the data?

One of those is a lot more exciting, but I think the other may be more likely.

The Scientific American article offers the following analysis;

"One of the most exciting possibilities is that dark energy is even stranger than the leading theory suggests".

However, as Wal Thornhill explains, the standard cosmology's increasingly strange interpretations become unnecessary in an Electric Universe.

It's no surprise that Big Bang theorists are having difficulties with each new discovery about the universe.

The most recent problem was highlighted in Nature on April 11th;

"The most precise measurement ever made of the current rate of expansion of the universe has produced a value that appears incompatible with measurements of radiation left over from the big bang.

If the findings are confirmed by independent techniques, the laws of cosmology might have to be rewritten".

The rate of expansion of the universe is supposed to be due to the competing action of

dark matter with dark energy.

Dark matter's gravity tends
to slow cosmic expansion
while dark energy pushes out
what makes it accelerate.

It was thought that dark energy
strength has been constant.

Now it has been found, the rate of
expansion is 8% faster than that predicted
based on the cosmic microwave
background radiation diagram.

But it is not the man-made laws of
cosmology that need to be rewritten,
it is the entire set of concepts
that underpin Big Bang cosmology.

It's no use making up laws
about things that don't exist,
like dark matter
and dark energy.

It is simply assumed because
of the belief in the Big Bang
that the cosmic microwave radiation is from
the background, rather than the foreground.

However, the evidence of asymmetry in that
radiation suggests it is locally produced.

More to the point, Plasma Cosmology and the

Electric Universe requires and simply explains
the cosmic radiation as being due to
microwave radiation from the filamentary
galactic electric currents flowing
in the neighborhood of the Sun.

Indeed some of the
expected structures,
a Galaxy wide sample of dense
filamentary structures
correlated with spiral arms and star
formation, have been recently mapped.

See here an example of a
network of galactic filaments.

Note the roughly orthogonal
branching of tributaries
which is characteristic of
an electrical discharge
and then compare it with the experimental
discharge filaments shown here.

In October 2011 I wrote, "A
Nobel Prize for the Dark Side",
about the prize in physics being
awarded to 3 astrophysicists
for the 'accelerating universe'.

Dark energy is supposed to
make up 73% of the universe.

The evidence interpreted
in this weird way
comes from comparing the
redshift distances of galaxies
with the brightness of the supernovae
type 1a, used as a standard candle.

It was found that the supernovae in highly
redshifted galaxies are fainter than expected,
indicating that they are further
away than previously estimated.

This in turn implied a startling
accelerating expansion of the universe,
according to the Big Bang model.

It's like throwing a ball into the air
and having it accelerate upwards!

So, a mysterious dark
energy was invented
which fills the vacuum and
works against gravity.

The popular science fiction
author Douglas Adams'
infinite improbability
generator type of argument,
was called upon to produce
this vacuum energy.

The language defining

vacuum energy is revealing.

"Vacuum energy is an underlying background energy that exists in space even when the space is devoid of matter, that is, free space.

The concept of vacuum energy has been deduced from the concept of virtual particles, which is itself derived from the energy-time uncertainty principle".

You may notice the absurdity of the concept given that the vacuum contains no matter, background or otherwise.

Yet it is supposed to contain energy.

This is impossible!

Incredibly, energy has no definition in physics.

Merely different examples.

Douglas Adams was parodying Heisenberg's uncertainty principle of quantum mechanics.

Quantum mechanics is merely a probabilistic description of what happens at the scale of subatomic particles with no real physical understanding of cause and effect.

Heisenberg was uncertain because he
didn't know, in a physical sense,
what he was talking about.

He was being truthful
though when he wrote;
"We still lack some essential feature in
our image of the structure of matter".

The concept of virtual particles
winking in and out of existence
defies the first
principle of physics.

'Thou shalt not magically materialize
nor dematerialize matter.'

Calling matter virtual merely
underscores its non-reality.

Indeed, the discovery of the
acceleration of the expanding universe
is an interpretation based on total
ignorance of the real nature of stars
and the standard candle,
the supernova type 1a.

A supernova type 1a is supposed to be due to
a hypothetical series of incredible events
resulting in an exploding
white dwarf star.

But in an Electric Universe a supernova is

simply an electrical explosion of a star
that draws its energy
from a galactic circuit.

The remarkable brilliance
of a supernova,
which can exceed that of its
host galaxy for days or weeks,
is explained by kind of power
transmission line failure
that can also be seen
occasionally on Earth.

If such a circuit is suddenly opened, the
electromagnetic energy stored in the circuit
is focused at the point where
the circuit is broken,
producing catastrophic arcing.

Stars too, can suddenly have the
current, focused on them, switched off
by a plasma instability, causing
it to be magnetically pinched off.

The result is what's known
as an exploding double layer
which results in ejection of
matter from the body of the star.

This turning inside out of a supernova has
been observed, to the puzzlement of theorists.

The standard candle of the
supernova and its light curve
are then simply due to the circuit
parameters of galactic transmission lines
which power all stars.

What of the discovery of fainter and more shortly
lived supernovae in high redshift galaxies?

The astronomer Halton Arp showed
from numerous observations
that faint, highly redshifted
objects like quasars,
are intrinsically faint because of
their youth and not their distance.

There was no big bang!

He proved that quasars are born episodically
from the nucleus of active galaxies.

Their light is initially
faint and highly redshifted
as they move rapidly along the
spin axis away from their parent.

As they mature, they grow brighter and their
redshift decreases while they slow down,
as the matter within
them increases in mass.

Finally, the quasars evolve
into companion galaxies.

The decreasing quasar redshift
occurs in discrete steps
which points to a process
whereby protons and electrons
go through a number of small
quantized, that is resonant,
increases in mass as the electrical
polarization within the quasar increases.

The charge required comes via
an electrical umbilical cord
in the form of the observed
parent galaxy's axial jet.

Based on Arp's discovery and the
electrical model of galaxies and stars,
both stars and supernovae
type 1a are naturally dimmer.

And the supernovae more short-lived in high
redshift galaxies than in low redshift galaxies
because of the lower
galactic energy density.

The Big Bang laws of cosmology need
to be discarded, not re-written.

They don't work!

All is darkness in the

Big Bang universe,

with its black holes, dark

matter and dark energy.

The Electric Universe throws

a new light on the subject

because its laws of cosmology are

simply those of electromagnetism

with, for the very first time,

definitions of mass and energy in terms

of the electrical structure of matter.

Of course, I don't expect a Nobel

Prize for the sensible explanation,

otherwise I could meet the

fate of the hapless student

who created the Infinite

Improbability Generator,

in Douglas Adams' wonderful

Hitchhiker's Guide to the Galaxy.

"When just after he was awarded the Galactic

Institute's Prize for Extreme Cleverness

he got lynched by a rampaging

mob of respectable physicists

who had finally realized that the one thing

they really couldn't stand was a smart-ass".

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The following presentation is an
adaptation of the Mel Acheson's TPOD
'Tool Time'. The link to the article may be
found in the description box of this video.

Have you ever seen a carpenter
try to cut a 2x4 with a hammer?
Probably not. Carpenters usually carry a
saw as well as a hammer in their tool
boxes, and they know to use the proper
tool for the task at hand. If they didn't
have a saw they could likely flail away
with the hammer and eventually produce a
splintered length of wood that more or
less fit their need. But it wouldn't be
pretty.

Astrophysicists have only one tool in
their kit -- the hammer of gravitational
theory. When called upon to build an
explanation for the phenomena of a
universe filled with plasma, they can't
cut it. They're forced to flail. An
oscillation in a plasma discharge that

produces a thousand pulses of electromagnetic radiation per second -- a pulsar -- will be splintered into ad-hoc kindling by the hammer of gravity.

Several stars' worth of matter must be pounded into a tiny volume and spun around at a thousand r.p.s. Then a hotspot must be tacked on to produce the pulses of radiation. The self-constraining filaments of plasma spiraling out from the poles of active galaxies -- galactic jets -- require even more gravitational hammering. An astronomical quantity of matter must be pounded into such a tiny volume that it loses most of its recognizable properties and becomes a black hole. The black hole then pulls in all the surrounding matter and squeezes it. Next, gravity has to poke tiny holes in the squeezed matter to squirt it back out. Finally, emergency aid for magnetic forces has to be called in to keep the streams of hot gas from evaporating into the empty space around them.

The spiraling filaments of a plasma 'rope' can pinch down into a small 'hot spot'. If

the current density is high enough, the pinch and the tubular or conical volume around it can glow revealing the filamentary structure in visible light. To explain these planetary nebulae with gravity, a catastrophic imbalance between radiation and gravitational pressures must be generated in the core of a star. The resulting explosion blows off a spherical shell of hot gas. That shell must then be molded into the observed bipolar shapes (the tubes and the cones) by way of asymmetric interactions with previous gaseous emissions and interstellar gas. Sometimes a little help from currentless magnetic fields is thrown in. As far as is known, with the possible exception of bar magnets, an electric current is the only way to produce a magnetic field. But "electric current" is an alias for a plasma. These examples of gravitational flailing illustrate a fundamental incommensurability in viewpoint. A carpenter chooses a saw or a hammer according to whether he's working with

wood or with steel. Identifying the material at hand is one of those cognitive activities that's so basic it's taken for granted. It's often unconscious. It surprises us when it's forced into our awareness by being mistaken, when what we assumed was a nail turns out to be a splinter of wood. This vacuum of sensory deprivation tends to suck in material from the nearest source of cognitive substance which is preconceived ideas. To a man with a hammer, everything looks like a nail. And to a physicist with a theory of gravity, everything looks like mass. When the mass he imputes to the source of the thin stream of photons doesn't nail down the explanation he needs, he imagines more mass, invisible mass, mass compressed into black holes and expanded into dark halos, until his universe is 90% imaginary. A physicist with a theory of plasma is much better off. At least she can perform laboratory experiments on her alternatives to black holes and dark matter.

She has more sources of information
about her material than the thin stream
of photons from the sky. She can test
the ideas she imagines with the sparks
she can manipulate. She can hammer on the
wood; she can saw on the nail; she can see
that doesn't work and go back to try the
reverse. She can be scientific, can use
concepts as tools and can avoid
transubstantiating them into pseudo-
religious icons.

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you, there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you,

and there is nothing to fear.

Archetype & Symbol

Is a unified approach possible?

In these Discourses, our goal has been to

identify the cross-cultural patterns of

world mythology and religious

symbolism, the Archetypes.

With these deepest patterns

as a starting point, our goal

has been to show how they arose under the

influence of extraordinary natural events.

Extraordinary events in the

ancient sky, events not occurring today

can only mean that a

fundamental assumption

guiding the theoretical

sciences is mistaken.

You can call this

'the uniformity principle.'

Simply put, it declares that
the present is the key to
the past, as today so before.

So astronomers typically draw on computer
simulations to represent the dynamic
motions of planets and
moons in ancient times.

All they need to do is run
their simulations in reverse.

Of course, if the underlined
conditions in the solar
system have changed, then it should go
without saying that the present could
not be the key to the past, in which case
computer simulations of ancient
conditions are simply
instruments of self-deception.

Based on systematic research
over more than 40 years, we've
challenged every idea derived
from modern assumptions.

It was explicit ancient evidence
that led us to describe
a gathering of planets close
to Earth in ancient times.

Our line of reasoning began

with a prehistoric mother goddess,
then led us upward to the first mythical
images inspired by a planetary gathering
we've called the
polar configuration.

From that starting point, we could follow
the configuration's dynamic evolution
over time, observing its direct impact
on commemorative practices and ancient
storytelling on every
habitable continent.

By immersing ourselves in the
ancient evidence, we exposed the
substructure of myth-making globally,
when unstable planets extremely close to
Earth were seen as divine
rulers of the sky.

The ancient sky worshipers are in
fact the most compelling witnesses to
events that inspired every mythic
archetype we've now documented,
a unified and testable
reconstruction.

From this radical vantage point, we've
asked entirely new questions.

Why did every culture on

Earth celebrate the towering
god at the center and
summit of the sky, a power
said to have presided
over a lost Golden Age?
What are the first creation
stories telling us?
What's meant by the repeated
insistence that the
creator himself brought forth a shining
home of the gods in primeval times?
Or the seemingly ludicrous location of
that dwelling at the celestial Pole?
Or the god's subsequent fall
from his primordial position?
In these stories we also meet a
larger caste of ancestral gods and
goddesses, a divine mother, a central star
of light and life magically radiating
her divine essence to the theater of the
gods, or the subsequent attack of a chaos
monster or Medusa figure seeking to
destroy the created world, or the
paradoxical identity of this very
monster as the terrible aspect
of the original love goddess, or a

warrior hero magically born to rescue
the world from unpredictable chaos
powers, or a cosmic mountain rising from
the abyss to support the divine
habitation above, or the Great Wheel
turning in the sky, the most revered
symbol of the sovereign god, the goddess
and the Warrior in their
primeval conjunction.

Though the stories have come
down to us in diverse forms, the
transformative realization is the
discovery that different words and
different mythic interpretations point to
the same archetypal substructure of
world mythology and symbolism.

In the end, we've learned,
it's this underlying unity
that opens the door to a mind-altering
shift in perception, the realization that
our cosmic environment
has radically changed.

What has come down to us as
elusive fragments can then be seen as
echoes of an alien sky, still
haunting us from the past.

The surprising truth today
is that a massive library of known
archetypes can now be named, though not a
single archetype has ever been explained
in conventional terms,
not a single one.

Yes, we've all seen various claims to
have explained one archetype or another,
but then, when we investigate, we discover
that no proposed explanation has
actually met the acid test.

No one has identified a natural
condition under which the archetype
would be explicitly expected.

In contrast to this state of
things, we've named many
dozens of widely distributed archetypes,
all inseparately connected to each
other and all suggesting a concrete but
extraordinary cause in natural
experience, which means that the events
from which the ancient myths arose
are not occurring today.

In this new paradigm, no
archetype lies outside a
plausible explanation and every

archetype leads to a larger, inseparably
connected, complex of themes.

The universal myth of an original
paradise or golden age leads invariably
to memories of a founding

King, the first

in the line of Kings presiding over the
golden age, but then we meet the
outrageous identity of that luminary as
an ancient Sun god seen in the sky
before the present Sun and then, even
more outrageous is the explicit identity
of that primeval sun as the
now remote planet Saturn.

And still more outrageous
is the location of the improbable power
at the celestial Pole, a location never
visited by any planet in our sky today.

Hence the logical question, how could a
concrete, highly coherent, set of ideas
arise to find direct and obvious
observation at every turn?

Of course, the reasonable
answer is that the coherence
is due to a human experience as yet
unrecognized, not imagination, conjuring

worlds never experienced.

In all of this, we see that it's the traditions closest to the original human experience that leads us to the most extraordinary story elements.

Here we confront the descent of the world into chaos and darkness, the attack of a fiery serpent or dragon, the heaven-altering wars of the gods, and most significantly, the Earth-shaking power of the cosmic thunderbolt--weapon simply out of this world with no similarity to lightning in today's sky but perfectly matching the complex morphology of high-energy electric discharge in the plasma laboratory.

Suddenly, a revolutionary scientific interpretation enters the picture, shifting the attention to new fields of evidence--all confirming the same underlying story, and of course the end of the story is just as

extraordinary as the rest, the renewal of
celestial order within a
radically transformed world.

But just consider the
big picture implications.

From beginning to end, the
ancient narrative affirms
that today's sky bears no connection
to the primeval sky under which the
myth-making phase of
human history arose.

And what distinguishes that environment,
above all else, is the pervasive impact
of an extraordinary planetary system,
highly electrified, as we shall next
demonstrate, and provoking all of
humanity to entirely new forms of
cultural expression.

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Our planet's atmosphere is home to
extraordinary electrical activity.
It's been known for decades that
electric currents from the Sun
induce our planet's aurorae,
a radical hypothesis originally proposed
over a century ago by Kristian Birkeland,
which ultimately proved correct.

And the profound influence of these electric
currents, called Birkeland currents,
has become increasingly
undeniable to mainstream science.

However, the Electric Universe has always
proposed that Birkeland currents from the Sun
have a far greater effect
on our planet's atmosphere,
including its jet stream
and wind patterns,
than the scientific mainstream
has ever considered.

As we've noted, retired professor of

electrical engineering Dr. Donald Scott
developed a mathematical model of
the structure of a Birkeland current,
which can be identified visually
as counterrotating cylinders.

We have suggested that the counterrotation
clearly seen at the poles of Jupiter,
Saturn, Neptune,
and in the earthly aurorae
are the consistent indicators of
the Birkeland current's influence.

Today, Dr. Scott invites the
Electric Universe community
to explore the ways one might
actually be able to track
the presence of Birkeland
currents in Earth's atmosphere.

It's been long suggested, as many of the
folks who looked at Space News are aware,
that back in the early part of the
1900's Kristian Birkeland suggested that
electric current coming from the
Sun down into the poles of the Earth
was the cause of
the Earth's Auroras.

And he got a lot of flak from the

astronomical community for saying that.

But after World War II when we sent
rockets up into the upper atmosphere,

we found that exactly

that was occurring

and so we now know that he was

correct in saying what he said.

Well anyway, in 2015 I presented a,

what I call a Bessel function model

of the form and structure of what those

Birkeland currents might look like.

In other words, were they like a stream of

water from a garden hose or what was it?

Well, actually the structure of the Birkeland
current is quite complicated, quite complex,

but generally, one of the most

obvious properties of it is,

it contains concentric

counter-rotating regions.

And so if you think of a pipe

within a pipe within a pipe

and all these pipes are going in the opposite

direction from the ones just inward or outside them,

you get a general idea and if something

like that, with that property,

hits the atmosphere then generally if it

causes the aurora, which we now know it does,
the aurora should have some sort of
a counterrotating property to it.

Not necessarily visible all the
time, but you should be able to see,
oh look,
there's counterrotation.

That's right, that is the way
that those things are formed.

And of course, there's, we've also
seen supporting evidence for that
by some of the NASA videos of the North
Pole of Saturn, the North Pole of Jupiter,
and there is accumulating evidence
that this is indeed what is happening.

Well, the reason I'm kind of interested
in talking to you this morning
is that there is a website which,
I think, is an excellent website.

If you go on there, you'll see this round
circle, which is of course the Earth.

So if you look down in the lower
left-hand corner of that screen,
you'll see the word Earth.

Just click on that, it'll bring up a menu of
things, the first thing on the top is the Date

and what I've selected is
the wind at 10 hectopascals.

A hectopascal is a
fancy name for millibar,
so 10 millibars is
very, very low pressure.

So if you look down in that menu,
you will see Scale and Source
— sources like US

National Weather Service,
Control, you see, Mode...

Now when it comes to Mode,
make sure you click on Air.

Air should be in a gold color.

You can look at the ocean, you can
look at chemistry, particles in space,
but air is what you
want to look at.

And the Height, next line down.

Way over on the right, you have
the opportunity to click on 10 hPa,
10 millibars, which is way up,
it's around, estimates vary,
but I would say it's somewhere
between 30 and 50 kilometers up,
so it's really really outer

edges of the atmosphere.

And the overlay that you want is Wind

and the projection that you want is O.

If you do that and then you want to get

rid of that menu, you just click on Earth,

on the word Earth again,

and it'll go down.

If you click on the globe, you'll

see, when you push on the globe,

on a point on the globe,

you will see a little green circle

and wherever you click, you can move

that it looks like you move the world up,

you will see that

it rotates the globe

and you can get a look at

the southern hemisphere.

And if you look at that southern hemisphere,

that's my ta-ta come-to-Jesus moment,

that is obviously counterrotation

of those wind flows,

here is a tremendously strong

clockwise circulation of wind

(around the), centered on

the continent of Antarctica.

And then as you go a little bit farther north,

there's another sort of a vacant spot
which is the center of a very tiny,
very weak vestigial counterclockwise flow,
the flow around the
South Pole is clockwise,
we would normally call
that a west to east flow.
And then as you go still farther
north, still south of the equator,
you see a very, very
strong, east to west,
you can see the equator that runs right
through Ecuador and across the Pacific there.
So there is no doubt that in
the upper atmosphere of Earth,
there is counterrotation of the
air in our upper atmosphere.
So anyway, if we go down
deeper into the atmosphere,
all of a sudden the wind
flow becomes distorted
and it's this sort of a
sinusoidal, sinuous kind of a flow.
It's not a circular flow anymore,
you can see that's a chaos;
wind flow is circular,

sinuous, all sorts of stuff.

And you say well, why is that?

Well, I submit that's because the wind
distribution, where the wind flows,
are being disturbed by
all sorts of things,
the farther down you get,
the closer to the surface you get,
the more important land masses and
storms, regions of high and low humidity,
high and low pressure,
all sorts of variants occur
to disrupt that beautiful
circular pattern.

So let's, in effect if you go
all the way down to the surface,
that's SFC, the one just
to the left of a thousand,
and go back and look at the
Earth, you see that this
yeah, that's kind of what it
looks like, there's a storm,
sort of off that peninsula
that sticks out of Antarctica.

It's a very interesting and, I think,
very educational kind of website.

But anyway, back to my main point and that
is looking at the wind at ten millibars,
way, way up there in
the upper atmosphere,
you can then go to the North Pole, whoa!

The North Pole is very different.

You look there and you realize
that there are two circular flows,
one centered pretty much on
the north end of Greenland,
it's not a circular,
it's a more of an elliptic
or hotdog shaped center to
that, that circular pattern.

And then over there centered
right about on the Bering Sea
between the Aleutian Islands and the
Kamchatka peninsula, there's another one
another center, if you will, that's,
that secondary one is weaker,
you can see that the red colors,
the purple, shows the strength of the flow.

There's a, in vector calculus there is
an operator called the curl operator.

If you look at your right
hand and curl your fingers

and then like make-believe
you're picking up a screwdriver
with your fingers curled
around the handle
and your thumb pointed down
the blade of the screwdriver.

If you set your hand on
that North Pole region
with your fingers going in the
direction of the purple flow,
you can see your thumb
is pointing up, outward,
and if that Birkeland
current is doing that,
that says the current there
is flowing out of the Earth,
and then you look at the other one just to
the left, the one that's over the Bering Sea,
you have to push your, put your
thumb in a downward direction
to have your fingers go in
the direction of that flow.

So that says there's a current
going in, a less strong one,
it's a sort of a vestigial current
but it's very strange that there's two

- well one Birkeland
current that's split,
one going in one direction and
one going in the other direction,
and again if you go back and rotate the
globe and look down at the South Pole,
then there is that major one, not quite
as strong as the one at the North Pole
but the one circulating around
Antarctica in a clockwise direction,
that would say that the
current is going in,
and that little vestigial one, that looks like a
current would be coming out of the globe
because the circulation
is counterclockwise.
I submit that these
patterns are indicative
and I should say, additional
substantially supportive evidence
that my idea of what the Birkeland
current structure looks like,
is indeed happening
here on Earth,
and the last Space News we did was about
this magnetic pole wandering around.

Yes well, these Birkeland currents can
also wander around, I don't mean that
one's going to wander up into the
equatorial regions or anything like that,
but you can see from day to day that the size
of these, the strength of these flows vary
and the location of their centers
of these circular flows vary
and just as an electric arc
would, from a welding machine,
it'll be at least if a welder knows what
he's doing, it'll wander all over the piece.
So I leave you with that thought
and I think, I submit that this
is more additional evidence that the
Electric Universe has opened the door,
I think to finding the answer
to this big question as
how does the Sun affect
weather on the Earth
and the answer is,
via the Birkeland current.

[Music]

As many of you viewers of these Thunderbolt videos are aware, in 2015 I was able to complete the derivation of a mathematical/physical model of a so-called force-free current, also sometimes called a field-aligned current. What motivated this project was my earlier interest in determining the exact shape of those electric plasma currents that flow from the Sun, the awesome distance of some 93 million miles to supply power, to light up Earth's auroras. Christian Birkeland predicted the existence of these flows way back in 1908. Only when satellites detected the magnetic signatures of electric currents in the auroras in 1973, was Birkeland's hypothesis irrefutably validated, though for another couple of decades, many astronomers resisted the implications of his discovery and some still do. They don't like the idea of electricity up there. The flows he discovered are now called Birkeland Currents in his honor. My

model is described by a set of five equations that can be used to produce three-dimensional images of both the internal, and the external, appearance and the workings of a typical Birkeland Current. It's based on answering a very simple question, "If we have a moving plasma cloud consisting of positive and negative ions, protons, electrons, and other particles such as neutral atoms in otherwise completely empty space, and we leave it absolutely alone - we don't touch it, what shape, what structure, if any, will this stream attempt to take on? What forces will these moving charges impose on each other, and how will they respond? What will the result be?"

The derivation is a fairly complex one that involves some fancy vector calculus, but the structural shape that results is elegantly simple, and testable. It turns out that the flow is essentially a cylindrical tube that contains plasma moving in co-axial, spiral, that is helical paths. As we get farther away from the central axis of the flow, the pitch angles of those spiral pathways gradually increase. This produces an

intertwined internal structure that has several self-maintaining properties. Nothing leaks out of the resulting flow, for one. And this immediately explains why BC's can maintain their integrity over distances of millions of miles, and now we think perhaps even millions of light years. One of the unique properties of any Birkeland Current can be seen by viewing a cross-section of the structure of the model.

This clearly shows counter-rotation.

There are clockwise flows at certain radial distances out from the center axis, and counterclockwise rotation at other distances. We have known for many years that Birkeland Currents power the auroral displays we see in the night sky, but were counter-rotating plasmas observed?

It was quickly discovered that, yes counter-rotation is often seen in Earth's auroras.

And it's also seen in NASA videos of the poles of several of the planets, especially Saturn and Jupiter.

This is evidence that what we're saying is correct, that counter-rotation does exist in these Birkeland Currents. It seems that the coaxial counter-rotation property is a unique property of Birkeland Currents. No

other natural process that we are aware of produces it. So, in my mind the race was on to find more examples.

If you see coaxial counter-rotation anywhere, keep your eyes open for the Birkeland Current that causes it.

Birkeland Currents can carry electrical charges in both directions, much like a coaxial cable carries normal electrical currents, here on Earth. When we power up a light bulb, it takes two wires, one to carry charge from the voltage source to the light, and another wire to carry those charges back to the ground terminal of the source, to complete the circuit as it's called. When charges are delivered to Earth by a Birkeland Current, they work their way down to the surface from the top of the atmosphere.

Quite often that journey results in the beautiful auroral lights. But sometimes also they create other visible discharges in the Earth's high altitude plasma, such as the so-called elves, sprites, and gnomes seen by the pilots of high-flying aircraft.

Thinking about the now accepted fact

that Birkeland Currents power the auroras
and recognizing that those auroras
often exhibit coaxial counter-rotation,
I wondered if the wind patterns high above
Earth's poles also behaved in a similar way.
There's an internet website
called earth.nullschool.net
that shows wind and water patterns
in Earth's oceans and atmosphere.
If you go to that site, you can click on the
word "Earth" to bring up the menu and
select "HD" - high def, and then pick "Mode"
equals "Air", "Animate" equals "Wind", "Height"
equals "10" hPa (hectopascals). This
is at an altitude of approximately
35 kilometers; that's the highest level
that the earth.null school gives us.
Set "Overlay" to "Wind" and "Projection"
to "O" and in the image click and drag the
Earth's Northern hemisphere down to
show the North Pole. Then go over to the
control line of the menu and change the
date, I think it's the second symbol, to
Year 2022, Month of January - 01, and date - 08.
If you click on any wind flow, you will see
its direction and velocity in the

upper left. To close the menu click
on the word "Earth" and you can see the whole Earth.
Hannes Alfven said that moving plasma,
when it contacts neutral gas, can drag
the gas along with it. With that in mind
and using the right-hand rule, point your right
thumb in the direction of the axial current,
and then your curved fingers will show the direction
of the magnetic field and the moving plasma.
Doing this, we see that the Birkeland
Current's central axial current is moving
positive charges up and out of the North Pole.
If you turn the Earth over by dragging the Pole
with your mouse, you can see a similar,
but much weaker current emerging
from the South Polar region. The
Earth in its orbit is closest to the
Sun in January. At that time its North
Pole is pointing away from the Sun. The
Electric Universe model presumes the Sun
is charged to a higher voltage than its
surroundings and therefore, there will be
an electric field radiating outward from it.
With those facts in mind, we expected
that in January, there might be a strong
inward current from the higher voltage neighbor-

hood of the Sun entering the Earth's South Pole,
and outward at the North Pole flowing away from
the Sun. Similarly, it was thought that in June
there might be a slightly weaker current
going into the North Pole and out the
South Pole. Weaker because we're farther
away from the Sun. Nothing even remotely
akin to that was observed; that was
not seen at all. Well what was observed:
monthly examinations were made by
sampling the earth.nullschool.net
website video images over a five-year
time span, June of 2014 through June of
2019, and the important observed results
were actually two. The first was during
the northern hemisphere summer;
that's called aphelion. Earth is as
far from the Sun as it gets. Current enters
into both the North and South poles. Th
The second thing that we observed was
that during the Northern hemisphere
winter, that's called perihelion, Earth is closest
to the Sun, current is directed out of both the
North and South poles. What should we make
of this? How do we interpret it? What's going on?
From December through February, the

Northern hemisphere winter, perihelion, Earth is nearest the Sun and according to Electric Universe theory, it should be picking up positive charge in this higher voltage region. But we see from our observations that the Birkeland Current is directed out of both hemispheres during this time. Earth is therefore losing positive charge via the Birkeland Current during this period. Just the opposite of what we might think. Six months later, a similar surprise awaited us. Earth in its elliptical orbit is farthest from the Sun then, at its aphelion, around the 4th of July and thus at its greatest orbital distance. The Sun's electric field is producing a lower voltage neighborhood there. Therefore Earth ought to be dumping positive charge out into that lower voltage neighborhood. But if we look at the nullschool.net site, it's clear that the Birkeland Current is dumping positive charge into Earth. Now, this unexpected behavior of the Sun-Earth BC was observed at every single one of the observed aphelion-perihelion times

during the five years we observed the site.

What could the explanation be for what we observed? After considering this apparent contradiction we came, after much thought, to the following conclusion. There is no contradiction.

There are two different processes going on.

One, Earth when it's closest to the Sun in January, is indeed collecting charge, just as the EU theory says it should.

And it does this from all possible directions through the extremely large surface area of Earth's toroidal, that is to say doughnut-shaped plasmasphere that completely surrounds the Earth. The charges come from positive-charged interplanetary plasma through which the Earth is moving. And two,

but during this same time we've observed that the Birkeland Current stream that directly connects the Sun to Earth's poles, is removing positive charges from Earth.

The Birkeland Current is acting like a pipeline that carries charge directly out of two comparatively small cusps in Earth's magnetosphere near its poles, back towards the outer coronal region of the Sun.

So, both these processes are going on simultaneously.

Therefore, this newly discovered

Birkeland Current mechanism apparently

works to stabilize Earth's net charge

over the course of the year. It's a

natural compensating negative feedback

mechanism which tends to neutralize, or

at least minimize, any seasonal variation in Earth's

net charge. The Birkeland Current supplies positive

charge when Earth is losing it from its

surrounding plasma, because it's passing

through the low voltage region, and then

the Birkeland Current removes the excess

charge Earth is taking on while it's

passing through the Sun's high voltage

region and is collecting charge. This

counter-flow of charge, provided by

the Birkeland Current that directly

connects the Sun to Earth, effectively

counteracts any fluctuation in Earth's

charge that might otherwise perturb its

orbital stability. The Birkeland Current

also provides a return path for all of

the electric charge delivered here by

Coronal Mass Ejections and the solar

wind. It doesn't pile up on Earth. Where does

it go? It goes back to the Birkeland Current.

There are many instances of such automatic negative stabilizing feedback mechanisms in astrophysics. An obvious one is the ability of a Birkeland Current to self-repair itself from any damage done by a perturbation in one or more of its current density components.

Anyway, there are a variety of things that one can see by manipulating the menu choices of this excellent website.

One of the most informative is to get an image on a date when the 10 hectopascal flow is quite regular, circular or at least smooth. We can suggest one out of the bunch might be December 17 2014. That's 2014-12-17. Then select a series of lower altitudes.

Higher hectopascal pressure levels mean you're going down, and the pressure in the atmosphere is getting larger. So, go down to 70, 250 and go all the way down to the surface. Anyway, notice that the farther down, the closer to the surface we get, the more chaotic, less smooth and regular, and slower, the patterns become.

It makes sense because if you place

the mouse pointer over a wider, closely spaced faster wind flow, you can left- click and measure its velocity.

Generally the higher our altitude, the faster and more regular the wind flows are.

This demonstrates that the Birkeland Current which is quite well-formed as it comes through space, drives the flow at its highest 10 hectopascal level, way up at the top.

This flow frictionally drives the air at the next lower level and so on. The lowest levels experience frictional contact with the geographical surface features and this breaks up the smooth, almost circular global flows, and reduces their velocities compared to what we see at the higher levels. What this makes clear is that Earth's polar wind patterns are driven from outside electrically, and not by any surface or internal Earth-bound processes or dynamos - the favorite word of astronomers when they don't know what's going on. The main outside source of these polar winds is quite obviously the varying strength and polarity, that is to say direction, of the Birkeland Current system of

electrically charged particles that it
delivers here both to and from the Sun.
In other words, we now have undeniable
scientific evidence of cause and effect.
Solar Birkeland Currents cause patterns
in the polar winds which affect
the weather on the planet.
Yet another verification of the
Electric Universe model of cosmology.

[Music]

[Music]

An open question in biology is, how do the shapes of creatures come about? How does, for example, a certain frog species obtain its particular shape and not some other?

How do its legs and toes and claws always get their particular shape and not some other?

The same question for all the internal bits: the spine, the liver, the brain.

How do each of these always come to the same shape and interconnect in the same way, particular for this species and no other. Most textbooks still repeat the 70-year old idea that the DNA alone, somehow determines everything, though there is surprisingly little evidence for this. I would like to highlight some of the evidence for the role of electricity in how plant and animal shapes come to be, and also say a few words about the role of electric fields in how inorganic objects obtain their shapes.

I was motivated to give this talk after reading about the work of the Michael Levin lab at Tufts University in Boston.

For more than a decade, the lab of Dr. Levin has been overturning some long-held

beliefs about how biological shapes arise.

Back in the late 1950's, when DNA was

being discovered and its role was

starting to be understood,

Watson and Crick championed the idea that

the DNA determines everything about the

organism. They called this the 'Central Dogma'

of biology. For the past 70 years,

most textbooks and funding have

unquestioningly followed this Dogma.

It is a form of predeterminism

all over again, since it assumes that the

information flows only one way from the DNA out

and nothing an organism could do would ever

change that. Crick was very vocal that finally,

he a mere man, had once and for

all eliminated the need for a god,

or any intelligence in the universe, since

everything about us flows from our DNA.

Bombastic cheekiness aside, we can

still run experiments to test the idea.

Over the past 70 years, many

thousands of experiments have been run

to elucidate the role of DNA

in developmental biology.

But try as we might, we could never show

that genes actually create any forms.

What exactly in the DNA determines that an arm be shaped just so, and not otherwise?

How is the inside of the mouth formed just right, to meld with the nose above and the throat below? Search the literature and you will find that the best we can do

is to show that disabling certain sections of DNA, will cause some body part to form

incorrectly. But this does not mean

that the DNA is causing the form

of that body part. I was always

surprised at such sloppy thinking.

That would be like me showing that I can

prevent you from driving to the store if

I give you a flat tire. Correct, you cannot

drive to the store if you have a flat tire,

but the tire was never the

cause of you going to the store.

Just because mucking with some DNA causes

an arm to form incorrectly, does not mean

that the genes cause the shape of

the arm. Using a cooking metaphor,

which is surprisingly accurate, ingredients

do not by themselves cause anything.

You need a recipe that tells you

what to do with the ingredients.

And what is the meal? How many people are you cooking for? What is the order of the evening? All that makes a real difference. Our genes do not necessarily tell our bodies what to make, or when to make it.

These decisions are made mostly outside the genes. Everyone should know that we do not really understand DNA. Every decade, the advanced textbooks need to be rewritten because we find out that the system is way more complicated than we previously thought. What we call genes are really a very small part of the total DNA. Genes are that small part of the code that contain the blueprint for building proteins. We still do not know what most of the DNA does. The collection of all the genes in your DNA is much like a giant ingredient list. If you had a cookbook of all the recipes you could ever make and you made an index of all the ingredients needed for all those recipes, that is what the genes are. All the blueprints for how to make each of the ingredients you might ever need. But again,

genes constitute only a very small part of the DNA.

The work in Dr. Levin 's lab is impressive

by any measure. These are virtuoso

level skills. They alter the DNA of

individual cells to change the number of

ion pumps the cell makes for itself.

This makes these particular cells more

or less electrically polarized relative to what

they would have been in the wild-type.

At certain times in the development of

the embryo, if enough cells in one place

can be tricked into creating just the right

electrical alterations, then body parts will grow

in that location. An eye will grow inside

of a stomach, a toe might grow on an elbow.

The 70-year old Central Dogma of biology

states that DNA, isolated inside the nucleus,

causes all shapes and forms to appear.

What does Levin's result show?

That an electric field external to the nucleus,

caused the shapes and forms to appear

when and where they did. It does not

mean that the fields create the form itself,

but it does mean that the field

can cause the shape to appear.

What does this mean for the Central

Dogma? Things get really tricky, because Dr. Levin, in altering the genes in the cells, which cause more ion channels to form on the cell wall, which causes a different electrical potential of the cell relative to its surroundings.

So you could argue that the DNA is controlling everything. But the argument has become muddled.

Why does the entire eye form in the electrified location and not just pieces of an eye? And how is it that we instinctually know that the eye should not be in the stomach? In Levin 's cancer research, they show that changing wild-type electrical fields can start and stop cancer cell growth. Highly malleable cells, such as stem cells and cancer cells, have less-defined electrical potentials relative to their surroundings.

Whereas healthy, mature cells have higher electrical potentials. One of the hallmarks of cancer cells is that they have lost their relationship with the larger body.

They are an out-of-control growth

of cells that are part of nothing.

They have no function beyond their self-interests.

Here Levin 's results come very close to

actually disproving Crick's Central Dogma

with regard to the form and function,

since electric fields, external to the

nucleus, can destroy all form and function.

On a more personal note, the Levin lab results

are terrifying to me, because here we are

again, stumbling into areas we do not understand

with tools too powerful for us to wield

with wisdom. Has this new

technology allowed us to add

beauty to the world? Not so far. To date we

are only making grotesque monsters with legs

growing out of their heads. The poor creatures

live, somehow and it turns my stomach to

imagine that. I'm afraid we are right

back where we were with the DNA story.

We knew that mucking with the DNA will cause

monsters. And now we know that mucking with the

electric fields will cause monsters. It

does not prove the DNA is causing the

proper shape, nor does it necessarily

prove that the electrical field

is causing the proper shape. Dr. Levin 's

lab is justifying all this with the
promise of new medical treatments,
if we can just make it through a few
more decades of producing monsters.

I am also surprised that Dr. Levin does not
seem to reference Dr. Robert

Becker, who already showed most
of these principles 40 years ago. You can see
a good summary of Becker's work in his book,

The Body Electric. Dr. Becker, a

practicing physician, discovered that

controlling electric fields could heal burn

victims and could let salamander tails grow back

properly. Why not give credit where credit

is due? I fear it is because it became known

that Robert Becker had a spiritual side. He

maintained that humans were more than

just sacks of chemicals. I fear that since

Dr. Becker did not believe in pure materialist

reductionism, many journals will

not allow reference to his work.

Let us look at two more sets of

experiments from Dr. Levin 's lab.

Then we can step back and

ask, why does it all matter?

These experiments involve planarian flat worms.

In the wild, if the tail of the worm gets chopped off, then a new tail will grow. If the head of the worm gets chopped off, a new head will grow, brain and all. Pretty amazing.

The wild-type worm has an electrical gradient along its body, more positive towards the head.

The researchers cut off the tail.

Then artificially gave that end a positive charge.

This caused a new head to grow off the back end. We now have a new shape: a two-headed worm.

This new two-headed worm then propagates.

It reproduces asexually, as all planarians do. Is this a new species? I think so.

Yet the DNA has not changed. You can see that the connection between the DNA of the animal and the shape of the animal is becoming less clear. How could the DNA remember that this new worm species has two heads? So, all future progeny must also have two heads.

Returning to the cooking metaphor. It looks like the genes are available to get the raw ingredients produced, but the recipe

and the plans for the full meal are
being handled at quite another level,
quite outside the world of genes.

In a different experiment, they went
to the wild-type, cut off its head,
then while the new head was forming,
they modified the electrical potential of some
cells and ended up producing the head
and brain types of another species
of planaria. Let that sink in. The DNA
is still that of the original species,
but the form, the shape, of the new worm
head, is that of a related species of worm.

We have created a new species,
but we have not altered the DNA.

In my opinion, any notion of DNA
determining the shapes of creatures
is on pretty shaky ground. Why
does any of this matter? It matters
because the story of DNA that we grew
up with and still teach to our children,
is not only wrong. It is actually harmful
to our spirit because it gives us a false
understanding of ourselves and of
our relationship to the universe.

We were told that a simple molecule with

sequences of four molecular letters determines everything about us. We were assured that not only our shape, but our entire being is supposedly a simple unfolding of some molecular computer program into which we have no input. I find all aspects of this dogma incorrect and harmful. As a scientist, I am trying to reconstruct a cosmology that is more accurate and more meaningful. In the second half we will look at the question of whether matter is even capable of organizing itself. And if not, then where could all these shapes be coming from?

[Music]

my title is visual intuition and the
ancient sky by subtitle complexity
theory and plasma cosmology I'm going to
beg the graces of those who know more
about complexity theory and cellular
automata than I do and they will help us
through this the most difficult part of
my presentation this is the defining
image the squatter man will you've seen
it before we'll see him again these are
more familiar images to you already the
squatter man in petroglyphs this is Kai
anta a defining image that will come up
later all around the world and more in
Arizona so you see how global and this
is hard to see but it's in our the state
we're in if anyone knows who drew this
I'd be deeply appreciative I came across
it through parot images on Google which
led me to ancient destructions calm we
see here marvelously we see here Stone
Age man and woman gazing at squatter man
configuration in the sky after having
made a petroglyph about it likewise what
is above it in the polar configuration
after having made another petroglyph of

it so I'm going to tantalize you with
something very strange this will be the
subject of my exposition of the work of
Stephen Wolfram author of a new
kind of science 2000

and it's very strange isn't it I will go
over it later but I just want you to
look at this image particularly at this
just hold that image

my thesis complexity theory is a
powerful natural a light of plasma
cosmology both tell us that in
reconstructing the sequence of events in
the ancient sky we have to imagine
watching images unfold in a sequence a
story the events and images are often
too complex to be predictable both tell
us that visual intuition will be an
indispensable guide and even in many
cases a form of proof will see if I make
this thesis clear to you or not

Galileo looking rather feisty don't you
think now now Laches soon gave us the
popular version of Galileo's famous
statement the book of nature is written
in mathematics since that simplification

which we are more familiar with than the original is not really the whole of what Galileo was said in one splendid long sentence of Italian prose I'll read you a translation of that sentence nature does not appear in it but philosophy and the universe do philosophy is written in that great book which ever is before our eyes I mean the universe but we cannot understand it if we do not first learn the language and grasp the symbols in which it is written the book is written in mathematical language and the symbols are triangles circles and other geometrical figures without whose help it is impossible to comprehend a single word of it without which one wanders in vain through a dark labyrinth

16:23 sagittal array the essayer no my theme will be partly the mathematics bashing which we've already seen however I want to come back to Galileo in the end and show him to be a good guy - all right but for the moment let us note that for him mathematics meant a geometry indeed classical Euclidean

geometry and he is certainly emphatic
without knowing that geometry you can't
read a single word in the book of nature
that does seem to be excessive still
we'll come back to him as a good guy now
here is Stephen Wolfram and here is the
first statement about how mathematics
can be superseded complemented augmented
replaced various possibilities by other
procedures which require more visual
intuition this and many subsequent
quotes are taken from an excellent thing
online quick takes on some ideas and
discoveries in a new kind of science
written by Wolfram his book on 846 pages
with 300 pages of fine print footnotes
is perhaps complex but he knows the
relation of simplicity to complexity and
on his various website pages he'll give
you the whole book in one single page
summary and he'll give you quick takes
here's a quick take he will make the
very quick take and then explain it
mathematical equations do not capture
many of nature's most essential
mechanisms for more than three centuries

we're talking Galileo - now mathematical equations and methods such as calculus have been taken as the foundation for the exact sciences there have been many profound successes but a great many important and obvious phenomena in nature remain unexplained especially ones where more complex forms or behavior are observed

now two other familiar faces more familiar than Wolfram's perhaps uh Talbot and Thornhill weighing in on mathematics astrophysicists are not trained in electrodynamics or plasma discharge phenomena such things would render their gravitational models obsolete they continue to rely on gas and magnetized fluid physics that is mathematically well-mannered uncritical application of mathematical models will lead to whimsical and unstable descriptions of nature so Wolfram's exposition of his use of cellular automata and his claim that through them we can also study similar phenomena in nature is what I will now explore in the

most technical part of my presentation
so here is a cellular automaton and here
is the progression of it and I'm going
to explain both images carefully but
first the quote cellular automata are
examples of simple programs that work by
having the color of each cell in
successive rows be determined by the
same simple rule so let's see the
example here is the second cell in a
checkerboard like this in which the top
line is as it were the initial state and
each line lower down is a subsequent
state of evolution of the cellular
automaton the evolution is contingent on
the rules for each of these eight boxes
let's look at this one if the cell the
central cell is white and flanked by
both White's left and right then in the
next stage it will be white if white but
flanked by white on the
left and black on the right again black
and so forth with each of these
evolutions now Wolfram took 255 cellular
automata of this kind all of them have
rules exactly as simple as each other

and they lead to very different kinds of developments as you go from stage to stage from horizontal level to horizontal level down the checkerboard with the rules above a simple pattern is produced here is the simple pattern evolving by these rules based on chapter 2 the crucial experiment and a new kind of science these images of cellular automata illustrates some of the core discoveries of nks and I add the two images above or rule 90 in Wolfram set of 255 rules I hope you fasten to your seat belt because if this page is unclear you will only get more complex alright but we perhaps will have time for questions

rule 90 produces an intricate yet ultimately regular pattern look at this isn't that lovely

it's a pattern it's in fact fractal to the beauty of fractals

that's rule 90 a different rule just as simple producing a different pattern which is getting on the left striated into bands and on the right complex the

wielder Wolfram as discovered and argues
in a new kind of science that certain
simple rules can produce patterns and
behavior of immense complexity above his
rule 30 it soon becomes complex above
and at a hundred steps it appears very
complex indeed below can you see how
striated bands are here but this is
other random isn't it well it only gets
worse if for you randomness is bad at
a thousand steps rule 30 pardon pike
typo appears to have patterns in the
bands on the left and to be random to
the right of those bands if one started
with only one step 1000 here one could
not reconstruct the simple rule that
generated it one would not guess that
the rule was simple and to look ahead to
the grand thesis suppose that this whole
evolution is like some phenomenon in
nature which you observe part of so say
you observe only this part like there
that's all you can see would you ever be
able to reconstruct the simple rule that
generated it would you be able to guess
that the rules that generated it were

simple rule 10 is in a different category of rules from those generating either Panem's or randomness there's rule 110 as it evolves a complex pattern emerges on the right and it continues to morph into similar patterns at different shapes none quite the same as the pattern preceding it a mysterious statement we sent about to illustrate here is it's Elementary rule 110 here is the opening sequence of steps so far it's just not so clear what's going to happen is it but this is the image I began with and asked you to hold that image rule 10 at 250 steps I would gladly have given you it at a thousand steps but it seemed a bit too much memory so we have the patterning of striations we have here something that seems to be monochrome one of the possibilities he sort of cellular automata when he was a boy wonder in his 20s into four categories when they turn random sorry when they turn monochrome when they turn patterned when they turn random and when they turn

what he calls complex this evolution is
visibly something that in which each
phase of it resembles earlier phases but
is not the same it's what I call the
Canadian phenomenon you look similar but
somehow different so can you see that we
are are I've seen this as a pattern
where I see this is a pattern this
pattern resembles that but is neither
the same scale nor precisely the same
shape so we could watch this unfold a
long time perhaps forever and would
still not be able to predict the
patterns in advance that is the
essential point of his take on the word
complexity now we've gotten through the
worst and most technical part what I
shall now do is juxtaposed statements
from a new kind of science taking
Stephen Wolfram as a case among many
fine laborers in complexity theory I
don't want to make him the sole star
that's been a problem with his reception
with you and I'm not interested in that
problem but many complexity theory
people would make similar statements

likewise I'm going to take Talbot and
Thornhill and
representative of many fine workers and
quite distinctive in their own
contribution and I'm gonna juxtapose
statements on a few topics mathematics
complexity and time so you can see the
how they might be powerful natural
allies with their similar views on these
topics and others views on mathematics
for the new kind of science thinking in
terms of programs rather than equations
opens up a new kind of science
mathematical equations correspond to
particular kinds of rules computer
programs can embody far more general
rules the electric universe uncritical
application of mathematical models will
lead to whimsical and unstable
descriptions of nature a quote you heard
from me before all right views on
complexity new kind of science even
extremely simple programs can produce
behavior of immense complexity that's
what we saw in rule 110 everyday
experience tends to make one think that

it is difficult to get complex behavior
and that to do so requires complicated
underlying rules the discovery now that
simple programs can produce immense
complexity forces a major shift in
scientific intuition

I love his choice of that words by the
way it's from the Latin to a or which
means to look at intuition is just
looking deeply at alright electric
universe although plasma behavior
follows simple or electric magnetic laws
the resulting complexity continues to
astonish the specialists who study it
plasma can self-organize into cells of
differing electrical characteristics I
included that last sentence because
self-organizing is another term in
complexity theory which came naturally
to the the pen of the authors of
electric universe it's part of the
language we now speak really views on
time through the third of the three
topics I mention a new kind of science
time may have a fundamentally different
nature from space the standard

mathematical formulation of relativity
theory suggests that despite our
everyday impression time should be
viewed as a fourth dimension much like
space a new kind of science suggests
however the time as we perceive it may
instead emerge from an underlying
process that makes it quite different
from space electric universe Einstein
redefined Newtonian gravity by placing
it in a metaphysical framework he
combined the three measurable physical
dimensions of space with the matter of
mathematical dimension that cannot be
measured by a ruler time the claimed
success of Einsteins thought experiments
encouraged mathematicians to follow his
lead and they have dominated physics and
cosmology ever since this skeptical
attitude towards what Einstein did will
I take it warm the heart of all who
attend Natural Philosophy Alliance
meetings we're going to really relax
because I'm going to tell you stories
all right to prepare the ground here's
the last sentence of a new kind of

science and a quote from a poet placed
by the authors of the electric universe
at the top of the second page of that
book last sentence of a new kind of
science all the wonders of the universe
can in effect be captured by simple
rules but there can be no way to know
all the consequences of
these rules except in effect just to
watch and see how they unfold to a or to
watch and see quote on second page of
the electric universe a quote I deeply
love the universe is made of stories not
of atoms Muriel Rukeyser by the way I
have another quote and I think it's
quite head who was cited earlier the
event is the unit of things real if
that's not by apply head please correct
me but it's a philosopher saying what a
poet says here now I'm gonna tell you an
unpredictable story one of the great
serendipitous moments in the history of
science I like to think perhaps
Christmas tree Christmas tree meets
Talbots chain of arrows chain of arrows
all right

this is the story some of you may have heard it in a simplified version I am privileged to have received it from the horse's mouth they've taught in an email of this week earlier and I asked him to tell me the story of parrot at a meeting where he said what are those and Petra M Talbot said petroglyphs and did this the first version I heard of it was per at thought well these are my plasma shapes what are they doing out there in petroglyphs but here's dave's telling of the story we'd invited Tony to our conference in September 2000 at a gathering of speakers the next day after the conference Tony was inspired to go to the whiteboard and to draw some plasma images let's go back there's the whiteboard there are the plasma images then he drew out the chain of arrows which he called the Christmas tree upper left form and the attached I said Tony you've just drawn the chain of arrows an image I directed walls attention to only a few days before the conference Tony asked how the form evolved I told him it

began with twin filaments up the polar axis dividing into a stack of embedded cones that emergently emerged eventually as a stack of Tauruses called the ladder of heaven and backbone of the sky Tony said that's how the Perret instability evolved the name given to the configuration by his coworkers when he returned home he asked me for the rock art images and the first image I sent him was the Chi Yenta petroglyph because I had no doubt he would recognize it that was the squatter man from chi ant Arizona really just across the border in northern Arizona from northern New Mexico the moment Tony saw it his life was changed he had no doubt whatsoever that it was an intense plasma instability and he immediately identified the parts for me Dave attached this picture to you can call these Christmas trees arrows or cones they are either going up to or coming down from a red disc that would be Mars then his attention immediately shifted to cataloging rock art images and on

numerous occasions afterwards

Tony confirmed to me that he had absolutely confirmed the formations I'd reconstructed saying that he could also demonstrate conclusively in due course that they involved planets as the anodes and cathodes in the discharge configuration that's the end of the story as Dave tobot emailed it to me in titling it the story in a nutshell so now the story takes on a dramatic global life / @ assembles a team to look at rock art all around the world and to put a GPS on each to see where it's pointing well all that team is modernist anthony von der Sluis AKA wrens there he is with the great pyramids is backdrop there he is in Mongolia so what does the team come up with

well I'm going to give you three examples of rock art juxtaposed to photographs by Tony I think we're doing well on time because I'm coming to an end which will be familiar to many of you and this is just to confirm that this global wandering team did indeed

find rock art images corresponding to
what you'll see as photographs
3-dimensional of Tony's figures
generated in a lab and then a schematic
drawing of them and there again we saw
this at the beginning this is the
Cayenne pipette rogue laughs which they
first sent to Tony so that would be the
squatter man I'm going to show you two
more and Tony and his written work says
he has a total of 84 some plasma shapes
in rock art so a second would be first
the schematic diagram of a stacked torus
and second that image four miles west of
here in petroglyph national monument
Rinconada
support your local petroglyph so one two
three four five six stacks one two three
four five six
sometimes they're five sometimes they're
4 6 is very common and we needn't go
into the details of the schematic
diagram you've seen it before you'll
probably see it again finally defining
image further the tipping point the
virus rod the Hindu word for the great

Thunderbolt which Indra wields at which
one fine recent translator Stanley
Lombardo used in his translation of
Hesiod Theogony for the great
thunderbolt which is use wheel
here is the three-dimensional photograph
in Peratt's lab here is the try dental
shape at both ends of the Thunderbolt or
of those Trident of Poseidon and here is
the hand the grasp it of a God my own
specialty is Pinder and in a poem a
victory ode for a young boxer from
southern Italy whose town had a
lightning bolt on its coins Pinder leads
to that coinage at the climax of the
poem by speaking of Zeus's primeval
victory the pattern for all olympic
victories where he overcame the titans
and python with the bolt as he says
grasped by the hand of fire that is the
hand of fire the problem now for us is
the Tonys story is about things that
appeared in the sky that are not there
now the story is not finished until we
can say how they disappeared how they as
we might say disintegrated how amping up

the language it collapsed catastrophic
way that is the story Renset said
himself to tell and he does so purely
through the language of myths around the
world in the fourth of the four volumes
of its recently published magnum opus
traditional cosmology the global
mythology of creation and destruction
volume 4 is entitled sorry pardon the
typo disintegration and its subsections
are disruption disconnection dispersion
inversion departure periodization and
eschaton the last thing so you can read
that volume right now so we return to
Galileo this is
my last slide and here Galileo is
Galileo is showing the Doge of Venice
his telescope too bad the dogs they
didn't use his power to keep Galileo out
of the hands of the forces of the Pope
and ultimately of life-long house arrest
I'm going to summarize with two more
quotes from a new kind of science simple
computer experiments reveal a vast world
of new phenomena in their times Wolfram
goes on telescopes revealed vast worlds

that had never been seen before through
the ideas of a new kind of science
computer experiments now also reveal a
vast new world in many ways more diverse
and surprising even in the world seen in
astronomy and you know this from
Thunderbolt of the gods the new data
Galileo

great lots of time the new data
Galileo collected in his first few weeks
of telescopic observation overthrew the
Ptolemaic view of the universe have you
accepted for more than a thousand years
so I'm going to conclude with an
anecdote from two weeks ago three weeks
ago at Bard College where I teach and
we're I'm delighted to say all of the
500 freshmen in our Freshman Seminar are
required to read not otto Plato and
Shakespeare Dante and Virgil but Galileo
as the last reading and if suddenly
occurred to me in class as a way of its
saying that what Galileo saw and did
with what he saw can be compared to
something happening in the world today
and I chose tony peratt

as an example Galileo I told them made
his telescope looked through it saw the
imperfect surface of the
it's valets as know this is ruggedness
and was compelled to tell the world of
what he saw and in so doing to overthrow
the Assumption by which the Western
world had lived for almost two thousand
years given it by Aristotle consolidated
by Ptolemy namely that the moon and
everything above it the planets and the
stars fear are perfect they can have no
irregularities either of motion or of
surface that worldview had to be
overthrown Galileo had to tell people
that any of them the doji of Venice or
you can look through that telescope and
see the imperfections of the surface of
the Moon

likewise Stephen Wolfram felt he needed
to tell the world after looking at rule
110 that simple that highly complex
behavior so complex that it's continued
evolution cannot be predicted it just
has to be watched unfolding can be
generated on a computer and cellular

automata and you can see by the mode of
its generation that that complexity came
from very simple rules against all our
intuition finally Tony Moran saw in his
lab the shapes that kept morphing from
one to another as he added more current
then he saw those rock art forms as Walt
had seen from Dave six years earlier and
was compelled to tell the world all
three of them that the sky that ancient
man
saw the ancient sky was not the same as
we see today that is overthrowing a
still dominant assumption and the seers
of those plasma shapes and petroglyphs
have felt compelled to tell the world it
was not so the ancient sky was different
thank you

The James Webb Space Telescope has been sending images to Earth since July 2022 and has already delivered a startling finding: seeing galaxies orders of magnitude brighter in the early Universe than astronomers had anticipated.

The Webb telescope was designed to see deeper into the infrared spectrum of light than the Hubble Space Telescope.

Infrared light does not get as scattered by dust and filament clouds as does the visible light spectrum. Consequently, photographs of deep space, using the infrared spectrum, reveal many more stars hiding in the haze of outer space.

Additionally, there is a redshift factor.

The older the galaxy, the faster it is moving away from us, making the Doppler effect on the light waves coming from deep space, stronger the faster the receding velocity is.

The Doppler effect is familiar to us in the change of pitch of a train's horn as it passes by.

As the train moves away from us, the sound waves are stretched out, making the horn's tone lower. In the case of light, the Doppler effect lowers the received

light frequency towards the red end of the visible spectrum, and if pronounced enough, into the invisible infrared part of the spectrum. In order to photograph galaxies that are so old that the redshift has moved to visible light wave spectral lines into the infrared range, the telescope's mirror and imaging chips are engineered to be sensitive to red light and rays that our eyes can't see. In the standard model of cosmology, evolutionary cosmologists say the first stars formed 400 million years after the so-called Big Bang and the first galaxies then formed a few hundred million years later. High redshift values are a measure of the age of a galaxy, and the degree of shift that the Webb telescope is showing, implies that the galaxies existed 180 million years or less after the Big Bang, a clear violation of the theory. A galaxy of 180 million years old is considered young in a universe that is believed to be over 13 billion years old. Following Webb's findings that surprisingly mature galaxies are located in a very young part of the universe, theorists and observers have been scrambling to explain them. Reaching back

to a comparatively young 180 million years after the theoretical Big Bang, the telescope found some galaxies with large fully formed disk-like structures that were not expected to exist so early in cosmic history.

Stacy McGaugh, cosmologist Case Western Reserve University, was quoted in the September 14, 2022 Scientific American saying, "We should see lots of these little protogalactic fragments that have not yet merged to make a big galaxy. Instead, we're seeing a few things that are already big galaxies."

Early proto-galaxies are expected to be small, dim, and thinly populated fuzzy blobs of stars, but what is seen are fully formed and evolved galaxies, well defined with spiral arms, and many times the size and energy of our Milky Way galaxy.

The Einsteinian gravity-fed Standard Model of the Universe's evolution is falling under the wheels of increasing observational resolution factors, greater levels of detail from which to extract predictive patterns. This is science in action, doing what it is supposed to do, make new discoveries, not validate old ideas.

This is the Platonic underpinning of scientific method, the replacement of old hypotheses by new and better ones.

When science refuses to be updated, it ceases to be science and begins to resemble an authoritarian cult, a collection of fetishes.

Mainstream astronomers, instead of being excited about new discovery, act like they were caught flat-footed and not at all happy about a 10 billion dollar investment that appears to have paid off.

When Michael Boylan Kolchin, theoretical astrophysicists, University of Texas Austin said in Science Journal, 12 August 2022, "No one was expecting anything like this."

One can only ask, why the heck not. The entire point of science is to toss obsolete ideas into the dustbin of history. This is precisely what scientists should be prepared to expect.

It is unsure whether current galaxy formation models need a revision, or abandonment. One can only marvel at the kluging of band-aid concepts to paper over observations that were unexpected.

The invocation of dark matter and dark energy in the face of the failure of

Einsteinian empty space to account for the high rotational speeds of galaxies, seems more like a parlor conjurer's 'rabbit in a hat-trick' than a science eager for a better understanding, even if it dynamites cherished canards like the Big Bang Theory and black holes.

Models hold that gas clouds should be far slower to coalesce into stars and galaxies than is suggested by the Webb's galaxy-rich images of the early universe, less than 500 million years after the Big Bang.

In questioning the validity of Big Bang, Paul J. Steinhardt, Professor of physics, Director of the Princeton Center for theoretical science in Scientific American, September 28, 2017, calls for reconsideration of the cosmic inflation theory, or Big Bang as it has come to be known. He states, "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."

But even before the experts could start incorporating the Webb telescope data

into their interpretive frameworks when the first Webb telescope pictures were only days old, astronomers from the University of Edinburgh in Scotland, announced that they had found a galaxy with the incredible value of $17z$. That value would indicate that this galaxy had a redshift of 17, which would mean this galaxy existed only 220 million years after the Big Bang. The galaxy CEERS-1749, but popularly called Schrodinger's Galaxy, shows in addition to its unusual age, a huge mass which means that there are a lot of stars in the galaxy. So, the oldest galaxy in the universe is anything but a small cluster of stars that might have formed shortly after the Big Bang. With 5 billion solar masses, Schrodinger's Galaxy is about five times more massive than our Milky Way. Schrodinger's also exhibits an enormous luminosity. The galaxy's brightness is much too high for one that existed only 220 million years after the Big Bang. Tomamaso Treu, Professor of physics, UC Santa Barbara, echoes the consensus of

consternation when he said in the October

2022 *Astrophysical Journal Letters*,

"Somehow, the universe has managed to form

galaxies faster and earlier than we thought."

The Webb telescope images from NASA also

unexpectedly reveal for the first time

barred spiral galaxies located at a time

when the universe was a mere 25 percent

of its present age. Barred spiral

galaxies, similar to our Milky Way, are

considered to be a mature, not a young

galaxy type, in fact to have evolved from

normal spiral galaxies, making them an

older and more evolved galaxy type.

Garth Illingworth, Professor of Astronomy

and Astrophysics, UC Santa Cruz, in the 9

August 2022 issue of *Science Journal*,

exclaimed, "This is way outside the box of what

models were predicting." One can only hope that

the new box Illingsworth and his colleagues are

busily constructing, will be one capable of expansion.

It will be interesting to see how the

'engine of orthodoxy' integrates this new

data which is very recent, and not fully

metabolized by the 'ivory tower'. Whatever the outcome,

it is certain that the cosmological discourse will

gravitate away from Einstein's 'space-is- empty'
gravity model. Since that hypothesis has been defended
for decades as unquestionable truth by
the vast majority of cosmological
theorists, the new data is causing these theorists
to panic. Based on the published literature right
now, the Big Bang makes 15 wrong
predictions, and only one right one,
the abundance of deuterium, an isotope of
hydrogen. In the 27 July, 2022 Nature Journal,
Alison Kirkpatrick, Assistant Professor,
Department of Physics and Astronomy,
University of Kansas, Lawrence, appears to
be not having much luck wrapping her
head around the new Webb data.

Quote, "Right now I find myself lying
awake at three in the morning and wondering
if everything I've done is wrong...."

Dr. Sabine Hossenfelder, Research Fellow,
Frankfurt Institute for Advanced Studies,
has been wondering the same thing. Even
before the Webb data entered the fray in
this panel discussion from 2021
sponsored by The Institute of Art and
Ideas. "...and that's exactly what I mean
when I say we have a problem with theory

development. Because you have all these theorists, they literally guess their models and it just leads nowhere. And I really think that theoretical physicists have to have a hard look at their methods of theory development, and throughout what didn't work. We talk about the scientific method as if it was a fixed thing. But it's a living and evolving thing and what counts as good science at one point in history, might no longer count as good science a hundred years later." Dr. Hossenfelder is an example of a scientist doing what they should all be doing: protecting the scientific method and its process of hypothesis formation.

Will this predictive failure of the accepted cosmology reinvigorate discussion towards alternative cosmologies? What I mean specifically are the steady state theories of William Duncan MacMillan, Hermann Bondi, Thomas Gold and Fred Hoyle. And of course, the Electric Universe model of Wal Thornhill, Don Scott, Dave Talbot, Ev Cochrane, Dwardu Cardona, Michael Armstrong and Mel Atchison, to name a few. Perhaps a cosmology of the future is

already here, although not yet acknowledged in the mainstream. The field is entirely wide open for those curious enough to invest the energy to think.

The EU model of cosmology represents a change in the categories of astrophysics, and most important the methodology of thought, which must drill these new ideas into the lockstep mind of conventional science.

[Music]

[Music]

I want to thank the organizers of this
conference for inviting me.

It's a little bit unusual,

I think, to have an eye

surgeon speaking to physicists but

nevertheless I'm honored that you would

allow me to come and share some thoughts with

you about the role of voltage in the body.

Now, I always start my lectures

by announcing that I'm not speaking with

my Texas MD license.

The Medical Board in the state

of Texas does not allow its

physicians to talk about anything that's

not standard of care medicine and of

course standard of care medicine is

pharmaceutical medicine, surgery, and

physical therapy and obviously what I'm

talking about today involves other things.

So I'm speaking today with my

Arizona homeopathic and integrative

medicine license.

I want to acknowledge certain

people that have contributed

greatly to much of the information I'm

going to share today.

This is the Tennant Institute staff
and we have dr. Marr and
dr. Hyde in the audience with us and if
there are those of you who become
intrigued by some of the things we're
talking about, they'll be happy to help
demonstrate to you how all of this works.

In addition, I want to acknowledge Eileen
McKusick whom you heard speak this morning
and her major contributions to this area
as well, so thank you Eileen.

So what are emotions?

Well, people talk about having them
but most people don't have a real,
good definition of what they really are
and how they work.

In addition, as in the over 50 years I've
been in medicine, people have talked, sort
of in passing, about the mind-body
connection but I found it was difficult
to get anybody explain to me what that meant.

How does that really work?

Well, they say well, you know, if you have
emotions it makes you get sick okay?

How's that work?

And I found it difficult to find any

solution or answer to that question.

So the reality is that none of us can get through life without having emotional events.

We have losses; loved ones die or disappoint us, our dreams go unfulfilled, we go bankrupt, we have car wrecks, we suffer injuries, all sorts of things happen and then of course we now have this big epidemic in our country of soldiers returning from war and committing suicide.

So this business about post-traumatic stress syndrome is of course, become a major issue for us and nobody really knows very well how to handle it and here's a list of all of the various things that can happen with that but we find that more and more people that aren't soldiers are having post-traumatic stress syndrome as well.

So we need to get a handle on how to deal with that.

Now, when this Time magazine cover came out, we were only losing one soldier a day, now it's up to

20 a day so 20 of our veterans a day are committing suicide.

So we obviously need to figure out a way to deal with that.

Now, the reality is that deployment and suicide are not necessarily related, in the studies that have been done.

But the important point,

I think, of the military

suicides is that pharmaceuticals are not very effective.

Most people know that and

the studies have been done to show that there's really not a pharmaceutical that does very much in helping deal with suicides and the emotions that go with it.

And then I'm just passing through to the studies that have been published about that.

Now in my observation, if you have treatment failures it usually means you're using a wrong paradigm and so I'm going to suggest to you a different paradigm as we go through the day.

But I'd first like to tell you how I ended up sitting in this chair.

I'm trained as an ophthalmologist and an ophthalmic plastic surgeon and I did the majority of the research for the laser that's used in lasik surgery by the company called Visx and I had a lot of fun doing that research but unfortunately we didn't know at the time that the laser wouldn't kill viruses so as I would be treating eyes and particularly I treated this one fellow from India that had scars on his corneas and I used the laser to remove those scars but he had leukemia.

Well, we didn't know that the laser wouldn't kill viruses and so the viruses came up, off his eye through my mask into my nose and into my brain and I developed encephalitis.

And so I, the result of that was that I could see a patient and know what was wrong with them but I couldn't remember how to write a prescription.

And I'd, in addition to that, I developed spastic movements so I'd be sitting there and do something like that which doesn't work really well if you're

operating inside somebody's eyeball.

And so, for all of those reasons I had to quit working at the end of November 1995.

So I spent about 16 hours a day in bed sleeping and I had two or three hours a day in which I could think clearly enough to understand a newspaper and there like a light switch would go off and I couldn't understand it anymore.

So during that 2 or 3 hours a day I could think, I had to figure out how to get myself well because the best doctors I could find at NIH in Boston and New York and wherever just said well you got three viruses in your brain, we don't know what to do about it, go home and don't call us, we'll call you.

So during that two or three hours a day that I could think, I began to try to figure out how to get myself well and I began to think about the fact that all the cells in the body work very much the same even though they look different but that if I could figure out how to make one cell work, I could make

them all work.

And so I went out and bought

10 or 15 books on cellular

biology and started to reading them

which I hadn't done for about 30 years.

And one of the things that resonated to me

with those various books was

that each one talked about the fact that

cells are designed to run at a pH of

7.35 to 7.45.

And so I didn't really know

too much about pH, I remembered there was

something about, have to do with

acid-base balance but I didn't really

know a great deal more about it.

So as I began to look at pH,

I began to realize

that pH describes voltage in a liquid.

So if you think about the wires that are

bringing the voltage into these lights

and to your computers etc, that's

conductive electricity of course with

electrons flowing through a copper wire.

But if you talk about a solution,

a solution has the opportunity to be

either an electron donor

or an electron stealer.

So in order to figure out which it is, use a sophisticated voltmeter, or so to speak, called pH meter.

And when you measure a liquid with a pH meter, it will give you either the pH or you can flip a switch and it will give, read it out in millivolts.

So the reality then is, voltage in a liquid we call pH and by convention, if you find that the solution is an electron stealer, you put a plus sign in front of the voltage and if it's an electron donor, you put a minus sign in front of it and then you convert the voltage that you measure with a logarithmic scale going from 0 to 14 and call that pH.

So plus 400 millivolts of electrons stealer is the same as a pH of zero whereas minus 400 millivolts of electron donor is the same thing as a pH of 14.

And if it's neutral, if it's neither electron down or electron stealer, then that's a pH of seven.

So when we say that cells must
run at a pH of 7.35 to 7.45,
we are saying, cells must run between minus
twenty and minus 25 millivolts.

Well, that was a wowser for me, guess what-
-cells need energy to work, that makes sense.

Now by the way, people sometimes get confused
with these numbers because if you take a
cell in a petri dish and you put an
electrode inside the cell and one
outside the cell and you measure across
the cell membrane, you'll get about -90 mV
but hopefully not very many of you
have your cells in Petri dishes.

But in the environment of this
body, they're designed to run at minus 25
minus 20 to minus 25 millivolts.

So one of the things that you will find is the
characteristic of essentially all chronic
disease is that you have low voltage
going to that organ.

So we are constantly wearing ourselves
out and needing to make new cells.

So what I'm seeing here is,
one slide behind that one apparently.

OK, so we are constantly

wearing ourselves out and having to make new cells so the macula in your eye today is only 48 hours old, in other words, you get new cells in the macula every 48 hours.

The lining of your gut is three weeks old, the skin you're sitting in today is six weeks old, your liver is eight weeks old, and your nervous system is eight months old.

So we are constantly wearing ourselves out and having to make new cells.

So it turns out then, the chronic disease only occurs when you lose the ability to make new cells that work.

Let me say that one more time, chronic disease only occurs when you lose the ability to make new cells that work.

Well, if that's the case then, we need to ask the question, what does it take to make a new cell that works?

Well, as I mentioned, it takes minus 25 millivolts for a cell to run but to make a new one, takes double that, it takes minus 50 millivolts.

And then, in addition to having the voltage to make new cells, we have to have all of the nutrients to make a new cell.

So if your house gets blown down with a tornado and you have to build a new one, guess what?

You have to have everything you need to 'bake' it.

You can't build a new house with door knobs and bathroom tiles, you have to have shingles and rafters and doors and windows, it's that you have to have everything it takes and this is a big mistake people make when they're trying to get well as they try one substance at a time saying that well,

I want to see what works.

Well it's not going to work because you have to have everything, all at one time, to build a new cell.

So we have to have minus 50 millivolts of energy, we have to have everything it takes to make a cell and then we have to deal with any of the toxins that are hanging around that damage cells as

fast as we make them.

And the most common toxins we have to deal with are heavy metals like mercury, toxins coming out of our teeth and GMO foods with the pesticide called RoundUp or glyphosate.

Now, the body actually has four different battery packs because the human body is a portable electronic device like all electronic devices it has to have a battery pack or multiple battery packs.

And so, the reality is that we have these four different packs.

Now the largest one of all is our muscles.

Now our muscles are piezoelectric and for those of you who aren't physicists that word, funny word piezoelectricity means that if you stress a substance and it emits electrons, that's called piezoelectricity.

So when I move my muscles, I'm generating electrons which is by the way why exercise is so important because exercise is the way the human body is designed to recharge your own personal

battery pack.

But the reality is also that

our muscles are rechargeable

batteries and so we have then these

large muscles which are our main

batteries and then these muscles battery

packs are all hooked to our cell

membranes.

Now, cell membranes are capacitors so

what is a capacitor, well, capacitor is a

small battery and the way our cell

membranes are designed is with a couple

of opposing layers of funny fats called

phospholipids and these fats have a ball

and then two legs.

Well, the balls are electron conductors

and the legs are insulators so when you

put them like this, you have two

conductors separated by insulator which

by definition is a capacitor which means

it stores electrons.

And then inside the cell, we have

mitochondria and inside the

mitochondria we have another

rechargeable battery system.

When that battery system is charged up,

we call it ATP and then as it gives away its electrons and discharges, we call it ADP.

Well, because we have a rechargeable battery system inside our mitochondria, guess what else we need in there, a battery charger and the battery charger inside the cell is called the citric acid cycle or the Krebs cycle.

So the Krebs cycle runs on primarily fatty acids and so as you put fatty acids through the Krebs cycle, it creates electrons and for every unit of fatty acids that you put through the Krebs cycle, if oxygen is present, you get enough electrons to charge up 38 of these ATP batteries.

Now in addition we have the DNA.

Now DNA inside of ourselves, we generally tend to look at it from the side and we see, looks like we took a couple of steps, stepladders and twisted them but if you look at it from the top, it looks like this.

And every circle of DNA is golden mean and what that means is that it's 1.618 times, the diameter is 1.618 times the

the height and so forth.

And any place in the universe

where there is something

that's golden mean or in the shape of

platonic solid, it will cause implosion

of scalar energy.

So because our DNA is golden mean

then scalar implodes into it and gives

it its charge so it has the

energy to do its job.

So then we have, our muscles then

are stacked one on top of each other in

a very specific order like stacking

batteries in a flashlight.

And so, surrounding these, the stack of muscle

batteries, we have a substance called fascia

which is very much like a stacking and

of course, fascia is that shiny stuff

you see when you carve the Christmas turkey.

Now the interesting thing about

fascia is that fascia is a semiconductor.

So what in the world is a semiconductor?

Semiconductor is a

collection of molecules arranged in such

a way that electrons move through it at the

speed of light but only in one direction.

So we have then this continuous stack of fasciae going from our toes up to our brain, from our fingers up to our brain and surrounded by this stacking which serves basically as the wiring system for the body.

So we have then the stack of muscle batteries surrounded by the fascia, so that every organ in the body has its own battery pack.

Because every organ in the body has its own battery pack, then we have the ability to isolate, measure that voltage and figure out why that organ is malfunctioning.

Now, a stack of muscle batteries it's what's been called an acupuncture meridian.

So an acupuncture meridian is simply a stack of muscle batteries.

Now, so this is an example of an acupuncture meridian called the spleen meridian and the spleen meridian... (oops, go back the other way, there you go).

So the Spleen Meridian starts down in the big toe, goes up the inside of the leg and then it goes, there's a special

branch, as you can see, goes over to the female genitalia, then it goes around the back where it gets the adrenal glands, the spleen and the pancreas, then it goes on, up into the neck and makes a loop and hooks into what's called the stomach circuit, and then the stomach circuit gets the macula of the eye so by the way if anybody has macular degeneration, it's because you have low voltage in your stomach circuit.

It powers the frontal lobes which is the thinking part of your brain, then it gets the thyroid, the breast, the stomach, the male genitalia and then back down to the big toe so it makes a loop.

So we have six of these loops of muscle batteries that provide the 25 millivolts you need for the organs to work and the 50 millivolts to repair them.

So chronic disease occurs when one of these muscle battery packs won't hold a charge.

So then that leads us to the

question well, why won't

that battery pack hold a charge?

Well, there is a checklist that you can go

through to try to figure out why it

won't hold, why it won't hold a charge

but basically you have to look at thyroid

hormone because that the thyroid

hormone T3 controls the voltage of

every cell membrane in the body and T2

controls the voltage in the

mitochondria so you have to be sure that

the thyroid hormone level is correct.

Then, if you were to put a scar across

one of these circuits, so if you put a

scar across one of these muscle battery

packs here, it's going to short it out

and it'll drain off some of the voltage.

So scars are, can be a significant

problem but the only scars that really

take you completely down are those on

the main line on your main cable.

A scar across your knee or something will

generally just lower it a few millivolts

but enough to cause some problems.

In addition, emotions are stored in

the body as magnetic fields so if you

have a magnetic field that's stuck in one of these muscle battery packs here, it's going to block the voltage so it won't go through.

And then finally, dental infections are a significant problem because each of these circuits go through very specific teeth.

So here you see that we have this main cable that goes up the back and down the front, and then from that main cable you get the voltage coming from our arms and our legs and they come up to these lateral terminals and then from those lateral terminals they go to this central one and then it starts looping around the body and as it loops around the back, it has the option then of going out and attaching to the ganglia that are up and down the spinal cord which we call the autonomic ganglia and then from the autonomic ganglia it goes to every organ in the body.

So that's the human body's wiring system and battery pack system and so, whenever you have chronic disease you will have failure of one of

these electronic systems. So you simply have to start out whenever you have some sort of illness asking the question, so what's the battery pack to that illness?

So if you have heart disease you would say what's the battery pack for the heart?

Well it's obviously the heart muscle battery pack.

There are others that are not as obvious, for example there's the example I gave you, a spleen stomach.

The spleen stomach circuit is the power supply for the entire endocrine system, the entire reproductive system in both males and females, the macula of the eye, and the thinking part of the brain.

And of course, when that system goes out which is that one of the more common ones to go out, then you start having failure of those organ systems.

So how do we know if the voltage is low in a circuit?

Well, we have the ability to measure it with certain acupuncture points, using what amounts to a specially-designed ohmmeter.

Now, as we began to then identify the Power

Packs that is not working correctly, we have two things in front of us, one is to figure out why that battery pack won't hold a charge and then the second is to try to recharge the battery pack while we're figuring out how to fix the reason that we got into trouble in the first place. So we have developed this device called a bio transducer that puts out both electromagnetic and scalar energy and if you simply aim it at the failing organ you can begin to recharge the cells in that organ itself and then you want to come behind it and you want to charge the muscle battery packs and these diagrams that we have here, where you see the red and the black dots, show you where to put the polarity because every battery pack, like every other battery you're aware of, has its terminals and polarity so you take patches and you stick the patches on to where the other terminals of the battery pack that doesn't have enough charge, hook it on to the bio modulator which is a little portable device that looks a bit like a

computer mouse and it puts out waveforms that are designed to implode energy and transfer energy to the cells and recharge your muscle battery packs.

So you're recharging the organ and the muscle battery packs while you're working on figuring out well why won't that battery pack hold a charge in the first place.

Now, one of the interesting things is that our bodies are wired up like many circuit boards.

As you know, many electronic circuit boards use Tesla resonating circuits.

A Tesla resonant circuit is a combination of a capacitor and a coil wired in parallel.

And when you do that, it has the ability to communicate with other systems that are a combination of Tesla resonating circuits.

So in the body, the lung is always wired to the large intestine, the heart is always wired to the small intestine, the spleen and pancreas are always wired to the stomach, the kidney is always wired to the bladder and the

liver is always wired at the gallbladder.

Each of these are screeds in a Tesla resonating circuit and because they are Tesla circuits, they are able to communicate with each other.

So one part of our body knows what's going on in the other part of the body because we're wired up with Tesla resonating circuits.

Now, all of these various circuits in the body go through very specific teeth and so the teeth act like circuit breakers.

So if you begin to have an infection in one of your teeth, it will at first begin to reduce the voltage that's in that circuit and later actually switch it off.

So the circuit we've been talking about, the spleen stomach circuit is the one that you see in yellow here, it's the upper molars and lower premolars.

And so if you have an infection in an upper molar, then it's going to begin to affect your spleen stomach circuit which means it's going to affect as I mentioned your entire reproductive system, your entire endocrine system, the thinking part of

your brain, and the macula of your eye.

So most people with macular degeneration have an infection in an upper molar.

On the same side is their macular degeneration.

Now, one of the issues then is how do teeth enter into this whole system?

Well, it turns out that the teeth appear to function similar to the way that a lymph node does in the lymphatic system.

If you have infection in your lymphatic system and it goes up the lymphatics, it gets caught and trapped in a lymph node.

Well, emotions are trapped in the body as magnetic fields and those magnetic fields tend to end being trapped in teeth as well.

And so, what you'll find is that the majority of chronic illnesses actually begins with an emotional event.

Let me say it one more time, the majority of chronic diseases actually begins as an emotional event and that emotion is a magnetic field that starts blocking the circuit by getting caught in one of the teeth and as it does so it

begins to lower the voltage in the tooth.

Now, Dr. Steinman showed that

every tooth has within it a pump that

pumps fluid from inside the tooth to

inside the mouth and that's what keeps

you from getting cavities.

Your kids will be happy to know

that it's not snicker

bars that are causing their cavities,

it's the failure of this pump.

So when their pump begins to fail,

then infection

comes from the mouth into the tooth and

begins to cause decay.

So, the emotion begins to lower

the voltage enough in

the tooth that the pump begins to fail

and then you begin to get a cavity and

then you begin to get a crown and then

you can begin to eventually keep going

until you get a root canal and then that

leads eventually to having a malignancy.

So again, most of the chronic diseases

occurs, begins as emotions.

Now obviously there's some circumstances

where that's not the case.

If you were living in Tokyo
when Fukushima blew up
and you were radiated, obviously that's
not necessarily emotional event in
the sense that you may not have known
you just got radiated, but it's
going to make you sick.

But generally speaking,
(most of the emotions) most of the
chronic disease we have we can trace
back to the emotion that has blocked a
particular muscle battery pack by
blocking the tooth that's involved with it.

Now, when you look at this particular
slide you might ask the question, didn't
anybody ever teach you not to put so
many numbers on one slide?

Well, I did it on purpose because
I wanted you to get
the gestalt of it.

So what you will see is that the
relationship, you'll see that here, that a
pH of seven point three five is the same
as minus twenty millivolts; seven point
four four is the same as minus twenty five.

So that's where our organ, our cells

normally run but as voltage begins to drop then things begin to get worse and worse for us until we finally get down to plus 30 millivolts.

All cancers occur at plus 30 millivolts so what you see is that normal tissue is running at electron donor which is minus 25 millivolts and as you go past zero you have flipped the polarity, that is that every battery as you know has a plus on one end, a minus on the other and as you drain a battery all the way to zero, it flips its polarity upside down. And so, when the polarity reverses is when, and it gets all the way down to plus 30 millivolts, it's when malignancies occur.

Now we don't have time to really go into that in much detail today but the amount of oxygen that will dissolve in water is dictated by the voltage of the water so as the water inside of ourselves has lower and lower voltage then the oxygen in the cell comes out of the cell and disappears and when you finally flip the polarity, there is so

little oxygen capability in the cell
that the stem cells recognize that
signal that hey, we just ran out of
oxygen here, please help!

And so stem cells go over and invade the
local blood supply and create a massive
blood vessels that we call a cancer
which is indistinguishable from a
placenta in a pregnant female.

So basically all solid tumors are
placentas, that is the body's way of
responding to lack of voltage and oxygen.

So if we begin then to think about the
the way that this
works, think about my thumb.

My thumb is a perfectly good thumb by the way.

It's running at what voltage? -25 millivolts.

Now I hit it with a hammer and I destroy
some cells in my thumb.

What's going to happen is that
the thumb's immediately

going to go to minus 50 millivolts and
minus 50 millivolts causes the
arterioles to dilate and the reason that
happens of course is we need the raw
materials dumped at the curb there so to

we speak so that we can rebuild the cells
we destroyed with a hammer.
Well when those capillaries dilate,
we get all the
signs we normally call inflammation,
we have redness, we have swelling, we have
heat, we have a pulsing pain, and it makes
you say bad words.

So my thumb gets busy and it makes
new cells, it replaces those
that I smashed with a hammer, goes back to
minus 25 millivolts and I'm a happy camper.
But on the other hand if,
when I smash my thumb, if the power
supply going to the thumb is inadequate
to provide the -50 millivolts I need to
make new cells, then my thumb won't heal and
I'm stuck in chronic disease, you see that?

So I can take all the pills I want,
I can do all the surgery I want on the
thumb, but it'll never get well until I
do what--insert enough electrons to get
me up to minus 50 millivolts.

And so if you understand what I just told you
about the thumb, you understand basically
my whole lecture so I can go home now.

Oh no, wait a minute, it's still a little bit more but the point is that chronic disease occurs when you don't have enough voltage to make new cells and so as voltage begins to drop, then oxygen begins to drop and when oxygen drops there are several bad things that begin to happen.

The one of the things that, as I mentioned earlier, is that you began to have less ATP which is the voltage inside the cell that cell needs to do its business.

Now I also mentioned to you that as, because of the Krebs cycle being able to make, to recharge 38 of these ATP batteries for every unit of fatty acid you put through the krebs cycle, that's only true if oxygen is available.

If oxygen is unavailable, then for every unit of fatty acid you put through the battery charger, you only get enough electrons to charge up two batteries.

So it's a bit like having a car that goes from 38 miles to gallon to 2 miles the gallon.

Your cells become very inefficient.

Now in addition to having inefficiency of

the intracellular voltage, we have problems with bugs.

Now the body contains perhaps trillion bugs of various kinds and the majority of them are suppressed by oxygen but as oxygen levels begin to drop because voltage drops, then these bugs wake up and the first thing the bugs want to do is have lunch and they want to have you for lunch.

Now bugs don't have teeth so that they can take a bite out of you so instead they put out digestive enzymes to dissolve your cells so they can get the nutrients.

So think about having a sore throat.

The strep bacteria on your tonsils having a picnic and they're having a good old time, but you have the world's worst sore throat, you have a headache, you have a fever, you have been vomiting, you have diarrhea, your joints hurt, you have a miserable day and it's because the bugs are having their way by putting out these digestive enzymes to get their nutrients out of the cells.

Now one of the things is that as voltage

and oxygen drop more and more, these microorganisms lose their cell membranes so they become what have been called cell wall deficient organisms or stealth pathogens.

One of the problems with that is, first of all you can't culture them.

Secondly, you don't see them with a standard microscope, you need one of these fancy microscopes called phase contrast or dark field microscope.

And these bugs then put out various toxins and begin to damage the local tissue and often what we call an autoimmune disease is simply these bugs having their way with your local tissue.

So as they put out their toxins, you get the signs of inflammation and swelling and so forth but if you try to culture anything or look at a biopsy of that area, you don't see anything because normal hospitals and physicians' offices don't use one of these microscopes so where you can actually see them.

In these images that you see on the screen, you see these various cell wall deficient bugs inside red blood cells consuming them,

in the lower right you see where I took red blood cells, put it under a coverslip on a microscope slide and let it sit there for a few hours and as it consumed all of the oxygen, you see the Lyme spirochetes coming crawling out of the red cells.

So everybody in this room has Lyme disease, it's just whether or not your immune system has the ability to deal with it, whether you have symptoms from it.

So then as the voltage gets down toward plus 30 millivolts, then the cell wall deficient fungus shows up and you began to have these kinds of cells, this is a blood from a fellow who had leukemia and you can see the fungal forms in his blood that the fungus is always associated with these kinds of things.

So I'm going to skip past, this is just a better microscopic view and I want to go to talk to you a minute more about teeth because that's terribly important in the understanding how to get people well.

Now, if you look at the lower left image,

you see a car battery that has corrosion around it which means that the alternator in that car is going to have trouble keeping that battery charged up. Well, the tooth just above it is attached to a muscle battery but it also has corrosion and thus it also has trouble keeping that battery charged up and then as corrosion in either your car battery or your tooth gets worse over time, then it gets harder and harder and harder and harder to keep your battery packs charged up and eventually in the car battery the corrosion will come outside the battery itself and start corroding through your battery cable which now means you have a total short-circuit and your car won't start.

Well, this process occurs in the body when the infection in the tooth moves out into the bone so when you have infection in a bone around a tooth it actually works just like a circuit breaker and shake takes down that circuit and then the two circumstances in which that occurs is

either a root canal tooth, which is of course a dead tooth, most of you may know the way you do a root canal, you drill a little hole in the top of the tooth and you put an auger down and then you rip out the artery and rip out the nerve and kill the tooth and then you fill it with putty.

You know, the problem is that now the tooth is dead and all dead tissue gets infected.

The dentists are the only physicians that believe you can get away with leaving dead tissue in the body.

No other doctor believes that.

So, one root canal tooth shuts down sixty-three percent of your immune system.

So and then what makes it worse is that it then gets out into the bone and when it gets into the bone it shuts off that

circuit and so now the voltage drops significantly in that circuit and that's

why you find in the, we looked at all the cancer patients we've seen in our clinic and ninety five percent of them are associated with a root canal or an

infected bone where a tooth had been

pulled, ninety five percent!

So a leading contributor to cancer is having an

infection in the bone around one of the teeth.

Now, in addition to root canals,

there's a problem when teeth get pulled

because teeth are held into the bone by

a ligament called a periodontal ligament.

What dentists are trained to do is

wiggle the tooth, make it loose, take it

out, put a stitch, and quit leaving the

ligament behind.

When you do that, it's very hard

for the bone to heal because

of the ligaments in the way.

And even if the dentist happens

to be one who takes the

to scrape out that ligament, because the

mouth is such a dirty place, often times

people get infection in the bone during

the first few days of healing once the

tooths been pulled.

So once you, and that's called

a cavitation by the way, so

whether you have infection from a root

canal or from a cavitation, it tends to

shut down the circuit and one of the problems is that infection in the bone then tends to move over and take out the next circuit.

So a huge problem is that our kids are in high school and they go to the dentist and they say oh, you got to get your wisdom teeth out.

It's that old thing of whether if you go to Midas you get a muffler.

So a study came out last year showing that 65 percent of root canal extractions were unnecessary.

Well, nevertheless they get their wisdom teeth pulled and now they start getting infection in that area and the wisdom teeth circuit is heart-small intestine but listen, it's the autonomic nervous system.

Autonomic nervous system is the body's on-off switches.

So all of a sudden, within days after getting their wisdom teeth extracted, the kids have lost their on/off switch which means they, their bodies doesn't allow to control itself.

Then, over time, it begins to move next door

and takes out the spleen-stomach circuit.

Now remember that the spleen circuit is the power supply to the adrenal glands so now, soon, they've lost their control panel, their on/off system and then they lose their adrenals so they can't deal with stress and so they began to become what many people say oh, he's just a teenager.

Well no, he's not just a teenager,

he's lost his

ability, the whole but way the

body deals with stress.

And so many of our kids hide

themselves within electronics because

within the electronics they have an

on/off switch, in their body they don't

so they can't deal with the real world

anymore and so they hide within their

cell phone and their game boys or

whatever you call them.

Nevertheless, this is a huge problem.

Now when you lose,

I only got five minutes left, so when you

lose your ability to make adrenalin, you

go down the following slippery slope, you

have trouble going to sleep, you have
trouble dealing with stress, you have
trouble with your memory and
then you can't multitask.

So you're sitting,
reading a book or watching TV and
somebody says hey, do you
want mustard or mayonnaise?

You become very annoyed
because they have interrupted you but you
don't have the mental horsepower to stay
attached to whatever you're doing so you
detach, you pick mustard, you go back to
your book and now you can't remember
your place and you're even more annoyed.

And then it gets to where you don't like
any stimulus so you don't like loud
noises, loud music, rowdy crowds can't be
around people who are arguing and
eventually it gets to where you don't
even want to be touched you just want to
sit in the corner and have people
leave you the heck alone.

And then your sexual
equipment quits working and then you
can't go to sleep before 11:00 and when

you wake up you're still tired, all of
that's due to the lack - loss of the
spleen power supplying the adrenals.

Well, what I've just described
of course is very destructive.

If you can't deal with
the life or the world, you can't be a
good spouse and particularly if your
sexual equipment doesn't work anymore
then that's a big problem in a marriage.
You can't be a good parent because kids
make noise and want something from you
and you have nothing to give, you can't
be a good worker, you can't be a good
friend you can't be good at much of
anything so your life's in the toilet
simply because you've lost the spleen
circuit that goes to the adrenal glands
and that's a huge problem in our society.

Well now, Eileen McKusick spoke earlier
about mapping the field of emotions
and this is the traditional Chinese
one so that the various circuits have
these various sorts of emotions get
stuck in these various particular places
or in the teeth that are associated

with these, Dr. Banis published these
and of course Eileen has published
hers which is this group of where
things get stuck.

And as far as the erasing emotions
are concerned, because
emotions are magnetic field, you can
erase them with a stronger magnetic field.

One of the laws of physics is, if
you take any magnet and you put a
stronger magnet over it, then the weaker
magnet assumes the characteristics of
the stronger one and so when you have
these emotions that are stuck, you can
begin to erase them in a
variety of different ways.

Now there are various
groups over the years that have looked
at this subject and tried to figure out
how to do it, EFT, Psych-K, Emotion Codes,
Psychosomatic Energetics, etc, etc, but
certainly we have developed one where
you can, if you can think about emotion
while holding onto these hand grips with
your bio modulator you could erase the
emotion but when we did that we were

doing one emotion at the time and of course, Eileen talked to you this morning about using her tuning fork to do it which is very effective.

What I have recently found is that, if you treat the wisdom teeth, which treats your autonomic nervous system, then you can begin to knock out, you can not only change the polarity in all of your various circuits at one time but also knock out many of emotions automatically.

Now a pendulum is actually a, like a single string on a guitar and the weight on the pendulum makes the string taut so when you move, when it's moved it's actually resonating with whatever frequency the string is.

So what you do is you hold this pendulum over the small intestine, heart-small intestine autonomic system and you take the bio transducer and simply put it over the wisdom teeth and you watch the pendulum and it'll always be spinning backwards if the voltage is low, counter-clockwise, and you keep holding it there and pretty soon it'll slow down and then

it'll start spinning clockwise, and then
you do the same on the other side again
holding the pendulum
over the heart-small intestine
circuit, put the bio transducer over the
autonomic system at where you can access
it at the tooth, watch it spin backwards
and in the correct way and now when you
go back and check all of the circuits
you've corrected the polarity in every
circuit and many of the emotions that
you had found out in the bio field are
already gone as well.

So, unfortunately I don't have the
time to talk to you about
how we're wired up with polarity
and how our bodies are golden
mean and how implosion occurs. If you're
interested in those subjects, then we
have some videos that will help you in
that area, plus we will be giving some
demonstration if there are any of you in
the audience who happen to have any
emotion, anybody here?

We'll be doing some demonstrations
in the breakout room.

So what I've hoped to accomplish in these few minutes I had to talk with you is to help you understand that the body is an electronic device which has a multiple battery packs and the chronic disease occurs when those battery packs won't hold a charge and that getting well involves you identifying which battery packs are failing, you identifying the reason that they're failing you and fixing that so that it's basically, what we're doing is like you coming home from work and opening the fridge and it's hot in there and the lamp in the living room won't turn on, the TV in the bedroom won't turn on, and you go out in the garage and flip the circuit breaker--now everything works. Well that's the way we do medicine now. As we figure out which circuit breaker is out, go fix it, turn you back on and let your body heal itself which it does very well if it has the voltage, the nutrients and deal with the toxins.

Thank you for allowing me to be here!

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

Recent scientific reports highlight
increased scientific interest
in a long enduring
mystery on the Moon.

For well over half a century,
scientists on Earth have puzzled over the cause
of occasional mysterious flashes of light
seen on the lunar surface,
or what is called
Transient Lunar Phenomena.

Reports on the nature
of these light episodes
range from a temporary increase
in the brightness of a surface,
to an apparent reddening of a surface
with no accompanying brightness,
to other odd color changes
such as blue, green or violet,
and even an unaccounted
darkening of the lunar surface.

In fact, reports of these

mysterious light events on the Moon

date back at least

over 1,000 years.

But for several decades,

many astronomers were highly

skeptical of the phenomena's existence.

That is largely because the Moon has long

been believed to be long geologically dead

and no dramatic activity

should be seen today.

But in recent years, statistical analyses

have indicated that the phenomena

overwhelmingly

seem to be genuine.

Yet, there remains no consensus scientific

theory on the underlying mechanism.

To date, most astronomers

have believed

the phenomena either involves

meteoritic explosions or outgassing.

However, some mainstream

astronomers have also entertained

that the phenomenon is

electrical in nature.

As stated in a recent

Phys.org report,

"Such flashes could also occur when electrically charged particles of the solar wind react with moon dust."

Recently, a team of scientists from the JMU University in Bavaria, Germany, began operating a privately built lunar telescope to try to gain a better understanding of Transient Lunar Phenomena.

The images the team obtains will be compared with those of the European Space Agency and may provide insights into the cause of the mysterious lights and flashes.

From the Electric Universe perspective, Transient Lunar Phenomena may be important both in terms of the Moon and our solar system's current electrical environment, but also the stupendous electrical events that may have shaped the Moon's surface.

Today, planetary scientists do acknowledge that dramatic electrostatic events occur on the Moon, even as the result of the Moon's interaction with our own planet.

As noted by NASA

scientist Tim Stubbs,

"Earth's magnetotail extends well

beyond the orbit of the moon

and, once a month, the

moon orbits through it.

This can have consequences ranging from lunar

'dust storms' to electrostatic discharges."

In recent years, scientists have also entertained

that subsurface electrical sparking

in permanently shadowed regions may

cause the breakdown of lunar soil.

Nevertheless, the

outgassing hypothesis

remains the preferred explanation among

astronomers for Transient Lunar Phenomena.

But there are several important clues that

point to the phenomena's electrical nature.

If the light episodes are indeed

a form of electrical arcing,

then we expect to see them most

commonly in high points of terrain,

which electric arcs

are always drawn to.

In fact, many transient

lunar phenomena

are associated with the edges

of so called lunar maria

which planetary scientists believe

are the sites of ancient volcanism.

But an analog to the lunar phenomena may be

the bright plume seen flaring on comet nuclei,

which comet scientists also

routinely interpret as "outgassing".

Consider this close-up image of the

comet 67P, taken on July 3rd, 2016.

The plume appeared suddenly when the

comet was over 500 million km from the Sun,

a distance at which the sublimation

of water ice is not expected at all.

The lead author of a paper

on the phenomenon stated,

"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 admitted they had no idea

what could have powered the plume.

The ESA website stated,

"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 Electric Universe has always proposed that comet activity is fundamentally electrical discharge activity caused as the comet moves through plasma regions of varying electrical potential.

Again, it is not a coincidence that the plumes seen in this image appear to be focused at the edge of a pit or crater which we do expect if it's a form of electrical arcing.

Another aspect of Transient Lunar Phenomena is the extraordinary events that shaped the surface of the Moon itself.

For many decades, the Electric Universe has proposed that the massive cratering on the Moon was caused not by meteoritic impacts over eons of time but by high-energy electrical discharge

in an epoch of planetary instability

in the inner solar system.

In fact, as far back

as the mid 1960s,

the amateur astronomer Brian J. Ford

performed plasma discharge experiments

which reproduced the rate of highly

circular crater formation seen on the Moon.

In the 1970s, the engineer Ralph

Juergens performed a rigorous analysis

which showed that

the lunar rills,

which consistently show no internal

debris from collapsed lava tubes,

which are improbably

wide at up to 7 km,

and which routinely become narrower

at their so-called outflow ends,

are not collapsed lava tubes as

standard theory has proposed for decades,

but they are the features

of electrical discharge.

The notion of the Moon as an

electrically scarred body was the basis

for an outrageous prediction offered by one

of the great heretics of the 20th century,

Dr. Immanuel Velikovsky.

Well before the

Apollo space missions,

Velikovsky predicted the discovery of

remanent magnetization of moon rocks,

a required lingering effect of

tremendous "lightning bolts" from space.

To the astonishment of planetary

scientists, the prediction was confirmed.

As stated in the 1971 paper, 'Determining the

origins of lunar remanent crustal magnetism,'

"The discovery of lunar magnetic

fields of crustal origin

was a major scientific surprise

of the Apollo program."

The electrical origins of

lunar geology enables us

to make predictions for the ongoing

study of lunar transient phenomena.

Since the Moon has no atmosphere, we

expect electrical discharges to be diffuse

with the glow seen

over large areas.

However, bright flashes will

typically occur at high points

due to a sudden concentration

of electrical discharge,
which we see on earth in
the form of St. Elmo's fire.

The pinched up rims of craters,
the craters' central peaks,
and any high points of terrain,
will be the consistent locations
of bright transient flashes.

The scarring events that formed these features
appear to make them ideal lightning rods
for much smaller scale
electrical activity today.

Like every other body
in the solar system,
the Moon is subject to the
electrical input of the Sun.

In fact, in recent years
astronomical papers have proposed
that the interactions of protons from the
solar wind with silicas in the lunar soil
may be the source of the
surprising abundance of lunar water,
and electrostatic dust
levitation on the Moon
as well as many other
airless bodies in space

is now routinely acknowledged
in astronomical literature.

So it is with great confidence, we predict
that future scientific investigations
into transient lunar phenomena
will point not toward outgassing nor any
other conventional geological process,
but rather, they will continue to affirm
the electrical nature of the phenomena
which predominate
the solar system
and the universe as a whole.

[Music]

[Music]

today uh my the title of my program Mars the great desert is somewhat ambiguous I'm going to pretty much follow on with wall and discuss what exactly happened to Mars and what the evidence is that it was an electrical event so we can start by saying that Mars is about six thousand seven hundred and ninety three kilometers in diameter which is about half that of Earth today it's average temperature is 63 minus 63 Celsius compared to earth a thirteen Celsius and the atmospheric density on Mars is equivalent to standing on top of a mountain six times taller than Mount Everest or 1-800 that of Earth at sea level now in August 12 2005 NASA launched the Mars Reconnaissance Orbiter on a two-year mission to map the Martian surface and since then it's been refunded every year after several months of flight it entered orbit on Mars on March 10 2006 now there are several instruments on board the satellite but

the one I'm going to be discussing today
in particular is the high resolution
imaging science experiment camera
otherwise known as high rise high rises
a half metre telescope in other words
doesn't meet a mirror but a half metre
in diameter and it's capable of
resolving objects as small as 30
centimeters from 300 kilometres up in
orbit it's from that camera that most of
these images are taken this initial
image of course is not taken from the
Mars Reconnaissance Orbiter this is an
image from the Mars Express which is a
mission that was launched a few years
prior by the European Space Agency
now Martian air iographer as well
mentioned tells a story of incredibly
violent events it appears from the
minute many images sent to earth from
high rise that it once experienced
powerful plasma discharges on a massive
Gail and Wahl Illustrated that by
showing the barred spiral galaxy shape
on Valles Marineris as terrain mapping
instruments indicate that's the Mars

orbital laser altimeter or otherwise known as MOLA the northern latitudes of Mars are six kilometers below the mean elevation of the planet so a great deal of material was removed from the northern hemisphere of Mars and then subsequently redeposited in the southern hemisphere burned and blasted craters piles of scorched dust covering almost an entire hemisphere and great trenches that went across its scarred face lead to the conclusion that lightning thousands or millions of times more powerful than we know today devastated Mars Mars our modern science has retained the longed-for hope desire long hoped for desire that Mars could be the cradle of different life forms and involving in a different ecology it's often speculated as well mentioned that the planet must have gone through a stage where there were oceans of liquid water there's a lot of disagreement in the scientific community about such weather such volumes of water could have ever existed on Mars surprisingly in

conventional science there's
disagreement in the March 5th 2000
edition of 2007 edition of Scientific
American it was reported that most of
what has been interpreted as water based
erosion on Mars could have come from
quote dry avalanches of dirt the authors
expressed serious doubts about whether
observations have demonstrated any
effects caused by liquid water Allan
Tremaine is one of the major geologists
from Houston's lunar and planetary
instrum Institute and he wrote the idea
of it being liquid water was a very
reasonable hypothesis to start with but
from my standpoint liquid will acquit
water hasn't been proven at all now the
large-scale structure of Mars with its
continent-wide Canyon gigantic volcanoes
and monstrous fish
this is the tractus container region on
Mars I know you probably can't see the
scale bar down at the bottom but this
area is approximately 10,000 square
kilometers so that is a very large
structure right there now when an

electric current passes over a solid body it can erode material from it or deposit material on its surface where an arc makes contact the pits are craters left by electric arcs are usually elongated circles because the arcs strike at right angles to the surface while they move and material in the bottom of a crater or a trench such as tractus gatinus will probably be electrically heated burned and melted if the surface is positively charged arcs tend to stick in one place resulting in increased melting while the electrodynamic forces lift the surface to form what's called a lightning blister or a Fulgham aight fog lights appear as domes and pedestal craters on Mars and the largest scale example of a Fulgham aight is probably the gigantic structure called olympus mons on Mars what's erroneously called the largest volcano in the solar system if the surface is negatively charged electric arcs tend to move rapidly after striking and carving out a crater small craters

on the rims of larger ones are signs of
this effect sometimes as electric arcs
travel they cut chains of craters and
tractus Catina as you can plainly see is
a long chain of craters of a varying
proximity the huge Canyon at the bottom
of the screen is you I don't know if you
can see it clearly from where you are
but it has little points at periodic
intervals matched by little points on
each side of the on the other side of
the canyon rim and that indicates that
these are elongated circles budding
against each other so actually the
tractus Catina region representing ten
thousand square kilometres are is
composed of chains of craters
NASA scientists often refer to what they
find on Mars as mysterious or puzzling
with long years of research and
contemplation ahead of them the reason
for the confusion is the problem of
reverse application earth should not be
used to explain the solar system the
read geological patterns found elsewhere
deserve alternative viewpoints so you

can kill the spot here's a closer view
of tractus Catina you can see at the
bottom where those points are located
there you know right in this area here
and they go along the structure and
along the rim as well in various places
you can see what most of us are
referring to as dendritic ridges
dendritic ridges because these are
electrical formations are most likely
fulgurites or scars left by lightning
bolts embedded in the walls after the
electric arc has removed and material
from the bottom and you can see that the
bottoms of this trench as well as the
bottoms of the craters are scoured clean
there is very little of anything in the
bottoms and on the sides of the crater
walls indeed there are also finger i'ts
embedded in them as I said tractus
Katinas a huge structure I think the
only other one larger would be Valles
Marineris and some of its tributaries
like Kandarasma well Mars has very
unusual features as well and besides
tractus Catina and some of them are what

planetary scientists refer to as dunes
now these dunes are unusual in the fact
that they don't move
and as we get closer to this structure
here you can see that this particular
dune is actually stuck to the side of a
ridge and I don't know how a loosely
conglomerated pile of sand is going to
stick to the side of it but that's
apparently what has
in here obviously the material was
melted and blown by anionic wind where
it then reconsolidated stuck to the side
and all these vast fields of dunes that
you see on Mars in many cases have a
crust on top of them and here one of the
things that I'm going to point out
that's important is that that like nilly
Patera this area where the opportunity
Rover was traveling near Victoria crater
traveled through a field of what they're
calling dunes for as far as the eye can
see as you can tell here these are piles
of hematite which in reality is iron
oxide so and these white patches that
you see in between the hematite and as

you can see here these patches of white are in reality what they call a pavement of silicon dioxide so on Mars in vast areas are these piles of hematite on top of silicon dioxide so you have a conductor of iron on top of an insulator which is silicon dioxide that's what they form semi conductors on and as I mentioned this is near Victoria crater many people have probably seen pictures of that now this this is Becker el crater on Mars and this is the floor of Becker el crater one of the interesting things about the craters on Mars is first of all most of them are quite large Becker el crater is a hundred kilometers in diameter and it was supposedly created by the impact of an asteroid but if you look at crater impacts that are caused by asteroids you do not see this chaos on the bottom of the crater you see a relatively humpy looking or a scooped out formation but here you see complex structure and this is another one of those unusual aspects of Mars when I first saw this picture

and by the way these are high
camera pictures that are over seven is
700 megabytes in size so you're able to
zoom in and result and look at images
only a couple of meters in diameter so
we're gonna go pretty close in this one
I hope your eyes can keep up so here as
we get closer eyes when I first saw this
I thought these dark bands were layers
of dust and in fact these are this is
called layer ring by the planetary
scientists due to wind erosion but as we
get closer we see that these so-called
layers are in reality pits that have
been eaten into the surface and these
pits form all the layers these are
terrorists layers formed by these burned
pits all that dark material is burned
and scorched you see here that there are
political structures there's little
points on a lot of these mesas so-called
mesas and these layers go on and on and
on and on their so called layers and
what this tells me
and if you'll also notice that the
bottoms of these depressions are clean

and if you go even closer I can't go any closer for you because you would virtually have to cross your eyes to see the things as you get closer and closer but this whole region here is composed of fractured polygonal blocks the entire surface is fractured political blocks most of them are square now this is a photo micrograph the scale is 10 micron the scale bar is 10 microns right down there so this is an extremely small region and this is the surface of material that has been sputtered now sputtering is where you have a substance like aluminum and you want to deposit it on a substance that doesn't normally accept aluminum plating like a piece of plastic and you put that in a chamber a vacuum chamber you apply an electric car to the source material that converts it to a plasma and then the plasma deposits on the other charge surface which is the substrate plastic or some other material and as you can see the surface of the sputtered material is looks remarkably like some of the images that Monty

showed of his a nodes from the sapphire
experiment
there are pits and cracks and other
formations led that look like ridges and
cliffs and craters with arcs runner with
cracks running through them now this is
an area on Mars called what is this area
on Mars go yeah this was an unnamed area
this is just a this is this has a number
yes peeve underscore 0 to 100
underscores 20 to 50 so they didn't
really they don't name this region but
as you can see the remarkable similarity
here between these two formations one is
a hundred square kilometers here and
this is 10 microns but the the features
are virtually identical you see the
branching burned scars the pits the
features that look like cliffs and
ridges and you know it's virtually
indistinguishable if this were presented
to you in black and white side by side
with a 10 micron scale bar to that other
image you would be hard-pressed to
determine which was which now one of the
reasons I mentioned the vast fields of

hematite and the insulating substrate
like silicon dioxide is that I'm going
to discuss a phenomenon in science
called the Rosen's veigue stability now
dr. ronald rosen veigue was from MIT and
he conducted many experiments in ferro
hydrodynamics

now the Rosen's veigue stability is this
is a quote from his book is a prominent
example for a surface driven instability
where the deformation of the surface is
amplified by an external generalized
force in this case electricity the
normal magnetic field and finally
settles at a spatial pattern so what's
happened is because this conductive
material is sitting on an on a
insulating substrate when exposed to
electric currents it acts like a
magnetic fluid because it's it's
ultrafine dust so it acts like a
magnetic fluid and it's influenced by
magnetic fields and there's his book
Ferro hydrodynamics probably looks weird
with 3d glasses on here's another
example of Ferro hydrodynamic pattern

and once again this is a little bit larger it's 10 times larger than the other image this is a hundred microns still smaller than the width of a human hair so you're looking at Rosenzweig instabilities in a fluidized magnetic substance in this case it's iron oxide nanoparticles suspended in a viscous liquid

now when the the rose's vegans stability occurs when a perpendicular magnetic field of whatever strength encounters a conductive medium now here corresponding to this this is an area on Mars called Kanderas Chasma is quite large but it's a mere tributary to the Valles Marineris feature and as we get closer you start seeing some very interesting patterns forming here look at there there's roses vegans stabilities in the surface of Mars they're identical to that ferromagnetic fluid that we just saw they line up they travel there they're there everywhere on Mars they're often called spiders in some cases Martian spiders and they are an

electromagnetic phenomenon this is due to the fact that the surface of Kandarasma is covered in the ultrafine hematite that makes up the vast fields of dunes that I showed you that opportunity crater or opportunity Rover is rolling through and this is Kandarasma oh yes Kandarasma the Valles Marineris tributary now here's another example of the Rosenzweig instability and this is on a ferrofluid now ferrofluid is once again a nano particle magnetic fluid magnetic fluid with iron oxide in a colloidal suspension when a perpendicular magnetic field is applied it forms a lattice and this is the Rosenzweig instability it settles into a common pattern and in this case there hexagons and one of the major things I'm going to discuss is hexagonal formations on Mars due to the Rosen's vorticity stability acting on the fluid eyes dust because ultrafine dust if it's conductive it magnetically conductive will act like a

fluid and you've probably all seen that
by moving a magnet across iron filings
they'll follow the magnet and flow just
like the liquid so here this is an
unnamed crater near ohm Olympus Mons
there are so many craters that it's
difficult for them to keep up I guess
with names start naming them Bill and Jo
so wall had or was it dawn had a slide
that Mel and CJ ransom had created of an
object Mellon's and CJ had created a
circular formation blasted into the
surface of a substrate with an electric
arc now you see here here are circular
formations blast it into a substrate
with an electric arc and you'll notice
the texture oops don't want to get too
far ahead you'll notice this texture
surrounding the entire region these are
all once again blocks fractured blocks
and they have an odd
radial pattern extending out from the
crater itself
now look at this the entire crater wall
and the fact the regions surrounding it
it's as if this crater is is isn't

separate from the surface surrounding it
there's no real demarcation here it's
just you have a flat surface and then
suddenly you have a depression then
another depression and another
depression and in though on the wall are
hexagons now in some cases you might see
among the hexagons Pentagon's or squares
and depending on the strength of the
perpendicular magnetic field a lower
strength field will create hexagons
slightly higher will form Pentagon's and
the highest fields will create squares
this is a region called SETI Mensa and
once again these formations are referred
to as dunes by planetary scientists
however if you look at them closely
these are not dunes this is etched into
the solid rock there's no tuning here
this is all electrically excavated and
it's highly organized as well it doesn't
look so organized from this scale
although you can start getting hints of
it and as we get closer you can see that
there are definite lines of demarcation
between regions and here at the closest

scale indeed what do we see here we see
hexagons and if you could look even
closer you can see that this whole
region is composed of hexagonal patterns
they're slightly elongated in some cases
in other cases they're a little
distorted because another hexagon has
been I don't know what the word would be
not blasted into it but if evaporating
out the material is missing there some
of it is gathered into concentrations on
the edges of the formations and that's
probably some of the hematite dust that
was scoured out of the surface and then
subsequently pinched together and left
behind after the arts passed on but it's
really amazing how much of
this surface is hexagonal now we come to
a crater in shepper le basin a lot of
people have probably seen this one
NASA advertised it quite heavily as
proof of the layering the sedimentary
layering on Mars because these
concentric rings are supposed to be
where a meteor impact blew out material
how it did it in concentric rings I'll

never know but the other thing that's odd is this is not a depression here in the middle this is a mound and if you look closely you can see that this has a spiral pattern and as dr. Wolfe I believe talked about spirals are very prevalent in nature and electricity creates spirals also once again you see the dunes but look here these are not dunes these are cuts in the surface they're not depression or piles of material these are where material has been definitely excavated away you can also see the rim of the crater I use the word crater advisedly I could say circular formation but that gets a little awkward everyone knows crater and you see here once again that these are this is not a depression in the center these are stacked terraces once again just like we saw in Kandor casma here you see a mound of scorch dust that's been obviously cut away somehow and then the ionic winds blew it off to one or other directions closer still you start saying oh look at this we've got

hexagons on these ridges and you've got
these little points too just like we're
in tractus Catina so this tells me that
this is a chain of hexagonal craters in
some sort of circular formation how this
could be created I have no clue and I
don't think anyone really
because no one has really experimented
with electricity on a planetary scale I
mean we don't know how electricity
behaves at certain scales sure we can
demonstrate effects in the laboratory
and I can show you those
photomicrographs and compared them to
the macro scale but in reality we're
only guessing when we talk about
electricity at these enormous scales
this is the closest image and it's plain
that these are hexagonal formations and
they circle the whole crater now here's
another example of the Rosenzweig
instability these are oh I don't know
what the scale is on these but they're
not very big this is about the size of a
petri dish now the the horrors of the
perpendicular magnetic field as you can

see has done two things depending on the strength of the field it's created depressions on this side and mounds on this side and these mountains have these points in the middle and you'll often see on Mars and even in the desert southwest of the United States you'll see Mesa formations that have 45 degrees shoulders and then straight up will be a needle or a an angled block like in Monument Valley for example and I it's my contention that some of those are probably representative of frozen vega stabilities because Rosenzweig for a theory says that you need a fluidized ferromagnetic material and indeed the desert Southwest is composed of iron largely it composed of iron oxides hematite and magnetite that's where we mined a lot of iron and we mined a lot of iron in some other areas but I won't get into those at this point now the reason I showed you this one is this is a region called Gore di dorsum and on Mars and once again you can see the political patterns as you get closer and

closer this

this was tentatively identified by planetary scientists as dried mud like you would see on a plane after a rain and it got saturated the mud would break up and curl up and form unusual formations but as we get closer here you can see that this is no way dried mud these are not cracks these are ridges separating these domains that exist side by side with one another now this was obviously a very strong electromagnetic field because the primary formation here is Square and these knife-edged ridges that outline each square are what are often referred to in modern geology is hot backs their their ridges that run for long distances and have a knife edge which and there are somewhat mysterious to geologists because erosion is supposed to be a blurring process of blurring and a rounding process sharp needle forms gradually erode down into blunt dome forms steep-sided valleys gradually erode down into wide Plains and sharp sharp River courses gradually

erode down into lazy meanders but in reality when you look at the particularly the Southwest and some mountain ranges you see that without fail they are sharp and pointed now if erosion of wind and water is supposed to create blurring rounding flattening and these formations have supposedly been exposed to wind and water for 500 million years one would expect that they would no longer have sharp needle shapes however that doesn't seem to bother anyone once again here's another example of the Rosenzweig instability and this has created somewhat of a rosette pattern with ridges converging on a central depression here's another structure on Mars this is let's see this is in Utopia Planitia I believe or this yeah this is utopia planitia and once again you see that there's this rosette pattern embossed in the surface and surrounding it are all of these elongated channels they're supposedly once again caused by drying you know the surface was once wet and

it's all dry but as you get closer just
to ancillary to the rest of the slide
you can see that these are trenches and
in many regards they are also a chain of
craters if we could get real close to
some of these areas for example here you
would see that this is a chain of
craters and it also has a similar
structure to what was a Gore di dorsum
these names now we're gonna get closer
still here and you can see once again
here are the hexagons they're all over
this region they're also in the
background as well but as I mentioned
it's very difficult to get close enough
to see some of these structures without
having without your highs crossing out
of your head and on the bottom here you
have ripples this is why I don't know
these are also called dunes
I guess there's just no other thing to
call them and they are actually embossed
in the rock you see here also that the
region if I were to back up a little bit
for a long longer view you see the
region is relatively clean there aren't

any fields of debris around here there's
no blast debris starting with large
boulders and the next thing out into
smaller and smaller objects this had
this once again has obviously been cut
into the surface now you see here to
some of these channels run right through
the structure they're just like this
this is almost like an area where the
electric arcs that were carving this
region suddenly stuck maybe there was an
excess positive charge in this region so
the arcs stuck briefly and maybe jumped
around a few times
with the end you can see here that
there's almost a logarithmic spiral
effect here it may have actually then
drilled its way in toward the center
before extinguishing I'm actually going
a little faster than I thought oh
there's the closest imaged yet yeah here
are all the hexagons and there are some
Pentagon's mixed in here as well but
it's just remarkable to me that what is
considerably nothing more than solid
rock can be so affected by electric

fields and then forming political patterns and what must have happened is that the material was somewhat vaporized or converted to a dust like state and then re-solidified after the arc was quenched this is another example of the Rosenzweig instability that people may have seen this is a ferrofluid and you can see that the cells are hexagonal and these points come out of each of them now this is an area called Utopia Planitia

these regions this is supposed to be faulting this is all due to faulting and subsidence and what they call mass wasting which is the sliding of material down a slope and this is supposedly what caused all these ridges but if we get closer here you start seeing evidence that maybe mass wasting or faulting is not really responsible for this because you start seeing these areas of scorched dust and if this was faulting you would expect that a fault would occur right along here where the area's upraised but no these ridges run up and down and up

and down and off to the side down in
here is a huge depression filled with
this black dust but the reason i'm Chive
chose
this image is because we're gonna look
more closely at some of these so-called
fault ridges I swear sometimes I think
NASA doesn't even look at their own
pictures because if you look at there
you go this is not a fault don't they
know geology here here again if I okay
here I'm almost done here again we see
that you've got some of these notches in
the ridges these are not really
Nachi but if you get even closer you see
oh my goodness these are hexagons
hexagons and pieces of hexagons the
hundred and twenty degree angles are
everywhere because of course that's what
a hexagon is composed of is 120 degree
angles and in fact on Mars 120 degree
angles are everywhere you find them on
earth too everywhere you go mountain
ranges in particular seem to have ridges
that meet at 120 degree angles I
happened over here two people talking

earlier about Shiprock New Mexico and indeed one of the things that I when I wrote my article about Shiprock there were there is a hundred and twenty degree lava dykes extending out that are knife-edged and stick out of the ground they call them lava dykes shift rock is supposed to be a pluton that was subsequently eroded the sedimentary rock was eroded leaving it exposed to the elements but once again it's all pointy it's not rounded and blurred and they mentioned that there are invisible lava dykes - that form hexagons around Shiprock so as we get even closer you can see that the hexagons become even more prominent you know it's almost like a sawtooth and I think this is as close as we get right here you can see here's a perfect example right here these are everywhere anywhere you see these long extended ridges you're going to find these hexagons notches in the top and this is due to the perpendicular magnetic field accompanying the electric arcs because

electric arcs in

hinge on the surface at right-angles

well we had one more closer still you

can it's just further evidence that

these are hexagonal formations now

here's an example of the hundred and

twenty degree angle formation and a

magnetic fluid this is what they call a

heel a Shaw chamber

it's got mag electromagnets surrounding

it and this is a ferrofluid being

exposed to a 100 kilohertz electric

field so as it evolves you can see that

definitely we're getting hundred and

twenty degrees vertices here and we're

starting to form the semblance of a

hexagon and this is the effect of

vertical of perpendicular magnetic

fields on ferromagnetic substances and

again here nature prefers spirals

this is the Rosenzweig instability

another example of the Rosenzweig

instability is upcoming and this one

will actually illustrate how the

perpendicular magnetic field can take a

non consolidated substance like a

geomagnetic powder geomagnetic
ferromagnetic powder this is 1000
microns now you can see the
instabilities beginning to form as the
magnetic field strength increases it's
actually pulling the magnetic particles
into a hexagonal pattern and in many
cases on Mars you'll find those sorts of
structures and that's all I have

[Music]

[Applause]

[Music]

SYMBOLS OF AN ALIEN SKY

Episode 4

THE ELECTRIC COMET - Best Evidence

Presented by

THE THUNDERBOLTS PROJECT™

What is a comet?

To answer that question we've contrasted the common scientific view with new evidence that challenges that view.

The new evidence directs our attention to the Electrical behavior of comets, almost entirely ignored through the course of the space age.

Of course, theoretical issues will always arise when facts and interpretations are intermingled.

But, when a theoretical interpretation masquerades as fact, that is a violation of the first principle of scientific investigation.

For many decades, it's been held that a comet is a leftover from the primordial formative

phase of the solar system.

That phase is typically
counted in billions of years,
and more often than not, the comet
theory will be stated as fact
simply because the idea is
popular in the scientific media.

And so we read that...

"Comets are often referred to as 'dirty snowballs'.

They are left over from the formation of
stars and planets billions of years ago".

This popular message blurred a crucial
distinction between what is known

- the undisputed facts -
and a theoretical supposition.

So, we're told a story ...

"Comets are basically dusty snowballs
which orbit the Sun. They are made of ices,
such as water, carbon dioxide, ammonia
and methane, mixed with dust.

These materials came from the time when
the solar system was formed".

In this case, the faith in a theory
is ironic, since no fact about comets
has even remotely substantiated a
comet's origins billions of years ago.

And, there are dozens of reasons

not to believe that idea.

So, it's encouraging to see a sliver of doubt

now creeping into official comet science.

We see it, for example, in the

science magazine *Sky and Telescope*:

formation in the solar system

about 4.6 billion years ago".

'Suspected'.

That's a refreshing use of language

actually describing the present situation.

Always remember that today's textbook theory

of comets arose prior to the space age.

And where interpretations differ,

the first reference should be

the factual bedrock of comet science,

not theoretical suppositions.

With this in mind, we offer here a

comparative analysis of two models:

1) the standard model; and

2) the electrical model.

Both models are sufficiently explicit to

invite a wide range of scientific tests

where the inherent predictions

of the two models

can be readily compared

to objective findings.

Standard Model of Comets

The standard model, largely unchanged since the 1950's, sees comets as a window to the formation of the solar system.

Here these bodies are composed of the primeval matter from which the Sun and the planets formed, perhaps holding keys to the origins of life.

A comet is a dirty chunk of ice, and its visible displays are due to warming by the Sun, such that vaporized water ice and other volatiles erupt as jets from the surface.

As we found in our first electric comet documentary, the standard model did not fare well in the course of the space age.

Taken as a whole, the failure is confirmed by the direct testimony of leading comet investigators as they confronted a continuing stream of surprises.

Together, these surprises

add dramatic support for
an alternative perspective
- an electric model.

Electric Model of Comets

The electric model starts with the
evident electric field of the Sun,
a massive electric potential across
the volume of the heliosphere.

In this view, comets possess
accumulated charge.

And they move on distinctly
elliptical orbits -
that means, they periodically plunge
through the Sun's electric field,
and as they enter regions of different
charge these bodies discharge electrically.

To place this summary in it's historical
context, the door must stay open to a new
(and perhaps unsettling) truth
about planetary history.

When we observe planetary
motions today,
we see highly stable and
predictable orbits,
as if the planets had moved
this way for a billion years.

But, it has not always been so.

Our confidence on this point comes from
the consistency of global testimony.

It seems that every
culture on Earth
preserved vivid memories of
world altering catastrophe.

And the agent most
commonly cited is a comet.

Irrespective of
differences in language,
the cultures describe a monstrous
form attacking the world.

And these descriptions consistently use
the local words and symbols for a comet.

Well, this is ground
we've already covered,
but we cannot afford to ignore a
consistent and global human pattern,
no matter how challenging to
conventional opinion today.

Converging human testimony from around
the world assures us that Solar System's
history was punctuated by episodes of
instability and interplanetary violence.

Comets, asteroids and

meteors originated in
the electrical excavation of surface
material from planets and moons.
As we've documented in earlier episodes
of this series, the most notable
players in these events were our two
closest planetary neighbors today:
the planet Venus
and the planet Mars.

For this reason, our reconsideration
of comet theory requires
that we address the worldwide
memories of planetary upheaval.

Comets are not
what we've been taught.
Yet, recent investigations of
comets can take us directly
to this extraordinary
conclusion.

Standard Model of Comets

One of the most telling milestones
in the history of comet science
was the Deep Impact Mission
to Comet Tempel 1.

But, here is a
remarkable dilemma.

As occurred in all prior
visits to comets,
no appreciable water ice was seen on
the surface of this active comet.
From the first disclosures of dry
cometary surfaces, theorists speculated
that such surfaces simply hid the icy,
watery content beneath the surface.
Then, in response to solar warming,
subsurface pockets of water vapor formed,
exploding through the crust
to create the observed jets.

Of course, the envisioned rupture of the
surface would expose the presumed ice below.

But, as occurred in
all visits to comets,
no detection of Tempel 1
subsurface ice was ever reported.

Nevertheless, mission scientists
tell us that infrared readings
did detect substantial water
ice in the ejecta cloud.

"Though ice was not observed on the surface in the impact region,
strong absorptions near 3 μm (micrometer) due to water ice are
detected in IR measurements of the ejecta from the impact event."

The enigma deserves investigation.

What happened at the surface and below
the surface at the moment of impact?

Most NASA scientists interpreted the
fast-moving cloud as vaporized silicates.

The cloud was self-luminous at an
estimated 1000° to 2000° Kelvin,
and the low angle of the impact and
blast propelled ejecta downrange.

The infrared readings of the ejecta
occurred about 3 seconds after impact
as the cloud came into the
view of the infrared camera.

These readings show what NASA scientists
describe as a narrow beam of water.

This water column was easily distinguished
from the rapidly moving dust cloud
and was very close to vertical
directly over the impact site.

That's a bizarre contrast to the
trajectory of the dust cloud.

"The highly collimated water ice-rich component
corresponds to a low-velocity, high-angle (i.e.,
near vertical), ejecta cloud above the impact."

How did a vertical column of water
get instantaneously separated from
an explosion of dust, heated to over

1,000°K and propelled downrange.

The Electric Comet model
offers an answer.

The heated silicate cloud
would be ionized (a plasma),
a conductive pathway for an
explosive electric discharge.

The evidence indicates the discharge occurred
between a negatively charged nucleus
and a surrounding region
of positive charge.

An abundance of hydrogen ions gathered at,
or close, to the surface of the nucleus
would provide the necessary
conditions for two things:

first, an instantaneous electrical
breakdown, or discharge, on impact;
and second, an equally instantaneous
electrochemical response to the discharge.

Consider what is already known
from laboratory experiments.

In a condition of electrical breakdown
hydrogen ions from the solar wind,
combining with the
oxygen and silicates
can produce an abundance

of hydroxyl, and/or water.

This very process has

been proposed

to explain the enigmatic

water on the planet Mercury.

"...Oxygen-containing surface rocks could release water through sputtering by protons from the solar wind."

The Electric Comet models suggest that

the detected column of water directly

over the impact site occurred along

the path of an electric discharge,

and that always means roughly

perpendicular to the surface.

Water created explosively,

electrochemically, in the ejecta -

even if no water lay beneath the

dry surface of comet Tempel 1.

This intriguing answer takes us

deeper into the infrared readings.

The conventional model

predicted that comet water ice

would contain substantial

quantities of dust.

This dust content would be

expected to show up as refractory

particles in the ice of the

collimated ejecta plume.

But amazingly, the ice particles themselves were free of dust.

"These pristine materials consist of very fine grained ($\sim 1 \pm 1 \mu\text{m}$) water ice particles, which are free from refractory impurities."

It seems the instruments measured virgin water, water freshly formed, as one would expect from the instantaneous electrochemistry of water production from hydrated silicates.

This very point is emphasized in a recent analysis by Dr. Franklin Anariba, a specialist in electrochemistry at the Singapore University of Technology and Design.

"Data from the infrared readings of the impact ejecta suggest that the explosive event may have triggered electrochemical production of water along an electric discharge pathway directly over the impact site."

Allow this possibility into discussions of comet science, in particular, the unsolved mysteries of missing water and water creation by comets, and the picture changes dramatically.

"The question that must be asked is whether the water detected in infrared readings of the Deep Impact ejecta

was the byproduct of electrochemical reactions..."

"...driven by a potential difference between the comet and the solar flux:

vaporized silicates transacting with a concentration of hydrogen ions

from the Sun, localized on or around the nucleus."

When we follow this possibility, the

missing water on the surface of Temple 1

becomes an affirmation of

the Electric Comet model.

Thunderbolts.info

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

The groundbreaking field of Electric Universe geology is vibrant with new possibilities. Standard geology proposes that the primary forces that have shaped planetary surfaces are periodic impacts: volcanism and wind and water erosion over eons of time. But on every rocky body in the solar system, from our planet, all the way to the Kuiper belt, the objects we see show features that routinely defy this reasoning. The theoretical alternatives Electric Universe geology offers, recognizes processes well-known to electrical engineers and plasma physicists. In our solar system, we do observe these type of electrical phenomena on a different scale. In previous presentations, Thunderblog contributor, Andrew Hall has proposed that the extraordinary winds of the gas giant Jupiter, provide analogues for the high-energy events that may have shaped the Earth. Today, Andrew continues his remarkable presentation in the latest installment of his series, The Eye of the Storm.

In previous articles, we established a link between the winds on Jupiter and landforms on Earth. In primordial times, Earth 's weather was like Jupiter's, with raging plasma, whirlwinds and segregated electric jet streams that attained supersonic speeds. Close examination of mountains and other landforms shows clear evidence of windblown deposition

that layered the land. Supersonic shockwaves that shape mountain flanks, massive lightning discharges that welded rock, and plasma vortices that blow-torched the land. Jupiter's winds are the result of capacitance between double layers in the atmosphere and the plasma sheath at the planet's surface. We don't know what the surface of Jupiter is, but it doesn't matter - it still forms a plasma sheath, a double layer at the interface between crust and atmosphere. Electric circuits form the winds by capacitance, inductance and magnetic fields. Surface and atmosphere are coupled by capacitance and ongoing release of energy from Jupiter's interior is what stirs the winds. On Earth, dust particles, aerosols and the water cycle - evaporation, condensation, ice and rain - are the charge carriers, or the "wires" of the circuit. On Jupiter, it also includes ammonia and other species. Regardless of the difference in chemistry between Earth and Jupiter, charge diffusion in Nature follows patterns. A lightning bolt on Jupiter is like a lightning bolt on Earth. It is a discharge between plasma layers that takes a fractal path as ionized filaments react in feedback with the magnetic field that current produces. Fractal forms are generated by this feedback loop in any process of charge diffusion. They're not restricted to the Lichtenberg pattern of a lightning bolt, but are evident in the helical path of field-aligned Birkeland currents, the

geometry of electromagnetic fields, and the drift currents reacting to far-field potentials. So, it should be no surprise at all to find the same fractal patterns in Jupiter's winds as we find on Earth 's landscape, if indeed the landscape was formed by similar winds. One spade-shaped feature is almost ubiquitous in Jupiter's turbulence. I call it the boot print. On Jupiter, the boot print is the downdrafting eye of a cyclone being pinched in the turbulent flow of competing winds. Like a hurricane, it is fed by billowing thunderstorms surrounding a whirlpool, which together forms a piece of a circuit - a ring current between the atmosphere and ground. The shape of the cloud tops is carried to the surface and reflected there, because the structure is a fractal, rotating filament of current reaching the surface. When Earth's weather raged like Jupiter's, Earth was in its formative age. The continents were being built, as layer upon layer of dust accumulated on a foundation of volcanic flows. Turbulent cyclones in the Earth's atmosphere produced boot prints, identical in form to the boot prints on Jupiter. Boot prints on Earth are literally, the footprints of storms. Boot prints on Earth are clear evidence of electric formation, because they display exactly what is expected in fine detail. The boot print is the consequence of a down-bursting wind - a hot ionized supersonic dust-laden wind, aimed at the ground like a blowtorch. The mountain rim is the pattern of a standing shockwave. The repeating

triangular layers on the inner flanks are impressed there by harmonic shock reflections which channeled the wind at the boundary layer and trapped dust in the low-pressure zone in the triangular wave forms. Shock waves produce triangular patterns of expansion and compression when a supersonic wind is deflected, like when it hits solid land. Just ahead of where a shock wave reflects, a low-pressure region forms, called the "Separation Bubble". The separation bubble is in the shape of a tetrahedron, with the triangular face perpendicular to the wind at the same angle as the shock wave reflection, called the Mach angle. As dust-laden ionized winds pass through the separation bubble, this low-pressure region collects dust like a vacuum cleaner and piles it in triangular layers. Therefore, the rims or mountains surrounding a boot print crater, display these triangular layers. If a downburst wind strikes at an angle, rotates or its mass flow is biased to one side, it will affect the shape of the crater it forms. Boot prints are often accompanied by a feature called a Prandtl-Meyer expansion fan. It's a series of standing shockwaves that form linear rays of compression and rarefaction, where the wind strikes and reflects off an object. This pattern implies the boot print is the result of an obliquely striking wind that rotated. If you've ever watched tornadoes, you probably noticed they're rarely perfectly vertical. They contact the ground at an angle and the rotating wind is lifted to one side and grinds against the

ground on the opposite side. That is precisely what has happened here to produce a boot print crater with an expansion fan. This single example is proof of my theory. Anyone with a supersonic wind tunnel can produce a Prandtl-Meyer expansion fan, tetrahedron- shaped separation bubbles, and triangular harmonic reflections. It's been done countless times. But show a way to produce all these together in a large-scale coherent form by tectonic uplift, seismic vibration, slip faulting, erosion or any other conventional geophysical means: can't be done. It is uniquely the result of supersonic shock. Nature provides rational, obvious proof, without need for computers or numeric models. The pattern is not vague, like Jesus on piece of toast. It is confirmed in every detail. The correlation is not only visual similarity, but also causation - vertical high-speed winds, electrically charged and shaped by electromagnetic fields. Proof of the winds of Jupiter are in NASA's data; proof of the ground effects on Earth or under our feet, and in decades of applied science and supersonic shock wave behavior. Proper interpretation of data and some wind tunnel testing would put the issue to bed. But maybe I can do that with this next example. California's most prominent feature is the San Joaquin Valley and its ring of mountains, including the imposing Sierra Nevada mountain arc and coastal ranges. Inside this bathtub, the floor of the valley is a long, flat plain, which at one time was an ancient sea bed. It was created by a storm

like this on Jupiter. So let's look at some amazing details.

In this image, I indicate four specific areas we'll discuss. Area 1 - the Mojave Desert. This almost perfectly triangular plane of high desert is demarcated by the straight line of the Tehachapi mountains to the north, and the straight line of the San Gabriel Mountains to the south, which also, by the way, aligns with the San Andreas Fault. It correlates to the region of low-level winds, tinted blue, at the cusp of the oval storm rotation on Jupiter. These winds are sinking winds, that is they are pressing against the ground in a venturi-effect as they speed around the cusp of the storm. The yellow-brown ring of this storm is a rising wind, forming what is essentially a continuous ring of thunderstorms. The sharp triangular demarcation between desert and mountain is the shear zone where shock waves form between the low-level horizontal winds and the rising winds of the rotating storm. As these winds rounded the corner into the Venturi, they accelerated, gouging the deep Owens, Saline, Amargosa and Death Valleys. Separating these valleys rise 11,000 foot ridgelines of the Panamint, Darwin and Amargosa ranges. They formed as sastrugi, parallel to the jet streams and low-pressure interference zones between the laminar jet streams. Lightning in this region was imposing. A plasma intensifies in a shear zone, meaning it generates ion content due to the shearing and extreme temperature and

pressure differentials. Shearing supersonic winds bounce shockwaves between them, generating high-current density in jet-streams that extend for thousands of miles. Lightning discharge from these plasma streams focused on the piling mountains below with the capacity of a thousand mile-long thunderstorm, being continually fed new energy. The current dumped in the strike zone didn't simply flash a second here and there, but arced continuously, diffusing through the land, welding granite from dust and sand. That is why the Sierras in this portion of the range have the most impressive granite structures - Yosemite, Mt Whitney; its neighboring peaks and the Domes. The granite of the Sierras lies atop sediment, which implies the storm(s), either by wind or tsunami brought layers of dust long before lightning even began to strike. Area 2 - Coalinga. Coaling Station A was its original name. Coalinga, as it's called today, is an oil patch town. The foothills that surround it are oil fields - anticlines of shallow sandstone, saturated in heavy oil. Similar anticlines flank the western side of the San Joaquin Valley, from Coalinga to the end of the bathtub at Bakersfield. These anticlines compose some of the largest oil fields in North America. What created them was like this turbulent region in Jupiter's clouds. The colorized image from NASA shows a crab-claw cloud structure, with high-level clouds in yellow, and low-level clouds in blue and black. There are several tornado

rotations along the boundaries of opposing flows. There are also deep, dark linear filaments. Now correlate the dark filaments with the deep-cut, linear valleys near Coalinga. The dark filaments are ground-level jet streams, which are what formed these valleys by preventing dust from depositing. Follow the filament in Jupiter's cloud and it ends in a tornado. Follow the valleys near Coalinga and they end in hills with spiral features. In other words, the filaments are jet streams hugging the ground, cutting beneath the storm clouds to feed a giant tornado. Fascinating, isn't it?

Blue lines in the wind pattern image represent ground level winds, combining across the San Joaquin Valley, and rising into thunderstorms. Yellow represents the higher-level mesocyclone winds which rained dust and rock. The blue winds approach the thunderstorm orthogonally, then rise in the updraft of the storm. Dark blue lines are the tornadoes and ground-hugging jet streams. A drive through the region shows the mountains are windblown dunes that rise abruptly from the flat valley floor and display exactly the wind pattern as I describe. It seems chaotic - winds crisscrossing in every direction, but it's not. The overall wind structure is called a Kelvin-Helmholtz instability. It's a fractal pattern that happens all the time if there's wind shear. Area 3 is the San Joaquin Valley. Look inside the yellow ring of thunderstorms and see that there are dozens of small vortices. These are tornadoes, or perhaps

water spouts, because the San Joaquin Valley was likely a sea at the time. Among all the tiny whirlwinds is one giant tornado, almost at the center of the storm. This feature correlates well with a circular region in the Sierra Foothills at the north end of the San Joaquin Valley. If you've ever driven from Sacramento to Lake Tahoe on State Highway 50, past the town of Folsom, where I once lived, you have climbed the Sierra foothills that constitute this feature. A distinct swirl is evident in the hills just above, or to the east of Folsom Lake. The swirl is fed by ground-level winds entering the vortex from the left, or the south, whereas the top level winds in Jupiter's clouds flow in from below, or the west on the Earth image. This indicates differences in flow patterns between double layers due to the rotational symmetry of fractals. Fractal rotational symmetry is when a fractal shape repeats, but rotated by 90 or 180 degrees. This indicates the wind clocks around 90 degrees in different layers of the storm. The same thing occurs in hurricanes and mesocyclones on Earth, even today. Area 4 - San Francisco Bay. Here, you are literally seeing the drain in the bathtub. Follow the dark filaments in Jupiter's clouds and they converge in a vortex. Compare the dark filaments on Jupiter to the long linear valleys leading to San Francisco Bay and you see the same pattern. The dark filaments are ground-level jet streams that scoured the land, while the light-colored cloud tops are thunderstorm anvils, raining

charged dust to form the mountains. Look close at Jupiter's clouds near the center of rotation and there is a dark X-shaped feature. Then compare the Sacramento Delta and you'll see the Delta is the top of the X. Again, it's because the dark filaments are ground-scouring winds, which in this case scour the land to a depth below current sea level. I hope these images provide unambiguous evidence of how the Earth was formed. Any one or two matching features between the clouds of Jupiter and Earth's landscape could be coincidence, but overlay Jupiter's oval storm on California and all seven features depicted here match in both shape and position. And the wind patterns not only look like, but explain the land features. At least they do, if you apply electric circuitry and ignore consensus science. There is a host of interesting things to learn by understanding California's true formation. For instance, a whirlwind-formed hill in Kern County is full of ancient shark's teeth fossils. These sharks date to the middle Miocene, roughly fifteen million years ago, by consensus chronology. Now, I don't trust consensus chronology, but it does place a bookmark in the fossil and geologic record. Oil sands in San Joaquin date from the Miocene and earlier, except for one shallow Pliocene sediment. The Miocene epoch that formed Shark Hill, was likely the last time such a mountain building storm raged over California. But the stratigraphy and the fossil record

suggest there were many similar fractal

storms in earlier epochs. Thank you!

[Music]

the dance of the planet
so regular and predictable one might
think they've moved like this forever
what a contrast to things claimed by the
first astronomers of ancient Mesopotamia
and numerous cultures that followed they
watched planetary motions with a
compulsive fear why would diligent
astronomers insist that the planets were
the towering gods of a prior time
planets ruled the destiny of kings and
kingdoms and they were the agents of
doomsday the end of the world what was
it about planets that inspired such
reverence and fear the Babylonian
priests astronomer Burruss said that
planets moving on different courses than
today produced world catastrophe in
Greek Roman and Gnostic thought this was
ekber OSIS a catastrophic meeting of the
planets but the memory of planetary
disorder is echoed by numerous ancient
sources

Plato expressed it and so did soro

Astrium texts the Hindu Mahabharata

Taoist teachings and the Chinese bamboo

books far from the spotlight today
researchers are exploring these
questions of planetary history they
bring wide-ranging backgrounds from
comparative mythology to planetary
science and plasma physics all are
asking if the solar system may have been
unstable in the past alive with
electrical activity allow this question
to be asked and the doors open to a new
understanding of the past of planetary
history and the rise of civilization
itself

when we hear the word civilization most
of us think of new technology economic
advances rapid communication and
expansive metropolitan vistas but
earlier civilizations are much different
and they pose a mystery yet to be
resolved early civilizations were
obsessed with the past all looked back
to extraordinary events to an age of
gods and wonders all insisted that
powerful gods ruled for a time then went
away

monumental cultures arose and the

monuments themselves meant much more
than a display of technical skill a
monument commemorates something
collectively remembered it was obsessive
acts of remembering that shaped the
early civilizations from the cities of
Egypt stretched along the Nile to those
of the Fertile Crescent of Mesopotamia
from India to Southeast Asia and China
and no less so in the Americas from the
early predecessors of the Aztecs and the
Maya to the archaic cultures of the
central Andes all reveal a desperate
urge to recover something lost
Egyptian priests called this lost epic
the age of the primeval gods it began
with the rule of an earlier son God
autumn who later departed cuneiform
texts speak of the God on who ruled with
terrifying splendor then fled the scene
the Greeks celebrated the lost age of
Chronos but he too was replaced by
another power the towering Zeus sages of
India likewise remembered the rule of
Brahma though the God progressively
faded into the background so to the

Chinese saying D in Huangdi the Aztec
Almaty aatul and the Maya its am nor all
either departed for remote regions are
faded from their original prominence
through festivals and symbolic rights
the cultures remembered the lives of the
gods with every temple construction
every sacrifice every harvest every
installation of a king every royal
marriage every New Year Festival the
celebrants reenacted critical turns in
the lives of the gods themselves
were you to remove the stories of the
gods there would be no cultural content
left in the early civilizations
who were the gods and why did the early
astronomers declare that the most
powerful gods were planets here's a clue
the mythic accounts are punctuated by
terror and cosmic violence urgent
prayers and hymns reenacted the deaths
or ordeals of great gods recounting how
one world age passed violently into
another

Welcome to Space News from
The Electric Universe,
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Standard geology tells us that the
Earth and the life that inhabits it
has changed incrementally over eons
of time, for many millions of years.

The process is thought to have shaped our
planet's landscape, our wind and water erosion,
volcanism, earthquakes and
random bombardments from space.

Of course, a guide that scientists use
to determine when a life form existed
and how it evolved is
the fossil record.

Conventional theory tells us that
the process of fossilization
takes no fewer
than 10,000 years.

But countless archaeological findings
suggest a "radical alternative",
that the remains of some
animals and other organisms
were fossilized not over eons

of time but instantaneously.

In part 1 of this two-part presentation,
Australian archaeologist Peter Mungo Jupp
will present his case for the instant
petrification of organisms on Earth
by powerful electrical
discharges.

Electric fossilization.

Now, living plants and animals
are petrified into solid rock
in a violent paroxysm of nature.

Their ends... what, agonizing or instantaneous
as witnessed by their contorted forms.

Now let's look at some examples.

Now, we go to Lesbos and there's
huge trees turned to solid stone
while they still point
to the heavens.

Giant squid-like shell
ammonites glare up at us
through translucent limestone rock
where they lie entombed on a beach
along the Jurassic coast
in England, another example.

And then we go to Hot Springs, South
Dakota, there's gigantic mammoths

converted to limestone in a
huge bolus of flora and fauna.
And perhaps the strangest
of all, petrified crabs
centered in spherical
basalt bowl jars.

Washington state.

Now what do these petrified
fossils have in common?

Their end was dramatic
and instantaneous.

But the unanswered question,
what pungent force of nature
changed their chemical composition
in their death throws?

Now, conventional geology has
time as its slowly moving tool
that bleached their bodies and replaced
the carbon with silicon and calcium.

But the rapid decay
of biological matter
makes a nonsense of this theory,
what then is the answer?

Let's go outside the scientific
square to start with.

Let's track back to those who

observed something deeply dramatic
that may hold the key to
this fossil forming event.

Native American mythology
is being held up
as a witness to catastrophic
mass destruction in modern times
by the foundational paleontologist Georges
Cuvier, writing some 200 years ago.

He recorded much of their mythology
around the destruction of the megafauna
and used it as evidence of the many mass
extinctions that have occurred on Earth.

Importantly, American
writer Adrienne Mayor
recognized the similarity in this destructive
mythological war of the thundergods
against the sea monsters.

She advocates for the use of
the celestial thunderbolt
as the weapon of choice in
this megafaunal destruction.

Now, I'm going to read an
example from the Lakota Nation
and, as cited by . . . ,
just bear with me as I read it.

This is a quote from

their mythology:

"Their Creator sang the song of destruction,
and sent down fierce thunderbirds to wage
a great battle against the other
humans and giant animals.

Finally, at the
height of the battle,
the thunderbirds suddenly threw down their
most powerful thunderbolts all at once.

The fiery blasts shook the entire
world, toppling mountain ranges
and setting forests
and prairies ablaze.

The flames let up in the
sky in all directions.

The world's lakes boiled, and the
giant animals and evil people
burned up where they stood.

The Earth split open, sending great
torrents across the entire world.

The survivors found the bleached bones
of the giant animals buried in mud
and rock all over the world."

Now backing up these you've got

Hesiod and the ancient Greek

writing about the Gorgons and they are
specifically responsible for petrification.

OK now, so where do

we go from here?

If we're to believe these bizarre
tales we've recognized in many myths
as the cosmic thunderbolt, backed up
by plasma physicist Anthony Peratt
who's an advocate of giant plasma
discharges that shaped history
and as is Rens van der Sluijs
and his study in mythology
for instance in his
thunderbolts of Zeus,
hitting down upon the
earth, and changing it,
but can these thunderbolts or plasma
discharges produce petrification,
turning living tissues to rock?

Now I just want to pause a second.

We've got a...

Notice the difference between
fossilization and petrification!

Fossilization is the preservation of
tissue, such occurs in fossils
buried in coal like in Antarctica,

Alaska and Siberia,
oil, such is La Brea Tar
Pits outside Los Angeles,
peat, for instance mammoths
buried in Snowmass, Colorado;
whereas petrification
is a subset,
where the original carbon rich
material is either replaced
or transmuted to different compounds
such as silicon or calcium.

In other words, rock.

Now while fossilization generally is
undoubtedly the result of cataclysmic events,
the burial of fauna and
flora in Alaska mud,
petrification would seem to magnify
the catastrophic event to actually
transmute elements
and compounds.

I suspect this is the result of
powerful electromagnetic forces
that happen to centralize
in a chosen area.

Not necessarily continent wide
as the catastrophism tells.

But I'm going into detail

of this in another episode.

But what evidence do we have

that electrical phenomena

can cause elements to transmute to

another form e.g. water to calcium?

What tool of nature fossilized these

once watery marine ammonites?

We have a powerful clue.

Now, this is a formational

study, done by Eric Milton.

He described examinations

of petrified tree trunk,

essentially water and

carbon, in Alberta, Canada.

And I'll quote him, "The piece (this is

the wood) was pure clear silica inside,

it was coated with a rougher opaque

crust of partially fused sand.

The tree, whose stump was petrified,

was alive five years ago!

After the tree was cut down to

accommodate the right of way for a new

power transmission line, an accidental

break allowed the live high-voltage wire

to contact several tree

stumps still in the ground.

The power was cut off

within hours of the break.

All of the tree roots which contacted

the broken wire were fossilized."

All these extremes of electricity

can metamorphize matter quickly.

As much as we stretch our

credibility to explain

fossilization and petrification

of watery living animals,

there is a bigger question:

What about the medium these

very animals are preserved in?

Let's examine a couple

of these cases.

Now, I went to Hotsprings in South

Dakota, talked to Dr. Larry Agenbroad.

He explained to me, the mammoths

themselves are barely distinguishable

from the medium

they're immersed in.

All calcium carbonate.

And this is huge bolus, which is

amazing to see, not just mammoths

but short-faced bear,

camels, all sorts of things
in this huge bolus about 100 feet
across, and about 90 feet deep.

This is a huge bolus and
this is all calcium,
and fascinatingly although Larry
himself believes the mammoths
fell into the water and
gradually were petrified.

In actual fact, when you
examine the digging, says,
thousands of little subsets
going right through the area,
these are layers and you wonder
what caused these layers,
is this perhaps an electrical effect
and I suspect it probably is.

So that's one.

Was the water there possibly
turned to calcium carbonate?

You know, I've started
with the example of H_2O
which is 2 protons of hydrogen and 8
protons of oxygen making 10 in all.

Whereas calcium carbonate is
50 or 5 times that number.

Could some agency change so all

you need is additional neutrons.

And as we know from Russian studies,

whenever there's a major lightning strike,

neutrons are in abundance everywhere for

some strange reason we don't know why.

Stay tuned for part 2

For continuous updates on Space

News from the Electric Universe,

stay tuned to

Thunderbolts.info

[Music]

Some of the largest stars in the Universe are also some of the strangest. Conventional science would have us believe that these stars are near the end of their life. And yet they show some features that we also find in young stars.

They claim that these stars will expel vast amounts of material which will eventually form a planetary nebula.

And now they have discovered a star which is not only ejecting material in this manner, but also an expanding ring system and also ejecting large blobs of plasma.

In the Electric Universe, these stars are deprived of electrons, which forces the outer plasma sheath to expand. A planetary nebula is not the remnants of a dying star, but instead are the structures that the star is connected to, which are being lit up in glow mode due to a pinching vent which is taking place around the star itself.

We know that what is termed as a young star can eject vast amounts of material from the jets. But this process also seems to happen with the larger, in quotes, 'dying stars'. At the same time,

we also see the formation of a ring system around new stars, which is often interpreted as an accretion disk from which planets may form. The same may also appear to happen with these supposed older stars, but now they call it a dust torus. In the Electric Universe, stars undergo a process whereby they become electrically stressed. There is an imbalance between the incoming charges and those flowing away.

In order to deal with this, some of its charge material can be ejected. This can happen as a CME or in extreme cases, large planet-sized chunks of plasma can be ejected. In the most extreme case, the star itself will split into two equal, and sometimes unequal, parts. There is much observational evidence to show that those latter cases occur right after a sudden flaring or brightening event.

V-Hydrae is what is called a carbon star.

These are luminous red giant stars. These stars contain atmospheres where there is more carbon than oxygen.

The two elements combine in the upper layers of the star, forming carbon monoxide.

This leaves the carbon atoms free to

form other carbon compounds, giving the star a sooty atmosphere and a strikingly ruby red appearance. This characteristic is not limited to massive stars, as dwarf stars are also known to be carbon stars. When astronomers developed the spectral classification of carbon stars, they had considerable difficulty when trying to correlate the spectra to the stars' effective temperatures. The trouble was that the atmospheric carbon was hiding the absorption lines normally used as temperature indicators for the stars. Back in 1981, astronomers detected very fast outflows from this star. Recently they have detected not just the jet-like flow, but that this flow consisted of compact plasma blobs ejected at high speeds, but also a slowly expanding set of six rings. The fact that they observe the star ejecting huge blobs of plasma on a very regular basis, is not easily explained in the mainstream model, and would require a companion star which passed through the outer envelope of the star, pulling away material from the star and ejecting it outwards. The star is around 2,000 light years away from us. Not only is it a carbon star, but it is a semi-regular variable star. It pulsates with a period of 530 days and its brightness

varies by about one to two magnitudes.

On top of this, it also has another dimming cycle which occurs every 6,160 days and causes its brightness to drop below magnitude 12.

This periodicity might suggest that there is a cyclic resonant circuit effect, complete with overtones.

Through visible observations, they were able to determine that it might have a companion, but due to the large separation between the components, the physical connection of this pair is still considered provisional, until sufficient radial velocity and proper motion data are available. This companion is also not responsible for the ejection of the plasma blobs. It is too far away for that to be the case.

Recent data has suggested that the star might have yet another companion, much closer in.

Direct observational evidence is hard to come by in these types of stars.

They are large, very luminous stars which are surrounded by a dusty envelope.

This makes it very difficult to detect nearby stellar companions.

Some binaries have been inferred

by radial velocity measurements.

This method looks for a wobble in the motion of stars around a common center of mass.

This causes the star to sometimes move a little towards us, and sometimes away from us, thereby altering its radial velocity.

The problem with these larger stars is that they are believed to have strong variability intrinsic to their pulsating atmosphere.

Instead, they turn to a technique called deep ultraviolet observations.

Carbon stars are thought to be cool objects.

The companions are likely a more normal star and therefore hotter. In their analysis they determined that V-Hydrae had the highest far ultraviolet flux.

This they took as evidence of a companion and they then linked this with the eruptions they saw to determine it had a periodicity of eight and a half years.

This is around half of the 6,160 day dimming cycle.

So, more likely the ejection mechanism is connected to the changes in the current from the cyclic resonance circuit effect.

What if the UV excess was in fact evidence of something else going on in the star

itself? That this process is what is causing the ejection of material and will eventually lead to the transformation of the entire surroundings?

In the case of a super red giant, we have a star which is electron deficient; it expands its outer envelope to increase the surface area for electron capture.

The UV excess we see may be associated with the fact that the plasma sheath has expanded far enough, causing an increase in the electric field and hence giving the electrons a longer period of acceleration whereby they collide with other neutral atoms, ionizing them, creating an avalanche process through more and more collisions.

These types of stars struggle to deal with sudden electrical stressing and the simplest way for them to deal with this is to discharge matter.

Going back to our example of a young star with its outflows and the ring system. Rather than considering them as young stars, maybe a better classification is a star undergoing extreme electrical stress. The same mechanism is what is causing all of these observations of V-Hydrae.

The way these stars manage sudden changes in

electrical input, is to discharge charged matter.

This initially starts in the equatorial region forming a torus, or series of rings. As the toroidal magnetization builds, it may reach a critical point after which an instability occurs.

This switches its behavior to force it to start ejecting material out of the polar regions instead. These are the jets and the ejected material we see from these types of stars, and are also the same mechanism that drives the ejection from active galaxies. If we examine the rings, you might notice something rather interesting. The rings are not equally spaced, but it would appear that the rings further out, are much further apart than those close by. If these rings were simply ejected material from the star, this material should slow down as it moves away from the star, and we would expect to see the rings get closer together as they move further away.

The only reason that they will be getting further apart, is if they are being accelerated away from the star.

This would make sense if the star had a radial electric field, driving away the plasma.

A similar thing is also observed with the blobs of plasma ejected by the star. They initially appeared to move at a steady speed, then suddenly underwent an acceleration. This star may well hold the clues to understanding the process that occurs when a star undergoes a sudden change in its incoming current, while at the same time being starved of a ready supply of electrons. The formation of both rings and jets is an indication of a star that is undergoing a significant change to its electrical load.

[Music]

[Music]

It is well known that Ptolemy, in his attempt to establish Greek astronomy on a sound scientific foundation, drew upon ancient observations made by Babylonian sky watchers in order to develop his models for predicting the motions of the Sun, Moon and planets. What was true in Ptolemy's time remains true today. In order to fine-tune their theories on such fundamental matters as the length of the day, or changes in the Earth's rate of rotation, astronomers analyzed ancient observations of the moon made by ancient Babylonian, Chinese and Arabic astronomers. In a recent book on the role of ancient observations in modern astronomy, John Steele underscored the point. Quote, "Astronomy always has been and still is a science that relies on the use of past observations. Unlike most sciences, astronomy can never be truly experimental: astronomers can only observe the astronomical phenomena that present themselves... Perhaps uniquely in the sciences, astronomers therefore, are forced to rely upon empirical data collected by their predecessors."

End of quote. Yet, while modern astronomers regularly employ ancient astronomical observations recorded in Babylonian diary texts and Chinese annals to test their measurements and formulate their theories, they typically pay little heed to the innumerable ancient artworks depicting the respective celestial bodies. This decision represents a significant oversight. Consider the example provided by the so-called 'Lamat' sign, one of the most familiar glyphs in the Mayan codices long believed to denote the planet Venus. In the Dresden codices elsewhere, the Lamat glyph is often coupled with the prefix 'chak', signifying red or great, and given the fact various Maya cultures denoted the Morningstar by the name red, or great, star, the phrase 'chak ek' is typically translated as Great Star Venus. The Lamat sign is archaic in nature, early exemplars appearing already in pre-classic times circa 1,000 to 400 BCE. Martha Macri emphasized the remarkable continuity of these images and their attendant symbolism over the millennia. Quote, "The Venus star logograph is depicted on portable objects from the Preclassic, Classic and Postclassic periods into the 16th century.

This continuity of an image that is graphically complex and semantically consistent is evidence not of the borrowing of a word or concept, but of the transmission of a specific image over an extensive geographic and temporal range.” End of quote.

A number of recent studies have questioned the glyphs direct link to Venus with various scholars arguing that Lamat sign serves as a generic term for star, rather than signifying any particular planetary body. That said, the general consensus among Mayanists appears to be that the Lamat sign ‘Red ek’ is a logogram denoting quote, ‘star’, ‘planet’ ‘Venus’. End of quote. How then are we to understand the great star of Mayan cosmology?

The first point to be made is that the Great Red Star was almost certainly not the planet Venus. Rather, it was the planet Mars, or Mars and Venus in conjunction.

This identification is explicit among the Skidi Pawnee, renowned for their astronomy-based religious beliefs, who described the mythical Morning Star as a powerful warrior and red in color. According to the Skidi creation myth, a

grand conjunction between Mars and Venus marked the origin of all living beings. Quote, "The second god placed in the heavens was Evening star, known to the white people as Venus...She was a beautiful woman. By speaking and waving her hands she could perform wonders. Through this star and Morning Star all things were created."

Analogous reports will be found among other Amerindian tribes, although it must be admitted that the evidence is often disjointed in nature and open to alternative interpretations.

Among the Puget Indians of the northwest coast, the Morning Star is not only described as red, it is carefully distinguished from the Evening star which is described as white. So too, the Osage remember the Morning Star as a red god; quote, "Great Star or Red Star, a male being, is the Morning Star. "

The very same idea is common to the Delaware Indians. Quote, "The Delaware call Morning Star the Great Star or Red Star." End of quote.

The recurring emphasis among Amerindian cultures upon the red color of the Great Star must command our attention. As

the most prominent red star in the sky, it stands to reason that ancient sky watchers would have described Mars as red or ruddy in color.

Venus on the other hand, typically presents a whitish color and is rarely, if ever, denoted by a name signifying red.

Equally telling is the fact that in all of the tribes referenced above, the mythical Morning Star is always described as a male warrior, exactly as in Mesoamerican lore. Here too it is difficult, if not impossible, to find an ethnographic report describing the planet Venus as a masculine warrior anywhere in the continent apart from disputed examples from Mesoamerica.

Given the antiquity of these Amerindian mythological traditions, not to mention the likely common ancestry and historical relation between the vast majority of the indigenous tribes on the North American continent, it stands to reason that the traditions attached to the Morningstar and Mesoamerican narratives and codices belong to the same general belief system.

In short, whether it is the red color ascribed to the Great Star, or its

masculine nature or intimate connection

to war, the preponderance of evidence

favors an identification with the planet

Mars, the Red Planet par excellence.

To return to the unique constellation

depicted in the Lamat glyph, if

Mayanists are in agreement, the

Lamat glyph has something to do with stars and/

or Venus, exactly what the image represents

remains a matter of much conjecture.

If the four-rayed star represents a star

or Venus, what are we to make of the four

circular dots? Susan Milbrath, an anthropologist

specializing in ancient Mesoamerican

astronomy, suggested that the glyph has

reference to the four phases of Venus's

appearance and disappearance. Quote, "The

fact that there are four circles in a cross-shaped

frame, naturally suggests the four phases of

Venus associated with four different directions."

End of quote. Although a great deal of ink has been

employed in discussing the possible

astronomical significance of the

Lamat's role in Mesoamerican symbolism,

precious little thought has been devoted

to the natural historical roots of the glyph

itself. Most scholars, with Milbrath, have concluded that the glyph is abstract in nature and encodes some arcane astronomical knowledge about Venus. The possibility that the Lamat glyph faithfully depicted an actual star constellation of prehistoric sky has never been entertained, to the best of my knowledge. Yet, there is much reason to believe that this is exactly what the icon represents, namely an accurate depiction of the Great Star during a prehistoric period. The fact that analogous pictographs we found around the globe, offers compelling evidence in support of this proposition. A NUZ cylinder seal, purportedly dating to the mid-second millennium BCE, depicts a star surrounded by four dots. The resemblance between the Mesopotamian and Mesoamerican glyphs is undeniable. Not only is there a central four-rayed star, but four circles or orbs are set in the corners, exactly as in the Lamat sign. Not unlike the longevity of the Lamat glyph in Mesoamerican iconography, the quadripartite star symbol

persisted for millennia in Mesopotamia.

The symbolic importance of the stellar image is indicated by the fact that Assyrian kings had it depicted on their royal garments. Other Mesopotamian cylinder seals substitute a flower-like form or cruciform structure for the central star.

One early cylinder seal represents a four-petaled flower star with four circles or dots at its corners.

In another cylinder seal, a cruciform structure is represented together with circular dots.

While the most common form of the Lamat in Mesoamerica shows a central four-rayed star, other early examples of the glyph show a flower-like object or cross instead.

As we will discover, these variant forms, all familiar symbols of stars among Amerindian cultures, offer a valuable clue as to the celestial origins of the Lamat glyph.

What are we to make of this iconographic evidence? If nothing else, the presence of analogous stellar images on opposite sides of the Atlantic in very early times, suggest the probability that such artworks encode some readily observable astronomical reality, be it a prominent

star or constellation. Yet the fact remains that it is impossible to point to an object in the present sky that depicts a four-rayed star surrounded by four dots. Hence the mystery presented by these widespread anomalous stellar images.

I discussed the Lamat glyph and the many faces of Venus and other works noting its possible relationship to the planet Venus.

At the time I was operating under the assumption that the image depicted a conjunction of Mars and Venus in which the red planet appeared in front of the larger orb, but I had no idea how to explain the four smaller dots surrounding the central star.

Upon discussing the matter with Anthony Peratt in 2002, he pointed out that the dots are indicative of intense synchrotron radiation produced by four parallel Birkeland currents resulting from a high-current Z-pinch event.

According to Peratt, quote "...the only known mechanism that produces synchrotron radiation are electrons spiraling about a magnetic field at nearly the speed of light."

Indeed, in high-energy/density plasma experiments conducted at the Los Alamos

Labs in the 1990s, Peratt himself had generated very similar images.

In the image on the left one finds a close analog to the classic Lamat sign depicted in the first figure here, in which a central star is surrounded by four small circles. In the figure on the right, the central star takes on a rosette-shaped image, not unlike that depicted in other figures here.

I returned to the Lamat symbolism in the Great Star published in 2002 and once again reached out to Dr. Peratt for instruction in clarifying the various structures in question.

In 2009 he wrote me as follows, quote, "Of course this symbol is found all over the place...It is indeed Venus and Mars in front but the quincunx is yet in front of Mars.

See my Physica Scripta article that purposely does not show everything yet.

Too early and I'll have to find an alias to publish under." End of quote.

Alas, in the intervening years, Tony has yet to elaborate on his groundbreaking experimental findings.

Findings which help elucidate the testimony provided by the ancient pictographs and glyphs associated with the celestial

bodies. Yet one thing is certain, in the case of the Lamat sign, a pictograph is indeed worth a thousand words. In summary, the Lamat sign will never be explained by reference to the present sky or to the familiar periodicities of the planet Venus.

Indeed it is our position that the stellar image in question represents a veritable smoking gun pointing to an extraordinary planetary conjunction in relatively recent prehistory, likely during the neolithic period.

If so, and if in fact the Lamat sign depicts a grand conjunction between Mars and Venus during the brief period when the two planets were lined along a shared polar axis, it follows that high-energy discharge events characterize this conjunction, and it must have been a memorable and likely very dangerous period in Earth history.

[Music]

Welcome to Space News from
the Electric Universe,
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The term "crisis in
cosmology" has been used
so routinely over the
last couple of decades,
I have to wonder if
its significance is
beginning to dull in the
public consciousness.

When science journalists
use the term, they're
generally describing the countless
scientific discoveries that contradict
or undermine
Big Bang cosmology.

Of course, for decades now, numerous
scientific studies have shown an
apparent discordancy between the
so-called expansion rate in the
"early universe" after the
hypothetical Big Bang,
and the expansion rate

in the "later universe."

Well, just in the last

couple of weeks, the Keck

Observatory issued a press release

reporting the most reliable verification

to date that the discordancy is real,

and the rate of acceleration of the

universe's expansion is too great for

standard cosmology to explain.

But of course, the crisis

in cosmology goes much

deeper than problems with

the expanding universe.

It seems that just about every

week we hear about the existence of

objects, from stars to galaxies to

quasars to super clusters, as well as a

host of celestial phenomena that

"can't exist in the Big Bang universe."

And even more fundamentally,

they shouldn't exist in a

universe where gravity, and

gravity alone, dominates.

If you've followed this series,

you've seen reports on these

discoveries ad nauseam, and we'll be

exploring several of these specific discoveries as we continue in this new discussion.

So today, we're going to be discussing all of this and more with the chief science advisor to The Thunderbolts Project, Wal Thornhill.

I can tell you at the outset that this is going to be at least a two part or even a three part presentation, because for several months now, there have been too many blockbuster discoveries, for us to adequately cover, which are incredibly important for the Electric Universe and Plasma Cosmology.

But before we begin addressing these items one by one, I'd like us to begin with a discussion on the very foundations of Big Bang cosmology, to clarify some essential distinctions between scientific fact and scientific theory, what is known versus what is believed.

For instance, New Scientist

recently published the
collection "seventeen more things you
need to understand" in which it outlines
what it describes as "six
principles of physics" and again, the
reader might assume that
each of these principles
is an established fact
or a "law of physics."

Wal, you introduced me
to this New Scientist
piece, so why don't you begin by
explaining what you think it reveals
about the current state of cosmology
and the culture of science.

Yeah, that New Scientist
special starts off with the
first chapters on mathematics,
instead of physics.

You would think that if you're
talking about cosmology, the
first thing you need to talk about is
the model, the cosmological model, the
physical model, before
you start talking about
the mathematics that

you're going to apply.

They got sort of backwards, you know, the cart before the horse.

And then, the very second one talks about the Big Bang.

The very nature of the Big Bang should sound alarm bells because, what we observe in the universe is pretty much a balance.

The solar system works like clockwork, there's no gravitational explanation for the beauty of spiral galaxies and yet they seem to be a standard form of galaxies...

So just the very nature of the observations suggests that using an explosion, something equivalent to an explosion, a Big Bang in the beginning, is something desperately wrong, and as one philosopher wrote and I read just recently, he said that only an idiot would design a universe with an unbalanced force, and gravity is an unbalanced force, it's only ever attractive, it's never repulsive according to our

experience on Earth, but then we
extrapolate our experience on Earth out
into the deep space,
and it doesn't work.

It only works within
the solar system.

But even then, when you go back to Newton,
Newton also considered that gravity was
a balanced force, he looked at
it as a repulsive force as well.

And it does work, but nobody could figure
out just how that might be physically.

And so, that's been
ignored ever since.

It wasn't until Halton Arp came
along and showed that his
balanced universe absolutely needed a
balanced force, gravity must be a
repulsive force on
the cosmic scale.

And that was one of the key issues that the
Electric Universe had to deal with, because
how can we explain gravity as a balanced
force, and as soon as you do that, all of
the requirements for a big bang go away,
you don't need anything to separate

matter in the beginning, because the result of that separation is either that all falls back together again, or it all continues to expand forever.

It's almost impossible to have it just expand to a certain point and then sit there.

So this was, you know, a major problem with the Big Bang Theory right from the very beginning.

The other thing is that, all of the lack of real physics in describing of how the Big Bang originated.

For instance, if you look at Wiki, that infamous source of information, it was created from a singularity which was described as a very hot, small and dense, super force.

In other words, the mix of four fundamental forces with no stars, atoms, form or structure.

This is physically meaningless.

Singularity is, by the very definition, involve the concept of infinity, which isn't a number.

So you can't add, subtract, multiply, or divide by infinity and come up with a number other than zero, and that only as an approximation in the case of division.

Singularities in a model are clear evidence that the model has failed.

So right at the very fundamental level we're not doing physics, and then again we look at Wiki's explanation: to be hot requires energetic particles, that's how we measure heat, it's a measure of the kinetic energy of particles.

That means that the singularity had to have the matter there already in this infinitely small point in space, right?

This schoolboy howler results from energy being undefined in modern physics.

There is no such thing as pure energy, it's always in relation to matter.

It's a gaping hole dug by Einstein and his relativity theory, where any arbitrarily moving observer can be considered at rest at the center of the universe, in other words you've all got your own, you're all at the center of your own universe and that's obvious nonsense, because movement of any of these observers is a form of energy.

So Einstein removed the absolute reference frame of the fixed stars, that is the rest of the universe, which was required by all the great physicists of the preceding centuries, including Newton.

And then they talk about this singularity being small, but that's meaningless, compared to what?

It's a concept you can get by dividing any number by infinity.

Then it goes on, it assumes there are four fundamental forces.

Well, this is a product of not understanding the physics

in the first place.

The Electric Universe, on the other hand, needs only one, the electric force, and then magnetism and gravity and the nuclear forces are all described in terms of the response of orbiting matter to an external electric force, or in the case of an atom, the internal electric force if the nucleus is offset from the center.

And then, the last thing that it talks about is this force being dense.

Now, any force requires the presence of matter before the Big Bang, so once again, we've got matter having to be there before the Big Bang, and how can a force be dense?

Matter can be dense, a force only has meaning in the presence of matter, which again isn't there before creation.

If it were, the singularity would be a black hole, one of those imaginary black holes from which matter can't escape, so that it could never bang.

And if you look at the Electric

Universe over the past decade or so, and
Steve Crothers' analysis
of the mathematics,
the mathematics
doesn't work either.

It uses a pseudo tensor which in Steve's
words is just a meaningless jumble of
symbols, it has no
physical significance.

The Big Bang is sheer nonsense, it has
nothing to do with real science.

What started the worship
of an expanding universe?

In 1929, Edwin Hubble discovered
that for fairly local galaxies in his
field of view, the fainter they are, the
higher their redshift--assumed to be due
to the Doppler effect, in other words, the
change in frequency of a signal, as it
recedes from you, drops in frequency,
and that's a redshift in light.

Anyway, Hubble himself remained
unconvinced that the
Doppler effect correctly
explained his observations.

He felt that the science

underpinning this physical model

was lacking, there's

something else involved.

It was left up to Halton Arp, who

worked at one point with Hubble, to

discover intrinsic redshift which means

that the objects themselves have a

different energy, a lower energy which

means that both the particles within

each atom, the protons and the electrons,

have a different mass, slightly lower, and

that difference in mass means that the

frequency of light that they emit will

be shifted towards the

red end of the spectrum.

It's as simple as that.

We just assume, we make

measurements of the

mass of the proton, the

mass of the electron

in laboratories on Earth and then put

it in a physics standards manual and

everyone assumes it's the same

throughout the universe.

It's merely an assumption,

and in the case of the

redshift, the very fact that Halton Arp was able to find that it was quantized, in other words this is a subatomic effect, this is a quantum effect, and we observe it in galactic scale objects; means that the whole underpinning of particle physics, as well, is based on nonsensical ideas.

This idea that the quantum theory only applies to the atomic and subatomic scale is incorrect, so trying to find the answers to everything through particle physics and cosmology fails on that very foundation.

The New Scientist article which is supposed to be giving us answers to the 17 big questions, when it comes to cosmology, it talks about the principles of physics.

Now, one of the principles of physics that is crucial is, that you cannot create or annihilate matter because that constitutes a miracle.

We have no idea how matter is constructed or how you would go about constructing it, what the constituent parts are, and what happens if you have discombobulate, you know, a proton or electron, what would these particles be and where would they go, how would we detect them?

None of this is answered.

When we come to what the New Scientist puts forward as the six principles of physics, none of them have anything to do with this basic problem.

The first one says, "the speed of light is a constant."

Who says so?

When we measure the speed of light, it's always in a medium and to say, as Einstein did, that there is no ether in the vacuum of space, is sheer nonsense. You cannot transmit an electromagnetic signal through nothing, it has to be a polarizable medium, and we measure the polarizable medium and give it capacity, you know, dielectric properties which is what's needed.

So there is an ether, the speed of light we know, depends on the density of the ether that it's traveling through, what its speed would be.

The speed of light is not a constant, and this was made crystal clear when Rupert Sheldrake spoke to us at one of our conferences, a few years ago, and he pointed out that it's acknowledged that when they measured the speed of light, it varied. So what's been done, they now define the meter, the measurement of distance, in terms of the speed of light and made it a constant, they've fixed it.

This is unscientific and, in fact, can lead to serious problems.

The second item is the equivalence principle, the equivalence between the sensation of gravity and the sensation of being accelerated in a lift.

They are not equivalent.

Gravity is, despite the

formula which talks about a center of gravity, is an effective force between all matter in the universe.

So in the case of the Earth, that's distributed throughout the volume of the Earth.

So the force on a person accelerating away from the Earth will change, it will be different to what you would experience in an elevator, they are not equivalent.

The cosmological principle is just another assumption based on observation and it may or may not be true.

When you look at Halton Arp's different perspective on the universe, we are only a small part of the universe that is of unknown age and unknown extent, so all we can say is that in our local visible universe, part of the universe, the cosmological principle appears to hold, but there is a lot of structure, the structure is unexpected that is, the filamentary structure of the universe is not expected in the gravitational model, unless you add dark

matter and all sorts of
other magical fairy dust.

But in the electrical model
that is absolutely necessary because of
the formation of stars
and galaxies along
cosmological Birkeland
current filaments.

So the filamentary nature is
actually prima facie evidence that the
Electrical Universe
model is correct.

Quantization is the next one, number four,
and of course, quantum theory, as Richard
Feynman famously said, nobody understands
it, and that is correct.

Nobody understands it because there is
no physical model underpinning it.

The Electric Universe deals
with that in terms of
resonant behavior of structured
subatomic particles.

The Electric Universe merely
repeats the pattern of
the atom, because they're closest together
in scale, as an orbital system, and repeats

that for the electron and the proton and says that they're orbital systems as well, and therefore they will exchange energy in discrete resonant ways.

You can only exchange energy between stable orbits.

The other thing is that the foundational work for these stable orbits comes from Wilhelm Weber, 150 years

ago, so the foundations of the Electric

Universe are that old.

It's just that no one was paying attention at the time, "his work was in German;" although Faraday and Maxwell knew about it, they preferred their field theories to ones which involved real particles and an instantaneous electric force.

But of course, this is a real physical model, this is one that relies on physics.

Quantum theory of Niels Bohr is a statistical theory, in other words, anything is possible.

"Lies, damned lies, and statistics," you can dream of anything you like, and this is where the uncertainty principle comes from; because it's a statistical model, you can be uncertain about where a particle is and what it's doing.

In the electrical model, there are real particles in real space in real time, the whole thing remains coherent, simply because we're dealing with real time.

None of this relativity nonsense of malleable clocks and distances.

The wave-particle duality comes about also from this problem of not understanding matter interactions at this structured subatomic level, because there is no such thing as a photon, you cannot have a particle with no mass which is what the photon is defined as being, traveling at the speed of light.

Now, light is a wave phenomenon, but the particles involved in that wave are communicating with one another instantaneously, so all of these

strange so-called nonlocality and spooky
quantum effects are just the order of
the day in the electrical model of
Wilhelm Weber and particle interactions.

He also showed that
there are stable orbits
in those electrodynamic
interactions.

It has nothing to do with
electrostatics, it's electrodynamic.

Not one of these six items is a
fundamental principle of physics.

So you start from that basis,
you've got nowhere to go
really, they're just stories that have
been made up to try and make it appear
as though we have a
cosmology at present.

Modern cosmology is not science, it's
merely a story and it gets more and more
complicated as time goes on.

Stay tuned for part 2

You've just entered the

theater of an alien sky.

If the words and images seem strange

to you, there's a reason for this.

Our world was once a

vastly different place.

To experience this won't hurt you

and there is nothing to fear.

The Great Comet Venus

The planet Venus.

A closest planetary neighbor and

the brightest star in the sky.

Poets the world over have

long considered Venus

as a celestial symbol of

charm and enchantment.

The morning star transitioning to

evening star, then back to morningstar.

But more ancient traditions

about the planet

run much deeper with

enigmas at every turn.

Tales of wonder and

terror attached to Venus

seem entirely out of place

in our tranquil heavens.

Within the common theoretical
frameworks today, there's just no room
for the extraordinary sky-altering
events once remembered around the world.

That today's quiet planet could have
formally appeared as a great monster,
a serpent or dragon attacking the Earth,
may indeed seem too much to believe.

And yet anomalies
abound at every turn,
inexplicably Venus is the
only planet revered globally
as a celestial symbol of the mother
goddess, both the love goddess,
a goddess of unrivaled
radiance and an angry goddess
linked to earth-shaking and
even world-ending catastrophe.

This global contradiction
must have an explanation
even if that explanation has been
entirely missed in contemporary studies.

Today Venus moves on an orbit
67 million miles from the Sun,
compared to Earth's distance from
the Sun, of 96 million miles.

But many clues suggest a historic connection of Venus to the Earth and these clues include the geometries of their motions today, both the rotation of Venus and its revolution around the Sun exhibit a synchronous connection to Earth's motions.

5 Venus' years equal
8 Earth years.

While the usual planetary rotation is from west to east, Venus rotates in reverse, though remarkably slowly in contrast to the solar system norm.

A Venus day of full rotation is longer than its year, the time it takes to complete a revolution around the Sun.

But a Venus' year almost exactly matches the timing of its closest approach to the Earth and at its closest approach Venus always shows virtually the same hemisphere to Earth.

Synchronous or locked-in relationships of this sort, when they occur elsewhere in the solar system,

are seen as evidence of a dynamic connection,
either currently or in the past.

Of course, astronomers have long
believed that Venus evolved peacefully
within its own enclave in the solar
system, for countless millions of years.

Given its proximity to
Earth, astronomers assumed
the planet to be rather
similar to our own,
calling it Earth's sister planet
and speculating freely on the
possibilities of life on Venus.

But such speculations
ended in the 1960s
when probes of the planet
stunned astronomers.

The first continuous close-up look at Venus'
surface came with the Magellan probe.

But Magellan moved into orbit around
the planet on August tenth, 1990.

Its radar images revealed features
as small as 100 meters across.

Almost nothing in the
earlier picture of Venus
could withstand the impact of

the discoveries that followed.

The surface of Venus has been radically
and catastrophically transformed
by events yet to
be comprehended.

The probes revealed the
superheated cauldron
with surface temperatures averaging
more than 460°C or 900°F.

And describing a new
profile of Venus,
astronomers summoned images
of a doomsday world.

Massive clouds of sulfuric acid and
carbon dioxide 20,000 meters high,
create an atmospheric pressure at the
surface some 90 times that of the Earth.

What has occurred in the
evolutionary history of Venus
to create a world never imagined
prior to the Space Age?

In this Discourse and others to follow
we'll explore the astonishing accord
between space-age surprises and the
ancient descriptions of Venus.

The greatest surprise for science

will lie in the global evidence
that Venus formerly roamed
the sky as a comet.

In the language of ancient myths and
symbols, the mother of all comets.

And this is where we find one
of the greatest challenges
to today's theoretical assumptions
about planetary history.

Though Immanuel Velikovsky
was not the first to notice
the cometary images
attached to Venus,
it was his book "Worlds in
Collision" published in 1950,
that brought the issue to public
attention with much greater force
than any evidential fragments that
preceded his best-selling book.

Velikovsky noted many tales
of disaster and upheaval
in which the agent of destruction not
only possessed comet-like attributes
but was named as
the planet Venus.

And so the anomalous comet-like

features of Venus in world mythology

became key pieces of a

historical argument.

He noted for example, that in Mexican

records Venus was the smoking star,

the very phrase natives

employed for a comet.

He found in both the Americas and the

Near East a recurring association

of Venus with celestial hair

and with a celestial beard.

Two of the most common hieroglyphs

for the comet in the ancient world.

Another popular glyph for the

comet was the serpent or dragon.

A form taken by the planet

Venus in virtually every land.

And the same planet among the Egyptians,

the Babylonians and other races

was called the Flame

or Torch of heaven,

a widespread symbol of a comet

amongst ancient peoples.

According to Velikovsky, the

history of the comet Venus

inspired one of the most powerful

themes of ancient myth and ritual,
a collective memory of catastrophe, global
upheaval, earth-shaking battles in the sky,
decimation of nations on earth,
an extended period of darkness
and the end of one world age
and the birth of another.

Having devoted decades to
following the global evidence,
I can confirm beyond
any reasonable doubt
that chroniclers the world over did
indeed describe Venus as a comet.

Not the planet that we observe
on a predictable path today.

From Egypt and Mesopotamia to
northern Europe and Africa,
from the Mediterranean to the South
Pacific, from China to the Americas,
the sky worshippers remembered the
comet Venus with awe and terror.

For those who've been following these
Discourses we'll connect the global story
of the comet Venus to our reconstruction
of the polar configuration.

The universal fears of comets trace

to the symbolic mother of all comets
without which the global accord could
never have arisen in the first place.

Why did the appearance of a comet
signify the death of a great king?

Why, more specifically, was it claimed to be
the soul of a deceased King rising in the sky?

Our goal will be to show that
the myth of the Great Comet
is the story of the radiant star that
animated the polar configuration.

As the central eye, heart and
soul of the primeval Sun.

The subsequent fate of that star is
indeed the story of the Great Comet.

Always look for the
underlying form!

[Music]

We concluded the previous episode with an overview of the vast evidence, accumulated by Halton Arp and others, and indicated by the initial images of the James Webb Space Telescope, that cosmological redshift is intrinsic, which thus falsifies the foundational axiom of Big Bang cosmology. I turn now to deal with the Webb first deep field, unveiled during a White House event on the 11th of July 2022. NASA's associated news release states, "Thousands of galaxies - including the faintest objects ever observed in the infrared - have appeared in Webb's View for the first time. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground. This deep field, taken by Webb's near infrared camera (NIRCam), is a composite made from images at different wavelengths, totaling 12.5 hours - achieving depths at infrared wavelengths beyond the Hubble Space Telescope deepest fields, which took weeks." In order to make sense of this image, we must take account of several matters. First, we know from the study of galaxies

in our local universe that they come in a range of shapes, sizes, luminosities and colors. At similar distances, some galaxies are smaller and some are larger. Some galaxies, especially dusty galaxies, appear redder, while others appear bluer. For a given size, some are more luminous and others less luminous. Astrophysicists expect variability among distant galaxies at every point in the Hubble flow.

Secondly, the Webb first deep field is centered on a massive galaxy cluster surrounded by stretched-out, curved objects. In the Standard Model, these curved objects are distant galaxies that are gravitationally lensed, making them appear larger and brighter than they would be in the absence of that lensing. Of course, in the Electric Universe that effect is due to refraction through the neutrino-sea ether that is denser around that massive galaxy cluster than elsewhere.

Thirdly, humans cannot see the wavelengths of infrared light that were used to construct the image. Instead, colors in the visible range that we can see, were assigned to the different filters and

then combined to produce the composite image.

The specified filters are circled in the assigned colors in the NASA graphic that you see on the screen.

You can see that there is broad coverage in the range from 0.6 to 5 microns.

Visible light extends down to about 0.7 microns.

As you would expect, NASA's image processing team assigned blue to the shortest or bluest wavelengths, green for still longer wavelengths, orange for even longer wavelengths, and finally red for the longest wavelengths in the image.

Fourthly, for some of the small faint galaxies in the Webb first deep field image, or in the deep images released by the CEERS project, we do not necessarily know whether that small size in the image is due to the galaxy being physically smaller and closer, or larger and further away.

Now, assigning a value to the distance of the galaxy or quasar, can be confusing.

In the Standard Model, space has been continually expanding since the Big Bang, and the brief period of exponential expansion, referred to as inflation.

That means that the distance traveled by

light emitted from an object, increases due to the expansion of space, while the light is traveling on its path to the observer. Moreover, the space already traversed by that light continues to expand, while the light continues to the observer. So, a galaxy that is one billion light years distant from Earth at the time its light is emitted, will be further away by the time that light arrives at the telescope. The lookback time, or distance at the time the light was emitted, plus that additional distance arising from the expansion of space during the light's travel time, is referred to as the quote 'co-moving radial distance' - the dotted line, marked 'distance now' on the graph, and can give a distance in light years that exceeds the age of the universe - the horizontal blue line on the graph. The time that has elapsed since the light was emitted, is referred to as the lookback time, or light travel time, and is the value that is most commonly used to describe the distance of high- redshift objects. That is what is shown on the y-axis of the graph. Notice the declining slope of

the 'distance then' line in this graph

beyond a redshift of about three.

In everyday life, we're used to the

intuitive idea that the apparent size of

objects - what astronomers refer to as

their angular diameter - decreases, as

the distance to those objects increases.

An object looks smaller as the distance to that

object increases. In Standard Model cosmology,

that relationship only holds until redshift reaches

about $Z=2$. It's uncontroversial that in the expanding

universe of the Big Bang, there's an

optical effect that beyond a redshift of

about $Z=2$ causes the apparent

size of galaxies to increase with

increasing redshift and distance. This

effect is totally counter-intuitive, but

is an inevitable consequence of Big Bang

Theory. This effect occurs because in an

expanding universe, the light we see from

high-redshift galaxies, was emitted many

billions of years ago, when the universe

was much smaller and the emitting galaxy

was much closer. In the time that the

light has taken to travel the distance

to our telescope, the space through

which the light has traveled had continued to expand, reddening that light and reducing the amount that arrives per unit time. This leads to the counter-intuitive result that beyond a redshift of about $Z=2$, galaxies of the same size will appear larger, redder, and fainter as their redshift increases. Moreover, as several Japanese scientists have shown, some red spiral galaxies with a redshift in the range of $Z=1$ to 3 can imitate galaxies with a much higher redshift. Finally, and perhaps most importantly, it is essential to recognize that the Webb first deep field is not claiming to depict redshift. Redshift values for objects across the image are not yet publicly available. Nevertheless, given the way that colors are assigned in the image, averaged over the whole image, the colors in the image are a reasonable proxy for redshift. So, if the Big Bang Theory is correct then, averaged over the whole of the Webb deep-field images, and putting aside obviously lensed objects, the faintest objects should be the reddest objects in the image. Further, the faintest and reddest galaxies should

appear larger than less faint and less red galaxies.

But this is not what the Webb's first deep field and the CEERS images show.

Instead, it is plain on even a casual analysis of those images that, averaged over the whole image, the faintest objects are the smallest objects and that a large proportion of the faintest objects are rendered in blue.

We're going to look at a portion of the image indicated by the white rectangle.

The arrows point to examples of faint objects that have been rendered in blue.

As we zoom and pan across the image, note that a clear majority of the faintest objects, all of them galaxies, are rendered in blue. This is *prima facie*, a stunning contradiction of the Big Bang's foundational premise. In the Electric Universe, space is not expanding. The universe is of unknown age and unknown extent, possibly infinite.

Following the observations and insights of Halton Arp, one way new galaxies are formed, is by ejection from active galactic nuclei [AGN], commencing life as very highly redshifted quasars that progress

through quantized decreases in redshift,
such that high redshift is an indication
of the youthfulness of a galaxy.

In the Electric Universe, we expect
to see galaxies that get smaller and
fainter - some bluer, some redder - to the
limits of the telescope's observational
power. That is exactly what Webb's first
deep field shows. I predict that deeper
Webb images will further confirm that fact.

In particular, I predict that when very
deep Webb images are obtained with
many days or weeks of observation, the
detection of additional faint galaxies
will simply show more of the same.

And it only gets worse for the Standard Model
theorists. According to Big Bang Theory, the
earliest galaxies are the least evolved
galaxies. They have not had time to
evolve and grow by accreting further gas
and dust from the intergalactic medium
or through collisions, mergers, or
the cannibalizing of smaller galaxies.

Overall, and putting aside the so-called
'lensed' objects for a moment, the reddest
objects visible in the image should

generally exhibit the least amount of smoothness and symmetric structure. Once again, that is not what we see in this image. Instead, overall we repeatedly see smoothness and symmetric structure in the reddest objects, including especially the curved, so-called 'lensed', galaxies. The arrows in the image on the screen point to a selection of the reddest objects in this portion of the image that bear out that contention. This fact is evident across the whole image. As for the red so-called 'distant lensed galaxies' of the Einstein Cross type, Halton Arp explains in an article on his official website titled, "Origins of Quasars and Galaxy Clusters", that two higher-redshift galaxies are found almost perfectly aligned across a lower- redshift galaxy on either side of it. He wrote, "This of course is the quintessential pattern of AGN's ejected from a larger galaxy (often interpreted as gravitational lensing)." We see the red so-called 'lensed objects' with so much visible structure in them, because they are recently born and close to their low redshift parent. The universe that the Galileo of Palomar

observed has biological overtones.

We see families of galaxies and clusters in
a small part of a universe of unknown size.

Arp concluded that to prevent collapse
in a non-expanding universe, gravity must
be a repulsive force between celestial
bodies. Collisions are in fact avoided.

I have explained elsewhere the electrical nature
of repulsive gravity between celestial bodies.

The infinities, beloved of mathematicians,
disappear when the distance between the
centers-of-mass of two bodies on a
collision course, approaches zero.

Nature must be explained by physics.

Mathematics might describes the result.

There are no collapsed-matter objects in
the universe. No white dwarfs. No neutron
stars, and definitely, no black holes. The
phenomena can only be understood in
a balanced Electric Universe.

It is impossible to overstate the
significance of these facts. Facts that are plain for
anyone to see on the face of the image. In short,
this one image, Webb's first deep
field, falsifies the Big Bang. And
given that the Webb Space Telescope

has a vastly improved spectroscopic performance, we can expect the spectra of high-redshift objects will not match those expected from the story of heavy element production by successive generations of stars since a Big Bang. So-called 'lensed galaxies' - that is galaxies that do not appear as a result of refraction through a denser neutrino sea - are newborn high-redshift quasars. They are the infants of nearby galaxies. Their faintness would not allow us to see them, much less their internal structure at cosmological distances. Being nearby, they will show anomalous super-luminal motion when viewed conventionally, billions of light years away.

[Music]

It's always a pleasure
to be here and to see
so many new faces and I wouldn't say
old faces but longtime friends.

Well, let's see.

Last year I described
for you a model,
mathematical model of
the Birkeland current,
the cross-section of
the Birkeland current
and what it looks like, how
it counter-rotates inside
and how it manages to go from
the Sun to the Earth, to Saturn
and create the auroras
on those planets..

And I thought maybe this year
we take a look at the other end,
not the Aurora but the Sun end
and talk a little bit
about the solar wind
because Birkeland, when he came up with the
idea of what the auroras were caused by,
said they were corpuscles,
electrical corpuscles that were

coming from the Sun to the Earth.

Of course he was laughed

at severely for that

but we now know

that that is true.

And astronomers, instead of calling it the

Birkeland wind or giving him credit for it,

they just call it

the solar wind.

So it's a bunch of, essentially,

protons and electrons that

come off the Sun

in steady-state.

Now I'm not talking about, of course,

CMEs, coronal mass ejections or flares

or any of the transient phenomena

that happened but the steady-state

DC as Ben would say, currents that are

coming from the Sun as a normal thing.

One might ask why the

solar wind is important

and I think that Ben has

done a very good job

of talking about why it's important that

we know what's coming off of the Sun.

It's obviously a stream

of charged particles

that speeds up to about a

million miles an hour.

That's moving.

And before it streams

past the Earth.

And disturbances

in the solar wind

pump energy into the Earth's

radiation belts and polar regions.

Space weather clearly,

as Ben points out,

can change the orbit of satellites, shorten

mission lifetimes, create all sorts of havoc.

The solar wind distorts the

Earth's magnetic field

and this causes current surges in transmission

lines and pretty much we know this.

So I'm not going to mention

those things again.

What I'm going to talk about, I

think, I hope, for the first time,

is some of the lesser known

properties of the solar wind

and most importantly how

well those properties,

those very subtle properties

of the solar wind

fit in exactly with Ralph

Juergens' electric sun model.

And so as I've said so many times before

you can't prove anything in science,

you can disprove but

you can't prove it.

But you can always add

supporting evidence.

You can build that wall like the DA tries

to build a wall of evidence that is

insurmountable by the defense and

this is, "no he really killed him".

This is what we're

trying to do here

and that is to build that wall of

evidence that says, "you betcha!".

The Sun is electric.

We don't know whether it's powered

completely by electricity,

we think it might be

but we don't know.

But one thing we know for certain

and that is that the effects,

the major phenomenon that we

see on the surface of the sun,
those phenomena are electric and i'd
like to show you in some detail
what, why I say that
and what's going on.

So there are actually two
different types of solar winds.
Perhaps some of you know that.
And I'd like to explain the
reasons why these properties
are quite different
from each other.

The standard
mainstream finds these
observations to be quote
"enigmatic" as always.

They're not enigmatic,
they're very simple.
Elegantly simple.

I'd like to explain how the different
points of origin on the surface of the sun
explain those differences between those two
different types of solar wind that we see.

One of the things that, by
the way I should say that
one of the things i want to

show you is a short video clip

that Monty Childs was kind enough to

lend to me from the SAFIRE project.

That shows that the things

that I'm talking about here,

as far as Juergens

model is concerned,

are being repeated here

on earth in Monty's lab.

So the Juergens' sun model was

proposed in the early 70's

and today I'm trying to propose

a slight extension to that.

And this, these proposals

that I'm trying to make

are based on Juergens',

Ralph Juergens' work

and also on something that I came up with

and presented 3, 4 years ago called,

I call it the transistor model

of the sun because the sun..

we'll talk about in a minute.

But sun surface works very analogously

to the way a PNP transistor works.

And we'll see that in..

briefly at least.

Anyway, again to state the obvious, we all probably know that the major three layers on the Sun that are important, and as you, if you come toward the Sun in the order in which you see them, would be the corona, the chromosphere and the photosphere.

Now the corona is perhaps the most beautiful thing in the sky.

It is this colorful, it's..

those are of course the same colors that we see in the Aurora.

And why, because

it's the same thing.

It is plasma in the glow mode.

And it is the same sort of

stuff, helium, hydrogen..

mostly hydrogen,

excited electrically.

Again, everything I say please ask

yourself while I'm saying it,

how does the.. how does the

standard model explain this?

The standard model has no explanation for

why a corona exists in the first place!

If.. if the Sun is just a nuclear
furnace like a wood stove..

My wood stove doesn't
glow like that!

And so clearly, everything that we
observe around the surface of the sun,
including the corona, is
electrical in nature.

Hm.. one other comment
and that is that
you can't see anything in the
night sky that isn't plasma.

"Oh yeah, I can see the Moon!"

But of course the moon is reflected
sunlight and sunlight is plasma.

The Sun, well all of
light that we see

if you look at Jupiter through a
telescope or Saturn or any other planet,
you're seeing reflected
plasma light

and the, we'll talk about the photosphere and
where that light comes from in a minute.

But the corona is pretty big thing,
it extends out about 3 solar radii.

If you look at half the

width of that disk

and then the 123, it takes you out

about the corner of that picture.

And you can see, that's about

the extent of the corona.

So it's large.

The Sun is what, 865 thousand

kilometers across, something like that?

The chromosphere, the second layer

going in, contains these spicules.

Spicules.. we've all heard,

you know, the pines of Rome..

Spicules are the

fountains of the Sun.

Not the fountains of Rome.

But anyway, they have

certain characteristics.

The spicules are really

towering fountains of electrons

that come up out of the Sun and then

back into the Sun again immediately

if our assumption is correct.

Juergens' assumption that the

Sun has a positive charge.

Those electrons once spewed are very

quickly brought back into the Sun again.

That's what the spicules are.

The photosphere is

where the action is

and that's what we're going

to be talking about mostly.

The, the photosphere

consists of these things

that the astronomers called

photospheric granules.

More proper name for

them is anode tufts.

The anode tufts consist

of plasma in the arc mode

and I've heard all

sorts, even my,

one of my good friends thinks the Sun

is liquid hydrogen or something..

It better be pretty

hot liquid because

plasma in the arc mode puts out

a horrific amount of power.

And as a matter of fact, but

I should say this, those

those granules come and

go with time, they grow,

they get bright and they

shrink and they go away.

The power put out by the

Sun is really fantastic.

That is to say, the the

radiation from the sun,

every square inch of the sun's surface

on average puts out 42,000 wats.

If you can think of what

about a square mile..

That's.. it's not, it's not boiling

anything, it's arc mode plasma.

The temperature of those

granular granules or tufts

is about 6000 Kelvin,

which is pretty..

you wouldn't want to spend your summer

vacation there but it's in relation to the..

to the temperature

of the lower corona,

which is 2 million Kelvin, it's

not, it's a medium temperature.

Anyway, the, there's a

picture of the granules.

That's a movie.

If you look at it very carefully

you can see it moving.

It's a real time motion

picture of the granules.

If you keep your eye on

one, especially near the..

I think that white stuff in the center is

a bunch of spicules coming up through..

I don't know, but I think

that's what it is.

And you see the they're, they're

all over the place let's see.

There's some down here,

there's some over here,

up here and of course a

bunch of them here..

If you keep your eyes on the

granules themselves, you see

them shrinking away to nothing

and the question is,

why do they do that?

Well, there's a typical

sunspot and you might say,

well what's a sunspot?

Sunspots are where the

photospheric tufts are not.

It's a region where the

photospheric tufts don't exist.

And so there's been a good deal of work
done on the laboratory on anode tufts
and we'll talk some about that.

The main, well, focus, I would say, of
Juergens' sun model is an anode tuft.

How does the anode tuft work?

That's one of the things I'd like
to spend some time on this morning.

There is of course the penumbra, that's
that orange ring that you can see.

The dark inner area
is called the umbra
and the temperatures in the
umbra have been measured, well,
just something in
worth of 3000 Kelvin.

So the umbra obviously is much
cooler than the normal spots,
I'm sorry, the normal tufts which are the the
yellow region around the outside there.

Anyway, I said that Monty had sent me some
interesting pictures from from SAFIRE.

There is one.

Now the, the purple wine glass
in the back is not real.

Monty has not been drinking, that's

just an aberration of the photograph.

This was taken

inside a bell jar.

And he has managed, he and his team have
managed to actually create anode tufts.

The center / bright purple
thing is a spherical halo,
it's distorted some by the
shape of the bell jar.

It's pretty spherical
and it's the anode
and riding on top of that
anode are anode tufts.

And so, the major property
of these anode Tufts
is that they're made up
of positive charges.

And as such, you can think to yourself,
just basic knowledge of electricity..

If those things are each one
a group of positive charges
then they don't like each other.

They're going to be
repelling each other
and so you see they're quite evenly
spaced over the surface of the sphere.

And as you'll see in a minute
when Monty increases the current
he increases the number of tufts and he
increases the brightness of the tufts
and finally they turn into
something in the arc mode
just like we see on the
surface of the Sun.

So the, as I said before,
I think I said before,
the main basis of the
of the Juergens model
is an analysis of those tufts
so we're going to be thinking of travelling
in a line, if you can visualize,
from the purple surface there,
the surface of the anode,
up through the tuft and
then out beyond the tuft.

And let's think what, what
would we expect to see there.
I'll tell you what Juergens expected to
see there and I think it's exactly what
Monty is seeing and is going to
see in the SAFIRE experiment.

Anyway, Juergens' electric

sun model and there it is,
you've seen that picture many times,
every time I talk, I think I show it.

It's fairly complicated but let's take
it one step at a time and I think,
I think you can see
what I'm saying.

The upper one of the three
graphs there is a plot..
well on all three of them the
horizontal axis is the radial distance,
up from the surface of the sun, up through
the tuft and out into the corona.

The top graph plots the
voltage that you would see
if you had a voltmeter in your hand and
could have a ground someplace out in space
and look at the various, the
voltage, the voltage varies
as you come up out of the Sun through the
tuft and then out the top of the tuft.

On the left-hand margin of
the left-hand axis there,
the vertical axis that's labeled
energy per unit charge, that's volts.

Energy, that's what voltage is.

A positive charge
has more energy
if it's at a high voltage then
if it's at a low-voltage.

The analogy is, that's the cross-section
of a mountain and the positive charge,
the analogy there
is a tennis ball.

So suppose you threw a
tennis ball on top of the..

I'm sorry didn't I got ahead of myself here,
no i didn't, I'm sorry, this is fine.

I'm looking at the next slide.

I'm cheating on you guys.

The tennis ball thrown on
the top of the photosphere,
well if you throw a

bunch of them there
and they begin to have a
sort of a billiard game
at the top on that horizontal
surface of the photosphere,
if one of the tennis balls
goes too far to the left,
that is to say between
the axis and point A,

it will roll off down the hill

with increasing velocity.

Same thing if one gets

bounced over beyond point B.

Can you see point B there?

And gets onto that ski jump that

I've labeled the chromosphere.

It will accelerate

off to the right.

The second plot, the middle plot there

if you can read it, the axis says,

the outward electrical field

which is force per unit charge

labeled in Volts per meter.

So the electric field, for those of

you who have learned any physics,

is the negative of the gradient of

the voltage, what I mean by that.

Well look at the voltage

and if it's sloping,

if it's going down that's a negative

slope like in the chromosphere.

That means that the electric field

to produce that is positive,

it's the negative of

what the slope does.

So we're, say, if you start at the vertical axis of the the upper plot, you can see that the voltage is increasing as you move from the axis to point A.

So, the voltage in the middle of the tuft is the highest voltage that you're going to see in this whole area.

And to get up there, to get that positive slope on the voltage, the electric field is, is negative.

Now it's, it's more negative right at the axis because the voltage curve is steepest there.

I don't know if you.. if you don't follow me don't worry about it, if you do you see what I'm talking about.

At the top of the photosphere where the voltage curve is flat there is no electric field, there is no force on the tennis ball pushing him one way or the other.

But if the tennis ball, i.e.

the positive charge,

gets over beyond point B,

there is a positive volt..

positive electric field and that will

tend to accelerate it toward the right.

The bottom curve is nothing

but the resulting velocity.

So clearly, once you get..

think of all three plots,

if you get at the point B

and slightly to the

right of point B,

the force is positive,

outer force is positive.

The electric field is positive

and getting bigger and the,

and the force is maximum

where the slope is steepest.

The skier is accelerating most rapidly

at the steepest part of the ski jump.

And so the voltage, I'm

sorry, the velocity

- the bottom curve, is

continuing to increase it in..

the increase in velocity, the

acceleration, is maximum at Point C.

Once you get beyond point D, there's

no more force on the skier,

the tennis ball or the positive ion

and so the velocity is constant.

But it's moving. It's fast.

Instead of talking about analogies

let me say it straight out.

A positive ion is accelerated

by a voltage drop.

The higher the voltage drop, the

higher the resulting velocity.

It's like saying, if you

drop a rock from a height,

to drop it from one foot it will get to a

certain velocity when it hits the floor,

if you drop it from 10

feet it's going faster.

OK, that's all of this.

The red marking there

on the lower curve

just talks about the region of

turbulence and that is as these,

as this stream of ions goes out into the

lower corona, there are some collisions.

Collisions mean, that's

what temperature is, right?

Most people, I think the
average person at least,
has a very poor idea about
what's a temperature.

I know it's hot outside

but how, what is it?

It's a measure of the
vibration of the atoms

in the stuff that you're talking
about the temperature of.

What's the temperature in space?

There's no temperature in space
unless you're in a cloud of stuff.

You have, you have to talk
about the temperature of
whatever it is

you're dealing with.

Lastly, in the in the central curve
there, the electric field curve,
you'll see there's some blue areas
and some salmon colored areas.

This is strictly from
Maxwell's equations.

If you're going to have an
increasing electric field,

doesn't make any difference what
the sign of the electric field is,
if it's negative or positive,
makes no difference.

If the electric field is increasing,
you're in a region of plus charge
and you can see that's what
happens there right next to the,
the vertical axis
in the middle plot.

So, that's the
positive charge layer.

Where the photosphere, the
voltage is not changing,
there is no electric field
so there is no charge.

And the little triangle out around,
between points B, C and D,
the electric field is at first
increasing and then decreasing,
always in the same direction.

The outward force is
still positive outward
but that force is increasing for a while and
then decreasing for a while back to zero.

That's the famous double layer.

You're going to hear people in
here talk about double layers.

Hannes Alfven was famous for
double layers, Irving Langmuir
got the Nobel Prize for his
work with double layers.

That's a double layer!

That's all it is,
that is what it is.

Why don't those positive
charges and negative charges
come together and
neutralize each other?

Why do they stay separate?

Irving Langmuir found out.

That's why he got
the Nobel Prize.

There has to be a continual
current through that double layer
in order to keep it stable.

And the reason that the spicules
pull, fountain those electrons
up through the chromosphere
is so that they can come back and
satisfy Langmuir's requirement
that that double layer has to

have electrons and positive ions.

So it all seems to work.

Langmuir's work, the double layer, Hannes

Alfven's work and now Juergens' work.

All works the way it does and

it's, it all, it all correlates.

Anyway I'd like to show you this,

courtesy of Monty, this short video clip.

The first thing you're going

to see is a set of anode tufts

under very low

current excitation

and then the currents going

to increase in strength

and the plasma tufts are going

to go into the arc mode..

You'll see the photosphere,

there they are.

They don't like each other.

It's like a bunch of Kabuki

Warriors pushing each other away.

They're both, they're all

positive and they're all

looking for advantage

and not finding any.

You might hear Monty's voice in the

background if they have the audio on..

There's this increase

of the current.

The tufts have begun to go

into that's, I know the word,

it is a high glow mode or..

That's arc mode.

You can see now, it's a better model

that you can see the sun spots,

sunspots are where

there are no tufts.

There's something that, he's got the excitation

such that it looks like the chromosphere.

That little black thing in the bottom, I

guess, Michael can tell me what it is.

Is this a spectroscopic probe

or it's a probe of some sort?

There's the corona.

The ring around the

outside is the cathode.

And, of course, in the model, in the

SAFIRE model, you need a cathode.

But in real space of course there is a

cathode, there is a virtual cathode.

But there's the, the corona.

The reason, the reason that the corona

there looks like it's only on one side
is because the, the anode
is closer to the cathode
on that spot where
you get the corona.

If they were equally spaced you'd
see the corona all the way around.

Sorry for the hooky ending,
that's a, that's what

Stanley Kubrick used,
it's the end of 2001

The Space Odyssey,
but I really do believe that
that's, it is the beginning.

Okay, down to business.

There are two different types
of solar wind and this diagram,
it looks complicated as all get-out
but it's not, it's very simple.

It, forget the nice
picture of the Sun.

Just, it's there for eyewash.

This is a radial graph.

The farther out you
get from the center,

it talks about the

velocity of the solar wind

so you can see that at latitudes,

of, higher than 30 or so degrees

and actually lower than

negative 30 degrees,

the maximum velocity

of the solar wind

is somewhere around 800

kilometers per second.

Maybe they're here, it's more like

600, they say it's about 800.

In the equatorial plane of the Sun you

notice that the diagram sort of collapses,

the maximum speed of solar

wind is low, it's about 400.

This is a picture obviously, look at the

upper left, from Ulysses, the Ulysses probe

- SWOOPS, that stands for "Solar Wind

Observation over the Poles of the Sun".

You're kidding?

They didn't get over the poles!

You see the diagram stops there, they

don't know what's going on up there.

But they did get to

about 85 degrees or so.

But Ulysses, when it got to 85

degrees, it was way out beyond Jupiter

so this is not a

closed-in measurement.

And what is, the plot here is what they

measure at about one astronomical unit,

which is where we are.

On the upper pole,

what Ben was saying,

the the upper half of this

is sort of tinged in red

and the lower half

is tinged in blue

and you notice on the lower

left it says, the outward IMF.

Outward Interplanetary

Magnetic Field

is coming from the north

at this, at this point,

and then back in to the

southern hemisphere.

But that's from NASA.

Anyway, the fast solar wind

comes from normal regions

from higher solar latitudes.

This is where we begin to divide into

two different kinds of solar winds.

A fast wind is one that comes from
the, not in the equatorial region,
and it gets up to about 800
kilometers per second.

The, it comes from normal
regions, that is to say,
it comes out of the tops of the solar,
of the photo.. photospheric tufts.

Out of the, out of
the anode tufts.

The slow solar wind comes from
active regions on the Sun's surface,
in other words sun spots.

Sunspots mainly are, they wander all over
the place but they're very often in,
generally in the what you'd say
the tropical zone of the Sun.

The near, near the equator.

So just to state it succinctly,
the fast solar wind emanates from regions
on the Sun where there are no sunspots,
generally at more than
20 degrees latitude.

And it comes out of the tops
of the photospheric tufts.

It approaches 800

kilometers per second

and it gets to that maximum

at about nine radii.

It's not too far out.

I used to think it

accelerated beyond Jupiter.

It doesn't, not too much anyway.

Another interesting thing is, it's

less dense, it carries fewer ions

than the slow solar wind.

So it goes faster but it carries, it's

less dense, it carries less stuff.

Question is why?

Well, I would suggest,

this is the reason why.

There's that first

voltage curve again

and the purple is an area where there are

excited ions trying to leave the Sun.

Sun, remember, is positive, positive ions

don't like that, so they're out of here.

It's kind of like the cross-section

of a dam at the end of a reservoir.

The reservoir is the purple

area in the upper left

and so you can, I think

you can visualize that if
the most excitable, the most
excited, the most energetic
positive ion in that distance, in
that, close to the surface area,
is just higher than the voltage
of the photospheric tuft,
some of those positive ions can trickle
over the top of the dam, if you will,
and just down the.. get accelerated
down through the corona,
down through the chromosphere
into the lower corona.

It's sort of reasonable that there
wouldn't be too much density in that.
It doesn't, not too many of these guys
are able to make it over the top.

So although they drop far and they're going
like crazy when they hit the bottom,
there are not too many of them.

Because not many of them are able
to get over the top of the tuft.

So that's the reason why the fast solar
wind is fast but it's less dense,
at least that's what the
Juergens' model says.

There's a sort of analogy.

That's Hoover Dam or part
of its associated dams.

The Hoover Dam is
up the road there.

A high-velocity,
low-density flow.

The water, not much water,
gets over the dam there.

Even less would get over if you
raised that wall a little bit
and that's my solar
transistor model.

This is kind of like the,
emitter, the base and the
collector of a PNP transistor.

If you raise the voltage on the
base you cut off the current.

So again, the velocity is
high but the density is low.

There is some turbulence
at the bottom

but it's intentional in
this hydraulic analogy.

You can see they put
rocks along the bottom.

They're trying to aerate the
water before it gets past.

If you could take those rocks away and
make that a nice smooth concrete surface,
there wouldn't be any..
that would minimize the
turbulence anyway.

How about the slow solar wind?

It emanates from the equatorial
region mainly, from sunspots.

The maximum velocity is about
400 kilometers per second
and the ion density is more than 3
times denser than the fast solar wind.

OK, so the slow
solar wind is slow
but it's got a lot
of stuff in it.

My, sort of my thought analysis,
my memory crutch on this
is that the fast solar
wind is like a sports car.

Goes like hell but it doesn't have
much space for the groceries.

The slow solar wind's
like a dumptruck.

Goes slowly but boy

can it carry stuff!

So, the ion density is more than 3
times denser than the fast solar wind.

So again the question is, why?

Well, is there an
analogy for this one?

Well, remember we said that
the slow solar wind emanates
from regions where there
are lots of sunspots.

What's a sunspot?

Sunspot is a place where
there aren't any tufts.

The dam is gone.

Somebody put a hole in the dike
and there's nothing
to prevent the water.

I used a, I'll show you a slide
in a minute, that I used to show
this hydraulic analogy of the slow
solar wind and I chose a bad one.

The real analogy for
the slow solar wind,
and if I've done it right I would have
gotten a photograph of the Mississippi River

right after Hurricane

Katrina busted the dike.

So that the water in the

Mississippi isn't much higher,

that's what, 8 feet or so

higher than the ground

outside and when you break the

dike, the water, the voltage drop,

the hydrostatic head, if you

wish, is not very high.

So there's no really high velocity

but when that Dyke breaks,

wow is there a flow.

So it's again, the slow solar wind is a

region of high density, low velocity flow.

It's like a broken dike.

Anyway, that's another movie

and I've heard people decry

that that cannot happen;

"Is that what you're seeing, don't

believe your lying eyes, believe me.

I'm gonna tell you

what happened."

No, that's what really

happens and that's a picture

of what the penumbral

filaments look like.

And it's kind of

interesting that..

I maintain and you

think of it yourself,

the umbra is a place where

there aren't any any tufts.

So if you look at a cross section

of this thing, you can see tufts,

tufts, tufts, tufts, tufts, they're

all pushing on each other, you know,

the samurai warriors, they

don't like each other..

But when it comes to the edge of the

place where there aren't any tufts,

these guys don't have anything to

hold them back so they fall in.

And you can see

that's happening.

The reason I say you can see it

happen is, concentrate on the,

on the circular ring right on

the outside of the penumbra,

right between the yellow and the,

what-is-it, ochre colored areas.

You can see that the regular

tufts, the yellow area,
right near where the tufts are
breaking away, are going outward.

Can you see that?

When the tufts in the
penumbra are going inward.

Sure they hate each other, they're both
positive, groups of positive charges.

They're elbowing each other and so when
the group that is not being held back
by anything and just falls off,
when it starts to flow, to move,
it's still pushing
on the other guys.

The space is opening up and so
some fall in and some fall away.

So there's, I think that that is
proof, the fact that the yellow ones
actually move outward while the
other ones are moving inward
when space opens up for
them to be able to move,
shows that what you're seeing
is an electric reaction.

It's not a gravitational
reaction,

at least I maintain it's not.

The analogy, of course, is
the calving of icebergs.

You get a glacier and you got the ocean
or whatever that water is out there
and these things eventually
break loose and fall in.

In this case this guy that's falling
in, the process of falling in,
is not pushing on anything.

So there's no tendency for the tufts,
if you will, the potential icebergs
there in the wall of the glacier, there's
no tendency for them to move away.

Because nothing is
pushing on them.

Only gravity is pulling the
one down that's falling in.

This is not the case, so
this is a partial analogy.

It is sort of like, makes you think
about what is happening on the Sun.

But on the Sun, this guy that's falling
is pushing back like crazy on the one
that he just came away
from and he's moving back.

Here's again that picture and this

is what I claim is happening.

Just look at the red dot,

dotted line there for a second.

The voltage V_2 , the higher voltage is the

voltage of the, of the photospheric tuft.

V_1 is the voltage of the umbra.

And ions in the umbra look up

and they don't see anything.

They just ... it's outer space

out there, that's the corona.

So they tend to fall

along that dotted path,

the dashed red curve is a voltage

profile taken up through an umbra.

And how many of them are there?

Zillions!

Because there's a lot of positive ions

inside the Sun that would love to get out

and the only reason they can't all get

out is because in a lot of there is the,

the photosphere granules

that the dam stops them.

But at an Umbra there

is no dam wall.

That's d.a.m.

So they flood out voluminosly but they
don't fall from such a high height.

They fall from V1 out to the low
voltage of the solar.. of the corona.

Whereas the fast solar wind
ions that come over the top,
they leak over the top of the dam and
go all the way down in front of it.

They fall from voltage V2 so the fast
solar wind comes over the top of the dam,
screams down that cor.. chromosphere, ski
jump if you will and fly out the bottom.

The slow solar wind,
many more of them
because they don't have to
just trickle over the top.

They just go.

So the slow solar wind
has a lot of ions in it
but they're not going as fast
cause they don't drop as far.

There is a side
view of a sunspot.

What you're seeing of course,
if you listen to mainstream
astronomers they say;

"Well that's a magnetic field!"

That's not the magnetic

field, that's plasma!

You don't see magnetic fields,

magnetic fields are invisible.

So are electric fields,

they're invisible too.

But plasma, no,

you can see that,

and so you you're seeing there

the side view of a sunspot

and the plasma is pouring

up out of that sun spot.

Over on the edge, on the lower right,

that's where, that's a normal tufts.

Here are they.

Stuff is still coming out

but much less of it.

So that's the reason why there's the

slow, the voluminous slow solar wind

and the very fast but not very

voluminous fast solar wind.

There's the slide I wish

i didn't put in there.

I should have shown a

picture of a broken dike.

This is an interesting thing.

This is the reversing falls.

I think it's a

national monument.

Does anybody know where it is?

I think it's up in Montana or

maybe Idaho, I'm not sure.

But this is a, it's not a man-made

thing, it's a natural thing.

It's the reversing falls and it converts a

fraction of, or all, of the kinetic energy

that's coming down from the upper

left, into potential energy.

In other words it it's

coming down from the

upper left as a rather

large volume of water.

When it hits this stagnant, stable,

placid pond into which this thing flows,

there's a collision of

those atoms of water.

Then there is, there's

a turbulence.

The electrical analogy of course is that

you've got a high-current coming down

hitting a place where

there are static ions.

And there's a collision

and the kinetic energy

is turned back into potential

energy, higher voltage.

And so what you get,

the electrical analogy of that

turbulent high bunch of water

is a concentration of positive ions

right at the bottom of the ski-jump.

A concentration of positive ions is a

good place for an E-field to begin

and that E-field, I claim, is

what accelerates the solar wind.

Here's a sort of a wrap-up slide

that shows, it shows it all.

You can see the photosphere, you can

see the sun spots there to the center,

to right of center..

And then coming out of that is a

tremendous flow of slow solar wind.

At the chromosphere, there's collisions with

the stable static ions in the chromosphere

and in the corona even more so.

To the, to the left, so the

middle left of the corona

you see one of the
famous coronal holes.
Coronal holes hooo, mystery.
There's nothing mysterious
about a coronal hole at all.
It's just above one
of the normal posit..
normal places on the,
on the photosphere.
It's, the coronal hole is not
where there's sun spots.
That's all it really is.
And so, what comes out
of the coronal hole?
The fast solar wind!
Sure, where is it coming from?
It's coming from the tufts
in the photosphere.
So it all makes sense.
It's elegantly simple.
Here is, I have to put this
in because I think it's a,
it really says what
I'd like to say.
This is by R.R. Grail,
he's a very well-known

or was a very well known

solar astronomer.

He said; "Our results in

measuring the solar wind

indicate that the acceleration of the solar

wind is almost complete by ten solar radii,

much closer to the Sun than had

been expected." Okay, good.

"This suggests that the

acceleration of the solar wind

and the heating of the solar corona

occur in essentially the same region

and thus that the underlying

mechanisms may be strongly linked.

They're not strongly linked,

it's the same thing!

It's the same mechanism, there's only

one mechanism and that's what does it.

Juergens' model says it all.

And all of these properties of the fast solar

wind, the slow solar wind, the densities..

are all explained by..

OK, one sort of just,

I would call it a technical slide

but it's, it's the statistics.

What they say, statistics don't

lie but statisticians do.

Here's the statistics

so they don't lie.

The two columns are; one for the slow solar wind and one for the fast solar wind.

The first line is the flow speed.

And you're talking about the velocity of protons, V_P .

And so the slow solar wind's highest velocity is around 400 kilometers per second, by fast solar wind it's about 800.

I hope you guys in the back can read this.

The proton density however, in the slow solar wind, is 10.7 per cubic centimeter.

In the fast solar wind it's 3.

So the fast solar wind is, contains one-third less than the slow solar wind.

The proton temperature is, if you go down there, it's a 2.3×10^5 .

It looks like you're comparing 2.3×10^5 to 3.4×10^4 but you're not.

3.4×10^4 is multiplied by 10 to the fourth so it's kind of like comparing 3.4×10^4 to 23.

OK, so the fast solar wind,
that proton temperature is
much higher than the
slow solar wind, why?

Because it's been through the mixmaster,
it's been through the ski jump.

Then look at, and this is the last
thing I will look at this page,
the electron temperature.

It's just the opposite.

The electron temperature is 1.3 in the
solar wind and 1.0 in the fast wind.

So the electrons don't
take part in this.

Why?

Because the electrons don't go over
the hill, they don't get excited.

That hill is a hill
only for positive ions.

If you want to know what happens to
electrons, you have to take that
cross-section of the of the
dam and turn it upside down.

If you turn it upside down
it looks like a saucepan.

So if electrons are coming into

the Sun from the lower corona,

they collect in the saucepan.

What's the saucepan?

It's the photospheric tuft.

The electrons come pouring in, happy as

larks, because they're coming downhill,

"yeah here we are we're going

to collect in the pan"

and they build up and build up more and

more electrons and finally what do they do?

They neutralize the positive charges

and they kill the photospheric tuft.

That's why the photospheric

tufts disappear.

They fill up with

incoming electrons.

Anyway there's more I can say about that

but I'm running out of the time here.

The only quantitatively

determined force

capable of achieving a fast solar wind

acceleration is the electric force.

And I did some work on this.

I won't bore you with

the mathematics but

I simply would say that my

final result is step 3 there.

I've derived the electric field strength necessary to accelerate the fast solar wind to 800 kilometers per second.

All sorts of people have tried to do that and have failed to come up with a mechanism.

Remember, the corona is a non collisional corona.

It's non-collisional plasma.

They don't bounce off each other, they just increase in velocity.

And if you put a positive ion in an electric field, it will do just that.

Well how strong this electric field have to be?

There is the answer, less than seven tenths of a micro volt per meter.

At a distance of about three solar radii, the end of the corona.

Seven-tenths of a micro volt per meter.

Monty, that's your next job.

Find out whether or not a glow mode plasma can support

an electric field of seven tenths

of a micro volt per meter.

If it can, that's the answer.

OK

There's the advertisement.

That's my website.

If you go to electric-cosmos.org,

you'll get that.

The stuff in white at the lower right hand

is a, you can, they are clickable links

and if you're interested in the gory

details of the mathematics involved

in both, the first one is the Birkeland

Current thing that I presented last year..

The second one is the solar

surface transistor action

that says what happens if you

raise or lower the dam and

and, can you curtail

the fast solar wind..

Yeah, you can cut it off!

Just like cutting off a transistor,

the solar wind stopped for two days,

back about six or

eight years ago.

The third one is what I'm talking about

now, the solar wind acceleration.

So anyway, I won't

bore you further.

Juergens' electric sun model explains

why the plasma corona exists

and explains the

temperature profile

and I submit that my,

what I've just told you,

the photospheric tufts are

variable electrical barriers

for positive ions attempting

to escape from the Sun..

Explains why there are two very different

solar winds, one fast and one slow,

why the fast wind is faster

and the slow wind is slower,

why the electron temperature

is the same in both.

Because the electrons don't go through

that process, they're just there.

And besides, on the average

they're coming in.

Not that some don't

leave, they do.

But they're not affected by

that, the shoot to shoot,

the ski jump and all the rest of that

stuff that the positive ions are.

And it explains why tufts go away,

because they fill up full of electrons..

And why the first solar wind

comes out of coronal holes..

And the stretching of sunspot

penumbra is electrical.

Anyway, I think that only the

electric sun model can explain this.

Thank you!

[Music]

We previously developed the criteria for model revolution, drawing on Thomas Kuhn's paradigm shift cycle, and explored whether any cosmological models, including the Electric Universe, meet these new criteria. Now, let's take a deeper look at the distinction between the Standard Model and the EU model, as we continue on the path to the next model of cosmology.

Implied by the major differences between the two models, is a difference in world view. According to Thornhill, Electric Universe proponents believe in a resonantly connected Universe which is self-organizing and where entropy can decrease. In the EU worldview, quote, "The whole is greater than the sum of the parts. The Universe is consciousness-filled... with instantaneous information transfer via resonant connection." End quote.

Overall, the EU worldview highlights and emphasizes cosmic connectivity.

While the Standard Model does not have a formally articulated or expressed world view, the EU infers from what the Standard

Model says and, more importantly, what it is silent on, a worldview that is quote, "Disconnected, random, chaotic unconscious, purposeless, with ever increasing entropy." End quote. A world view that is very much in contrast with that of the EU model. Given their differences, Standard Model scientists and EU scientists are living in two different and incompatible worlds. As mentioned earlier, a change of paradigm is ultimately a change of worldview. As noted in "The Structure Of Scientific Revolutions," quote, "Though the world does not change with a change of paradigm, the scientist afterward works in a different world.... Rather than being an interpreter, the scientist who embraces a new paradigm is like the man wearing inverting lenses. Confronting the same constellation of objects as before, and knowing that he does so, he nevertheless finds them transformed through... and through..." End quote. From this statement, we can conclude that a change of paradigm will upset the scientists' worldview and field of study,

turning them on their head. In light of this, let's look at how proponents of the Standard Model have reacted to the Electric Universe.

For a long time, mainstream or dominant science responded as one might expect. Once science becomes institutionalized and entrenched, it tends to function much like other dominant institutions in that it is dogmatic, and unyielding to falsification or change.

For years, mainstream scientists have ignored, dismissed and/or mocked the EU model. For instance, why isn't anyone seriously challenging the Big Bang?

Mainstream astrophysicist Ethan Siegel dismisses the EU model and lumps it in with what he describes as absurd hypotheses held by quote "... crackpots and a few fringe contrarians." End quote. He also claims that the EU model is not to be taken seriously and that its predictions are, quote, "...in absurd conflict with observations of the Big Bang." This is ironic, given the EU's claim of a history of accurate predictions. According to Wal Thornhill, examples include

1. That solar radiant energy is due largely

to transmutation of elements in the electrically active solar plasma, which was confirmed by an independent SAFIRE experiment in 2019.

2. The electrical “flash” discharge preceding the impact of a copper projectile on

Comet Temple One. 3. That the surface of

Saturn's moon Titan has distinctive

lightning scars - called Lichtenberg

patterns - with virtually no large craters.

4. Successful predictions about what would be found at the heliopause.

and 5. Successful predictions about the heat from Saturn's north pole.

These predictions notwithstanding however, it is not surprising that the Standard Model would dismiss the EU, especially given what Kuhn says about incommensurability.

In the course of a paradigm shift, new ideas and assertions cannot be strictly compared to, or judged by, those of the old model.

Especially since the two models will have no common measure. From the perspective of my own field, Critical Discourse Analysis, judging the EU model by the existing model standards and/or categorizing it as a model that is not to be taken seriously, are prime

examples of how language is linked to power.

In CDA, power is understood in broader symbolic terms, including the power to represent someone or something in a certain way. For CDA, quote, "...language.... is not simply a tool of communication, but a means by which people demonstrate their commitment, in one way or another, to certain ideologies or dogmas." End quote.

From this perspective, language is always about power and control and is never arbitrary.

With respect to science, those working within a model that is as deeply entrenched and as heavily funded as the current Standard Model, ultimately you have the power to define and control the very discourse around cosmology, including what is acceptable, or not to be taken seriously. Given the careers and funding at stake, and given the power it has to define and shape the discourse, it is not surprising that mainstream science and cosmology would dismiss or mock, any truly alternative model that threatens or undermines it. Moreover, once this becomes the official discourse on

cosmology, i.e that the Standard Model is acceptable and alternative models that deviate from it, unacceptable, it functions as a form of neuro-linguistic programming that ultimately signals to the broader population how they should think about cosmology. Ironically however, it is the very resistance to new ideas that eventually forces institutionalized science to change.

By resisting novelty, normal science, or dominant science, prepares the way for its own change, not least because crises that are left unresolved eventually force individuals, including scientists working within the existing model, to look elsewhere for new and better answers and explanations. It must be stressed that this entails fully abandoning the existing broken model. New models demand the destruction of the old paradigm.

In a scientific revolution, the new paradigm does not simply revise the old model, it replaces it.

Now, while mainstream science has typically ignored or dismissed the EU model, more recently there has been what I describe as Electric Universe adjacent language in the mainstream.

Examples include the following titles. -- How

Magnetism Shapes the Universe - PBS Spacetime;

-- The magnetic field in the Milky Way

filamentary bone G47 - phys.org;

-- Juno and Hubble data reveal

electromagnetic 'tug-of-war' lights up

Jupiter's upper atmosphere - phys.org

again; and -- Astronomers discover

1,000 strange 'filaments' of radio energy

bursting from the galaxy's center -

Live Science. From the titles alone, we

can see that this language is different

and uncharacteristic from what's been

typically reported by the mainstream in

the past and appears to be more closely

aligned with the discourse of

electromagnetism. One title even mentions

filaments and while two of the titles

deal exclusively with magnetism,

according to the EU model, it is

meaningless to talk about magnetism without

also considering the electric force.

So, what might this recent change in

mainstream discourse foretell? While it

is too early to say for sure, one

possibility is that more advanced

technology, with more sophisticated

probes, will make it increasingly impossible to deny the role of electricity in space. Thornhill notes that the Electric Universe paradigm has an unparalleled record of successful predictions in the space age. He expects that this will continue and that images and findings from the new James Webb Space Telescope will further support the predictions of the Electric Universe.

Given the recent additions to their lexicon, can proponents of the Standard Model be preparing to get ahead of the curve, and make room in their discourse for electromagnetism and cosmic electrical forces, all the while maintaining their authority? In other words, could they be preparing to include electricity as an add-on or an extension? Will we suddenly be reading about e-gravity for instance?

Kuhn's framework and everything discussed so far, clearly demonstrate that this is not sustainable in the long run.

Mixing incommensurate models with fundamentally different paradigmatic languages, would only hurt science and could not be considered a true paradigm

shift, or scientific revolution.

Due to their fundamental differences, the Electric Universe model and the Standard Model cannot coexist in the same paradigm. They are too different.

As Mel Acheson aptly maintains, trying to add the Electric Universe as an extension to the Standard Model would simply muddy the waters.

Given everything we know about the paradigm shift process, including Kuhn's clearly articulated criteria for a model revolution stage, we must conclude that the future of cosmology cannot, and will not, be an ad hoc revision to the Standard Model.

On the contrary, due to the very nature and definition of a scientific revolution, the only way forward is a truly alternative cosmological model with a radically different paradigmatic language and world view.

Could this be the Electric Universe model of cosmology? Time will tell.

[Music]

welcome to the thunderbolts.info podcast
for december 6 2012.

we bring you all the latest news
information and analysis from the
electric universe
shedding new light on the many mysteries
that dark theories have yet to
illuminate

one of the hottest trending news items
in the last week was the anticipated
announcement from nasa of a purported
discovery of historic proportions by the
mars rover curiosity i can tell you in
all honesty that we at the thunderbolts
project were not surprised that this
supposed historic revelation turned out
to be a vast disappointment perhaps for
millions of people around the world
we're now being told that it was all
just a big misunderstanding due to some
miscommunication between curiosity's
chief scientist and a journalist with
npr

but the truth of the matter is that we
have no shortage of incredibly exciting
and thought-provoking mysteries

surrounding mars and the nasa rovers in fact when we scrutinize each of these mysteries it becomes readily apparent that the most exciting discoveries on mars are not even on the table for discussion among nasa scientists at least not in any public statements so what we're going to be doing over the next month or so on the thunderbolts youtube channel is flashing back to the most fascinating and enduring recent mysteries surrounding nasa's investigations into the red planet now today we're going to be talking about an ongoing anomaly that truly is one of the great mysteries in mars exploration in january of 2004 the mars rover's spirit and opportunity arrived on mars about three weeks apart each of these rovers was given an anticipated lifespan of 90 days but for reasons that no one at nasa has satisfactorily explained almost nine years later the rover opportunity is still alive and transmitting information to scientists

on earth the rover spirit eventually
died around 2010
but only after being ensnared by sandy
soil in a martian crater
how on earth could two rovers that were
given lifespans of 90 days stay alive
for so many years now the scientific
explanation for this ongoing mystery is
at least from our perspective
incontrovertible and it provides
powerful verification of the electrical
martian environment and the environments
of all the planets that reside within
the sun's electrical domain

i'm going to bring david talbot onto the
line now

david is of course the director of the
thunderbolts project he is co-author of
thunderbolts of the gods and the
electric universe and he has handled the
enormous task of organizing the
forthcoming conference the tipping point
from january 3rd to 6th in albuquerque
new mexico and david is going to be with
us for a series of discussions over the
next month devoted to unraveling a

number of the ongoing martian mysteries
that to date nasa scientists have been
unable to resolve

david talbot welcome to the show today

yes greetings michael now david as i

said we're flashing back to january of

2004 and i know that when the rovers

first arrived on mars there wasn't

anything

particularly mysterious about their

missions but then events began to unfold

and nasa scientists really had to

struggle and in fact they still struggle

today to provide any satisfying

explanation why don't you take us back

to the moment

when the mystery began to unfold that

today nasa scientists are still

scratching their heads in truth trying

to figure out

it was in january 2004

that the two rovers dropped onto the

planet mars

and began a project or an exploration of

the surface that was envisioned to last

some three months or 90 days now the

reason for the short lived anticipated project was the incredibly dusty atmosphere of mars this is an interesting mystery in itself because the martian atmosphere is 0.008 as dense as the earth's atmosphere so just the fact of such a dense presence of dust in the martian atmosphere is itself a great uh enigma for planetary scientists but accumulation of dust on the solar panels was envisioned to occur so rapidly that the solar panels would basically be deactivated within a three month or so period of time now what actually occurred seemed to clearly verify that this was going to happen after just a few months spirit's output dropped to 400 watt hours the opportunity output dropped to about 500 watt hours due to dust accumulation affecting the solar cells so this is what the project was

designed around
but that's when something actually
amazing happened it was something akin
to a car wash as the scientists
themselves put it and nasa scientists
were quite frankly stunned
this this coming back to life that
occurred with these rovers remains a
mystery today
and why did it happen in
spurts during the martian nights power
increased by up to five percent
and it was not long before the power had
peaked at the original 900 watt hours in
other words a full
recovery of both rovers powers so
opportunity and spirit just kept going
and as you said opportunity is still
going today it's nine years after the
landing on mars
so
what
what in the name of heaven happened
nobody could say actually
well it may be that they can't say and
yet they do say they do give their

explanations and as is so often the case
in the science media the guesses they
are offering are actually routinely
reported as fact it's a fact that one of
the rovers had a fortuitous encounter
with a dust devil and the wind from the
dust devil blew off all the dust from
the panels
what was the first guess they offered to
try to explain these miraculous
cleanings
well
the first is wind they just
appeal to the martian wind which would
have the most trivial impact on
accumulated dust and even in a hurricane
you cannot clean a car on earth by wind
so
the fact that that was given as the
first and most plausible
explanation is is very telling this is
all
incredibly ironic because the truth of
the matter is that many technical folks
in and around nasa have worked for years
with electrostatic cleaning

electrostatic cleaning nasa engineers
have attended conferences on
electrostatic cleaning and it's a
process that actually was envisioned for
keeping solar panels clear technologies
to clear the panels electrostatically
electrostatic deposition and
electrostatic cleaning are extremely
prevalent in industry now this was
something
that i pointed out myself way back in
2005 in a picture of the day that it's
just ironic that nasa scientists the
technical folks
have been so aware of electrostatic
cleaning but the people at the top who
are well let's just say they're closer
to science by news release and they you
might say as well that their gatekeepers
who are responsible for
the public image of the sciences and so
on they seem to know nothing about
electrostatic cleaning
so right after all of these years i was
encouraged to see a headline in the mit
technology review uh it was from august

2010 the headline was self-cleaning
solar panels and it specifically
referred to mars
and the mars rovers solar panels and it
specifically referred to electrostatic
cleaning and its intended use on mars
rovers
so that's when this dismain
aspect of the article jumped out at me
the article said this about spirit and
opportunity
the spirit and opportunity mars rovers
lasted longer than expected because
occasional gusts of wind have cleared
off their panels
i'll just add one more point here the
article then quotes a project monitor at
the jet propulsion laboratory quote
we may not be lucky all of the time
well this was part of
an article designed to foster interest
in electrostatic
cleaning and to know that the margin
atmosphere could actually be
accomplishing this electrostatically
would it be helpful to business let's

put it that way right and and let's be
clear about what we're talking about
here
this is not a case of just one or two
happenstance instances
of a miraculous cleaning by
a gust of wind
somehow
clearing the dust from these rovers so
that they can then reboot their power
we're talking about
cleaning after cleaning after cleaning
extending the expected lifespans of
these rovers from 90 days to a period
going on now
nine
years
it's absolutely amazing michael because
the margin atmosphere is
an incredible witness to the behavior
of
electrified wind or electric wind and so
if there's any planet which we should be
closely investigating the potential for
electrostatic cleaning naturally it
would be the planet mars this

electrified atmosphere of mars needs to
be a key part of the
podcast that you're preparing now for
the next few weeks because
mars is giving us all kinds of
indicators of the role of
electricity in the natural environment
of the planet it's one heck of a story
right well there was also the recent
trending news item relating to the
global dust storms on mars and that is
of course from your perspective an
electrical phenomenon
yeah the
the dust devils on mars are so clearly
electrical because you see them actually
gathered in in
bunches
very tightly packed
at the leading edge of storm fronts on
mars this is a great
topic in fact to just emphasize how
we're failing to
to see what is actually occurring on the
planet you can't have dust devils which
is what they're being called you can't

have dust devils in a neutral electrical
environment

gathered close together at all because
they require for their very existence a
broad circle of atmospheric circulation
so these are the kinds of things that i
i think we'll want to look at and it
does add up to one heck of a mystery for
standard science

right well again and in conclusion here
and we're going to be keeping each of
these segments relatively short we're
going to be doing a series as i said on
these ongoing martian mysteries but dave
just to drive the point home again in
conclusion with people

i challenge anyone to point to an
instance when their car
has gotten cleaner on a windy day
that is a very uh good point and i think
the complementary point is that we we
want to

uh

we want to emphasize that there's this
huge divide between working scientists
on the one hand who delivered these

incredible uh technological achievements

a divide between

his army of working scientists

and and the top-down ideological

stagnation that we see

i mean the the latter appears now to

have virtually

destroyed the inspiration in the

sciences because all of the real paths

of discovery have been shut down no

sense of things yet to know no sense of

true mysteries the only mystery that we

find

of late is the mystery was life once

active on a surface it's really a crying

shame but to always remember that the uh

the inspiration and the rapport and the

dedication and the conscientious work

of the scientists who actually got these

these instruments into space and onto

planets this is an incredible and

admirable achievement

so it's it's very important that we keep

perspective on this ideology is only

a damaging science but the dedication of

the working scientists is what

we want to appeal to now
well david this was a lot of fun i'm
glad that we've done this first
installment of a series of videos on
these ongoing martian mysteries you talk
about your hope to resonate with some
appeal to the working scientists and we
see the evidence of this happening now i
know there are a number of highly
accredited scientists who will be in
attendance at the tipping point
conference in albuquerque and i look
forward to these ongoing broadcasts and
ongoing investigations into these really
fascinating martian mysteries we have a
lot more work to do and this is going to
be a lot of fun
very good michael yes
all right thank you very much david
talbot and thank you the listeners for
joining us yet again we have lots of
breaking news
continuously now to talk about stay
tuned to our youtube channel [youtube.com](https://www.youtube.com)
[thunderboltsproject](https://www.youtube.com) and keep checking
back to [thunderbolts.info](https://www.thunderbolts.info)

for all the latest news and analysis on
the electric universe thank you very
much

Welcome to Space News from
the Electric Universe,
brought to you by

The Thunderbolts Project™
at Thunderbolts.info

Today, physicist Eugene
Bagashov continues his analysis
of the scientific missions to the
asteroids Bennu and Ryugu respectively.

As Eugene explained in
the previous episode,
one of the hypotheses scientists have proposed
to explain a number of asteroid anomalies
is that many asteroids are
essentially "rubble piles."

In fact, when asteroids have
occasionally displayed dramatic
and completely unexpected
comet-like tails,
the explanation astronomers have offered
is that the so called rubble piles
simply began spinning faster and
faster, hurling material into space.

However, as Eugene explains as
he continues his discussion,
the latest scientific data offers little support

for the rubble-pile asteroid hypothesis.

Let us now talk about the other issue,
that is the spin of these asteroids.

Currently, Ryugu has a spin period of
7.63 hours and Bennu of 4.29 hours.

But here the interesting
stuff begins.

One thing that the researchers from
Hayabusa2 Mission keep referring to
is the hypothetical long-term trend
in slowing down of the spin of Ryugu.

In that way they are able to, more or less,
explain on the basis of the rubble pile model,
the surface slopes of the asteroid and also
the distribution of boulders on its surface.

And they attribute this hypothetical
spinning down to the so called
Yarkovsky-O'Keefe-Razdievskii-Paddack
effect or YORP.

This effect basically implies that
the irregular form of the asteroid
leads to the imbalance in its thermal
emission in different directions,
which in turn causes the object to
experience some very small torque,
and on long timescales it might alter

the rotational period quite a bit,
introduce tilting of the spin axis,
wobbling and other things like that.

Well ok, perhaps,

but let us look at Bennu now.

Here we see not the hypothetical but actually
observed spinning up of the asteroid.

It has been derived from a series
of ground- based observations,
the earliest one being made in 1999,
and now confirmed by the OSIRIS-REx data.

Bennu is spinning
faster and faster,
losing about a second of
spin period each century.

That would mean that the doubling of the spin
rate would happen in only 1.5 million years
and the rubble-pile model used by
the researchers in OSIRIS-REx team
predicts that it would be incompatible
with the stability of the asteroid.

At this rate of spinning up,
it should have been torn apart by
centrifugal forces very long time ago.

Perhaps the reasonable conclusion
that should follow from that

is that the body should be much younger than even ten million years but the researchers are obviously not happy with that conclusion, so to somehow cope with this, they invoke additional and not very plausible assumptions such as some unexplained long-term cycles of spinning up and spinning down etc.

But that's not even the real problem.

The problem is that they're trying to explain the observed spinning up of Bennu, with the same YORP effect that Hayabusa2 team is using to explain the hypothetical spinning down of asteroid Ryugu.

It starts to make really little sense from that point.

Now, it is true that theoretically, and I repeat — theoretically, YORP might indeed lead to both spinning up and spinning down and that would depend mostly on the shape and orientation of the object, but the thing is that Bennu and Ryugu have almost exactly the same shape.

More than that, they have
almost the same orientation

Take a look at this
picture for example.

Here I've plotted the orbits of
inner solar system planets, that is;
Mercury, Venus, Earth, and Mars.

On the next picture, I've added
Bennu's orbit in darker blue
and on the third picture,
I've also added Ryugu's orbit in red.

So if I now add here the
orientations of their spin axes,
you'd immediately
understand what I mean.

Numerically speaking, their spin
axes differ less than 8 degrees
so they're pointing almost
in the same spot in the sky.

Note also that they are both
spinning backwards, just like Venus,
here I've plotted all the
other planets' spin axes.

So from that I conclude that if YORP is
indeed acting upon both of these asteroids,
it should follow that it would have

the same effect on both of them
and therefore either Hayabusa2 or OSIRIS-REx
team is wrong in interpreting their data
or maybe even both of them,
but since we're already
looking at orbital diagrams,
which I personally enjoy doing,
let me note another thing that
might not be immediately evident.

Both these asteroids
essentially,
at some point of their orbits,
cross the orbit of Earth.

I have indicated these
crossings with purple circles.

In fact, both these asteroids might potentially
impact Earth in the next couple of centuries,
and I'm only mentioning this
to support my next statement
that in my opinion,
the orbits of these objects
might indicate that they actually originate
from this area of the solar system
and they're not some intruders
from the inner asteroid belt.

It would only seem logical that if they

both originated from the catastrophes
that involved, for example, planet
Earth and Mars, or maybe Venus too,
they wouldn't stray too far from the
area where this catastrophe occurred.
That would potentially explain
why both these asteroids
move roughly between
Earth and Mars,
even more so if one looks at the exact
arrangement of the orbit of Ryugu,
another fascinating
thing would surface,
that its perihelion is really
well aligned with Earth's,
if one discards the difference
in orbital inclination.

The coincidence is
quite incredible,
both Earth's and Ryugu's ecliptic
longitude of perihelion is 102 degrees.

Here I've shown the perihelia
positions with thin black lines.

Yes, potentially it is
possible to explain all of that
through some long-term

gravitational interactions,
tidal forces and resonances,
and things like that,
but remember that first we need
to somehow drag these objects here
from the inner asteroid belt
without them being destroyed
or thrown away into the outer system
by these gravitational interactions.
So maybe it would be reasonable
to assume that these alignments
are the result of these asteroids being
born from some catastrophic processes
involving the inner
planets in the first place,
maybe not even the Earth
but the Moon for example,
as I've noted that the spin
axes of Bennu and Ryugu
are almost exactly opposite
to the Lunar spin axis
depicted with grey
arrow in this picture.
There's only 4 to 5 degrees
difference between them.
OK, let's now return to the

issue of the spin rate change.

What are the options from the
standpoint of electrical excavation
of these bodies from
planetary crusts?

Of course, theoretically here
YORP effect might also play a role
so that explanation is possible,
but at the same time I wish to repeat
the points made in the previous video
following from that paper
with liquid droplets,
that perhaps these objects continue to
very slowly relax to a more spherical shape
after being squashed by electrical
forces during the time of their birth.

In this case, as more and more
matter moves closer to the spin axis,
the angular momentum conservation would dictate
that the body should spin faster and faster.

If that is true, theoretically if
we'd observe the objects long enough,
we would see the very slow
shrinking of their equatorial radii
in favor of higher
latitudes radii.

Unfortunately however, we haven't been able to determine their shape with good enough precision previously.

The mean value of ground-based radar observations gives a diameter of Bennu of 492 meters, while OSIRIS-REx shows a 490 meters of diameter, so one could say that indeed the Equator is shrinking, but the error bars of the first measurement are so big that they include the second value as possible too.

And finally, at the moment I wouldn't even discount possible electromagnetic effects of spinning up the asteroid, especially if it's at least slightly magnetized.

Its interaction with the solar wind plasma might potentially induce a torque that would spin it up or down depending on the field configuration.

Now, let's discuss the surface properties of these asteroids.

One thing that both Hayabusa2
and OSIRIS-REx teams indicate
is the noticeable
lack of small craters.

They assume that it is the consequence of
either the dynamic reshaping of the surface
or of the presence of regolith, that
is dust, that would quickly bury them.

The problem with that however,
is that both Ryugu and Bennu
demonstrate some craters even
in the equatorial region,
which suggests that
their equatorial bulges
appeared before subsequent
alteration of their surfaces
and the surface hasn't
completely relaxed ever since.

But researchers
themselves acknowledge,
especially in case of Ryugu with
its hypothetical spinning down,
that the equatorial bulges
should be really old
so why didn't they also reshape during all
these supposed hundreds of millions of years?

Large craters also did not relax to the overall shape of their surroundings and their depth to diameter ratios of about 0.16 are consistent with other asteroids such as Eros and Vesta which have this parameter of about 0.15 but not in any way represent rubble piles.

That seems not really consistent with a rubble pile hypothesis and perhaps indicates a higher internal strength of the underlying material than what is assumed by the researchers.

Conversely, in the electrical scenario, some of the craters might have appeared due to plasma discharges on the surface as it was rebalancing its electric potential after the initial catastrophic event that has led to the formation of the body.

So perhaps the deficit of small craters might be explained if one assumes that the strength of the surface is underestimated

so that only really energetic
processes would leave craters.

And it doesn't really matter if we're
talking about discharges or impacts here.

It's quite peculiar that asteroid
Ryugu has twice more large boulders
than asteroid Itokawa per unit of
area, but the same number of craters,
and in the case of Bennu, the
researchers themselves admit
that these boulders
and their complexity

"...imply energetic events that
far exceed what Bennu can support."

The researchers actually sometimes start
contradicting themselves and state that,
"Evidence for structural strength
includes Bennu's nonhydrostatic shape,
the high-standing longitudinal ridges, the long
linear grooves, and apparent mass wasting.

A fluid-like
hydrostatic shape ...
with Bennu's density and
rotation rate is not stable."

So how then is, this supposedly
rubble-pile object exists?

Maybe it's not a
rubble pile after all?

With regards to the
regolith, I should note that
it seems that there is much less
of it than what was assumed.

For example, MASCOT lander has found no regolith
where it landed on the surface of Ryugu
and the same seems true for the
photos from other two landers.

It's definitely very rocky out
there but also not very dusty.

In fact, OSIRIS-REx team has been
complaining in some of the papers
that the abundance of rock and the
deficit of pristine flat dusty areas
might compromise the success of
the mission, since initially they,
"...hypothesized that, over time, gravel
migration had built up the equatorial ridge
that was apparent in
the radar shape model.

Even though the equatorial
region is the geopotential low,
it is in fact dominated by
large concentrations of boulders

with little apparent

fine-grained regolith.

Bennu does not contain the extensive

patches of fine-grained regolith

according to which we

designed the mission."

Other fascinating find is a relatively

low values of thermal inertia,

on average 350 for Bennu

and 200 to 500 for Ryugu,

where the units are joules,

divided by meters squared,

divided by Kelvin, divided

by square root of a second.

Compare that to some other

similar objects' thermal inertia,

for example asteroid

Itokawa has 750

and the lowest thermal inertia

documented in a meteorite is 770

in the meteorite Cold Bokkeveld.

Basically, thermal inertia is a measure of how

hard it is to heat up or cool down a body,

so in my opinion, low values of thermal

inertia of asteroids Bennu and Ryugu

would imply a relatively

good heat conduction
and therefore a relatively strong internal
structure, at least in the near surface layer
that would allow the heat to be quickly
transferred to and from the asteroids.

Now, this is not a definite
evidence for that per se,
as the properties of boulders and even small
amounts of dust covering the surface
would also play a huge role in the
measured value of thermal inertia,
but coupled to some other
hints that I've mentioned,
in my opinion it provides a
more or less coherent picture.

Speaking of boulders,
Hayabusa2 team
acknowledges that they seem
to be internally strong.

I quote, "The shallower slope
in the small size range suggests
a non-negligible mechanical strength of
individual boulders/pebbles on Ryugu."

And also I quote,
"...the boulders on Ryugu have survived impact
processes during catastrophic disruption,

the re-accumulation process and
more recent impacts on Ryugu;
they are not dust balls
with little cohesion."

So if these boulders are supposed to
represent some primordial material
and they demonstrate
significant internal strength,
why is the rest of these asteroids
considered to be so weak?

Maybe they aren't after all.

We'll examine some more evidence
for that in the next video
and also talk about the recent finding
of dust grains in space around Bennu.

Stay tuned for part 3

What follows is a look back at the progress of The Thunderbolts Project as of the 2018 year end. Since the inception of The Thunderbolts Project in 2012, we've experienced substantial and continuous growth, emerging as the leading voice of the Electric Universe movement. The many testaments to our growth would include five full-length documentaries all emphasizing the extraordinary role of the electric force in the natural world. Well over three hundred episodes of the highly rated video series Space News from the Electric Universe. The popular Thunderbolts Picture Of the Day or TPOD under the guidance of editor Stephen Smith offering wide-ranging factual and visual support of the Electric Universe. 39 episodes of the series Discourses on an Alien Sky exploring the extraordinary natural events from which the ancient myth-making epoch arose. And several international conferences sponsored by The Thunderbolts Project to bring together leading innovators in both the

sciences and in the study of the ancient cultures. Also of interest to followers of The Thunderbolts Project, we should note the independently organized ongoing experiment called the SAFIRE project exploring the electric discharge patterns in the laboratory as possible corollaries to enigmatic features of the Sun and other bodies in space. As we settle into the new year, this is also a good time to reflect on the great surprises in space, as one discovery after another reinforces the core tenets of the electrical paradigm. Consider for example the recent findings in our own solar system where new discoveries have overturned long-standing beliefs about planetary origins and about comets, meteors and asteroids, even throwing into doubt many popular teachings about the Sun at the center of the system. According to electrical theorist Wal Thornhill and others, comets are not the assumed leftovers of a solar system formed from gravitational collapse and accretion billions of years

ago.

Comets, along with great multitudes of asteroids, meteoroids and other cosmic debris, were torn from planetary surfaces by powerful electric discharge in a prior more violent phase of solar system history. With a broad field of evidence now in front of us, the comet provides ideal opportunities to test key tenets of the Electric Universe paradigm. The truth is that close-up images of comet nuclei have revealed rocky desiccated surfaces, exactly as anticipated by electrical theorists. We now know that these bodies bear no resemblance at all to the dirty snowballs of traditional comet theory. In fact, the recently published scientific papers on the Rosetta mission to comet 67P, continue to confirm the predictions of the electric comet model. As we reported last year, comet specialists now acknowledge that 67P cannot be billions of years old as was commonly believed. It also seems clear that the double lobes and rocky terrain of 67P not only

present insurmountable problems for a theoretical model once considered unassailable. Tellingly, many astronomers now suggest a remarkable collision of two such minuscule bodies across millions of miles, placing an exclamation point on the improbability of the underlying claim. If Electric Universe proponents are correct, the most fundamental scientific mistake in our time has been the exclusion of the electric force from events in space. In the 19th and 20th centuries, the blind assumption of cosmic neutrality affected the field of view within all of the space sciences.

According to Thornhill and others, it was this intellectual confinement that prevented space scientists from seeing the electric force at work in the discharge activity of comets. And yet, as telescopes have expanded our view to thousands of exoplanetary systems of planets outside the solar system, nothing we have found is consistent with today's popular theory of cometary origins. The

traditional nebular hypothesis suggests that comets were born billions of years ago in an imagined diffuse cloud of gas and dust, the very cloud from which stars are claimed to have been born. It was from that ideological foundation, the nebular hypothesis, that not only comet science but all of the planetary sciences emerged over the past century. More recently however, the entire ideological framework has been shattered by the surprising discovery of abundant planetary systems with so called 'Hot Jupiters' or gas giants bizarrely located in seemingly impossible proximity to their parent stars. In response to this surprise, astronomers now routinely point to evidence for large-scale planetary migration -- a radical departure from traditional theory. In the scenario most recently offered, theorists suggest that the gas giants Jupiter and Saturn formerly acted as so-called 'wrecking balls' plowing through the inner solar system to destroy the planetary order in its earlier evolutionary phase.

Of course this conjecture, if accurate, could only add support to the radical claim of today's electrical theorists that chaos formerly reigned in the solar system. Not just billions of years ago, as now proposed, but extending into much more recent times to powerfully affect all of humanity. The result of such developments in the theoretical science has been a remarkable convergence of the Electric Universe movement with new perspectives on the origins of ancient thought. We are confident that those who investigate this convergence will find the doors opening to an unprecedented synthesis of ancient experience and modern science with a host of wonders and surprises along the way.

welcome to space news from the electric universe brought to you by the thunderbolts project at Thunderbolts dot info on May 12th 2013 a series of powerful solar flares begin to erupt from sunspot AR 1748 over a period of 48 hours the sunspot produced a total of four x-class solar flares the most powerful type of solar flare known to science the proton storms that solar flares and CMEs sometimes produce can potentially affect life on Earth as evidenced by the one-hour radio blackout associated with its latest solar activity some CME's have astonished mainstream scientist by reaching the earth in a matter of minutes to understand the potential dangers of such events let us first consider the electrical model of the Sun this model says that the Sun is a highly charged ball of plasma the charge is reckoned to be somewhere around 10^{19} coulombs now CME is an event that for some reason indicates a rupture in this skin of the Sun and so the Sun kind of

burps out a huge bubble of high energy high intensity plasma when this material streams away it's quite spectacular and it can be dangerous to life on the earth CME's are categorized into three categories a c-class low energy Class M class which is the lowest class that can really affect things on earth our radio transmission and satellites and so on and then the high energy class is the X class and X class CME's can be very dangerous you need to understand that there's almost in infinite directions from the Sun that things can go in and the earth is like this tiny little Bibi miles and miles away so we would almost never get hit by a rifle bullet fired from the Sun but since CME's come off in a huge bubble why we can be intersected but most CME's of course miss the earth now talking a little more about the structure of the Sun a salient point is that the Sun has a radial electrical field and gives off electrical particles which are called the solar wind and

these things accelerate away from the Sun and when they pass the earth they are going 200 times as fast as they were when they left the Sun it's just absurd to think that there is anything other than an electrical field that can accelerate electrical particles in that fashion now one of the most dangerous aspects associated with some solar flares and some CMI's are what are called solar proton events and sometimes we can get a burst of proton particles called a proton storm and these can do great damage and they arrive not in one to three days but within fifteen to forty minutes this just amazes establishment science to gain perspective on the potential threat Assia me might pose to earth let us consider the historical precedent provided in 1859 by the Carrington event in 1859 two astronomers in England one in particular named carrington I happened to be watching the Sun and witnessed a huge flare and real strong brightening of visible light

soon after witnessing that why then the earth experienced severe magnetic effects and at the time of course we did not have the same technology that we have today probably the highest level of technology that we had that was affected was the telegraph lines Telegraph service and those of course picked up what's called a geomagnetic induction current that caused some havoc with the Telegraph service and disrupted it partly at times during the event but also it allowed the operators to use the Telegraph equipment without the batteries being connected so a CME that engulfs the earth kind of buckles our double layer and it produces spectacular aurora in the north and the south the bad part is that an event of the magnitude of the Carrington event would in the blink of an eye send us back to the Bronze Age and here's why the modern power grid especially in the United States and the grids are similar elsewhere have power lines attached out overhead at distances criss-crossing

nearly two hundred thousand miles
this grid acts as a giant antenna system
which would easily pick up the electric
currents induced by a geomagnetic solar
storm we've already experienced a sample
of this when in 1989 Quebec experienced
a power outage because of a CME the
hydro-québec outage resulted from the
malfunction of more than 15 discrete
protective system operations from the
initial event to complete blackout only
one and a half minutes elapsed hardly
enough time to assess what was occurring
let alone to intervene the u.s.

electrical system includes over 6,000
generating units more than 500,000 miles
of bulk transmission lines approximately
12,000 major substations and innumerable
lower voltage distribution transformers
all of these can serve as potential
geomagnetic induced current entry points
from their respective ground connections
so at high risk today is our network of
extra high voltage transformers that
operate approximately three hundred and
forty thousand volts and above spread

around the grid these house sized transformers cost around twelve million dollars and of course their manufacture is highly specialized and the replacement delivery time takes about a year and wouldn't you know they're manufactured in India and China Carrington event would bring down our grid which is very much our dated and it would generate powerful GICs or geomagnetic induced currents that would burn out these extra high voltage transformers the North American grid meltdown effects would be like this the monetary loss resulting from just a year long electrical blackout across half of the United States could easily be measured in trillions of dollars the loss of electricity disables much of our civilized life-support system including portable water production and delivery waste and sewage treatment and disposal refrigeration would go down hydrocarbon fuel production transport and delivery would cease to a large degree of course heating the modern heating equipment in

residences and businesses are all
initiated and controlled by electricity
food production would be disrupted food
storage transport delivery and
preparation affected firefighting rescue
and emergency service would be almost
totally degraded communication because
cell tower and cell phone functionality
would be gone in a few hours
television transmission would be a goner
with only limited Radio surviving for
those with battery receptivity financial
transactions would be immediately
limited to hard currency mode with the
normal banking services completely lost
computer telecommunication and network
functionality almost completely gone
and finally medical treatment severely
hampered with medication supply to run
out in about a month now harking back to
the Carrington event that event was so
severe people that were connected to the
wires a telegraph system and other
equipment were shocked if they were
grounded some were stunned and the
reports are that some were even killed

so if we dropped everything if our government said forget about doing much of anything except let's all concentrate on getting our grid back up the most optimistic estimate is on the order of weeks or a few months because no business wants to have a stockpile of 12 million dollar house sized replacement units sitting around the US would be severely set back if we did have a Carrington event and put it into a global perspective if 50% of the electrical grid around the world went down we just probably wouldn't recover for a long long time we would be back in the Bronze Age so what to do NASA is currently implementing a project called Solar shield which is designed to provide warnings to vital systems after an earth affecting CME occurs since CMEs take one to four days to reach us from the Sun an early warning system has some possibility of ameliorating the effects if we were really wise we would shut down and disconnect vulnerable equipment but that's a massive step to take in

disrupting the whole fabric of our lives
and the fabric of our businesses on just
the possibility that those things are
going to be at risk and going to be
affected also at risk is satellite
functionality that would further
eliminate communicational capability the
Global Positioning Systems would go down
I will leave it to your imagination to
think about doing without electricity
for three months or longer
for continuous updates on space news
from the electric universe stay tuned to
Thunderbolts dot info

You have just entered
the theater of an alien sky.
If the words and images seem strange to
you, there's a reason for this -
our world was once
a vastly different place.

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

This little video will be the
first in a series looking
at celestial events that
changed human history
and catalyzed the birth
of the great civilizations.

Nothing I'll propose in this series
will be found in familiar text books
but the events can be
confirmed by factual
evidence. That means fundamental
facts that are not in dispute.

It happened just a few
thousand years ago
when we lived in the
presence of the gods.

Planetary powers ruled
the celestial theater

in the lost age of
gods and wonders.

Planets gathered in close
congregation, as if alive,
engaging each other
electrically.

But then the gods grew
violent and they went to war,
driving human witnesses to take shelter
in caves and rocky enclosures.

Humans left to remember - to
remember the powers of the gods -
formations and
cosmic events
not to be
forgotten.

Yes, how could we know how? How could we know
that extraordinary natural phenomena
in the sky above our early
ancestors provoked an
outpouring of human imagination? Of
course, the ancient witnesses did not
understand and they relentlessly
misinterpreted their experience,
but this experience was the most
awe-inspiring and terrifying occasion

in all of

human history.

Every ancient monument was, by

its very nature, commemorative.

Every crowning of a king,

every sacred marriage,

every sacrifice to the gods,

every sacred temple and city,

every obelisk,

pyramid and tower

re-enacted a critical juncture in a

remembered age of gods and wonders.

This truth comes down

to us without exception.

And the over-riding, fatal

mistake in modern perception

is the assumption that

the mythic archetypes

can somehow find their explanation

in phenomena occurring today.

But the events that provoked the global

archetypes, and the entire symbolic

content of the

first civilizations

can be systematically

reconstructed.

Rational and well-established
principles will enable us to draw
reliable conclusions from a
crowd of unreliable witnesses.

That's the long-overlooked
truth of the matter,
and it's that message I intend to
confirm in this video series.

Not that long ago
our world was, indeed,
a very different place.

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

In the first five
installments of this series,
we outlined some of the
most compelling evidence
that the role of electromagnetism throughout
the cosmos is vastly more significant
than modern space science
has ever entertained.

So far, we have explored this question
through an examination of the highest-
energy electromagnetic phenomena at the
vastest scales throughout the cosmos.

We now move our attention to
our own celestial neighborhood
and the dynamic interactions
between the Sun
and all of the bodies which move
within its electrical domain.

Today we'll explore why
planetary electrical discharges
are the 6th of 10 reasons why

the Universe is electric.

Charged Planets in the

Inner Solar System

At no time in history have human

beings been more dependent

on electricity for everyday

functioning and survival.

On Earth, electricity's

significance both for society

and in nature, seems

self-evident.

Yet in the Space Sciences many

strange and outdated notions

about Earth's atmospheric and

weather phenomena endure,

despite an ever growing

wealth of scientific data.

It was in the early 20th century that the

Norwegian experimentalist Kristian Birkeland

correctly hypothesized that electric currents

from the Sun power the Earth's auroras.

For many decades, the scientific

mainstream largely rejected the thesis

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's hypothesis

irrefutably validated

though even today many scientists still

resist the implications of the discovery.

In testing his ideas about

the Earth-Sun connection,

Birkeland built a vacuum chamber

and placed a magnetized metal ball

called a terrella inside

it, representing the Earth.

He observed how the terrella behaved in its

artificial electrically charged atmosphere.

In addition to solving the

riddle of Earth's auroras,

Birkeland's electrical experiments also

uncannily simulated planetary rings

and the energetic displays

of cometary jets.

More than a century after Birkeland's polar

expedition to investigate the Northern Lights,

mainstream scientists still express

surprise or even astonishment
when they observe the tell-tale
signs of electrical circuitry
connecting the
Earth and the Sun.

Of course, the Earth is the most
well-studied celestial object
and much has been learned about
its electrical environment.

The Space Age has brought a
much greater understanding of
the Earth's upper
atmosphere and ionosphere
as well as the inner and
outer radiation belts.

With greater technological
data, the challenges for
planetary scientists to explain
discovery have only increased.

Lightning is the most powerful
electrical phenomenon on our world.

In near the end of the 20th
century and continuing today,
terrestrial lightning has held new
surprises for atmospheric scientists.

As far back as the 1960's, some airline

pilots reported their observations
of powerful electrical discharges that
appeared to originate above thunder clouds,
reaching towards space.

It wasn't until the early
1990's that scientists
were able to verify the
phenomenon definitely exists
including blue jets, seen
exploding from thunder clouds,
and enormous red sprites, even
higher in the upper atmosphere.

Scientists today acknowledge that
the phenomenon remains mysterious
but amazingly, above-clouds-lightning was
in fact predicted nearly a century ago.

In the 1920's, the Scottish
physicist C.T.R. Wilson
predicted the existence of brief flashes
of light above large thunderstorms.

On the cause of the phenomena, an
important clue was uncovered in 2001.

A physicist named
Professor Edgar Bering
flew a high-altitude balloon
above a thunderstorm.

He made the unexpected discovery
that when lightning strikes occur
above and below the clouds, the
electrical charge was already present
and did not take time to build
up between lightning strikes.

This contradicts the
standard notion
that lightning is a generator
of the clear-air electric field
measured at about 100 V/m between
the Earth and the clear sky.

Bering wrote on his findings
that sprites and jets
"...may be an essential element of the
Earth's global electrical circuit."

However, physicist Wal Thornhill notes of the
standard scientific literature on our planet's
'Global Electrical Circuit',

"As big as the term 'global' sounds,
the circuit is too restricted.

It is a circuit that assumes
heat-driven convection in clouds
is the global
electricity generator.

This generator mysteriously separates

electric charge in storm clouds

to power world-wide currents.

However, the circuit

is 'unplugged'.

It is isolated from electrical connection

with anything else in the universe.

Such a lack of a holistic

or cosmic-scale vision

is a fundamental

constraint on theorists."

In the Electric Universe, the ultimate circuitry

driving atmospheric and weather phenomena

is the electric current system

connecting planets and the Sun.

In recent years, it has become

increasingly evident that the Sun

affects our own planet's

atmosphere and weather

in ways that standard

theorists had never imagined.

In 2014, we reported on the discovery

that charged particles from the Sun

appear linked to increased

lightning on Earth.

According to an article on the Institute

of Physics website, a team of scientists,

"...found a substantial and significant increase in lightning rates across Europe for up to 40 days after the arrival of high-speed solar winds."

And indeed, the ramifications of the confirmation of Kristian Birkeland's thesis on the Earth's auroras become more and more evident with each new discovery.

Earlier this year, the ESA Swarm mission reported the groundbreaking discovery of "supersonic plasma jets" high up in Earth's atmosphere which can push temperatures up to 10,000°C.

A phys.org report on the discovery stated, "The theory that there are huge electric currents, powered by solar wind and guided through the ionosphere by Earth's magnetic field, was postulated more than a century ago by Norwegian scientist Kristian Birkeland...

While much is known about these current systems, recent observations

have revealed that they are associated
with large electrical fields."

The existence of Birkeland currents in space
is now confirmed by scientific discovery.

But of course, many differences
remain between the standard
interpretation and predictions and
those of the Electric Universe.

The notion that celestial objects
cannot have an excess of charge
is a guiding principle
of astronomy.

Yet as Thunderbolts' colleague, Dr. Michael
Clarage, explained in his 2014 presentation
'Earth's Electric Environment',
"Overall charge neutrality
is not really the point.

A battery that you hold in your
hand has no overall charge on it.

But the point is that we've separated
the charge in it so it can do work."

And as we will see as we continue, charge
exchange between celestial bodies
seen most dramatically between the
Sun and the planets in its domain,
is the most promising explanation for

many spectacular atmospheric phenomena
that remain unexplained
in standard astronomy.

As we turn our attention
to our planetary neighbors,
we see the need for a new understanding of
all forms of lightning on our own world.

When the, then Soviet
Union's, Venera probes
touched down on the planet Venus
more than half a century ago,
they recorded surprising
evidence of lightning
that was much more frequent and
powerful than earthly lightning.

Yet Venus has no water
clouds which means that
the electrical discharges traversed
directly from the ionosphere to the ground.

In a scientific paper on
the Venera discoveries,
planetary scientist professor

Donald Hunten wrote:

"The indications are that
lightning is likely to occur
in any substantial

planetary atmosphere.

Theories of electrification are faced with the need to explain its presence under a wide variety of circumstances and atmospheric conditions."

The so-called "strange magnetic ropes" detected in Venus's atmosphere are evidence of its electrical connection to the Sun which is more direct than the Earth's.

The mysterious ropes' twisted filamentary structure reveals the electric currents required to sustain the detected magnetism.

Incoming electrical currents open the doorway to explain many mysterious atmospheric and weather phenomena on Venus.

In 2006, the ESA's Venus Express satellite recorded the astonishing images of a twin cyclone above Venus's south pole.

For reasons that still elude planetary scientists, the cyclone structure

constantly evolves

and it appears to be a permanent

fixture at the South Pole.

However, we see not the first

instance when science discovery

has confirmed a seemingly preposterous

prediction of the Electric Universe theory.

In 2005, when scientists

using the Keck Observatory

discovered a warm vortex at

the South Pole of Saturn,

Thornhill made a prediction that

could only seem preposterous

from a conventional viewpoint.

He wrote:

"The Electric Universe

predicts, experimentum crucis,

that BOTH poles should be hot,

not one hot and the other cold."

In 2008, NASA's Cassini scientists

were astonished to discover

a mysterious hot spot

at Saturn's north pole.

This was astonishing

because the freezing pole

had been deprived of

sunlight for over 12 years.

On Venus, twin tornadoes have been observed at both poles.

This is important, because the Electric Universe states that the Sun's electrical input generally occurs at the poles of planets which we usually see in the form of auroras.

As we see, the constantly shifting structure of the south polar vortex seems strikingly reminiscent of the spiral galaxies' forms reproduced by plasma scientist Dr. Anthony Peratt's simulations of two current filaments interacting in a plasma.

In the Electric Universe, the incoming electrical currents are also the driver of Venus's mysterious superfast winds which are difficult for conventional meteorology to explain.

Cloud movement show a four-day rotation period of the upper atmosphere at the equator which declines to two

days toward the poles.

Within the framework

of standard theory,

no force is present to drive the upper

winds around the planet at such a speed

since Venus itself has a rotational

period of 243 days retrograde

and the planet's lower winds

are exceptionally sluggish.

Since the planet is the

same temperature overall,

there is no temperature gradient

to drive these winds either.

In recent years, it was reported

that the superfast winds of Venus

have actually been steadily

accelerating for a decade.

This is explained through analogy

to the simplest electrical motor

called a Faraday disk motor.

The Faraday disk motor requires only a

magnetic field and a disk conductor

or something symmetrical.

When a current is directed inward to the

poles of the object and out at the equator,

it will cause the

object to rotate.

We note that while the Venusian winds were found to be accelerating, scientists found that the planet's rotation was mysteriously slowing down.

In the Electric Universe theory as developed by Wal Thornhill, the deposition or extraction of charge from an object will change its mass, and therefore its rotation rate which has been observed on Earth in small changes of the Earth's rotation called glitches,

when we receive a large blast of charged particles from the Sun.

On Venus, both the accelerating winds and the planet's slowing rotation could be due to a variation in the incoming electrical current flow.

As we turn our attention to Mars, mysterious wind and atmospheric phenomena again point to the planet's dynamic interactions with its electrical space environment.

Mars has an atmosphere only around 0.5% as dense as Earth's so it has been a puzzle for

decades why powerful dust storms
sometimes encompass
the entire planet.

How is the dust removed from the soil
and accelerated into massive clouds,
sometimes up to hundreds of miles per hour in
the near vacuum of the Martian atmosphere?

Adding to the mystery, when the most dramatic
dust-storm ever seen on the planet occurred,
it involved packed
congregations of dust devils,
a completely unexpected feature
in standard meteorology.

In conventional theory,
an atmospheric vortex
requires a vastly larger
circulation of wind
than what is clearly seen in edge-on
pictures of storm fronts on Mars.

Electrically speaking, what produces
a global Martian dust storm
and other tremendous dust-raising
events on the Red Planet?

To begin to get an idea, let
us consider the dust devils
seen in association

with the global storms.

The so-called dust devils on Mars
are so enormous and energetic,
they routinely dwarf
Earthly tornadoes.

A NASA press release describes a
typical Martian dust devil as a,
"...monster column towering kilometers
high and hundreds of meters wide,
10 times larger than
any tornado on Earth."

The reason meteorologists call them
"dust devils" instead of tornadoes,
is because they are not associated
with water-laden storm clouds
which don't exist on Mars.

The powerful electric fields associated
with dust devils, both on Mars and on Earth,
are now acknowledged in
scientific literature.

But meteorologists can only
look to solar heating,
air convection and dust particle
friction as their cause.

The electrical nature of the
tornadic dust fountains on Mars

may be better understood through
an examination of their cousins,
water spouts.

A great breakthrough in
understanding water spouts
came from the work of Russian plasma
physicist V.A. Rantsev-Kartinov.

From his investigation, he
concluded that these phenomena
are the result of a
long-lasting discharge current
between the plasma networks
of a water surface
and the electrical charge
of the clouds above.

Both the rotation and the narrow coherent
and undulating funnels of water spouts
are thus explained in terms
of plasma discharge behavior.

All of this relates to the unfounded
assumption of planetary scientists
that mechanical processes must separate
charge wherever they see electrical activity.

The Electric Universe's counter
viewpoint on Martian wind and weather
is summarized in a 2005 Thunderbolts

Picture Of the Day article.

It states:

"Since Mars has no thunderstorms
to 'charge-up its ionosphere',
it should present a good case
study of the Electric Universe.

The electrical model predicts that the
Martian ionosphere is indeed charged,
and it posits no isolated
dynamo to 'separate charge'.

On Mars, electrical effects will reach
directly from the ionosphere to the surface
without the ameliorating leakage via
storm clouds that we see on Earth.

Unlike radiant
energy from the Sun,
electrical energy can accumulate in the
'planetary capacitor' for some time,
with a potential for planet-altering events
when the atmosphere finally 'breaks down'
and massive discharge
activity is initiated."

The Thunderbolts article also
offered the following prediction:

"The intensity and number of
dust devils will be affected

by solar outbursts and the planet's elliptical orbit."

In fact, in recent years the electrical interpretation of dramatic Martian dust-raising events has been stunningly confirmed.

In 2012, amateur astronomers first spotted seemingly inexplicable plumes rising hundreds of kilometers above the surface of Mars.

In 2016, scientists using the Mars Express spacecraft discovered something completely unexpected to planetary scientists.

A coronal mass-ejection hit Mars immediately before the plume was first spotted.

The leader of a team of scientists said of the discovery, "It's very surprising that was affecting Mars right before the plume was first observed."

And of course, the electrical nature of the event seems undeniable.

The 2016 New Scientist report states:

"One possibility is that plasma could be interacting with ice grains or dust lower down in the atmosphere and electrically charging them, boosting them higher, but it's not clear how the effect would be big."

An analogue to the Martian dust raising events might be the electrostatic dust storms that are now known to occur on the Moon when it encounters the Earth's magnetotail once a month.

We also note that when the largest global dust storm on Mars began in 2001, Mars had reached opposition and was the closest that had been to Earth in about 12 years.

As noted at the beginning of this video, planetary scientists are only now recognizing the pervasive electric current systems on our own planet which were postulated more than a century ago by Kristian Birkeland.

Of course on Mars,

far less is known

but NASA's MAVEN mission has provided
important new data and insights.

One of many surprising findings was characterized
as follows in a 2015 NASA press release:

"NASA's... (MAVEN)

spacecraft has observed

two unexpected phenomena

in the Martian atmosphere:

an unexplained high-altitude

dust cloud and aurora

that reaches deep into the

Martian atmosphere...

The presence of the dust

at orbital altitudes

from about 93 miles to 190 miles above

the surface was not predicted."

As mission scientist

Laila Anderson stated,

"If the dust originates

from the atmosphere,

this suggests we are missing some fundamental

process in the Martian atmosphere."

Also surprising to MAVEN

scientists was the discovery

of a highly energetic

glowing aurora

that reaches shockingly deep
into the Martian atmosphere.

As one team member stated,

"What's especially surprising
about the aurora we saw

is how deep in the

atmosphere it occurs

-- much deeper than at Earth

or elsewhere on Mars.

The electrons producing

it must be energetic."

As the NASA press

release explains,

"MAVEN's Solar Energetic

Particle instrument

detected a huge surge in energetic

electrons at the onset of the aurora."

Today, within the Electric

Universe community,

experimental research such as that

which Birkeland pioneered, continues.

Through simple experiments with electric

fields, we see the routine replication

of many atmospheric, weather

and geological phenomena.

These experimental analogs place the
endless surprising space discoveries
in an entirely new light
and emphasize the desperate need for a
new perspective in planetary science.

One which recognizes charge
exchange between celestial bodies.

In our next installment of this
series, we will turn our attention
to the gas giants in
the outer solar system
whose dynamic
electrical environments
offer further testimony that
the Universe is electric.

For continuous updates on Space
News from the Electric Universe,
stay tuned to
Thunderbolts.info

Welcome to the
Electricity of Life,
brought to you by The Thunderbolts
Project™ at Thunderbolts.info

In part 1 of this presentation, our guest
Dawson Church discussed his remarkable
investigation into the role of
consciousness in one's physical well-being.

In his book 'Mind to Matter'

Dawson cites voluminous scientific
research which suggests that our minds
can profoundly affect our bodies and
even the external world.

Emotions can be "stored" in the body and
over time can lead to imbalance and illness.

In this conclusion,

Dawson begins by addressing the notion,
which is highly controversial in Western
medicine, that energy exists in the body
and can aid in healing.

I've read critics, for example, who say there's
no plausible role for energy in biology
or in medicine or in healing and when I
read those comments, I think hey
guy, have you ever looked at an MRI
of our magnetic field?

Our EEG is reading our electrical field,
it's reading the electro-activity of the brain.
You can measure those fields of the body,
15 feet up from the body with a simple device.

I carry a little pocket device
called the galvanometer with me when I
go to conferences or to do the
demonstrations and in just a few seconds
I can show where your acupuncture points are
because they have a different electrical
charge than the skin around them.

So we are energy beings and MRI's, EEGs, all
these things, use those phenomena to
diagnose and to treat people who are
sick, so they're energy medicine too, energy
shifts produce dramatic changes in cells
and in bodies and again, I have a lot of
these stories in Mind toMatter, a
lot of these studies in Mind to Matter.

There's lots of case histories,
lots of evidence, there are lots of
randomized controlled trials.

On our nonprofit website, we have over
600 studies, people healing from anything, from
Alzheimer's to ADHD to obesity to kidney disease
to metabolic failure, all kinds of healing studies.

are people who use energy therapies like Reiki, like EFT, energy medicine, Johrei, therapeutic touch and so on and so yeah, this isn't, you know, three studies, this is over a thousand studies cumulatively of these kinds of techniques and they show that energy therapies are, not only are they often effective, they're often effective really quickly.

Dawson explores in 'Mind to Matter' the scientific research of Dr. Bill Bengston which showed remarkable effects of quote 'energy healing' in many laboratory experiments.

While The Thunderbolts Project, as always, takes no position on these questions, we asked Dawson to enumerate the findings of Dr. Bengston's studies.

Yeah, Bill is unique because

there are a lot of animal trials,

Bill's method which is called cycling.

It's the energy healing technique where people hold their hands over a human being or over an animal and they do a mental process that is designed to shift the energy of the disease and

Bill's work is unique because there are now 13 randomized controlled trials that various people have done of his method on, usually on mice and the usual way these experiments are done is that the mice were injected with a substance that causes them to develop cancer and they develop these large mammary cancers which eventually crush the organs and they die in usually 15 to 20 days. The longest a mouse has ever survived in these trials is 21 days.

And in Bill's research, in the research of Bill's method, just a study after, he finds that these mice heal.

These mice heal and not only do they heal from those cancers, they did live out the full lifespan of a mouse, which is about two years, and they're immune to cancer after that as well.

In one really cool trial I report in Mind to Matter, they had Bill sending energy to a group of mice at a distant location and they were measuring the electromagnetism in the room right below the cage that held the mice.

And so, at random intervals
a buzzer was sound
in Bill's home a long way away, he would
then send energy to this cage of mice in
a room at a university, distantly,
and then there are other mice in other
cages in other parts of the university
but only one, which was in a room painted
green, that he was targeting.

So mice in the green room got energy from Bill, the
mice in the red and purple rooms,
different parts of the campus, didn't get
that and they had this magnetometer
underneath the cage and at the very
moments when there were those signals
for Bill to send energy to those mice,
the magnetometer fluctuated by about 25
percent so massive shifts in
electromagnetism, this is an energy field.

It supposed to be totally stable at any
geographical point on the Earth's
surface, and energy fluctuated hugely and
only at the very moment when Bill sent
energy to mice in the green room and the
magnetometers in the purple and red
rooms were unaffected.

So energy heals, there's so much evidence for this that I really urge people to use energy approaches, they're not invasive, there are no bad side effects, they don't hurt your body, in fact in one review I cover in the book in Mind to Matter, I show that there are 175 studies published over the last 50 years showing the beneficial effects of various energy therapies on our bodies and these effects are not small.

Stem cells regenerating, stem cells adhering to diseased tissue and repairing it, telomeres lengthening, enzymes that are helpful to our metabolism--increasing in amounts; stress hormones, like cortisol--decreasing, immune factors like immunoglobulins increasing, all of these things happening on the basis of energy treatments.

So even though it's energy, it's producing massive shifts to the physical material of our bodies.

When I began to look at the science of how our consciousness affects the world around us, I thought I would find a few

suggestive studies.

What I was surprised at was how many things I found and what they show.

And so it turns out that there is evidence, either subjective evidence or really solid evidence, that our consciousness, human consciousness affects the four fundamental forces of physics and those are electromagnetism, gravity, the strong nuclear force that holds the atom together, and also the weak nuclear force which is measured in the radioactive decay of uranium, plutonium, americium, francium, all of those elements, they give off these particles and then degenerate over the course of years.

That is the weak nuclear force, but there's evidence that all four of these forces are affected by human awareness and the most interesting practical studies I talk about in the book are those conducted on water.

And so, water is a very simple molecule, it has one big oxygen atom, two small hydrogen atoms attached to it and the bonding angle

between those three atoms is 104.5 degrees and that's just a constant, it's been measured for close to a century, we know the angle at which those two hydrogens join that big oxygen, is always 104.5 degrees.

That's just a fact, so one of the most intriguing studies was done looking at that bonding angle after water had been blessed by a Healing Touch practitioner.

So the practitioner held his hands over the vial or glass of water, didn't actually touch it but held his hands near it, had the intention of healing flowing through his hands and then the water was measured again.

And that bonding angle between those two hydrogens changed from 104.5 degrees to less than that. There was a substantial change in the actual molecular structure of water that was blessed by a healer.

Then in another series of studies, researchers took water that had been blessed and used it to

water plants and they found that the plants that had been watered with blessed water, grew much faster, much stronger, had a higher chlorophyll content than those that were watered with control water.

And so it looks from these kinds of trials that we are literally able to shift, purely by intention, the molecules at least of water around us.

Now, there's other research which I talk about in the book showing that we can affect DNA and this series of phases was really intriguing because they had people intend to change the configuration of DNA and DNA of course is a double helix, has certain degree of twist, it looks like a ladder but a twisted ladder and the amount of twist, the degree of twist in a sample of DNA can be measured using some elaborate equipment, so researchers said to these volunteers in the study they said, ok, here's a beaker containing human DNA and we want you to make that DNA twist tighter and so these people sat there in the room at the beaker thinking

of DNA, focused their attention on the DNA
to put the twist tighter, the scientists
measured the DNA after the attention,
nothing happened.

But then they had those volunteers enter
a deeply coherent state
so when you're meditating, when you're in
deep meditation, your heart rhythm
becomes coherent, your brain rhythm
becomes coherent and those entrain your whole body.

When those coherent people
projected their attention into the DNA
flask, the DNA did indeed twist tighter.

So then, the researchers (they) did a whole
series of these experiments and then said
ok, we'll leave you three vials of DNA.

So they're across the lab, you see there's a
middle one, there's a left hand one,
there's a right hand flask of DNA,
identical samples of DNA.

We want you to intend to twist the one, the DNA in
the middle flask tighter and leave the
flask on the right and the left untouched.

And again, when they weren't in
coherence then it happened, when they
were in coherence, they changed the

middle flask but not the two other flasks.

The researchers then said ok,

let's see if this is an effect, an

artifact of your own individual energy field,

let's move these things 50 miles away.

They then put the three beakers 50

miles away, they then said okay, now we

want you to change the twist at only the

right-hand one, and not the other two

and the meditators were able to do that.

So here we have human attention

literally affecting the conformation of

the DNA molecule and if that isn't

exciting, think that your thoughts,

your consciousness, your degree of coherence

is literally shifting molecules,

distantly away from your body in the

next group, 50 miles away, in the case of

one Chi master

1,200 kilometers away, the effect was

still seen so this is really amazing

that science is now giving us the tools

to show these effects and we're just at

the dawn, of being able to use them

therapeutically and for human good.

"...All the stories, characters and adventures narrated
by mythology concentrate on the active powers among
the stars, who are the planets."

Episode 1

Symbols of an Alien Sky

The dance of the planets

So regular and predictable, one may
think they've moved like this forever

What a contrast to things claimed
by the first astronomers

of ancient Mesopotamia and
numerous cultures that followed!

They watched planetary motions
with a compulsive fear.

Why would diligent
astronomers insist
that the planets were the
towering gods of a prior time?

Planets ruled the destiny
of kings and kingdoms
and they were the agents of
doomsday, the End of the World.

What was it about planets that
inspired such reverence and fear?

The Babylonian priest
astronomer Berossus

said that planets, moving on
different courses than today,
produced world catastrophe.

In Greek, Roman and
Gnostic thought,
this was ekpyrosis, a catastrophic
meeting of the planets.

But the memory of planetary disorder
is echoed by numerous ancient sources.

Plato expressed it, and
so did Zoroastrian texts.

The Hindu Mahabharata,
Taoist teachings,
and the Chinese Bamboo Books.

Far from the spotlight, today,
researchers are exploring these
questions of planetary history.

They bring wide
ranging backgrounds
from comparative mythology to
planetary science and plasma physics

All are asking if the solar system
may have been unstable in the past,
alive with electrical activity?

Allow this question to be asked
and the doors open to a new

understanding of the past,
a planetary history,
and the rise of
Civilization itself.

Monumental Cultures

"What is normal in nature and society rarely exits the
myth-making imagination, which is more likely to be
kindled by the abnormal, some startling catastrophe..."

When we hear the
word "civilization,"
most of us think of new
technology, economic advances,
rapid communication and
expansive metropolitan vistas.

But earlier civilizations
are much different,
and they pose a mystery
yet to be resolved.

Early civilizations were
obsessed with the past.

All looked back to extraordinary
events, to an age of gods and wonders.

All insisted that powerful gods
ruled for a time, then went away.

Monumental cultures arose,
and the monuments themselves

meant much more than a
display of technical skill.

A monument commemorates something
collectively remembered.

It was obsessive acts of remembering
that shaped the early civilizations.

From the cities of Egypt
stretched along the Nile
to those of the Fertile
Crescent of Mesopotamia.

From India to Southeast
Asia and China
and no less so in the Americas.

From the early predecessors
of the Aztecs and the Maya
to the archaic cultures
of the central Andes.

All reveal a desperate urge
to recover something lost.

Egyptian priests called this lost
epoch "The Age of the Primeval Gods."

It began with the rule of an earlier
sun-god, Atum who later departed.

Cuneiform texts speak of
the god An,
who ruled with terrifying

splendor, then fled the scene.

The Greeks celebrated

the lost age of Kronos,

but he too was replaced by another

power, the towering Zeus.

Sages of India likewise

remembered the rule of Brahma,

though the god progressively

faded into the background.

So too, the Chinese

Cheng Di and Huang Di

The Aztec Ometeotl

and the Mayan Itzamna

All either departed for remote regions

or faded from their original prominence.

Remembering the Gods

"The broad spectrum of cultural responses to
cataclysmic events attest to the profoundly unsettling
impact chaotic events in the skies may have had."

Through festivals and symbolic rites, the
cultures remembered the lives of the gods.

With every temple construction,

every sacrifice,

every harvest,

every installation of a king,

every royal marriage,

every New Year festival,
the celebrants reenacted critical turns
in the lives of the gods themselves.

Were you to remove the
stories of the gods,
there would be no cultural content
left in the early civilizations.

Who were the gods?
And why did the early
astronomers declare
that the most powerful
gods were planets?

Here's a clue: The mythic accounts are
punctuated by terror and cosmic violence.

Urgent prayers and hymns reenacted
the deaths or ordeals of great gods,
recounting how one world age
passed violently into another.

"...modern astronomical evidence does not
support the common supposition that the night
sky has been unchanging for 5,000 years."

At least some of the artistic and
mythological themes will be familiar to you.

The myth of Paradise or the
Golden Age, for example,
a perfect time before a

descent into cosmic disaster.

An exemplary sun, revered as the King of
the World, ruling before the present Sun.

A Mother Goddess, a symbol
of beauty and of life

A great warrior or a hero born
from the womb of that very goddess
to rescue the world
from monsters.

That are also unexplained.

Dragons in the Air

"Although people have been probing into facts
and stories about the dragon for hundreds of years,
the dragon has yet eluded final interpretations."

Perhaps there's no better example
of an unexplained mythical theme
than the serpent or dragon.

This remarkable creature with
origins in prehistoric times
has no counterpart in
the biological world,
yet it was remembered on
every habitable continent
and persisted across the
millennia into modern times.

Well, we can find amusement in the

comic book versions of this monster,
but nothing in nature today will explain
the dragon's long, flowing hair,
its fiery breath, its beard,
its twin whiskers,
its wings or effusive feathers,
or its global
occurrence as twins,
or its global association
with lightning.

Thousands of years after
its prehistoric birth,
the monster continues to linger in
human fantasy, it will not go away.

But ask yourself, how could the dragon
archetype have arisen without provocation?

And should we not wonder if
uniquely modern prejudices
are the primary reason the
mystery remains unsolved.

With one voice, every
ancient culture insisted
that our world was once
a much different place.

PLASMA FORMATION IN THE SKY

"Are all these legends a confused account of great events on

a planetary scale which were beheld in terror simultaneously
by men scattered everywhere over the world?"

Several thousand years
ago events of beauty
and terror provoked an explosion
of human imagination.

This was the myth-making
epoch of human history.

First came the enchanted realm, the
theater of venerated gods and goddesses.

The gods were prodigious.

Their celestial habitat
towered over the world,
a model for temples and
commemorative monuments on Earth.

But the gods grew capricious, one celestial
power metamorphosed into another.

Preposterous creatures never
seen on Earth roamed the sky.

The gods turned violent as
heaven itself fell into chaos.

Then celestial warriors and monsters
appeared to battle in the heavens
wielding weapons of
thunder, and fire, and stone.

Our challenge will be to account for

this outpouring of mythic content.

Meeting the Archetypes

"Past cultures worldwide often shared in a single cosmic vision,
and we must not let our own present fragmented fields of
knowledge hinder our attempt to recapture that vision."

The eminent psychoanalyst Carl Jung called
these deep patterns "The Archetypes."

He saw them as universal
structures of the unconscious,
lying beyond rational or
scientific explanation.

ARCHETYPE:

Dragon-slayer

Yes, the myths seem
incomprehensible to us,
but the Archetypes offer a
pathway through the confusion,
they are the points of agreement
between the far-flung cultures.

And this agreement rises above the
carnival of confusion and contradiction.

ARCHETYPE:

Pillar or Mountain of the Gods

Every major culture remembered a Cosmic
Mountain around which the Heavens turned.

ARCHETYPE:

Angry Goddess

And every culture chronicled the
terrible aspect of the Mother Goddess.

Were there no common experience, the archetypal
agreement would not even be possible.

ARCHETYPE:

Ouroboros, the enclosing serpent

All that is required here is a
willingness to meet the archetypes
and without fear or prejudice or any
advanced assumptions, to hear their message.

ARCHETYPE:

Ladder to Heaven

The existence of hundreds
of archetypes is a fact,
and it is a fact as well
that no archetype
speaks for natural events
occurring today, not a single one.

ARCHETYPE:

Dying God

At the Dawn of Civilization all of
the Archetypes were already present.

"...The extreme preoccupation of most early
societies with celestial imagery... appears to
be part of a world wide phenomenon."

"Could the prehistoric 'sky' have
been much more active than now?"

Today, we are fascinated by the monumental
scale of the antique civilizations.

But what were the essential memories that
drove the monumental cultures so obsessively?

The threads of evidence trace
deep into the prehistoric past,
a world barely recognized
but not entirely lost.

More than ten
thousand years ago,
Paleolithic artists 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 the widespread patterns

must have an explanation.

And other details only

accent the irrationality.

Recently an answer to these mysteries came

from outside traditional archaeology,

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
donut-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 two hundred 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.

IMMANUEL VELIKOVSKY

Is it possible that a fundamental

mistake has crept into the sciences?

Today we witness an unshakable confidence
in the regularity of planetary motions,
but is this confidence
truly justified?

I need to take you back
about thirty-seven years.

That was when the controversial theorist
Immanuel Velikovsky lit a fire for me.
He was the author of the book "Worlds
in Collision," first published in 1950,
and several other
books that followed.

In these books he reinterpreted both
planetary history and human history.

A distinguished scholar,
colleague of Albert Einstein,
Velikovsky had claimed that planets
formerly moved on unstable courses.

And more than once a planet came close
enough to Earth to cause global catastrophe.

Scene from "Remembering
the End of the World"

Most astronomers dismissed
the book out of hand
and some threatened a boycott

of the publisher Macmillan,
forcing the company to drop the book
when it was the number one bestseller.

But when the space
age arrived our
probes of planets and moons
revealed devastated surfaces
inspiring renewed interest
in Velikovsky's claims.

With Velikovsky's cooperation, I
had the privilege of publishing
a ten issue series on his
challenge to science.

Velikovsky said that cosmic catastrophe
left its marks on the now-peaceful planets,
our Earth included.

He said that the planet Venus
appeared in the sky as a comet
and that its near-collision with the
Earth decimated early civilizations.

He said that electricity was
highly active in these events.

Planets moved on erratic courses and
on occasion they nearly collided
as cosmic lightning bolts flew
between the approaching bodies.

and he said that human
memories of these events
constitute evidence that science
can not afford to ignore.

It soon became clear to me that Velikovsky
had opened the door to a new possibility,
perhaps even a new understanding of
the mythic archetypes as a whole.

But why did the evidence always
seem too preposterous to believe?

Why did all of the archaic
cultures stake everything
on memories of the gods as
towering bodies in a former sky?

I was particularly enchanted by
something Velikovsky proposed
in a work still
unpublished at the time.

He claimed that, in the earliest remembered
epoch, the planet Saturn dominated the sky,
close to the Earth,
presiding over the
mythic Golden Age

It was an outrageous idea and yet I found
in it the inspiration for a life's work.

Ancient cultures, the world over, insisted

that an exemplary sun once ruled the sky.

For the Egyptians, this former
power was the creator Atum-Ra,
ruling from the center
and summit of the sky.

In ancient Mesopotamia, we see the primeval
sun as a great turning wheel in the heavens
and the astronomers
named this body
as the planet Saturn.

It was from the Romans that we
received the planet's name,
Saturn,

but an archaic Latin name for
Saturn was Sol, the Sun.

In earlier Greek texts, the
planet Saturn, called Kronos,
was also named Helios - the Sun.

"Helios and Kronos were
one and the same god."

Even the alchemists preserved
this preposterous identity.

They called Saturn
"The Best Sun".

Best sun, superior
sun, exemplary sun ..

the core idea always pointed
directly to the axis of the sky,
the celestial pole, around which
the heavens visually turned.

As improbable as it may seem,
this is where the Egyptians located
their primeval sun-god, Atum.

"The great god lives, fixed
in the middle of the sky."

"[Atum was] the arbiter of destiny perched on
the top of the world pole. Here must be the node
of the universe, the centre of regulation."

This motionless spot in the
heavens is precisely where
later astronomical traditions
from Greece to Persia and China,
all claimed that Saturn
had ruled the world.

A contradiction of every principle
we take for granted today.

"What has Saturn, the far-out planet, to do with the Pole?
Such figures of speech were an essential part
of the technical idiom of archaic astrology."

Ancient chroniclers insisted
that the planet Saturn,
now just a speck in the sky, had

presided over the Golden Age.

An epoch of abundance,
cosmic harmony and grandeur.

The archaic name of

Italy was Saturnia

and tradition held that this very name
was given to the original site of Rome.

The Sabbath, the special day of rest and
reverence was Saturni Dies, Saturn's day.

A day honored throughout the
Mediterranean, the Near East and beyond.

The popular Roman

festival, Saturnalia,

was a symbolic return to the Saturnia

Regna, Saturn's Reign, the Golden Age.

Much symbolic content of our own New

Year's and Christmas celebrations

will trace to the Roman Saturnalia

and related ancient festivals.

In one form or another, every culture

that remembered Saturn's reign

regarded the planet-god as the Father of

Kings, the Father of the Nation or the Race,

Ancient traditions identified the

Ugaritic and Hebrew El as Saturn.

And it was said that the Israelites once

saw themselves as Saturn's children.

In the same way the Greeks invoked
Kronos as their first father
and the Romans insisted that they
were the true descendants of Saturn,
arriving in Italy through the adventures
of the legendary ancestor Aeneas.

"Deign to know the Latins, Saturn's
race, a race freely self-controlled as
in the olden days [the Golden Age]".

But there was a dark
side to Saturn,
reflecting the catastrophic
end of the Golden Age.

This was when, in the words of
Manilius, Saturn, the First Father,
fell to the opposite
end of the World Axis.

This sudden onset of chaos, when heaven
itself seemed to fall out of control,
has haunted civilizations
across the millennia,
erupting as doomsday anxiety, the fear
that what happened once will happen again.
It's almost impossible to believe that ancient
people sacrificed their own children,

either symbolically or literally

to the planet-god Saturn.

Saturn was remembered as the

devourer of his own children

and as Moloch,

demanding sacrifice.

and as El or the Elohim commanding

Abraham to sacrifice his own son, Isaac.

In the face of evidence

that can not be denied,

the reasonable course is to bring the

catastrophic source of these memories

into the light of day.

My book "The Saturn Myth,"

published by Doubleday in 1980,

began the reconstruction of a spectacular

formation formerly seen in the sky:

a gathering of planets, looming

immense above the ancient witnesses

I was working with the

mythic archetypes,

cultures everywhere using different

words and different symbols

to describe eerily

similar events.

but the planetary model presented in

"The Saturn Myth" was far from complete.

Amongst the greatest of enigmas was the cosmic
wheel recorded by every ancient culture.

Images of a wheel in the sky, carved on
stone, are older than civilization itself.

Many archaeologists see these wheels
as an imagined vehicle of the Sun,
rolling across the sky.

But in its most common form, the
cosmic wheel doesn't go anywhere.

Often it rests on a
stationary pillar

Or atop of a stairway or ladder

Or is turned by a rope while
resting on an altar or table.

And the spokes of the wheel
are not functional as such;
they are fluid and etheric.

Archaic gods and heroes hold
a wheel in their hands.

A cosmic wheel served
as the throne of gods,
and cultural heroes,
and wise men.

Symbolically replicated in the
wheel-thrones of kings on Earth.

The wheel-throne of Buddha

underscores our point.

And even the popular footprint of Buddha

recalls the same wheel in heaven.

The inspiration did not

come from our Sun.

Compare these prehistoric instances

of the pictographic wheel

from Ireland and

from California.

Different parts of the

wheel are clearly evident.

A large circle or sphere,

though not always present,

a central star and a smaller darker circle

or sphere inside the star-like form.

The images do not

depict a single object,

but three objects, as

demonstrated here,

where the artist placed the small dark

sphere well below the central star.

I can assure you that the

placements are not random.

These forms in the sky were

planets in close congregation

and immense above the
ancient sky-worshippers.

The stories begin with the appearance
of this celestial formation
Heaven, when "Heaven was
close to the Earth"

The original Unity Of The Sky
formed by the Great Conjunction
when a straight line or arrow would "pierce
the hearts of the gathered powers".

The Motionless, Superior Sun
ruling before the present Sun.

The Father of Kings and first
in the mythic line of kings.

And a dying or displaced god.

In later times the first astronomers
identified this overarching ruler of the sky.

They claimed it was
the planet Saturn,
remembered as the owner of the Cosmic Wheel
before the god departed for distant realms.

The astronomical traditions also name the
central star as Venus, the Mother Goddess
and they name the darker, reddish sphere
as the planet Mars, the cosmic warrior.

In these three hours I intend to

demonstrate that the stories of the gods
are the stories of what happens
to these celestial bodies.

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 a 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.

The Cosmic Thunderbolt
Just a few thousand years
ago our ancestors witnessed
the gathering of planets
close to the Earth.

An explosion of human
imagination occurred,
an outpouring of mythology and symbolism
that defined cultures for thousands of years
long after the celestial
provocation itself was forgotten.

In these early historical times, there
are no records of the present planets,
no diaries recording planetary
motions or periods,

Planets as we know them today did
not exist, these were the gods,
awe-inspiring and at times

capricious and terrifying.

Saturn

Early star-worshippers speak of a great

Light of Heaven, motionless in the sky.

The Egyptian Atum or Atum-Ra

The Sumerian An

The Babylonian Anu

and enigmatically, early astronomers knew

the overarching figure as the planet Saturn

whose story will be a centerpiece

of our third episode.

In the beginning the gathered powers

were not seen as separated gods

but as the primeval Unity of

Heaven, the perfect conjunction

or Great Conjunction

of the Golden Age.

A massive sphere hung in the sky

and in its center stood a radiant star

surrounded by explosive streamers.

Cultures the world over came to see this star

in feminine terms as the Mother Goddess,

the planet Venus.

Remembered as the Great Star,

the Mother of all stars.

This was the central eye, heart

and soul of the primeval Sun,
his animating life, power
and glory and much more.

One of the most enigmatic
cultural themes
is the transformation of
the life-giving Goddess
into a monstrous form,
attacking the world.

This was the terrible Goddess, raging
in the sky with wildly disordered hair,
or multiple flailing arms, celestial
spectacle radiating a paralyzing light.

When instability and
displacement occurred,
the streamers discharging
from Venus grew chaotic,
giving the planet a
frightful countenance.

The angry goddess was a comet.

The mythic prototype of comets.

Immanuel Velikovsky's

Great Comet,

the planet Venus.

Aphrodite Comaetho:

"the Comet Venus"

Roman image of Venus

as "the comet"

"The ignorant masses of the people
had considered Venus as a comet."

Mars

Seen in front of this central star was
a smaller, darker, reddish sphere.

This was the mythic warrior,

The masculine "Heart
of the Heart"

The "Child in the Womb"

The "Child on the Lap"

The "Pupil of the Eye"

The "Axle of the Cosmic Wheel"

The most active figure
of world mythology

Sky-worshippers everywhere knew
the identity of this warrior,
the victor over dragons
and chaos monsters.

This global identity of Mars
as the greatest of warriors
shouts to us an
unrecognized history.

Star-in-Crescent

On the great sphere of heaven

a bright crescent appeared,
with the orb or star of
Venus between its horns.

Things never seen in our sky were
once revered around the world.

As the Earth rotated
on its axis,
the crescent marked out a
cycle of day and night.

Crescent below in the phase
of greatest brightness,
crescent above in the
phase of dimming.

Though our Sun was present, casting
its light on the configuration,
it was not itself in the
visual theater of the gods.

I call this "The Polar Configuration"
because the Earth itself
rotated in alignment with
the forms in the sky,
placing these forms at a celestial pole
around which the heavens visually turned.

The configuration evolved
through numerous phases.

The number of streamers

changed repeatedly,
as did their observed form.

Every change in
relative position
produced dramatic changes in the
appearance of the configuration.

Electric Universe

In 1996, the Canadian filmmaker Ben Ged
Low spent many months in Portland,
producing a 90-minute documentary
on the reconstruction.

At that time many dynamic
issues were largely unresolved.

But later that year, the Australian
physicist Wallace Thornhill
flew to Portland for
a 30-day visit.

He convinced me that the forms I'd
reconstructed were electrical.

They were plasma discharge streamers,
stretching between planets.

He explained that, in a
radial electric discharge,
both the number of streamers
and their concrete form
will change with the

intensity of the discharge.

The whirling forms I'd reconstructed
in the common symmetry,
which I'd often laughed about,
did indeed have a
physical explanation.

At the time of his visit, Wal Thornhill
had devoted more than 25 years
to exploring what he called
"The Electric Universe."

His work follows in the traditions of the
electrical and plasma science pioneers,
who showed that electricity
plays a major role in space.

That galaxies, stars and planets
are formed electrically.

That comets, with their bright tails, move
through an electric field of the Sun.

His electrical interpretation
extended to the origin
of bizarre landscapes
on planets and moons
now explained by the well-tested
principles of electrical arcing.

In an electric solar system, if two
planets or moons approach each other

from regions of different potential,
electric discharge will occur,
producing plasma formations stretching
between the approaching bodies.

Plasma laboratory experiments can tell
us what the formations might look like.

The backbone is typically a
column of twisted filaments,
but disks and embedded cylinders also
arise to evolve in spectacular ways.

The counterpart to
such formations
can be seen in ancient depictions
of the cosmic thunderbolt.

But what an outrageous idea,
that exotic formations could arise
between planets in close approach!

"The space between the two planets
lights up and is set aflame by both
planets and produces a train of fire."

"Heavenly fire is spit forth by the planet as
crackling charcoal flies from a burning log."

"[Archaic traditions say] that these bolts
come from the planet Saturn, just as
the inflammatory ones come from Mars."

What then was the relationship

of the cosmic thunderbolt
to the magical swords, arrows, clubs
and spears of the great warrior-gods?

With a stunning accord, ancient
languages identify these weapons
as special forms of the
cosmic thunderbolt.

Scholars have already identified
the sword and arrows of Apollo

The spear of Zeus

The trident of Poseidon

as aspects of the
divine thunderbolt.

The same linkage occurs with the
Greek Ares, the Latin Mars,
whose sword was his identity.

Ares (Mars) "darted swift and bright
as the thunderbolt terribly flashing
from the mighth hand of Zeus."

First came the thunderbolt,
the core archetype,
then came its mythic interpretation
as a weapon of the warrior-god.

"...A 'derivation' of the sword from a 'root' or
archetype in lightning is universal and world wide."

Placed in the hands of the Gods,

the cosmic thunderbolt provides
a bridge the Latin Mars,
the Latin Mars, joining the mythic world to
the leading edge of plasma science.

POLAR CONFIGURATION

The Dawn of Civilization

One simple truth will change
the future of science
and our understanding
of human history.

The ancient sky bore no resemblance
to the sky we see today.

Above human witnesses, planetary
formations hovered close to the Earth.

ARCHETYPE:

Mother Goddess as "Great Star"

...with numerous variations

Babylonian star

of Ishtar (Venus)

...with enclosed, unidentified sphere

One electrical form

metamorphosed into another

in the celestial dance of the mythic

star-goddess and the cosmic warrior,

astronomically identified as

the planets Venus and Mars.

Ancient observers saw the
head of the warrior-king
wrapped in the radiance of the
star-goddess, it was his crown of glory.

ARCHETYPE:

Star Goddess as Crown

And it was the warrior's magical protection,
worn as a helmet or crest, but much more.

The dancing Aztec god wore
the rays of Venus as a crest
but also held the so-called half-star
of Venus in an outstretched hand.

And he even wore this protective
radiance as his skirt.

The theme is universal, the warrior's
armor was the radiance of the great star
and that is the explanation for the
unexplained "radiate crown of kings".

Greece: Warrior god Apollo

Crown of Antiochos

Roman crown of kingship

Heraldry: "Celestial Crown"

As the forms of the configuration changed,
the mythic interpretations changed as well.

ARCHETYPE:

"Spread Tail Feathers"

In pictures and words,
the ancient chroniclers
recounted the cosmic conjunction
of the goddess and the warrior.

ARCHETYPE:

Orb (eye) in the "Hand of God"

The goddess was the eye and the
warrior was the pupil of the eye.

Two spheres in alignment inspired
a mythical interpretation
as an eye and pupil inscribed
upon the Hand of God.

In ancient Egypt, the "Hand of Ra"
was the Eye goddess Iusaset.

The Egyptian warrior gods were named
Arit, the "pupil" of the feminine eye.

The five fingers of the hand
were the visible aspects
of an eight-spoked wheel
in a different phase.

Buddhist symbolists knew that the
hand bore a secret relationship
to the eight-spoked
dharma-wheel.

Buddha was the motionless axle of the
wheel, enthroned upon the hand of heaven,

he was surrounded and protected by
the celestial fire of the gods.

Every form that arose provoked a
variety of mythical interpretations,
not just a single idea.

The spokes of the wheel were the animating
soul and power of the universal sovereign,
exploding into life at sunset, that is the
meaning of the mythic "Plant of life".

ARCHETYPE:

Goddess as "Plant of Life"

Greece: Rosette of Aphrodite (Venus)

Things seen in the sky provoked
hundreds of imaginative images
and not one speaks for the events in
the heavens today, not a single one.

Even when the concrete form of the
cosmic original was forgotten,
the imaginative idea persisted
for thousands of years.

ARCHETYPE:

"7-Headed Serpent"

Innumerable concrete
details would not allow us
to just make up explanations
for the myths and symbols.

ARCHETYPE:

"Spread Tail Feathers"

Some symbols remained abstract
but more often they added mythical
interpretation to the underlined form.

And many mythical images,
seemingly incompatible,
will trace to the
same tangible form.

Goddess Venus as dove

The plant of life was not just
an attractive design element,
it was a form in the sky, inspiring
a story of vast influence.

ARCHETYPE:

Goddess as "Plant of Life"

In his birth or re-birth the warrior-god
emerged from the radiant flower.

Egypt: birth of the Warrior-King

Egypt: Nefertem emerging from the lotus

The diverse mythical interpretations and the
larger stories told about these events,
all point to a unified
substructure of human memory.

ARCHETYPE:

"Wheel of Heaven"

A great wheel turned in the heavens and
it was remembered around the world.
Even the modest displacement of the aligned
powers was captured in ancient images.

ARCHETYPE:

"Displacemente"

Scallop:

symbol of Aphrodite's "birth" and departure

Why was the Egyptian goddess identified
as the headdress of the warrior-king?

It's the underlined form
that gives us the answer.

Warrior Hero

A primeval sun ruled the world shining
most brightly in the night sky.

A crescent came to adorn this primeval
sun and it certainly was not our moon.

The great star of Venus
rested between its horns,
and visually seated within the
star, was the planet Mars.

A luminous stream appeared
to descend from Mars,
the first form of the
cosmic thunderbolt.

Greece:

forms of the cosmic thunderbolt

Tibet:

forms of the cosmic thunderbolt

Human imagination saw sword or dagger,
thrust into the region below.

The warrior-god was his sword,
envisioned also as an axial pin, peg
or mooring post of the turning sky.

The same thing as the stem
of the plant of life.

And the pillar-like lower
limbs of the goddess.

The same form in the sky was seen as a
protruding tongue of both the warrior
and the angry goddess.

A pronounced movement
of Mars occurred,
close to but not precisely
on the planetary axis.

Now the celestial crescent appeared
as the horns of the warrior himself,
in his identity as
the Bull of Heaven.

ARCHETYPE:

"Bull of Heaven"

And it should not surprise

us that the foundation post
bore the image of the
bull at its apex.

When it reached the Earth, the
stream presented the form
of a great pillar
or cosmic mountain.

"O Great Mountain (Enlil), whose head rivals the heavens,
Whose foundation is laid in the pure abyss.
Whose horns gleam."

Perhaps it is too much to believe
that the famous Bull of Heaven
was just the pillar
and shining horns,

"I am the bull, the Old One...
I support the sky with my horns."
"...the pillar of the stars,
the Bull of Heaven..."

"whose horns shine, the anointed
pillar, the Bull of Heaven."

To these events we will trace the worldwide
myths of the heaven-lifting cosmic giant,
the first active form
of the warrior-hero.

His upraised arms were precisely the same
thing as the horns of the Bull of Heaven,

ARCHETYPE:

"Cosmic Pillar"

a testament to the integrity of
the substructure, the archetypes.

Greece:

Heaven-lifting Atlas

THE MYTH OF CREATION

Conical Crowns of

the Warrior King

In some phases with the movement of
Mars, dust and electrified plasma,
streaming between Mars and Venus, became
visible to terrestrial observers,
even small changes in
this dusty plasma stream,
were we to view the
formation from space,
would create distinctive differences in
the appearance of the configuration.

The great kings of ancient
times wore conical crowns
in numerous and always
enigmatic varieties.

For these revered forms the experts
can find no referent in nature today.

Yet the priestly chroniclers of

antiquity knew that these crowns
imitated the vestment
of the cosmic warrior,
the prototype of the
warrior king on Earth.

The Curling Life-Breath

ARCHETYPE:

"Curling Life-Breath"

With progressive instability and
displacement from the axis,
the stream joining Mars and
Venus spiralled outward.

This was the mother
goddess herself,
the radiant eye, heart and
soul of the primeval sun,
now externalized as a
curling lock of hair.

And the earliest sources leave no doubt
that it was a visible form in the sky.

Egyptian texts invoked "the lock
of hair which circles round about."

The primeval sun god Ra had "the
light of the lock of hair on him."

The side lock of the warrior-king mimicked
that of his predecessor, the cosmic warrior.

Horus:

"He of the Sidelock"

This curling life breath
provoked innumerable symbols,
far more than we
could include here.

Just one example was the
mooring post in the sky
signifying the outflow of the eye and
the evolving form of creation itself.

A critical turn came with the
removal of the life breath curl
unleashing the terrible
goddess and a cosmic crisis.

In his rage, the Hindu Shiva
tore out a lock of his hair
from which arose his
own dark aspect,
the monster Virabadra
and close by the terrifying
form of the angry goddess
whom we recognize
as the comet Venus.

The life of the legendary King Nisus resided
in a tuft of hair. His death resulted when
Aphrodite Comaetho removed the strands of life.

The Greek name Aphodite Comaetho translates
astronomically as "the comet Venus."

Chaos Serpent or Dragon

ARCHETYPE:

"Chaos Serpent-Dragon"

The medusa archetype was only a nuance
away from the celestial serpent or dragon,
with its bright filaments,
effusive feathers,
long flowing hair and
lightning emanations,
the global symbols
of the great comet.

In Egypt, the eye, heart and soul
of Ra, departed from the god
to become the fiery Uraeus
serpent, rampaging in the heavens.

"The tip of its flame crosses the land from
the sky... No one at all can approach her,
the streams behind her are flames of fire."

Astronomical traditions throughout
the Mediterranean and Near East
confirm that this goddess
was the planet Venus.

The ancient Sumerians
identified Venus as Inanna,

the serpent or dragon mother,
unapproachable in her rage.

"Like a dragon you have deposited venom on the land...

Raining the fanned fire down upon the nation."

The disordered comet-like hair of the
Chinese dragon was an overriding feature,
as was the discharging sphere or
so called night glowing pearl
its spiraling attributes.

And the lightning emanations
of the dragon itself.

Long after the remembered events the Aztecs
still knew the comet as streaming feathers.

They knew the connection of the
comet to a cosmic serpent,
and they remembered the connection
of both to the planet Venus.

Creation

From the episodes of disorder a phase
of celestial construction emerged,
focused on the activity of the
spiraling form or rayed spiral,
remembered as the
Serpent of creation.

This was the expanded enclosure
of the Mother Goddess herself,

the motherland in the sky, the two
subject of the archaic creation legend.

ARCHETYPE:

"Serpent of Creation"

The mythic home of gods and
heroes lay within an enclosure
formed by the body of the
celestial serpent or dragon.

ARCHETYPE:

"Oroborus" (Enclosing Serpent)

The evolving forms noted
here are provable phases
in the biography of
the mother goddess,
largely ignored but confirmed at the level
of concrete detail in the early cultures.
The priests of ancient Egypt knew that
the White Crown was the Mother Goddess.
"I know my mother,
the White Crown."

They knew that the life-breath curl
and the revolving lock of hair
were the same goddess.

Isis and Hathor were also
named, "the side-lock"

Across all of Egypt, the chroniclers

remembered the luminous spiral
with its radial projections as the
agent of celestial construction.

Egypt:

Serpent of Creation

From north to south, they described the
goddess originally "The Eye of Ra"
taking the form of a flaming serpent,
whose hieroglyph means goddess.

"The cobra-snake of Ra, who came
forth from him - The Eye of Ra.

She is the flaming goddess."

And it was this very serpent
that came to form an enclosure,
the boundary of Neter Ta,
the celestial kingdom.

Meso-American artists understood very
well that the fire serpent or dragon,
enclosing the land of the gods,
had appeared as a rayed spiral.

Four Streams of Life

The created land of the gods, emerging from
the dance of the goddess and the hero,
presented four streams
of light and life.

Here was the mother

land in the sky,
the celestial model for every
kingdom and city on Earth.

The lost land of
mythic ancestors,
divided by four rivers or
animated by four explosive winds
and turning as a great
wheel in the sky.

To be sure, the evolution
of myth over time
brought endless elaborations
of the archetype,
yet even in the enthusiasm
to extend the symbolism,
the substratum of human
memory does shine through.

The complexities of the
Aztec calendar-wheel
did not eliminate the axial
role of the warrior-hero,
or the four exploding
streams of life-energy,
or the circumscribing, often
double-headed, serpent,
or the identity of that serpent

as the fire of the gods.

As a rule, later spiritual traditions did not displace this human memories either, but found in them the symbolic landscape for expressing insights and beliefs that would guide later interpretations of myth.

Mountain of the Gods

Lastly, we must acknowledge one of the most pervasive symbols of world mythology.

All mythic traditions agree that the land of the gods rested on the golden or fiery mountain of heaven.

It is evident that the core symbols of the human yearning, suffering and devotion across the millennia, trace to the very events from which the first civilizations themselves arose.

Now the question must be asked: if the great mythic archetypes are explained by events unknown to our world, what can the Electric Universe and the leading edge of Plasma Science tell us about the

ancient experience?

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

A new scientific report may provide
stunning support for the role of a form
of electric current called a Birkeland
current on the cosmological scale.

A team of scientists using the ALMA telescope
to study the doughnut-shaped cloud of
gas and dust at the center of the galaxy
NGC 1068 made a shocking discovery -- two
separate disks of gas and dust are
rotating in opposite directions.

Phys.org reports on the team's discovery,
"Unexpectedly, they found two
counter-rotating disks of gas. The inner
disk spans two to four light-years and
follows the rotation of the galaxy,
whereas the outer disk (also known as the
torus) spans 4 to 22 light years
and is rotating the opposite way."

The lead author of a paper on the discovery
states, "We did not expect to see this,
because gas falling into a black hole

would normally spin around it in only
one direction. Something must
have disturbed the flow,
because it is impossible
for a part of the disk
to start rotating
backward all on its own."

Those who have followed this
series might understand
the potential significance
of this discovery.

In 2015, retired
professor of electrical
engineering Dr. Donald Scott published
his mathematical model of the structure
of a Birkeland current, which he
identified visually as counter-rotating
cylinders, and it's being seen at vastly
different scales in the cosmos, from
galaxies to planetary aurorae.

We asked Dr. Scott for his
thoughts on this latest discovery.

Well, a week or two ago,
National Radio Astronomy Observatory
announced their again of course,
"unexpected discovery" that in another

galaxy, it happens to be M 77, the galactic disk was experiencing counter-rotation.

While the part of the disk that is closest to the center of the galaxy rotates in one direction, the outer regions of the disk rotate in the opposite direction, and so there is counter rotation.

And the only explanation they could offer was that, "...counter rotation always results from the collision or interaction between two galaxies. What makes this result remarkable is that we see it on a much smaller scale, tens of light-years instead of thousands from the central black hole."

And of course, their amazement is the result of two different errors that are actually compounding each other and making the whole thing worse.

The first is, since they still refuse to acknowledge the existence of any electrical effects in the cosmos, the only tool available to them is the attractive force of gravity.

So of course, they declare

that any case of counter-rotation has to be caused by some sort of collision or near collision or near-miss or something like that.

And the second error, expressly in this press release but in other places of course as well, they repeat the self-contradictory idea that black holes that suck in matter due to a singularity -- that's an infinite concentration of matter which is impossible -- they also spit out matter at incredibly high speeds up to five hundred kilometers per second, which is more than a million miles an hour.

It's all getting sucked in, how can it be blasted out again?

But anyway, how can this have anything at all to do with the counter rotation in this particular case is not really discussed.

I feel that their mentioning of the black hole that exists there is just a red herring to distract the reader from asking the obvious question, how do you explain the counter rotation in the first place?

And I submit, there is no known scientific process that naturally produces two concentric discs that rotate in opposite directions, other than the natural counter-rotation that occurs within a Birkeland current.

It's just that simple.

So very similarly in another case I'm familiar with, there is a galaxy NGC 4550, and a well-known British astronomer tried to explain an earlier case of galactic counter-rotation in this galaxy by saying that another galaxy that was spinning in the other direction must have come close to or collided with the first galaxy.

And anyway, I discussed this in an earlier paper that I published.

But the reason the counter-rotation of stars within a galaxy hasn't been discovered as often as it might, I suggest, is because

1) the galaxy has to be oriented in such a way that the red-blue shift that reveals the counter-rotation can be measured.

It has to be oriented so that it can be measured.

For example, galaxies that are face-on to us will not show spectral evidence of counter-rotation, because it takes the stars, the stars that are involved have to be moving at least partially toward us and then away from us as they rotate around the galaxy, and that'll be so if the galaxy is at an angle but not face on.

But also, in my estimation, the primary reason that this hasn't been discovered, as much as it's seemingly being discovered now, is that it's easy not to see something if you don't really want to see it.

And so we do know of the existence of several galaxies within which counter-rotation has been measured, but in the explanation, none of them have a satisfactory explanation if electrical phenomena such as Birkeland current structure are intentionally excluded and ignored.

And by the way, if you do a web search, anyone who sees this, just go

ahead and do a web search using a search engine on 'galactic web' and if you do that well, I just did this morning as a matter of fact, and I found a Wikipedia description of the galactic web and it says the following, "In the standard model of the evolution of the universe, galactic filaments form along and follow web-like structures of dark matter.

It is thought that this dark matter dictates the structure of the universe on the grandest of scales. Dark matter gravitationally attracts normal matter and it is this normal matter that astronomers see forming long thin walls of super-galactic clusters."

Well of course, what they're missing is that the strings are made up of plasma and the formation of filaments is a very normal thing within a plasma.

That has nothing to do with dark matter or anything else, any other fairy dust they conjure up to explain what they can't normally explain.

It can't be explained without

thinking about electricity up there.

Anyway, they confidently say these kinds of things about dark matter as if they actually have seen some and measured what its properties are.

Maybe they will now say, dark matter causes things to spin!

They haven't said that one before, but that's a possibility.

Anyway, the filaments that make up the galactic web undoubtedly consist of plasma in the form of force-free currents.

They carry electric currents to and from the galaxies that form along them and when these filaments emit visible light, they're then properly called Birkeland currents.

And we've talked a lot about

Birkeland currents here on Space News.

We know that the cross sections of those Birkeland currents have regions of counter-rotation, it's the only thing in the universe that naturally does have counter-rotation.

And of course, the galaxies that form on those filaments will probably also exhibit that same counter-rotation because that's how they're formed.

Astronomers ought to know

these things as well but they don't.

They'd rather talk about things smashing

and crashing together and reject the

idea that anything

electrical is happening.

Therefore, the only tool they

have to explain things is the attractive

force of gravity, so the only thing left

for them is to assume collisions or near

collisions are the cause of

just about everything they see.

Their Big Bang story

says that everything blew apart.

OK, if you accept that, fine, but in

addition to blowing apart, then what

causes everything in

the universe to spin?

We don't know, no answer.

Every time we hear about or observe counter-

rotation of disks or cylinders anywhere,

especially at galaxies that have a

common center, think Birkeland currents,

don't think collisions or explosions.

So every time we hear about counter-rotation,

just think about Birkeland currents.

It's the only thing in the universe
that does have counter-rotation.

Our celestial neighbour,
the planet Mars.

Astronomers once considered Mars to be a long
barren and geologically dead rock in space.

But since the arrival of our
probes beginning in the 1960s,
the planet has
come alive for us.

It does not reveal the inactive
and worn down landscape
astronomers and planetary
scientists had expected.

Nevertheless, investigators continued
to apply geologic concepts
based on their understanding
of the Earth and the Moon.

They could only see volcanism, erosion,
surface movement and surface collapse,
all punctuated by episodic impacts
from space over billions of years.

What force created the sharply cut gouges
and depressions across the surface of Mars,
looking as if a giant trowel
descended to scoop out material,
at radically different and
irreconcilable depths.

Running north to south, we see massive
interwoven scratches or grooves
extending hundreds of miles.

And how remarkable that a planet
only half the diameter of Earth
exhibits canyons on a scale dwarfing
anything seen on our own planet.

And mountains that would
tower over Mount Everest.

Today, no planet outside the Earth has
received more attention than Mars,
but the mysteries and theoretical
contradictions have grown spectacularly.

For decades now,
investigators have wondered
why the two hemispheres of Mars look as
if they were formed in different worlds.

A southern hemisphere
dominated by craters,
a northern hemisphere with only
sparsely scattered craters.

And note, the contrasting crustal
depths of the two hemispheres.

Shallow crust in the North, much
thicker crust in the South.

Why would a planet evolving in isolation

display such a profound dichotomy?

It's as if, some unknown force excavated
the northern crust miles deep.

The hemispheric removal
of crustal material
requires a force external to
Mars, acting on the planet.

But when it comes
to external events
scientific convention has
only one thing to work with:
random collisions.

Could a planetoid or huge
asteroid crashing into Mars
have removed millions of
cubic miles of crust?

A shattering impact
is all that theory would allow.

But what would Martian
history look like
were we to include
electrical events?

Events on a scale sufficient to sculpt the
surface of the Red Planet from pole to pole.

Of all the enigmatic
features in the solar system

perhaps none provokes

greater amazement

than Valles Marineris.

The largest canyon on

any planet or moon,

the deep trench complex stretches a

third of the way around the planet,

hundreds of times larger

than the Grand Canyon.

It would reach from San Francisco

to New York and beyond.

Prior theory of planet formation had never

anticipated such a chasm on a small planet.

What natural force excavated

this colossal trench?

With the arrival of

the Mariner probes,

NASA scientists thought the chasm

could have been cut by water erosion,

though nothing even close was ever achieved

by water on the known watery planet Earth.

In any erosional hypothesis, three million

cubic miles of material were removed.

3,000,000 cubic miles! And

it had to go somewhere.

Neither the means of fluid drainage, nor

the vast outflow required are in evidence.

Now, we know that Valles Marineris

reaches to a greater depth

than any outflow channel

originally envisioned.

And the tributaries

imagined by some

turned out to be cleanly cut

alcoves and stubby depressions.

They are not connected to

feeder streams at all.

One portion of the Valles Marineris system,

in particular, underscores our point here.

Planetary scientists acknowledge that Hebes

Canyon,

much larger than our Grand Canyon, is an

inseparable part of Valles Marineris.

The scientists have now acknowledged

it was certainly not created by water.

Hebes Chasma: "a fairly large canyon in the Valles Marineris

complex that has absolutely no inlet or outlet on the surface."

Nor is it plausible to suggest

that surface spreading

created the massive caisson

of Valles Marineris

with its repeated morphology

of sharply scalloped walls.

The surface

was not torn, it was carved

and the detailed images

imply a removal of material

along the entire

length of the chasm,

a process clearly illustrated by the

neatly machined so-called tributaries

all the way up to their rounded,

cleanly cut terminations.

Whatever formed the canyon complex could not

stop at the margins of the primary channel,

but added irregular craters and crater

chains, and surface grooves and gouges.

So, the question can

not be escaped.

Is there anything known

to science today

that can account for the

extraordinary profile

of Valles Marineris?

There is an explanation

well-known to science

though it's never entered

the geologist's lexicon.

Lightning!

In the plasma laboratory,
it's power is demonstrated
in electric discharge
experiments.

But the form unfamiliar to conventional
science today is the cosmic thunderbolt.

It was the brilliant engineer Ralph
Juergens, who first suggested decades ago,
that cosmic thunderbolts
carved Valles Marineris.

"..This entire region resembles nothing so much
as an area zapped by a powerful electric arc
advancing unsteadily across the surface..."

With the benefit of
more recent data,
electrical theorist Wallace Thornhill
returned to this extraordinary possibility.

"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."

Yes, the electric hypothesis
will unnerve many scientists
but it is the only hypothesis that

meets the test of direct observation.

Here is a scar left by an electric
arc on a piece of wet wood.

Electric discharge provides a direct and
complete explanation for the Valles Marineris.

The so-called tributaries of the valley were
cut by secondary streamers of the discharge.

That is a typical signature of an electric
arc when it cuts a surface channel.

And here is the scar from electric
discharge to an insulator.

Notice in particular the network of
secondary streamers to the left;
a perfect counterpart to the
western edge of Valles Marineris.

It was long held that this
remarkable region on Mars
was the result of uplift,
fracturing and spreading.

And from a distance, it
did look like fracturing.

But with a closer view in front of us, it is
simply irrational to cling to that interpretation.

Material has been cleanly removed, exactly
as in the discharging to the insulator.

The evidence now available

demands a new perspective,
a larger field of view.

In Thornhill's interpretation,
the discharge took the
form of a plasmoid,
not unlike the plasmoid from which
the spiral galaxy is formed.

Plasmoid simulation

On his website, Thornhill noted
how the discharge effect
spiraled upward to the East
and downward to the West,
an effect that shows up quite clearly on
the elevation map given on his website.

In fact, if we extend the
view of the elevation map,
we see an even larger effect.

It seems that the spiraling trails to the
East and West nearly completed two circles
as they swung back to
the trench itself.

But one difference between the northern
and the southern extension stands out.

The northern extension is entirely
constituted of ravines and depressions,
while the southern extension consists

of ridges and mountainous terrain.

For this unusual contrast, electrical experiments offer a startling explanation.

It was George Christoph Lichtenberg who in the 18th century first showed that electric arcs create ravine networks on more negatively charged surfaces and elevated ridges on more positively charged surfaces.

Could it be that simple?

...that a cosmic thunderbolt

carving Valles Marineris

acted on two regions of different charge, negative to the north and positive to the south?

If such was the case, the only plausible cause of the charge differential would be an electrical exchange between Mars and other charged bodies in the past.

And what was the relationship of these events to the hemispheric dichotomies, the removal of crustal material to the North and the densely cratered southern hemisphere?

In the electrical interpretation, the violent excavation of the surface to create Valles Marineris would have created immense deposits of sediment on surrounding topography.

And indeed, we see that previous craters
in the region were completely buried,
with only the largest craters appearing as
outlines penetrating through the deep deposits.

It's apparent that the released
material had a net drift to the West,
since the blanket of deposited sediment
stretches all the way to the eastern flank
of the towering Olympus Mons.

Keep in mind as well that
an electric discharge
at energies necessary to create
the chasms of Valles Marineris
would have ejected great volumes
of rocky material into space.

Much of the rocky debris would have fallen
back to litter the Martian landscape.

And indeed, shattered rock of all sizes across
the surface of Mars is a long-standing mystery.

And the mystery is resolved by electrical events
on a continental and even hemispheric scale.

Given the energies of the events
considerable volumes of material would
have surely escaped the planet altogether.

And what might this tell us
about the Mars-Earth connection

in our reconstruction

of ancient events?

Or the surprising discovery that rocks
from Mars have fallen on our own planet?

When Meteorites Fell from Mars

One of the great surprises

of the Space Age

was the discovery that certain meteorites
had arrived from the planet Mars!

Initially, most scientists
rejected the idea outright.

For rock to escape

Martian gravity,

they could only imagine

an asteroidal impact

blasting rock into space at more
than three miles per second!

That is five times the muzzle
velocity of a hunting rifle.

The energies would either
pulverize or vaporize the rock.

But the question was eventually settled by
gases trapped inside a suspect meteorite.

The gases bore the atmospheric
signature of Mars.

Martian meteorite

"The trapped gases match these that Viking
measured in the martian atmosphere."

By 2003, at least 30 meteorites
had been identified as Martian.

But how could the removal of rock from
the Martian surface have occurred?

Planetary scientists began
to offer exotic speculations
based on mathematical models.

No one seems to have wondered if
the vast debris fields of Mars
might point the
way to discovery.

Even the smaller rocks viewed here from
space would weigh tons on the Earth.

We have proposed that in a former
epoch of planetary instability
electric discharge excavated the
Martian surface miles deep,
throwing massive quantities
of rock into space.

This would mean that most of the
Martian rocks reaching Earth
would have come from
well below the surface
and would not even bear the

atmospheric signature of the planet.

So, it is not unreasonable to suspect that
the planet Mars was not a small contributor
... but the greatest contributor to meteoric
bombardment of Earth in ancient times!

On this question, ancient testimony
holds a surprising answer!

Worldwide accounts describe
apocalyptic wars of the gods
punctuated by lightning
and falling stone!

Rocks from space falling on the Earth have no
connection to lightning and thunder in our own time,
but the ancient
connection is clear.

In many different languages meteorites and
exotic rocks were called thunderstones,
or thundereggs,
said to have fallen in the
great wars of the gods.

It seems that the answer lies with
the worlds first astronomers.

They insisted the
rocks from space
were hurled by the warring
thundergod, the planet Mars.

"The ancient Babylonians specifically referred
to meteorites falling from the planet Mars."

"You hurl the towering stone...

You hurl the stone in fury."

From one land to another ancient sky
worshippers celebrated the planet Mars
as the cosmic prototype
for the warrior on Earth.

It seems that rocks
encircling Mars,
when Mars loomed
huge in the heavens,
appeared as a fiery
retinue of warriors
with ablazing countenance.

The terrifying Maruts
of Hindu literature
derived from the same Indo-European
root as the Latin Mars.

They are the sons and
companions of the Hindu Rudra,
"the Red One"
who could hardly be
other than Mars itself.

The Marutas hurled in the heavens
bringing blasts of fire,

of lightning and falling stone.

"The glittering army..."

"Armed with lightning spears..."

Babylonian astronomical

traditions

declared precisely the same thing

of Nergal, the planet Mars.

"Raging demons with awesome numbers

run at his right and at his left"

the texts say.

In the same way, the classical poet

described the dwelling of the Greek Ares,

the Roman Mars,

ringed by a thousand Furies.

Just as a horde of Berserkers,

or the furious Valkyries,

accompanied the devine warriors in archaic

traditions of Germany and Scandinavia.

Phobos

For many years, our claim has been

that catastrophic electrical exchanges

between Mars and other

planets at close range

removed immense volumes of rock, dust and

debris from the surface of the Red Planet.

But now planetary scientists

face an additional challenge.

The surface of the

Martian moon Phobos

reveals a chemistry very close

to that of Mars itself.

Scientists now say that Phobos is not the

captured asteroid that they have once thought.

Like the meteorites from Mars,

even this moon seems to

be composed of material

blasted from the

planet's surface.

"Observations from Phobos appear to match the types

of minerals identified on the surface of Mars."

"This moon might itself have originated from material

thrown into orbit from the Martian surface."

Theorists envision rocky debris orbiting

Mars after a major impact event,

then gradually accreting

into the observed moon.

But, it is surely more likely

that collisions of rocks in orbit

would progressively wear them down

not create a moon...

The idea of gravitational accretion

followed by meteoric impact

is, in fact, contradicted by the most

visible surface features of Phobos.

Imagine the secondary collision

that impact theories required in order

to create the gigantic Stickney crater

5.6 miles (9.01km) in diameter,

almost half the

diameter of Phobos

along the axis of the

supposed impact.

The trivial gravity of the moon could never

hold together a loose collection of rocks

experiencing such an event.

Parallel channels and crater

chains running in every direction.

Is it a coincidence that everything required

to fuse material in the implied way...

has already been demonstrated by

electric arcs in the laboratory?

Pinching material into

spherical shapes -

the same electric force that produces

parallel channels and crater chains.

Electric arc experiments

It should not surprise us that a body

fused electrically into a rough sphere

would continue to attract
the surrounding dust
created by the prior catastrophic
events on the Martian surface.

But no popular theory has explained how
Phobos acquired a surface layer of dust
or fine grain estimated
at a hundred meters deep.

Even moderate vibrations
created by the larger
supposed impacts
would immediately have propelled
collected dust grains back into space
due to the rock's
minuscule gravity.

Enhanced colors suggest
electrical sorting of dust

The available evidence points directly to
the very center piece of ancient fears

... the cosmic thunderbolt ...

and the ancient story of the
great warrior in the heavens

of his raging companions

and of hurled stone

does not end here.

Scarface

No surface feature on any
body in the solar system
is more recognizable than the
great scar of Valles Marineris.

And it appears, that ancient nations preserved
the story about this memorable scar.

The scarred face of
the Aztec god Xipe,
the celestial model of
the devoted warrior,
is not easily forgotten.

And many cultures recall a
legendary warrior or giant
recognized by his
distinctive scar.

But could this scared god really
have been the planet Mars?

Scarface was the name of a
legendary Blackfoot indian warrior
also called Star Boy.

His counterpart among the Pawnee was
the great warrior named Morning Star
not Venus they say,
but the planet Mars.

The Greek Ares personified
the lightning weapon

and the Greeks identified

the god as the planet Mars.

When wounded in battle he rushed to Zeus

with the shout of a thousand warriors

to display the deep gash.

In the different cultures, the warring god appears

alternately as a hero vanquishing chaos monsters

and a rogue warrior

or dark power.

We see the two aspects of the warrior

archetype in the Hindu Indra,

famed for the

cosmic thunderbolt.

And the giant Ravana,

who is said to have been permanently

scarred by the thunderbolt.

Greek poets knew the monster Typhon

as the owner of a lightning weapon

but also as the

lightning scarred god.

And the same is true of

the giant Enceladus,

alternately said to have been

scarred by the thunderbolt of Zeus

or the spear of Athena,

which meant the same thing.

We have good reason
to ask, therefore,
if the scar-faced theme derived
from remembered events
when planetary gods waged
battles in the sky
and the planet Mars acquired
it's unforgettable wound.

Olympus Mons

In it's sheer size the towering
Martian mountain Olympus Mons
dwarfs anything seen on Earth.
The great mound on the Tharsis
Rise stunned planetary scientists
as it rose through a dust cloud to
greet the Mariner 9 mission in 1972.

Almost as flat as a pancake,
Olympus Mons is three times
the height of Mount Everest
and as wide as the
entire State of Arizona!

From its discovery onward,
planetary scientists interpreted Olympus
Mons as a classic shield volcano,
comparing it to the great shield
volcanos of the Hawaiian islands.

But, Olympus Mons is as large as the
entire Hawaiian island chain of mountains,
from the sea floor
to their summits.

Numerous features distinguish it
from any shield volcano on Earth.

It's steep scarp rises up
to 4 miles (6.43km) high.

No shield volcano offers a
counterpart to this towering cliff.

(Belknap Shield Volcano) The
defining feature of a shield volcano
is the gentle extrusion of
fluid or low viscosity lava.

Shield volcanoes do
not present a scarp
and a scarp 4 miles high is
simply out of the question.

"The scarp is of unknown origin."

"This steep cliff around Olympus Mons is peculiar and
not characteristic of terrestrial shield volcanoes."

In fact, one engima after another
leaps out at the observer.

A blanket of incredibly fine,
filamentary ridges and ravines,
a surrounding aureole,

exhibiting sharply cut

ridges and channels

and stupendous carved blocks.

"The origin of the deposits has challenged planetary scientists for an explanation for decades."

Subsequent to its formation,

much of the aureole to the East

was apparently buried by equally

enigmatic activity in the region.

Indeed, the Tharsis Rise as a

whole is a long-standing enigma,

2,500 miles (4,023 km) across and

more than 6 miles (9.65km) high.

A vast bulge of this sort has no place in the standard evolution of an isolated planet.

"The origin of the Tharsis

Rise is not well understood."

Planetary scientists

still debate the enigma,

but if Mars formerly engaged other

charged bodies at close range,

the great bulge is the very

deformation we would expect.

We have claimed that the surface of

Mars was sculpted by electric discharge

in an epoch of solar system

instability and planetary violence.

Yes, this is an outrageous idea,

but Olympus Mons itself has all the

characteristics of a lightning blister.

Such raised bell-shaped blisters can be

found on the caps of lightning arrestors

after a cloud to ground strike.

And we find them in other

natural settings as well,

they're elevated fulgarites, what

some have called fulgamites.

The discharge that creates

raised fulgurites

is often followed by lesser strokes

along the same ionized path

creating overlapping pits on

the top of the formation,

just like the circular craters

on the summit of Olympus Mons.

On the Martian mountain the smaller

craters center on the walls of the larger

and are cut to a greater depths,

as if with a cookie cutter.

The material that forms the raised fulgarite

is scavenged from the surrounding surface.

The result is an encircling

depression or moat.

This characteristic is so clear and obvious
as to raise an critical question...

Is there a moat around the
base of Olympus Mons?

Planetary scientists

say there is a moat,

but that its remains are only

slightly visible to the West

and the rest of the moat had been buried by later
deposits of material who's origin is still debated.

They explain the moat as being

an effect of Olympus Mons

sinking into the local terrain

over long spans of time.

But is another

explanation possible?

The features of Olympus

Mons are, in fact,

a perfect fit to an electrical

interpretation down to numerous details.

Several years ago, Wal Thornhill

conducted a laboratory experiment

to demonstrate the effect

of an electric arc

on a positively charged,

or anode clay surface.

At moderate power, the electric arc raised a circular mound from the surrounding material to create both, a moat and an encircling fluid aureole extracted from the clay, while also carving a crater on the top of the mound and cutting pits and gouges in its flanks.

As the power was increased, the arc briefly stopped moving and burnt a smaller circular crater within the pre-existing crater, leaving a glowing spot.

Scaled up to an interplanetary discharge, that glowing spot represents a duration and temperature sufficient to melt the floors of the Olympus Mons caldera craters and to produce their remarkably flat surfaces.

The Olympus Mons aureole also has it's analog on the aureoles of lightning blisters showing concentric scarring.

This distinctive pattern directs

our attention to a stunning,
highly enigmatic counterpart
on the Olympus Mons aureole.

In conventional terms, the
similarity can only be accidental.

And, here is an equally
profound mystery.

Much of the original aureole was
overwritten by subsequent scarring.

It is only necessary to
look closely at the images
to see that the overwriting was
achieved by a force acting from above
with no regard for previously
formed ridges and channels.

That's the trademark of the
electric arcs acting on a surface.

In an electrical interpretation
of Olympus Mons,
successive strokes from
a cosmic lightning bolt
lifted the peak and carved
the craters on the summit.

The Olympus Mons caldera illustrates the
effect of a sputtering, rotating arc,
superimposing flat bottom craters

on the summit of an anode blister.

It's rapid movement will

frequently cut steep terraces

into the walls of the

superimposed craters.

We see the effect most clearly on the caldera

walls of neighbouring Ascraeus Mons.

On a planetary scale a cylindrical

rotating electric discharge

can be seen as an array

of smaller cylinders.

A good example is the

cylindrical Earth auroras

formed by curtains of smaller

discharge cylinders.

When electric arcs

sputter across a surface

they will often stick

momentarily to one spot,

creating a distinctive

scalloping effect,

an effect evident on the

caldera walls of Olympus Mons

and even more evident on the caldera

walls of Hecates Tholus to the North.

Cleanly cut scalloping is not apparent

on the walls of shield volcano calderas.

The highly filamentary blanket

on the summit of Olympus Mons

is to be expected if an

'interplanetary' arc

created a focal point

of negative charge

on a positively

charged surface -

like the fine filamentary tail of a comet moving

through the weak electric field of the Sun.

Here we would look for a similar

effect on the massive cloud

of dust and sediment that

fell upon the region.

Radial filaments, perhaps even

electrically fused material

would have poured over the

flanks and scarp of Olympus Mons

to fill the surrounding moat as a permanent

record of the movement of charge.

In truth, no shield volcano on Earth

replicates the morphology of Olympus Mons.

Yet, the pattern is repeated more than

once on the Tharsis Rise of Mars,

not just superimposed

craters and terracing,
but as seen in the laboratory
experiments with electric arcs,
a spectacular array of surrounding
pits and deep surface gouges.
And most extraordinary is the fact, that
the expansive carved surface seen here
reveals not a single opening to the great voids
that are supposed to lie beneath the surface
- the voids into which scientists have
assumed these pits and gouges collapsed.

Collapsed pits are
typically quite obvious
revealing either their
connection to local fissures
or openings to
cavernous space below.

Examined critically. the supposed
shield volcanoes of Mars
do not reveal the
expected features.

This may not exclude the possibility of active
volcanoes in the planet's violent past,
but with higher
resolution images
the spectrum of enigmas has

broadened spectacularly.

Electrical events are scaleable,

and it should not surprise us to find that

events similar to those producing Olympus Mons

occurred on a smaller

scale, as well.

In fact, the surface of Mars is replete

with small mounds surmounted by craters.

Abundant cratered mounds remain

mysterious to planetary scientists.

Many of these mounds are remarkably

similar to raised fulgarites.

In many instances, we see the cratered

mounds surrounded by moats or barrow pits.

An electrical explanation may be the only

explanation that can withstand scrutiny.

Most of the formations are

under half a mile in diameter.

Where we see one cratered mound

we typically see others,

sometimes by the hundreds,

even by the thousands.

We see strings of

cratered mounds

and we see parallel strings; an

unresolved geological enigma,

but an enigma that reminds us of the parallel
streamers common to electric discharge.

Many of the higher resolution
images are quite recent
and yes, it is too early to impose
any sweeping interpretation.

But, the greatest mistake would be to
ignore the converging lines of evidence,
evidence that points to planet-wide
electrical sculpting of the Martian surface
not that long ago.

Electrical Sculpting of Mars

Is it possible to identify the events that
shaped the surface of the planet Mars?

A planet of vast but
unrecognized landscapes,
vista after vista eluding every
attempt to explain them.

Scientists labour to solve the
mysteries through text book theory,
but if, as we have claimed,
the cause was electrical,
they will never get
the expected answers.

Many details of a new interpretation come from
laboratory experiments with electric discharge,

but how far can this new
interpretation take us
toward an understanding
of Martian history?

One advantage of the
electrical perspective
is that its every implication can be tested
against massive layers of evidence now available,
including wide-ranging
experiments with electric arcs.

Lab discharge
between two spheres

Anode
(Positive charge)

Cathode
(Negative charge)

If as we've proposed, Mars was
immersed in hemispheric discharge,
the planet can be viewed
as a laboratory in space
for testing the
electrical hypothesis.

Lichtenberg Figures

As seen in lightning displays,
electric arcs exhibit dendritic
branching called Lichtenberg patterns.

These look very much like the dendritic erosion created by flowing water.

And electric arcs exploding across a surface can produce sinuous channels that also resemble fluid erosion.

Lab discharge to wet wood

But there are differences.

In electric discharge

to a solid surface

the electron pathways frequently create dark spotting,

or chains of craters, running along the channel floors or close by.

The presence of crater concentrations in relation to surface channels offers a fundamental test of the electrical hypothesis.

In electric experiments, we also see coronal streamers radiating perpendicularly from the primary discharge channel.

Both, the cratering and the coronal discharge are keys to a new understanding of the Martian surface.

Martian Channels:

scalloping; crater chains;

alcoves; pseudo-tributaries

Did electric arcs cut the

great channels on Mars?

Nirgal Vallis is some three miles and

more in width and 250 miles in length.

Yes, it did look

like a dry river bed

when first seen by the

Mariner 9 mission in 1972,

but the original confidence of planetary

scientists soon gave way to doubts,

then to contradiction.

"It is not clear how this channel formed..."

A river can take many twists

and turns along its path

but its tributaries will not look like

the blunt alcoves of Nirgall Vallis.

Martian channels exhibit the predictable

features of an electric scar.

Rotating cylindrical arcs

sputtering along the

primary discharge path

produced scalloping

of the channel walls

with sharp angular projections that
are inconsistent with fluid flow.

The same process left
overlapping craters and alcoves
that make no sense in terms of
familiar erosional patterns.

We see virtually identical craters, alcoves and
sharply cut stubby gouges along Nanedi Valles.

Nanedi Valles:

"The valley's origins remain unclear."

Numerous other Martian rilles
underscore the same enigma
and the unanswered questions
grow year by year.

Nirgal Valles "tributaries"

Electric arc to wood

"Collapsed Lava Tubes"

Planetary scientists identify depressions
such as these, as collapsed lava tubes.

Lava tubes form as flowing molten rock
cools and hardens at its surface,
insulating the lava below so it continues
to flow in a tube that eventually empties.

When an empty lava
tube collapses,
the result will be an

entrance to a lava tube cave.

A good example is "Barker's cave" in Australia.

So, a cave entrance is the first thing to look for on Mars.

The second thing to look for is a rubble field created by a collapsing roof.

And a third thing to look for is abundant outflow since the emptying of a lava tube requires an outflow region.

Lava outflow

But in reviewing innumerable instances of claimed lava tubes collapse on Mars we find no cave entrance, no rubble field from a collapsed roof and no outflow.

The depressions stand alone with literally nothing to support the theoretical interpretation.

Like any fluid, lava flow follows topographical relief, always running downhill.

The channels seen here change directions randomly in apparent disregard for topography.

They make 90 degree turns
unrelated to surface gradients.
And they also cross over each other
with no disturbance of either.

These depressions can not
be collapsed lava tubes,
but what are they?

What you see here is
not the planet Mars.

It is a surface affected by very
high voltage, but microamp current,
creating a complex of
gouges and craters.

Again, in electrical terms
craters and channels are
inseparable companions.

"Fractured" Terrain

In responding to the mysterious
channels and depressions on Mars,
many planetary scientists thought
they saw spreading and fracturing
and, indeed, evidence of fracturing
is present on Mars as seen here.

Here there are no associated
craters or crater chains
and the nature of the stresses acting

on the surface is an open question.

Planetary scientists think in the same terms
when considering the region of Avernus Colles.

They identify the channels
as cracks or fractures.

But why the concentrations of
craters and crater chains?

A rotating electric arc traveling across the
surface can alternately sputter forward
to produce linear
chains of craters,
or advance on a continuous path
to cut channels as if by a router
with uniform depth
and parallel sides.

As seen in laboratory experiments
with electric discharge channels,
here, the channel width will be
the width of the rotating arc
at it's contact
with the surface.

VEMASAT Laboratories, Earth

Avernus Colles, Mars

Crater Anomalies

The question of crater formation on rocky
planets and moons must be re-opened.

The impact explanation would mean it is only necessary to count craters in order to calculate the age of a surface.

But electric discharge on an hemispheric scale could quickly create a surface that looks a billion years old to those counting craters.

Plasma scientist Dr. J. C.

Ransom of VEMASAT-Laboratories conducted a series of experiments with electric arcs.

Electric discharge produced surface cratering patterns closely resembling those observed on planets and moons.

Even a surface darkening and central bumps or mounds of so many craters on Mars were present in the laboratory experiment.

Electric arcs can also produce cratering patterns that could never be produced by impact.

Complex terracing of crater floors and crater walls are a common effect of a

rotating electric arc

or discharge streamer.

Across the surface of Mars we observe
countless examples of exotic terracing.

Impact theory was never able
to resolve the mysteries.

So-called bull's eye craters
with a central crater
inside a larger crater
are surprisingly common on Mars.

Could this be a rare accident?

That explanation is reduced to absurdity
when two such craters are seen side by side.

In fact several bull's eye craters
appear within the same region of Mars.

But an ionized discharge path of lightning does
allow for subsequent discharge along the same path.

The bull's eye crater
is a logical extension
of the electric model.

And when it comes to
improbable events side by side
these two craters with central peaks
each terminating in another crater
will certainly never be
explained by impact.

Impacts do not create
hexagonal craters.
But look closely at
this region of Mars
and you'll see several hexagons,
an observed form taken
by rotating plasma
as seen in the planet Saturn's
electrified polar hexagon.

In an extended discharge,
systematic cratering, pitting,
or etching can be the norm.

That's why in
industrial applications
electric discharge machining can achieve
exceptionally dependable results.

The microscopic pitting
of electric discharge
can give a consistent depth
and a remarkably smooth surface
despite the fact that the surface is
entirely constituted of craters or pits.

The same effect can be observed
on seemingly smooth surfaces
in the northern
hemisphere of Mars,

surfaces that have been

excavated miles deep.

But look more closely with the

help of recent high-res images

and smooth surfaces are revealed to

be nothing more than fields of small

densely packed craters.

The baffling crater

field seen here,

like so many others on Mars,

is a perfect counterpart to an

electrically machined surface.

Martian region in high resolution

Electric discharge machining

(electron microscope)

And don't underestimate the scale of

this dilemma for planetary scientists.

We witness a pattern at both, the low

points and the high points on Mars.

From the bottom of Zunil crater in

the depressed northern hemisphere

to the highest point on Mars, the

summit of towering Olympus Mons.

Here no grasping for conventional

explanations such as a dune field

could possibly account for what

leaps out at the observer.

The baffling crater

fields seen here,

like so many others on Mars,

is a perfect counterpart to an

electrically machined surface.

Electric discharge machining

(electron microscope)

Lightning's Dendritic Forms

Lightning in slow motion

More than two centuries after

Benjamin Franklin flew his kite,

the origin and behaviour of lightning continues

to amaze and to puzzle the lightning specialists.

Lightning will occasionally imprint it's

distinctive form on terrestrial surfaces,

Lightning strike on a sidewalk

and even on the skin of humans.

In the laboratory, the counterpart to

lightning is the Lichtenberg figure,

perhaps the most common and fascinating

form taken by electric discharge.

Dendritic means

tree-like branching

and dendritic forms can be

easily confused with fracturing.

The dendritic patterns seen here are not fracturing, as the term is normally understood, but electrical break down channels on a polycarbonate plate.

Georg Christoph Lichtenberg appears to have been the first to demonstrate the different forms taken by dust on positive and negative surfaces.

A line of investigation later followed by others but with no impact on planetary science.

Late in the 19th century, industrialist Lord William G. Armstrong explored the power of electricity to produce exquisite forms on surfaces of different charge.

The feathery qualities of Lichtenberg figures on a negative surface could be compared to the more dendritic patterns on a positive surface.

"Captured" Lightning

At Stoneridge Engineering, the technology of Lichtenberg figures has produced an art form, lightning captured in clear acrylic blocks.

The blocks are bombarded by electrons from a 5 megavolt particle accelerator arriving at nearly

the speed of light

but, coming to a stop within a

fraction of an inch into the block,

a cloud of trapped

negative charge.

Here, the event producing the dendritic channels

is triggered by a simple stroke of a metallic pin.

That is all it takes for a breakdown

of the insulating material

and a nearly instantaneous release

of charge and dendritic channels.

A millisecond lightning storm

frozen into the acrylic block.

The branching of the electron channels

is a spectacular fractal pattern,

apparently occurring all the way down

to scale, to the molecular level.

From what we have

earlier presented

it is evident that planet-wide

electric discharge

created vast regions of raised

Lichtenberg figures on Mars.

Mars: dendritic ridges

Laboratory experiments show that

in regions of positive charge

dust will typically gather into
raised Lichtenberg formations
standing out from the
surrounding terrain.

In fact, sharply sculpted
dendritic ridge systems
are abundant on Mars
showing up wherever the highest
energy events are implied.

The great trench of Valles Marineris
is an extraordinary example.

Here, we find the raised Lichtenberg figures
exactly where we would expect them,
running down from sharp
cliffs and high points
in predictable patterns, stretching for
hundreds of miles along the trench.

Yet, strangely, the mystery receives
almost no mention by planetary scientists.

We also observe dendritic ridges on
the great mound of Olympus Mons,
both, on the miles high scarp
and on the caldera walls.

In fact, the mystery is global.

We see the same pattern on
the walls of major rilles.

We see it along the so-called fractured
terrain of Noctis Labyrinthis.

And everywhere on Mars we
see the dendritic patterns
reaching down from
towering cliffs and mesas.

We even see such ridge systems descending
from the rims of large craters,
opening the door to a much broader
perspective on crater formation.

Scalloping

In the hypothesis
presented here,
many craters on Mars were produced
by the same electrical events
that created chains of craters and a
great variety of channels or rilles.

As a discharge column
sputters across a surface,
it's diameter will vary
with discharge energy
and a narrowing or pinching by
the induced magnetic field.

The pinching effect will be most strongly focused
at the point of contact with the surface.

The sputtering arc will leave a unique

signature in the form of scalloped walls.

Popular explanations say that surface collapse must have produced these crater channels.

But scalloping effects on Mars are by no means limited to chains of craters.

Planetary scientists cannot agree on the forces that created this bizarre channel network north of Valles Marineris.

Other channels, that are said to have been caused by fluid flow, either water or lava, exhibit the same scalloped walls.

Similar neatly cut scallops appear on the cliffs of towering mesas.

And the so-called calderas of the great mountains of Mars reveal the same pattern.

Even the celebrated Victoria crater, supposedly formed by impact, exhibits alcoves and scallops similar to those of the great rilles and valleys.

And the scalloped walls of Zunil crater are virtually indistinguishable from the scalloped walls of Valles Marineris.

Scallops and Ridges

Additional patterns enter
the picture, as well,
including a consistent global
connection between scallops
and dendritic ridge networks.

The explanation appears to lie in the fractal
nature of cylindrical current sheets.

Current flow can metamorphose
into secondary cylinders
and fractal-like sub-structures
to be pinched by the
induced magnetic fields
into a narrow highly
focused discharge.

We see this interplay
of different scales
in the cylindrical currents
of Earth's auroras
as charged particles enter and exit the
polar regions in an electric circuit.

Invisible current sheets,
magnetically pinched at Earth's poles
divide into visible curtains
of secondary cylinders,
all dancing in the turbulence

of Earth's upper atmosphere.

The same electromagnetic structure
arising from charged particle movement
will at times be seen in the
electrified tails of comets.

In the larger scale events
carving the surface of Mars,
we envision multiple columns
of charged particles
being pinched into a narrow
discharge at the surface.

This established principle will be crucial
to comprehending the giant Valles Marineris
with all of it's
accompanying chasms.

Smaller scallops within
larger scallops,
they are the imprint of
pinched cylindrical currents,
constituted of
smaller cylinders.

The pattern occurs repeatedly
and is surely no accident.

Consider the consistent relationship
between the scalloping effects
and Lichtenberg ridge systems.

The most prominent of
these dendritic forms
are those that separate
the larger scallops.

The smaller dendritic ridges define the
boundaries between smaller scallops.

At both scales, the ridge networks
can be seen as the final events
in catastrophic
discharge activity
as charge redistribution
gathered and fused loose material
into the familiar
Lichtenberg patterns.

In this revisioning
of Martian history
contradictions find a
unified resolution
in an electrical cause.

Enigmatic craters,
crater chains,
dendritic ridges,
scalloped craters,
calderas and rilles -
all are connected to the observed
behaviour of electric discharge.

Negative Lichtenberg Figures

Here is an image of electric arcing
to a negatively charged surface
capturing the feathery
discharge glow, or corona.

The corona is constituted of extremely fine hair-like
filaments radiating from the primary streamers.

On a surface affected
by electric arcing,
experiments show that
regions of localised charge
can attract dust or sediment into a
record of the electrical activity,
or discharge pathways,
down to many fine details.

Martian surface

Here is a ridge complex on Mars
covering thousands
of square miles.

The ridge forms have puzzled planetary
scientists for more than a decade now.

Since standard geology does
not include such forms,
this unique behaviour is a logical
test of the electrical hypothesis.

Examined closely, we see perpendicular

hair-like filaments illuminated by the Sun
confirming that electric discharge
attracted dust into raised relief.

Martian surface

This exotic formation was produced
electrically by D. Z. Parker on a CRT screen
showing a gathering of dust in a
region of previous discharge activity.

The ridge with its
fine filaments
offers a striking counterpart to
the baffling Martian formations.

Surface Etching

We have suggested that the
northern hemisphere of Mars
was eroded electrically to a
depth of 5 miles or more,
as seen on the global
elevation map.

It is only reasonable therefore
to look for transitional zones
on the margins of the more depressed
or heavily eroded regions.

If the erosion was electrical,
what should we expect to find,
particularly in the regions that separate

the low lying northern latitudes
from the elevated and densely
cratered southern hemisphere?

We should expect to
find what we do find -
vast regions from the
equator northward
showing the predictable
phases of electrical erosion.

First electric arcs
raking across the surface
created a network of channels
cutting the region
in discrete blocks.

Then the arcs acting on the
sharp edges of the blocks
continued to extend
the Valley floors
leaving separate
angular islands.

The islands standing out above
the newly excavated terrain
were then progressively eroded
into various pyramidal forms
then mounds as electric arcs
continued to erode the sharp edges.

And finally the remaining
mounds were etched away.
Just as industrial applications
of electric discharge machining
can erode high points to
produce a flat surface.

All that is left of the
earlier Martian plains
are the few scattered remnants
of sculpted mesas and bluffs
disappearing altogether in a flat
depression farther to the north.

This transitional process can be
observed across great distances on Mars
with a consistent pattern,
highly cratered elevated
plains to the south
giving way to isolated blocks,
then mounds,
then a smooth lower terrain that characterizes
so much of the northern hemisphere.

Blueberries

In early 2004, the Mars rover
"Opportunity" returned images
that alone could alter our ideas about
the recent history of the solar system.

The rover had landed in a crater
and scattered around the walls of the crater
were a multitude of BB-sized spherules.

Their blue-grey colour set them
apart from the reddish hue
of the iron-rich Martian soil.

Thus, the informal name
given them: blueberries.

As "Opportunity" rolled across the Martian landscape
it found a profusion of the little spheres
that apparently occupied the
Martian surface by the trillions.

But how were they formed?

Not long after the discovery
of the Martian blueberries,

Dr. Ransom set up an experiment to
test the effects of electric arcs
on different materials.

He obtained a quantity of hematite
roughly comparable to the Martian soil
and blasted it with
an electric arc.

The results are
quite spectacular.

Embedded in the soil were perfect
counterparts of the Martian blueberries.

From what is now known
about the Martian surface,
it's clear that if the planet was
engulfed in electric discharge,
the spherules are a
predictable effect.

Mars

VEMASAT laboratories

Ransom's experiments did not
end the investigation either.

Cameras of the rover "Opportunity" captured
a flat floored channel with parallel sides
from both walls of the channel
we observed jagged razorbacks.

One more feature with no place
in the geologists' lexicon.

But Dr. Troy Shinbrot, and his
colleagues at Rutgers University,
recently produced this very form,
razorbacks, in electro-static experiments.

And the researchers did indeed see a direct connection
to the razorbacks recorded by "Opportunity".

Shortly thereafter, D. Z.

Parker also produced razorbacks
on the charged surface
of a CRT screen.

Both, the razorbacks and the
blueberries, point to electrical events.

And electrical events
are scaleable.

Formations created on a small scale can
also appear on a much larger scale.

In fact, our orbiting cameras have found numerous
craters with domes or spheres resting within them
looking very much like the spheres and
craters of Ransom's blueberry experiments.

The pictures seen here
of domed craters on Mars
are from the "Mars
Global Surveyor".

But in contrast to the
rover's blueberry images
the domed craters range in size
from a hundred meters or less
to a mile or more in diameter.

And the pattern occurs
even on a larger scale.

In the polar region of Mars the domed
craters are up to many miles wide.

It is surely reasonable to ask if the tiny
blueberries, and the far more massive domed craters,
were produced by the

same electrical force

acting on widely different scales in an
earlier phase of global electric discharge?

One thing is certain, if it was electricity
that sculpted the Martian surface,
the events were vastly more dramatic than
planetary scientists have ever imagined.

Symbols of an Alien Sky

Episode Two

The Lightning-Scarred Planet Mars

[Music]

The Electric Universe paradigm has an unparalleled record of successful predictions in the space age. In stark contrast, as telescopes have improved and covered more of the electromagnetic spectrum, astronomers have become more perplexed by exoplanets, stars and galaxies that shouldn't exist. A few brave souls have declared cosmology to be in crisis, but at no time has the belief been shaken in Einstein's gravitational cosmology and its meaningless Big Bang expanding universe.

Now, 21st century technology has built and prepares to launch the James Webb Space Telescope, also known as the JWST or Webb Space Telescope. It is described by NASA as "the largest, most powerful and complex space telescope ever built and launched into space, it will fundamentally alter our understanding of the universe."

But fundamental changes in understanding are subject to the dead hand of academic peer review, which is governed by a coterie of top experts who have a great deal to lose if

they don't control the consensus narrative.

So, there has been no substantial change in our understanding of the universe since the middle of the 20th century. Instead, the narrative has simply become more and more complicated as barnacles of ad-hoc theory have encrusted the Titanic of institutionalized science. Fundamental changes break the consensus.

They're the icebergs awaiting sciences' Titanic.

So, fundamental changes almost always come from individuals on the fringe. The field is wide open for the successfully predictive Electric Universe cosmology to be critically tested by the new Webb Space Telescope.

NASA states, "The Webb Space Telescope is an orbiting infrared observatory that will complement and extend the discoveries of the Hubble Space Telescope with longer wavelength coverage and greatly improved sensitivity.

The longer wavelengths enable Webb to look much closer to the beginning of time and to hunt for the unobserved formation of the first galaxies, as well as to look inside dust clouds where stars and planetary systems

are forming today." Observe this aim is unscientific and therefore unlikely to fundamentally alter our understanding of the universe, since it presumes only the consensus Big Bang gravitational paradigm for study.

We've seen that to maintain this narrative, there has been an endless introduction of ad-hoc forces, particles and impossible objects like neutron stars and black holes.

Meanwhile in the 1960's plasma cosmology was introduced by Hannes Alfvén, a plasma scientist who won the 1970 Nobel prize in physics for his research.

Plasma cosmology is a model of the universe in which plasma and electromagnetic forces play a dominant role on the galactic scale. It's based heavily on observation and experiment, but due to specialism in the 20th century, it's studiously ignored by astrophysicists. They ignore Alfvén's Nobel speech warning that their treatment of space plasma as a mysteriously magnetized fluid, is fundamentally flawed. Meanwhile, plasma cosmologists produced the spiral shape and non-gravitational rotation of

a classic spiral galaxy experimentally,
and with supercomputer models. When
they included the weak force of gravity in
the computer models, it had no
appreciable effect. Such experimentation
and simplification are
hallmarks of classical physics.

Galaxies are governed by electromagnetic
forces, not by gravity. Well-organized galactic
magnetic fields have more recently been
mapped and conform to plasma cosmology.

Such fields are unexpected and
unexplained in gravitational theory.

This alone knocks out the gravitational
foundation of Big Bang cosmology.

Imaginary black holes and dark matter are not
required. All we know about the force of gravity
is that Newton's law operates within
the present orderly solar system.

We can't presume peacefulness in the
solar system for most of Earth's history.

That's merely wishful thinking and flies
in the face of geological evidence of
past global paroxysms. And the notion that Newton's
law of gravity and the gravitational constant
as measured on the Earth, applies

universally, is characteristically geocentric and myopic, when you consider our short history and the discovery that gravity theory doesn't work at the galactic scale. So, let's first get Big Bang history right.

The Belgian priest-astronomer Georges Lemaitre is usually identified as the first to theorize that the recession of nearby galaxies can be explained by an expanding universe. Einstein is supposed to have said and I quote, "This is the most beautiful and satisfactory explanation of creation to which I have ever listened." End quote. But we can forget Einstein.

He did away with the force of gravity and try telling someone who has just fallen over that it was the Earth's warping of space-time that told him to hit the ground.

Two years after Lemaitre's epiphany, Edwin Hubble provided evidence that the velocity of a galaxy away from us, increases with its distance from us, a property now known as Hubble's law.

The Hubble law implies that the universe is expanding. But that simply assumes the redshift of faint galaxies is due almost entirely to the Doppler

effect, which is the increase in wavelength and consequent lowering of frequency of the light from a fast receding object.

Mathematicians jumped on Hubble's law for their new creation myth by retro-calculating to a point origin in a magical Big Bang. They now tell us with religious fervor how the universe began and how it may end.

What we are not told is that Edwin Hubble termed his famous discovery a "...redshift versus apparent-distance relationship." Wisely, Hubble didn't accept his discovery as proof the universe is expanding.

Rather than signifying that some faint galaxies are accelerating away from us at a good fraction of the speed of light, Hubble maintained that it was likely some new physics was involved.

This was later proved by the astronomer Dr. Halton Arp, who became known by his followers, including some leading astronomers, as the modern-day Galileo, following his banishment by the mathematical priesthood of Big Bang cosmology.

Like Galileo and Hubble, Arp worked directly from telescopic observations.

He studied the photographic plates and lined his office walls with images of galaxies. He produced the Atlas of Peculiar Galaxies. By careful observation he found physical links between high-redshift quasars and low-redshift active galaxies, which proved Hubble was right. High redshift is not evidence for an expanding universe. Arp's research into high-redshift quasars shows they are local. The universe is of unknown age and extent and is essentially static. A Big Bang never happened. The origin of the universe, if that has any real meaning, is well beyond our present deeply flawed science. Let me explain quasars. When discovered in the early 1960's, quasars were utterly mysterious. In 1963 the Dutch astronomer Maarten Schmidt solved the mystery of quasar spectral lines when he discovered they were highly redshifted. This placed the brightest one, 3C 273 about 1.5 billion lightyears away. The radio astronomer Gerrit Verschuur wrote quote, "What could possibly look like a star, produce tremendously strong radio waves,

resemble double radio galaxies and yet produce so much energy? The full mystery of the quasar becomes more profound when all the information is considered together. They are very far away and the luminous cores are very small. At the distances inferred by the redshift, quasars emit the energy equivalent of 100 billion stars like the Sun, all the energy being generated in a volume of space not much larger than the solar system.” End quote. To make matters worse, it was found that quasar 3C 273 underwent sudden changes in brightness over a period of 80 years. Verschuur notes “This incredible discovery was also completely unexpected.” The sudden changes in brightness were found to be associated with blobs of matter being blasted out in jets at irregular intervals. At the assumed redshift distance of the quasars, those blobs were apparently moving faster than light. Halton Arp published a paper in 2007, ‘Quasars and the Hubble relation’, in which he states “...a continuity exists in redshift from the highest redshift quasars to low redshift Seyferts,

active galaxies and allied galaxies.

Evidence is discussed for this sequence to be an evolutionary track with objects evolving from high to low intrinsic redshift with time. At the end of this evolution the objects are nearly the same age as our own galaxy..." In the case of quasar 3C273 the odds are 100 trillion to 1 against Arp being wrong. Remarkably, Arp found the quasar's redshift decreases discontinuously, in quantized steps, and their mass and brightness increase as they move away from their parent, slowing down to eventually form companion galaxies.

Quantization of redshift verifies that it is intrinsic to the matter in the quasar, rather than anything to do with the light on its journey to the Earth, which solves most of the quasar mysteries at a stroke. They are not at the edge of the visible universe. They are local, small and faint, and not moving faster than light.

Arp's evolutionary sequence adds a pleasing biological nuance to plasma cosmology which, instead of a black hole, has a doughnut-shaped electromagnetic plasmoid at the galactic center. The plasmoid is formed

by electric current fed radially into the galactic center in the case of a spiral galaxy along the spiral arms.

The current produces the ordered galactic magnetic field. A similar plasmoid, produced in a laboratory, is the most extremely compact and complex form of electrical energy storage known. The lab plasmoid is formed by a radial plasma discharge between a central conductor, and a concentric outer conductor, which mimics plasma cosmology's galactic circuit.

Laboratory plasmoids are observed to emit intense beams of neutrons axially as they lose energy. The Electric Universe model proposes that when the energy density inside the surface of the plasmoid nearest the axis is sufficient to form neutrons from protons and electrons, the neutrons escape axially from the plasmoid's intense magnetic field to subsequently decay into a beam of electrons and protons. On leaving the active galactic plasmoid, the light electrons spiral in the galactic magnetic field, more than the heavier protons.

The result is an electron-deficient

smaller plasmoid, or quasar,
jetted along the active
galactic plasmoid's umbilical
intergalactic Birkeland current. The
coaxial galactic Birkeland current,
identified by its magnetic field structure,
acts like a cosmic dense plasma focus.
Mapping the magnetic field in a jet
along one of these intergalactic
Birkeland currents, has shown the
current to be on the order of 10
billion billion amps. The knots seen in
galactic jets are embryonic galaxies.
The Electric Universe further explains
Arp's quantized redshift and increasing
mass and brightness of quasars.
The umbilical galactic Birkeland current
has an axial current surrounded by a more
negative current cylinder, rather like a
cosmic coaxial cable. It effectively imitates
the dense plasma focus device's structure.
Electrons from the cylinder flow
radially into the axial quasar,
powering its embryonic plasmoid and, quickly
at first, increasing the charge polarization of
its subatomic particles and consequently,

its particles' energies and masses
in quantized jumps. That gives rise
to its increasing brightness and the
quantized decreases in redshift,
and slowing of the quasar due to
conservation of momentum. Arp's
discovery demonstrates a galactic- scale
quantum effect. In summary, the active
galactic nucleus is the plasmoid womb
and origin of the jets and the matter forming
quasars, or embryonic galactic plasmoids.
This simply explains the phenomenal
jets and radio-lobes of both parent
and child. Halton Arp's research
showed sensibly the universe
is of unknown age and extent. It is not collapsing
under gravity, or mysteriously expanding.
As nature repeatedly demonstrates, it is in balance.
Arp realized this raised a serious issue, because it
implies that gravity between
celestial bodies, must be repulsive.
Otherwise, balance is impossible.
Of course this is completely counter-
intuitive, because we experience gravity
only as an attractive force. But there
are historical precedents for a theory of repulsive

gravity, which was first proposed in the 1690's by Ncolas Fatio de Duillier and considered at the time by Sir Isaac Newton.

Arp studied a later theory known as Le Sage's theory of gravity. Theoretically it works by a shadowing effect under bombardment from all directions by strange high-speed particles, but no plausible particle impact mechanism could be found.

However, as I've argued in the past, gravity is a subatomic dipolar electric force which for all celestial bodies has one pole facing outwards and the other inwards.

It's equivalent to having spherical magnets with the same surface polarity.

This side-steps the problems with Le Sage's theory.

We experience gravity as an attractive force, simply because we are as much a part of the Earth as are the air, rocks and water. We are polarized within the Earth's gravitational sphere of influence, like iron filing stuck to a magnet The James Webb Telescope has the power to see fainter red-shifted quasars, more clearly than before.

So, my first prediction is that the

James Webb Telescope will support Halton Arp's research, which shows plainly that high-redshift quasars are born in pairs and emitted in oppositely directed jets, along the spin axis of a low redshift active galaxy. They are not at the edge of the visible universe. They are in the neighborhood of their parent galaxy. Therefore they are not incredibly distant, bright and large. There is no superluminal motion. They are nearby and youthfully faint. By carefully tracking quasar redshift evolution, we will see the transformation from a naked, high-velocity and low-mass plasmoid, to a low-velocity high-mass companion galaxy. Experimental tests of active galactic nucleus behavior by plasma cosmologists should be possible using the dense plasma focus device. In other words, a return to real physics. Theoretical physicists on the other hand have failed to self-correct their theories for a century. It is time for plasma and Electric Universe cosmology to explain Halton Arp's universe.

[Music]

[Music]

"In the sphere of thought, absurdity and perversity remain the masters of the world, and their dominion is suspended only for brief periods", so opined Arthur Schopenhauer, my favorite of the well-known philosophers because he could look on the dark side.

Let me attack some of the absurdities regarding 'space', 'ether', 'nothing' and 'infinity' by jacking apart the word 'cosmological'.

Note the middle word is 'logic'.

Really intelligent, but irresponsible creative thinkers have found the perfect intellectual playground: 'cosmology'.

The subject is far enough removed from practical life that we really don't care that much. We love the sensationalism and creativity and the not so very mundane mystery. But this playground is now costing the world a lot of resources.

Hear 'money', 'cash', 'moolah', 'filthy looker' or whatever your favorite term may be.

In the current expositions of the James Webb Telescope with its discrediting of the Big Bang, now is a good time to call a halt to the cosmological chicanery or 'cosmo-illogicality'.

Even prior to the James Webb Telescope revelations, astronomers had discovered large-scale galactic structures.

Actually Birkeland currents, which they characterized as 'massive spinning filaments' with unclear provenance.

These are not so much of unclear provenance in the Electric Universe paradigm, which goes a long way towards climbing out of the rabbit hole, at least in the material realm. Heidegger, a heavyweight thinker, noted quote 'nothing nothings' end quote. In other words, nothing doesn't do anything, it can't contain anything like a marble or like the universe. And it doesn't make up real space or volume in the physical universe.

There is no such thing as 'nothing' or 'nothingness'. The term is just and only a mental marker used for contrast or as a reference, like zero. The philosopher Michael Miller wrote quote, "As Parmenides pointed out about 2,500 years ago, and as Ayn Rand reminded us more recently, there is no nothing. To say that a void exists is to say that there is a place where

non-existence nevertheless exists. Voids are absurd - an epistemological error, a figment. There is something everywhere; reality is full. It has no gaps." End quote.

And also philosopher Michael Miller claims quote, "The universe is not in space, space is in the universe." End quote.

Hooray for Michael Miller. Yes and yes.

I sometimes wish we could do away with the cosmological word 'space'.

Cosmologically, the term is only good for a vague reference to a region out beyond the observational point. There is the real volume of the universe, which we often call 'space', and then we have the imaginary infinite extension of the Cartesian coordinates, x , y and z which we call 'space'. We mistakenly conflate the two concepts. But these are not the same thing. This false idea of space cannot be valid, or reified nor specified. But neither can volume be reified for that matter - but only specified.

Neither volume, nor space in general, can be reified into something that stretches, shrinks, curves, warps, or ripples. The material inside the volume may ripple, but not volume itself. Given both sound reasoning and evidence,

the EU paradigm has confidently settled on the conclusion that the volume of the physical universe is filled with an ether.

In other words, the existence of an ether is axiomatic. It should not be up for debate. Currently, the EU thinking is that this ether is composed of polarizable neutrinos, where there can be no such thing as voids of nothingness.

Again, the philosopher Michael Miller has paved some of the way to the model. Quote, "'Curved space' is a staple of 20th century thought. Space warps are a cliché of science fiction. Generations of science students have tried to make sense of curved space, and succeeded only in warping their own minds. Curved space is taken for granted among the learned; if you protest that curved space is absurd, they roll their eyes and shake their heads pityingly." End quote.

And also, Michael Miller said concerning the theories of relativity and lack of an ether, quote, "The infamous Michelson-Morley measurements cited by Einstein were poorly done, had too short a path length, were plagued by other instrumental problems, and did not

consider the possibility that ether could be entrained by the earth." End quote.

But what does the term 'curved space' even mean if we're curving something not even real? Not only is it a reification but how does it measure up against the principle of immutable units. It clearly violates this principle. There is a correspondence between the human mind and physical reality, which means that if you cannot visualize it, it cannot be real. Bottom line: the whole monstrous mathematical edifice of Einsteinian thinking about relativity, and there being no ether, has a false philosophical foundation. It violates axiomatic physical principles and space-time is a double reification absurdity. Do we not need to do a massive rethink of all this?

More and more, people are beginning to understand that modern academia has fabricated this circus assembly of falsities. A modern mythology little better than the primitive ones at which we scoff and sneer. In my opinion, our wholesale rethink must also concern the origins of humans on Earth, languages, religions, cosmology,

ancient civilizations, the unsound psychological condition of mankind, and more. Not because of the dictates of sacred literature, not because of some mystical revelation does this awareness begin to dawn, but because these unwieldy constructs cannot stand the force of logic and critical thinking applied to the vast amount of evidence and information now available out there. Much of this corpus fails to become integrated into something more meaningful that makes sense. Thus, we wind up with a construction that fails the simple test of coherence and consistency.

Mankind may be on the verge of the most sweeping intellectual revolution ever seen in this world.

For the first time in history, there is now a convergence and reconciliation possible between the worldwide catastrophes the first men on Earth tell us they experienced. This ancient global experience, adequately buttressed by geology and planetology, demands a scientifically defensible foundation - a cosmology called The Electric Universe. When just the framework of this is developed, this reconstruction of the ancient times sweeps away the modern mythology. It will transform our

understanding of Earth science, paleontology, anthropology, biology, etymology, origins, and especially psychology and religion. To further characterize this soulless modern mythology, it remains adamant about some of its absolutely absurd and disconfirmed claims, such as the invariance and randomness of radioactive decay; the constant speed of light in space; the absence of an ether; and the universal constant of gravity, among many other aspects.

This modern mythology and its followers largely remain impervious to understanding the electrical force as being the major structuring and energizing agency in the universe, as well as the major factor in sculpting the geological formations on the surface of the Earth and the other planets.

Would you believe that the proponents of the modern mythology sling vast amounts of time around as the explanation for otherwise inexplicable developments? You don't have to strain to believe this, quote, "The doctrine that the Earth was of

unlimited age allowed geologists to explain any phenomenon, not by the laws of physics, but by 'reckless drafts on the bank of time.'" End quote. Chamberlain 1899.

On the other extreme from nothing or zero, 'infinity' may also be a useful mathematical construct. But it cannot be applied to any countable or measurable aspect of the tangible physical universe.

It is misguided to think of space being infinite, just as it is for zero being a number. The physical universe may be vast, beyond our scope or scale, but it is misguided to think of it as being infinite in its particulate makeup or volume.

The number of galaxies, stars, planets, atoms and subatomic particles, including ether particles, are all countable and the number cannot be infinite. To think otherwise, violates our foundational logic and opens the door to mysticism and intellectual and spiritual chicanery.

So, does the physical universe have a boundary? Maybe not so much.

Think of this boundary not as a thing, but rather as a limit of what is

included with nothing else. The

non-sequitur question is often asked,

what is on the other side of

the boundary of the universe?

The obvious answer is - nothing. Nothing.

The definition of the universe is such

that it includes everything that exists,

and there can be no thing outside of it.

Modern man remains also in denial as to

the tenuous hold on biological viability

that the earthly biosphere actually has.

Essentially in denial that a major

X-class coronal mass ejection or a

nearby gamma-ray burst could sterilize

our globe. With enough warning modern

man, via the aid of our military and space

exploration technology, might be able to

deal with an asteroid on a trajectory of

impact. But there is no conceivable way to even

ameliorate an incoming giant CME or gamma-ray burst.

Given that point locations in space are

addressed by the Cartesian coordinates,

we can become aware that the solar

system is playing a kind of Cartesian

doomsday roulette with humans on earth.

The frequency of the most powerful CMEs,

strong enough to send us back into the Stone Age, evidently averages out to about 50 years. In March 2023 two X-class CMEs were released from the Sun, the most powerful directly opposite to our direction. But even then, it affected our communications. Something to think about, because we are largely in denial of this threat, and we could do something about it. Burying our national electrical transmission grids, would protect them from both natural CME threats and from nuclear weapon electromagnetic pulses. Recently, plasma torch technology has been developed that makes tunneling 50 to 100 times faster and easier. My final point is a distressing one. In spite of what the truth actually is; about the Electric Universe; about the ancient Saturnian configuration and its catastrophic breakup; about the significant chronological reduction that needs to be done, our human race consistently distorts, misrepresents and sometimes denies what the reality actually is. And we fabricate something to fit an

erroneous paradigm or false sense of security

- and for a wide variety of perverse reasons.

Maybe someday soon more people can get a glimpse of
how far down the rabbit hole as a race we really are.

There is a way out, but not without
becoming intellectually responsible.

[Music]

Welcome to Space News from
the Electric Universe,
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In recent months, according to a
number of scientific reports, the dusty
winds and sand dune formations on the planet
Mars have grown even more mysterious.

For decades, the Martian winds have
puzzled planetary scientists on Earth.

The atmosphere on Mars is of
course incredibly rarefied.

It's only 0.6% as dense as
Earth's, and yet on Mars,
incredible dust storms vastly more
powerful than anything ever witnessed on
Earth, sometimes engulf
the entire planet.

These dust storms are sometimes composed of
vast congregations of so-called dust
devils, or dust tornados reaching
as tall as Mount Everest.

All over the Red Planet, countless
strange wind-driven features
also present huge mysteries.

These include so-called sand dunes which are very different from earthly sand dunes in important ways.

In some instances, the dune features appear to be permanently frozen in to the terrain.

In August of 2003, the New Scientist article "All Eyes on Mars" remarked on this and several other Martian geological oddities.

It states, "Mars is proving more enigmatic than ever at the moment.

The latest images of the Martian surface taken by NASA's orbiting Mars Global Surveyor have revealed profoundly mysterious landforms that have left geologists scratching their heads.

The features include a combination of surprisingly stable dunes, canyons without craters and rapidly eroding ice caps.

All point to amazingly fast processes taking place on the surface.

Mars has changed considerably in the past few thousand years -- in some places,

even the past two years.

Yet nobody knows why.

Unraveling the mystery will require a radical leap in theoretical thinking, says Michael Malin, the geologist in charge of the MGS camera."

However, 16 years after these remarks were published, the required "radical leap in theoretical thinking" has yet to occur.

Planetary scientists today remain confined to the theoretical toolkit which only recognizes the geological processes of wind and water erosion, plate tectonics, periodic impacts from space, and volcanism, as the basic forces shaping planetary surfaces.

But as we shall see, standard geology fails to explain either the processes occurring on the Red Planet today nor the ones that devastated its surface in the past.

This point is made emphatically if we examine just one type of geological feature on Mars, the sand dune.

Earlier this year, NASA's Odyssey orbiter stunned planetary scientists when it captured images of a "dune field" with a roughly hexagonal shape.

The dunes are found on the floor of the crater Terra Cimmeria which appear in a heavily cratered southern highland region of Mars.

Perhaps tellingly, another dune field, also at least partly hexagonal, can be seen in a nearby crater.

As planetary scientists have noted, the dunes and "ripples" that appear on Mars's high southern latitudes, are thought to be stable and so they suggest the dunes could essentially be fossils of ancient Martian winds.

But as an EarthSky report on the puzzling dunes asks, "What about the hexagonal shape? Are we surprised?

Yes and no. Hexagons can be found in other places in nature. Another striking example is the jet stream formation at Saturn's North Pole, which is a massive, near-perfect hexagon centered at the pole itself. It's

absolutely astonishing."

As those who have followed the Electric Universe theory are well aware, the hexagonal shape of any feature seen in nature may give an essential clue to its formation.

Hexagonal craters are seen on rocky bodies throughout the solar system; including Mars, Mercury, the dwarf planet Ceres, and the asteroid Vesta.

One hypothesis planetary scientists have proposed is that in each and every instance meteoritic impacts have struck fault lines which have collapsed over time eventually producing the hexagonal form.

But of course, this strange reasoning would not account for the hexagonal dune field.

However, as we have repeatedly noted, the hexagonal form is seen rather routinely in craters produced by electrical discharge machining in the laboratory.

On the aforementioned hexagon at Saturn's North Pole, the mystery for planetary scientists has only deepened over time.

For several years, scientists

on earth had pointed to the appearance of hexagons in simple fluid dynamic experiments as the ideal analogue explaining the Saturnian hexagons formation.

But as we reported last year, scientists studying data from NASA's Cassini spacecraft were amazed to discover that the hexagon reaches hundreds of kilometers higher in Saturn's atmosphere than was previously thought.

This is problematic because, as noted in a Sciencealert report, "...since wind conditions change dramatically with altitude, the fact that the hexagon shape persists so much higher than the cloud tops is a baffling conundrum."

And yet the Electric Universe theory has always proposed that the hexagon formation is ultimately produced by an external electric current entering at the pole.

In fact, it was this reasoning that led physicist Wal Thornhill to predict in 2005, that Saturn's North Pole would have a "hot spot" which would match the one already discovered at

the planet's South Pole.

When this prediction was confirmed in 2008, it was to the astonishment of planetary scientists, since the pole had been deprived of sunlight for over 12 years.

For decades, the chief principals of The Thunderbolts Project have proposed that experiments with electrical discharge provide the greatest potential for understanding both past and current geological phenomena in our solar system.

As we have noted many times, in addition to producing varieties of "weird craters" seen on rocky bodies, electrical discharge in the laboratory also routinely creates both dust levitation and plumes of ejected material, as seen in this experiment by Jacob Gable.

And ionic winds which can organize dust into dune-like patterns, as seen in this experiment by Billy Yelverton.

These experiments could also provide insight

into what actually drives the incredible,
towering dust devils, and planet-
encompassing dust storms on Mars today.

Planetary scientists do indeed recognize
that tremendous electric fields are
associated with the
giant dust devils.

Although they believe that the electric
fields are generated by grains of sand
and dust rubbing together.

However, this begs the question, with such
low atmospheric pressure and so little
force in the Martian wind, how does one account
for the dust particles leaving the surface?

Physicist Wal Thornhill
suggests a fundamental confusion of
cause and effect among
planetary scientists.

He writes, "...in an electrified
universe charge is already separated on
the macroscopic scale and the movement
of air in a dust devil is an effect of
charge recombination, not a
cause of charge separation."

The hexagonal dune field on
the planet Mars may have been

indeed formed in the past by the same type of electrical discharge that ravaged much of the Martian surface.

As Wal Thornhill explains, "No amount of theorizing based on slow evolutionary geological principles will explain how the giant canyons on Mars are so young that they have no craters in their walls.

The very formation mechanism of Valles Marineris is a mystery to geologists.

However, if we make use of the forensic evidence from the past, the formation of Valles Marineris was witnessed by modern humans in late prehistory. We don't need to theorize. Mars, the God of war, was memorialized as the heroic figure in a celestial battle fought with thunderbolts. Mars was struck and a visible scar remained. For the scar of Valles Marineris to be seen by the naked eye requires that Mars was about 100 times closer to the Earth than it is on its closest approach today!"

Indeed in our next episode, we will explore why Mars's identity as the God of War is the ultimate key to understanding the events which make Martian geology so mysterious to this day.

Welcome to Space News from
the Electric Universe,
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The planet Mars -- our planetary
neighbor and a source of enormous
mystery for space
science and academia.

In our previous episode, our guest Ev
Cochrane summarized some of the
incredible identities given Mars in ancient
myth, astronomical traditions, and religion.

For reasons that defy explanation
based on Mars's appearance
and behavior in our sky today,
Mars was globally recognized as a
masculine warrior hero, the
God of War, a Dragonslayer.

Cochrane also described the
equally inexplicable, in modern
astronomical terms, relationship
between the "masculine" Mars and the
feminine Venus in
ancient storytelling.

For decades, Cochrane and his colleagues

including David Talbott and the late Edward Cardona have worked to reconstruct the catastrophic celestial events that inspired countless global recurring patterns in myth and religion.

As Cochrane explains in this conclusion, the reconstruction of these events has involved not merely a cross-cultural investigation of myth, but also sheds remarkable new light on the origins of words and language.

I've now had 40 years of experience reconnecting these myths and is becoming more and more apparent that not only are the myths all around the world, but comparative mythology works hand in hand with comparative linguistics or language.

And so, take whatever language you want, it doesn't make any difference because languages will always include archaic vestiges of these catastrophic events, and so words will mean things that have no reference whatsoever in the current natural world or the current sky.

When you find that confirmed
on virtually every continent,
you get a level of
confidence that suggests that
we're on the right
track, that's for sure.

To take a classic example, we
mentioned eclipses earlier, so
the universal myth of the
eclipse is that a sun-like
object is swallowed by
a great dragon, right?

Of course, as you said, there
are no such things as dragons.

So what does that mean?

And you will find that cultures
all around the world will
always say, that was a time of tremendous
terror, disaster and that indigenous
cultures all around, they always made a
tremendous noise like banging on drums
or clashing shields together or shouting
and screaming at the time of an eclipse.

Their goal was, according to
them, to scare away the dragon.

None of that makes sense

by current standards.

I mean, we just had a full eclipse of the Sun here in the last year or so, which was a spectacular event, but number one -- there was no disaster, there was no loud clanging of sounds, the end of the world did not happen.

And so, as you start to piece these things together, you realize that these traditions surrounding eclipses have nothing to do with the current eclipse whatsoever, they had to do with a prototypical celestial disaster that was interpreted as a sun-like object being swallowed by a giant dragon.

To give you another example, I think that uses a little bit of language, that will make my point.

The Sumerian word, again, Sumerian is theoretically the oldest language on the planet, you know, started writing about 3000 BC, and in the Sumerian language the word for Sun is Ud, but the Sumerian word for storm is also Ud.

Now, how is that to be explained?

Why would a culture use the same

word to describe a Sun as

they used to describe a storm?

Well, if you pull up the earliest artworks

in ancient Mesopotamia, you will

see this picture of the Sun will have a giant

Thunderbolt or lightning bolt right in its center.

So, slowly but surely, you start

to deduce that the former Sun

was electrical in nature and the

former Sun God was the Thunder God.

So turn to Greece or take any culture, doesn't

make any difference; the same bizarre

association of Sun and storm will show

up in other cultures as well and also in

other languages, so it's not just a wild

guess about comparative mythology.

This is comparative linguistics and so, that

is a powerful argument that some

historical event caused these bizarre

associations in these various languages.

The earliest pictures of the Sun show a giant

lightning bolt set right in the center of it.

Dave and I had reconstructed

that the center was where

Mars was at, and so you get this image

that Mars was at the center of an

intense lightning storm, and so it was constantly being subjected to these unbelievably powerful exchanges of lightning, plasma, whatever you want to call it.

Unbelievable torsion of its geological structure.

Again, the language also is going to describe that, so when you talk about early words for lightning bolt or thunderbolt, they will have the word star in there.

So like you will have, a word for thunderbolt is "astropeleki" for example, and there's dozens of words that I can cite just like that, but it clearly means star-something, in that case star-axe.

The original thunderbolt was a celestial, star-caused event.

That has never been discerned before, or properly recognized as being at the heart of so much of comparative mythology, but it clearly testifies to the solar system having a radically different appearance in former times.

In 1971, when the Mariner 9 spacecraft returned the closest images

of the Martian surface to that time,
planetary scientists were astonished to
observe the stupendous feature of Valles
Marineris, an enormous canyon system
which is four thousand kilometres long
and reaches depths of up to seven kilometers.

If Mars was indeed drastically
closer to Planet Earth only
several thousands of years ago in
prehistory, then, as Ev explains, perhaps
it's not a coincidence that a figure in myth
and storytelling is the scar-faced warrior.

I don't think there's
any doubt about it.

The particular myth that Dave has cited
very early on, I'll just read it to you, it's
describing this character named Scarface
in North American myth and it goes
like this, "He was so poor he had no
clothes, not even moccasins to wear.

He did not play with other children,
because they made fun of him ... He had a
ridge-scar on his face, and
they called him Scarface."

So, as I mentioned earlier,
when Mars was close to Venus a long

ways from Earth, it appeared small, like an infant at Venus' breast, but when it moved on its orbit towards the Earth, it grew giant in size, and so you get the impression that you could see a lot of the surface fixtures on Mars, kind of like we can see the structures on Moon right now when we've got a full Moon, you know, you'll see certain sections of a crater on the Moon or whatever.

But there's no doubt that Mars was much bigger than the Moon and when it got close to the Earth, if the scar was there, Valles Marineris, yes, I think that's a very strong possibility.

One of the great surprises in planetary science has been the discovery of Martian meteorites on planet Earth.

While many mainstream astronomers initially challenged the validity of the discovery, Ev explains why Martian meteorites on our planet are both explicable and necessary in the catastrophists' hypothesis.

When we first started discussing this subject in the mid-90s, Dave and I were on the internet

trying to get some feedback from the scientists, we had a bunch of JPL scientists on there, the world's famous figures, each and every one of them denied that meteorites could get off the planet Mars, they could not, they had no way that they could figure out how these giant rocks could get ejected off the planet Mars.

But we had statements from ancient Sumerian texts and stuff saying meteorites come from the planet Mars, so we were pretty confident that not only did meteorites from Mars make it to Earth but they make it to Earth in tremendous numbers.

That just based upon our reading of myth and so, within about five years, very quickly, the scientists came up with this ejection hypothesis where they have some massive celestial objects smash into Mars and ejecting these meteorites.

And of course, they place it many many millions of years ago and

these, we're supposed to imagine that these rocks have traveled around solar system for countless millions of years and then they just happen to make their way to Earth.

Our theory, of course, argues that because of these tremendous exchanges of thunderbolts, the lightning, plasma, and the torsion going on between Mars moving close orbit to Earth, that it just naturally follows that gargantuan amounts of Mars rocks were launched into the atmosphere and because of the close proximity to the planet Earth, it follows that they fell in great numbers on the planet Earth, much higher numbers than would ever be expected from the mainstream theory, and at the same time now, you have a perfectly natural explanation for why Mars lost its water, why it lost its atmosphere.

I mean, mainstream astronomers have no envision for why Mars looks like it had tremendous oceans and flowing water and yet there's no possibility of having water today because it's out in the middle of nowhere, it's frozen solid.

But given our theory, where Mars was right next to the Earth, it stands to reason that just like the Earth, it probably had water at some point in time and it certainly had an atmosphere at some point in time, and according to our theory of course, it's lost both here in the last five to ten thousand years as a result of these stupendous catastrophes.

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

The following presentation is an
adaptation of the Mel Acheson picture
of the day article Another Fogged Image
of Stephan's Quintet.

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

This image of Stephan's Quintet is
befogged with the same obsolete
commentary as previous images:
the foreground galaxy, collisions,
shock waves, and heat.

The foreground galaxy, on the
bottom-left, is believed to be in the
foreground solely because of the
consensus belief that redshift is a
measure of distance: the foreground
galaxy has a redshift of $z=0.0026$;
the others range
from $z=0.019$
to $z=0.0225$.

The consensual conclusion is that the foreground galaxy is 250 million light-years closer than the others.

This belief in redshift as a cosmic meterstick has been disproved since the 1960s, but facts seldom affect institutionalized belief systems.

Unremarked is the fact that the differences in redshift to the background galaxies place them, under consensus belief, farther from each other than the foreground galaxy is from the Milky Way.

Does that make the foreground galaxy a member of our Local Group?

Apparently, the illusion of foreshortening with distance works on beliefs as well.

Another fact that's consistently overlooked is that the bright ionized hydrogen regions in the background galaxies are about the same as those in the foreground galaxy.

Since it's also consensually believed that bright ionized hydrogen regions tend to

be of similar size, the consensus has simply ignored the fact.

Perhaps the dark matter in the foreground galaxy is positioned exactly right to magnify the bright ionized hydrogen regions beyond through gravitational lensing.

The long tails on both the foreground galaxy and the one immediately above it are mentioned and then dismissed as due to "complex interactions in the past."

The interactions must have been complex in the extreme to have affected the foreground galaxy.

A characteristic of consensus astronomy is a flight into tunnel vision: attention is narrowed to single objects or even to parts of objects and larger connections are disregarded.

So with the long tails.

On deep images, both tails trail off, in parallel, far toward a large active galaxy, NGC 7331.

Radio observations reveal a

bridge of radiation that
follows the path of the tails and connects
Stephan's Quintet with the active galaxy.

The bridge continues on
the opposite side of NGC 7331 to a
cluster of quasars, which coincidentally
have similar redshifts to the high- z
members of the Quintet.

This is obviously another instance
of paired ejection from an active galaxy.

Of course, what's
obvious to one eye is not to another
because eyes tend to
see what they believe.

It's no shock that Consensus eyes
are blind to the facts of ejection pairs.

Another consensual blind spot
covers a high- z quasar that lies in
front of the upper-left galaxy.

According to its redshift, the quasar should be
billions of light years behind the
galaxy and therefore as
invisible as dark matter.

The galaxy is full of dust,
completely opaque, and displays an
energized region leading

right up to the quasar.

When scanning this galaxy,
consensus astronomers blink in unison.

The ridge of X-ray radiation and the
core of Stephan's quintet is
consensually ascribed to gas heated by
shockwaves from colliding galaxies.

At 70 million Kelvin,
the heating is truly shocking.

Overlooked is the fact that
long before such a
temperature is reached,
the gas has been
fully ionized into a plasma in which
electrical and magnetic forces dominate.

The 70 million figure is an artifact of
runaway extrapolation from a theory about solids.

In reality, the X-rays are
synchrotron radiation from high-speed
electrons that is an electric current
spiraling in a magnetic field.

Since temperature is based on random motions
and the electrons are aligned in the
magnetic field, the concept of
temperature is not even relevant.

A final observation that appears not to have

been mentioned before concerns this X-ray ridge.

Stephan's quintet is

considered to be a "compact cluster,"

of which several thousand are known.

George Abel catalogued many of them

before X-ray observations were possible.

A review of several of them shows similar

ridges of X-ray radiation across their cores.

Others show simply a spot.

If these compact clusters are fragmenting

quasars on their way to

becoming companion galaxies around the

parent active galaxy from which they

were ejected, the X-rays delineate the central

pinch in the parents' ejection circuit.

Ridges of radiation show up in

clusters whose axis is inclined to our

line of sight; the spots result from our

"looking down the barrel of the discharge."

Welcome to Space News from
the Electric Universe,
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Planet Earth is home to an
extraordinary diversity of species.

Their current total numbers are
estimated at around 10 million
including between 1 and 2
million animal species.

However, scientists estimate that
documenting all terrestrial species,
if it could ever be achieved, could take
as long as another thousand years.

The consensus theory of the origins
and evolution of life on Earth
states that it all began 3.8 billion
years ago, with single-celled organisms.

Through an exhaustive study
of the geological record,
scientists have constructed a
story of our planet's history
and the life that inhabits it.

But how reliable is this story?

We have proposed a radically different

origin and history of planet Earth
and indeed of our
entire solar system.

Planets do not form from accretion in
gravitationally collapsing nebular clouds.

Rather, the Electric Universe has proposed
two forms of planetary formation.

The ejection of rocky planets
from the cores of gas giants
and planets forming from the
electromagnetic z-pinch effect
along the same networks of filaments
where stars are now known to form.

The discovery of countless so-called
'baffling exoplanetary systems'
have further demonstrated
the emphatic failure
of the two and a half centuries
old nebular hypothesis.

In our Electric Universe, the
actual age of the Earth,
our parent star and
our solar system,
cannot be quantified based
on our current understanding.

Further complicating any attempts

to assess our own planet's age
is the overwhelming evidence for
relatively recent global catastrophes,
events that were recorded
in the myths, folklore
and countless ancient and
religious texts around the world.

We have proposed that in an epoch of planetary
instability in the inner solar system,
powerful interplanetary lightning
carved planetary surfaces.

A hypothesis with an increasing
body of scientific support.

As our growing community of
experimentalists have demonstrated,
countless familiar
geological features
are easily reproduced by electrical
discharge to a solid surface.

Of course if these
events did occur,
both the geological and anthropological
timelines of popular scientific theory
must be reassessed.

Indeed, in our Electric Universe the entire
question of evolutionary time-tables

must be reopened for further
scientific investigation.

And today, recent scientific reports
have delivered a shocking blow
to the standard theory of the
evolution of life on Earth.

Earlier this year, scientists from New
York and Sweden published the results
of a sweeping study of
5 million DNA barcodes
from about 100 thousand
animal species.

As reported by phys.org on
May 28, 2008, the results are,
"...sure to jostle, if not overturn, more than
one settled idea about how evolution unfolds.

It is textbook biology, for example, that
species with large, far-flung populations
— think ants, rats, humans —
will become more genetically
diverse over time.

But is that true?

'The answer is no,' said Mark
Stoeckle, lead author of the study,
published in the journal
Human Evolution."

In addition to this surprising
absence of genetic diversity,
the authors were stunned to conclude that
about nine out of every ten species on Earth
appear to have come into
being at about the same time,
apparently sometime between
100,000 and 200,000 years ago.

Study co-author David

Thaler said of the findings,

"...this conclusion is very surprising, and
I fought against it as hard as I could."

One unavoidable possibility

that these results raise

is articulated in the

phys.org report which asks,

"Was there some catastrophic event 200,000
years ago that nearly wiped the slate clean?"

In part one of this two-part presentation,

Thunderbolts colleague Peter Mungo Jupp

begins a comprehensive and radical

reassessment of the questions.

How old is the Earth and how

has life unfolded upon it?

How old is the Earth

and all its species?

In 1650 AD, Bishop Ussher
proposed that the world's age,
gleaned from the biblical
Genesis, was 6,000 years old.

This relied on stated timelines
from the book of Jasher.

It was not until more recent times that
new paradigms started to take hold.

William Buckland, in the early 1800's,
noted the part that catastrophic events
had formed the
geological landscape.

However, Buckland's student Lyell broke
away to form a radical new scenario.

Drawing on the work
of Hutton, he argued
that the Earth was transformed
not by unimaginable catastrophes
but by imperceptibly
slow changes,
many of which we can
see around us today.

For instance, rain erodes mountains
while molten rock slowly pushes up
to create new ones.

The eroded sediments

form into layers of rock
which can later be
lifted above sea level
tilted by the forces of the
uprising rock and eroded away again.

These changes are tiny
but he reasoned, with enough time
they could produce vast changes.

Both Hutton and Lyell therefore argued
that the Earth was millions of years old.

Time in the form of millions of years was the
key to explaining the geological landscape.

Uniformitarianism as a
theory was thus born.

The use of millions of years as an explanation
of gradual change was seized on by Darwin
who envisaged evolution as a sort
of biological uniformitarianism.

Evolution took place from
one generation to the next
before our very eyes, he argued.

But it worked too slowly
for us to perceive.

So out of this was born

Darwin's prime theory,
evolution by natural selection.

Or as we know it,
survival of the fittest.

Evolution arose from happy slow mutational
changes that were either rejected
or finally adopted and passed on to
future generations of that species.

However, the lack of
intermittent adaptive species
was and is a fundamental flaw
to this time-driven theory.

Nevertheless, this paradigm
still seems to infect
every area of modern
geology and biology.

It was only later that Alfred
Wallace reformatted this theory
and expounded a
totally new concept.

He formed the theory of
evolution by intelligent design.

Parts of the brain, for
instance, were so complex
that it seemed impossible to subscribe
their formation to accidental development.

There had to be a guiding force
that designed and managed

purposeful change.

Both forms of evolution

described change through time

but only Wallace's intelligent evolution

limits the power of natural selection

to effect biological change.

It suggested, in those areas

of the biological world

beyond the scope of natural

selection's operations,

some purposeful intelligence must be

called upon to explain their existence.

In contrast, Darwinian evolution

claims that all biological life

can be explained through a directionless

process of survival of the fittest

and random mutation.

This fact has powerful implications

for the age of life on Earth

as it doesn't necessarily rely on

time as the arbiter of species change.

Wallace's theory complements the late Stephen

Gould's most significant contribution

to evolutionary biology.

This was the theory of punctuated

equilibrium which he developed in 1972.

The theory proposes that most evolution is characterized by periods of evolutionary stability which is infrequently punctuated by swift periods of branching speciation.

This theory was contrasted against phyletic gradualism, the popular idea that evolutionary change is marked by pattern of smooth and continuous change in the fossil record.

Gould's theory lays the groundwork for the penetration of cataclysmic intervention into genetic reformulation of species and ceases the demands for long periods of time to explain the age of the Earth and its inhabitants.

Now how can we date the Earth's biology and geology?

Proof of theories is very dicey as too often they work towards a predefined finale.

These outcomes can strongly bias scientific evidence, often this is the case when one

unproven dating methodology

is used as evidence for the

veracity of some new process.

This is particularly true in the case

of the mitochondrial-DNA-atomic-clock-

-follow genetic studies where we'll

be aiming our main critique.

But first I would like to summarize

the more classic methods of dating

in our clarification of Earth age.

Now firstly you have

classic mythology,

historical facts and biblical sources which

themselves are quite often historic.

They often are underestimated

but these can be very important

sources of both relative,

as for parallel

civilizational studies,

and absolute dating events.

But as the historical Egyptian king-lists

show, they can be grossly incorrect

depending on the basis from

which they are sourced.

Velikovsky versus the world is but

one controversial academic argument.

Nevertheless, they do provide in many cases
a broad brush to place historical events.
For instance, whether it's the Trojan War
which circuits around a thousand BC
or Maya civilizations,
we can glean some rough idea within
at least 500 years' timescale.

But this is recent history.

Beyond 6,000 years ago, we are
beyond the scope of written history
and have to essentially turn to modern
scientific dating tools to support our work.

Now let's first examine
carbon dating.

It's important to be aware of carbon dating
fundamentals and their serious limitations
beyond 6,000 years
beyond the present time.

Standardization procedures involving
tree-ring sequences has this limitation.

Two of the basic assumptions on
which radiometric dating are based
are that the Earth is an
isolated body in space,
unaffected by interactions
with other bodies

and that the decay

constant is not variable.

Again, the decay constant

is not variable.

No matter what, no matter where,

the half-life of a particular

radioactive isotope remains the same.

Carbon dating not only varies with

the amount of water to absorb it

and thus decrease the amount

available to the living organism,

but would be susceptible with

extraneous ratios from cosmic rays.

Now at times for instance, CME's, or

coronal mass ejections from the Sun,

does dramatically vary carbon-12

to carbon-14 isotope ratio

and for that matter

carbon-13 isotope ratios.

Furthermore, even when

absorbed by living organisms

as to start the clock

for carbon dating,

there is no guarantee these

ratios stay the same.

For instance, bacteria can

selectively differentiate carbon-13
from carbon-12 and perhaps
take them out of the system.

They can alter the isotope
balance after death.

This anomaly is aside from the
fact that carbon-14 dates
taken in isotopically chaotic times
are necessarily heavily distorted.

W.F. Libby, the inventor of carbon dating,
clearly saw the limitations of the method
and the conditions under which his
theoretical figures would be valid.

Libby understood the three
reservoirs of radiocarbon on Earth;
the atmosphere, the biosphere,
and the hydrosphere.

The hydrosphere or oceans
and seas is the richest-
the correctness of the method
depends greatly on the condition
that in the last 40
or 50 thousand years
the quantity of water in the hydrosphere
and carbon thus diluted in it
has not substantially changed.

The author Flood quotes from Chappell that the sea levels were low, for instance around the Wallace Line, around Indonesia abutting the Pacific Ring of Fire, around 20,000 years ago.

This lower amount of water must then generally falsify results.

Even the assumed 20,000 year-old-figure is unreliable if based on erroneous paradigm.

The method depends also on the condition that during the same period of time, the influx of cosmic rays or energy particles coming from the stars and the

Sun has not suffered substantial variations.

There are a number of possible reasons for the variation in radio carbon content of the atmosphere.

Changes in the cosmic ray concentration due to the activity of the Sun and galactic influences and changes

in the Earth's magnetic field
which modulates
proton concentration
which in turn affects the rate
of production of carbon-14.

And as Libby, the inventor
of carbon dating, states,
"These conclusions (this is on
the basis of carbon dating)
could be false if errors in
the very different quantities
— the intensity of the cosmic rays and the
mixing rate and depths of the oceans —
should happen just to
cancel one another."

It should also be noted, most of these
specimens were heavily fossilized
and the effects of this process
may have important connotations
regarding contamination.

They also reflect a dramatic
environment at the time of death.

Fossilization could also
heavily influence the validity
of the assumptions beyond,
for instance, carbon dating.

Now let's take an example.

When characterizing hominid WHL 50
from the Willandra lakes in Australia,
the archaeologist

Flood describes silica
replacing the phosphate
in that specimen's bones.

Opalized is the term she
uses and this to her

is proof of great
antiquity, but is it?

Similarly, Kow Swamps assemblage in Australia
has been preserved by calcification,
that's fossilization
in other words.

This fossilization of human remains
has occurred without exception
in all of the huge
Australian limits.

Now remember, De Grazia notes;
fossil is typically an accident,
a disaster, an anomaly.

The problem with fossilization
is to stop the decay
and that means killing everything in the
organism at once, including the bacteria.

What dies is thus quickly
recycled biotically
unless some geological
intervention occurs.

It's quite possible the fossils found
in these Australian lunettes
were killed instantly
and then petrified.

Intervention that fossilizes is almost
always connected to the cause of death.
I suspect, an enormous electrical shock
from the Lake Mungo magnetic reversal
might do just that.

In fact, as Wallace
Thornhill points out,
"A huge current flow must necessarily
accompany a magnetic reversal."

If that's the case,
which it must be,
then the Lake Mungo and Lake
Victoria deposits in Australia
might be the result of past
catastrophic electrical interactions
between the Earth and
a cosmological event.

Could this fact also signal

a possible mutation driver?

However, paramount is the fact that all of these remains are not necessarily ancient because they're fossilized.

Secondly, as Gillespie, who dated much of the Willandra hominids, points out;

The very nature of fossilizing can skew the results of carbon dating.

If the carbon is replaced or transmuted to silicon, ratios can easily be altered.

From this contamination or selective bleaching of the carbon-14 isotope to heightened age.

His doubts are voiced in this quoted article,

"Have direct dating measurements on skeletal remains helped to resolve the Lake Mungo, Willandra Lakes, chronology?

Should we believe the older dates,

which always seem curiously more desirable to archaeologists, measured on base-soluble humic acids fractions, or the younger dates

on insoluble residues?

The unpalatable choice for both
black sediment and burnt bone dates
seems to be between soluble or
insoluble organic humic substances,
both of which are of unknown
composition and dubious origin.

Now the architect Webb argued for the older
soluble humic acids dates on these burnt bones,
on my advice at the time.

I subsequently changed my view and
supported the younger insoluble dates,
on the grounds that humic acids of
whatever age are not likely to represent
the burnt carbon we seek
in charcoal or burnt bone.

Not much of a choice and
neither may be the real age."

The problem of the doubtful integrity
of fossil carbon dates has also risen
with Tom Loy's work at
Australian National University.

Using a technique of
minute samples of blood
from the bone carbon residues of
human remains, ancient human remains,

he was able to accurately
date those samples.

The reasoning is; the blood,
unlike other protein remains,
is extremely robust and gives
a distinct clean reading
compared to other
protein samples.

These are classically destroyed by many
environmental actions, for instance bacteria.

With these minute samples,
he was able to date not only megafauna
from Lake Eyre, South Australia,
but samples of the de WHL 50
hominid from the Willandra Lakes.

The mass spectrometer reading was
5580 years before the present.

This directly clashed with the expected
chronology of forty to fifty thousand years
that Alan Thorne, the chief
archaeologist, expected.

Thorne claimed
contamination but was it?

More likely, the fossilized samples as
distinct from the relatively pristine blood,
had been incorrectly

assumed to be accurate.

This is so often the case.

Contamination is often cited

when great discrepancies occur between

expected dates and incongruent results.

Stay tuned for part 2

A thunderstorm can be a terrifying event.

Perhaps touching something beneath the

A thunderstorm can be a terrifying event.

surface of consciousness. Even today,

Perhaps touching something beneath the

science does not understand lightning's

surface of consciousness. Even today,

cause. But with new technology we can now

science does not understand lightning's

observe lightning in slow motion. We can

cause. But with new technology we can now

fly directly into thunderstorms and we

observe lightning in slow motion. We can

can observe electrical events from space,

fly directly into thunderstorms and we

see lightning as it has never been seen

can observe electrical events from space,

before. For years, we ignored direct human

see lightning as it has never been seen

testimony about exotic forms of

before. For years, we ignored direct human

lightning.

testimony about exotic forms of

When airline pilots reported electrical

lightning.

discharges launched into space above the

When airline pilots reported electrical
thunder clouds, scientists dismissed
discharges launched into space above the
these reports.

thunder clouds, scientists dismissed
But now we know that blue jets and red
these reports.
sprites are real.

But now we know that blue jets and red
Only recently did we begin to appreciate
the electrical circuitry of our planet.

Only recently did we begin to appreciate
By firing into space, blue jets, red
the electrical circuitry of our planet.

sprites and their exotic companions
By firing into space, blue jets, red
reveal a direct electrical connection to
sprites and their exotic companions
a much larger environment through which

reveal a direct electrical connection to
Earth itself moves. Our planet responds
a much larger environment through which
to surrounding space as a charged body
Earth itself moves. Our planet responds
would respond to regions of difference
to surrounding space as a charged body

charge. Auroral displays for example,
would respond to regions of difference
are now known to connect directly to the
charge. Auroral displays for example,
electrical domain of the Sun.

are now known to connect directly to the
[Music]

Most scientists dismissed this
connection until it was proven by
most scientists dismissed this
space-age findings. Meteorologists and
connection until it was proven by
Atmospheric physicists were astonished
space-age findings. Meteorologists and
to discover a flow of charged particles
Atmospheric physicists were astonished
moving along magnetic field lines from
to discover a flow of charged particles
the Sun and entering Earth's upper
moving along magnetic field lines from
atmosphere to light the auroras. The
the Sun and entering Earth's upper
Earth-Sun connection means that space is
atmosphere to light the Auroras. The
not electrically neutral as astronomers,
Earth-Sun connection means that space is

cosmologists and planetary scientists
not electrically neutral as astronomers,
had so long supposed but there is more
cosmologists and planetary scientists
to discover.

had so long supposed but there is more
[Music]
to discover.

Electrical events today cannot compare
[Music]

to events in more ancient times. Every
Electrical events today cannot compare
early culture looked back in terror to
to events in more ancient times. Every
the flash of a heaven-shaking
early culture looked back in terror to
Thunderbolt.

the flash of a heaven-shaking
This great weapon of the gods never
looks like the lightning we know. Never.

This great weapon of the gods never
Often the mythic Thunderbolt is depicted
acting in one direction only. But even
often the mythic Thunderbolt is depicted
more often, the images accent a bipolar
acting in one direction only. But even

form, an unexplained curiosity.

more often, the images accent a bipolar

But today, this mystifying weapon, the

Thunderbolt of the Gods is recognized in

But today, this mystifying weapon, the

laboratory experiments with high-energy

Thunderbolt of the Gods is recognized in

electrical discharge. And its bipolar

laboratory experiments with high-energy

form is seen in space as typified by the

electrical discharge. And its bipolar

dynamic electrical structure of nebulas.

form is seen in space as typified by the

The result is that the picture of

dynamic electrical structure of nebulas.

planetary history has changed. The divine

The result is that the picture of

weapon, both celebrated and feared

planetary history has changed. The divine

throughout the ancient world, now

weapon, both celebrated and feared

connects ancient mythology and symbolism

throughout the ancient world, now

to the most far-reaching discoveries in

connects ancient mythology and symbolism

space. And one conclusion rises above all

to the most far-reaching discoveries in
others. Just a few thousand years ago,
space. And one conclusion rises above all
cosmic events transformed our sky
others. Just a few thousand years ago,
forever altering human consciousness and
cosmic events transformed our sky
cultural history.

forever altering human consciousness and

[Music]

[Music]

Hello, I'm David Talbott and this is the

[Music]

second episode in the series "Symbols of
Hello, I'm David Talbott and this is the
an Alien Sky". Is it possible to
second episode in the series "Symbols of
reconstruct the cosmic events of ancient
an Alien Sky". Is it possible to
times? It is possible if we allow the
reconstruct the cosmic events of ancient
witnesses themselves to speak in their
times? It is possible if we allow the
own language of myths and symbols. That's
witnesses themselves to speak in their
how we bring to light the points of

own language of myths and symbols. That's
agreement between the different cultures.

how we bring to light the points of

We expose the substructure of human
agreement between the different cultures.

memories around the world. In Episode one,

We expose the substructure of human
we considered several of these mythic
memories around the world. In Episode one,
archetypes.

we considered several of these mythic

[Music]

archetypes.

A primeval Sun God whom the first

[Music]

astronomers mysteriously identified as

A primeval Sun God whom the first

the planet Saturn.

astronomers mysteriously identified as

[Music]

the planet Saturn.

Mother goddess, said to be the planet

Venus.

Mother goddess, said to be the planet

A cosmic warrior, named as the planet

Venus.

Mars. A fiery serpent or dragon, attacking

A cosmic warrior, named as the planet

the world. And a cosmic mountain, rising

Mars. A fiery serpent or dragon, attacking

to the center of heaven.

the world. And a cosmic mountain, rising

For millennia, we've tried to understand

the archetypes based on the world as we

For millennia, we've tried to understand

know it. Despite our best efforts, every

the archetypes based on the world as we

archetype remains an enigma today. Around

know it. Despite our best efforts, every

the world, ancient cultures invoked a

archetype remains an enigma today. Around

Great Wheel of heaven. They carved the

the world, ancient cultures invoked a

wheel on stone. Repeated endless stories

Great Wheel of heaven. They carved the

about it. And celebrated it in magical

wheel on stone. Repeated endless stories

rites. The power of this archetype has

about it. And celebrated it in magical

never been explained.

rites. The power of this archetype has

[Music]

never been explained.

But if we see the ancient world through
the eyes of our early ancestors, we

But if we see the ancient world through
discover that the archetypes are

the eyes of our early ancestors, we

descriptions of formations they saw in

discover that the archetypes are

the sky and stories about what happened

descriptions of formations they saw in

to these forms. The archetypes seem

the sky and stories about what happened

enigmatic only because those events are

to these forms. The archetypes seem

not occurring now. Our purpose here is to

enigmatic only because those events are

reconstruct the events that inspired the

not occurring now. Our purpose here is to

archetypes. When the great civilizations

reconstruct the events that inspired the

first appeared, the world was a much

archetypes. When the great civilizations

different place. How are we to understand

first appeared, the world was a much

the celestial events acting on human

different place. How are we to understand

consciousness? The terrestrial sky today
the celestial events acting on human
can't serve as a guide because the
consciousness? The terrestrial sky today
positions of planets, Earth included, have
can't serve as a guide because the
changed. But if we work only with the
positions of planets, Earth included, have
archetypes, consistent, global testimony, a
changed. But if we work only with the
reliable picture does emerge. On the face
archetypes, consistent, global testimony, a
of it, the picture is preposterous.

reliable picture does emerge. On the face
Unbelievable, but unbelievable only until
of it, the picture is preposterous.

the definitive evidence lies before us. A
Unbelievable, but unbelievable only until
few thousand years ago, a gathering of
planets filled the heavens close to
few thousand years ago, a gathering of
Earth.

planets filled the heavens close to
And there are electrical interactions.
They produced immense discharge
and there are electrical interactions

configurations in the sky. When these
They produced immense discharge
events occurred, our ancestors did not
configurations in the sky. When these
know what a planet is. They simply saw
events occurred, our ancestors did not
gods in the sky.

know what a planet is. They simply saw
And when the gods went to war, their most
feared weapon was the cosmic Thunderbolt.
and when the gods went to war, their most
We see this Thunderbolt in the hands of
feared weapon was the cosmic Thunderbolt.

innumerable warrior gods and
We see this Thunderbolt in the hands of
world-saving heroes. Early astronomical
innumerable warrior gods and
traditions held that the cosmic
world-saving heroes. Early astronomical
Thunderbolt was a stream of fire between
traditions held that the cosmic
planets.

Thunderbolt was a stream of fire between
Evidence for intense electrical activity
in the ancient sky, leads us directly to
Evidence for intense electrical activity

new discoveries in space and from there
in the ancient sky, leads us directly to
to a surprising scientific confirmation
new discoveries in space and from there
of the reconstruction offered here.

to a surprising scientific confirmation

[Music]

[Music]

[Music]

so the cultural impact of planetary history this is a huge subject and it's been around the catastrophist movement for decades now and additional nuances just continually come in to the studies the research into the effect of planetary catastrophe on human history probably the greatest challenge for someone coming into this subject matter with an interest in historical studies more interest in history than say in theoretical physics is that there seems to be an incompatibility that these subjects don't seem conceivably aligned up to the level at which a coherent synthesis might be possible but I am here to testify to the possibility that a coherent synthesis is possible up to a level that has never been adequately or fully appreciated it's possible through the lens of a new paradigm and that lens is what give what gave us what gave wal thornhill and myself the possibility of a lifelong collaboration it simply

requires us to ask certain unasked
questions have planets always moved on
their present courses
this idea that planets close to the
Earth may have impacted humanity up to
the level of provoking the early
civilizations the whole new cultural
expressions storytelling myth-making
and monumental construction the birth of
civilization itself that consideration
required a contribution from Immanuel
Velikovsky to give substance to this
possibility that planets very close to
the earth engaging each other
electrically impacted cultures the world
over up to the level that history would
never be the same

I was powerfully affected by
Velikovsky's worlds in collision in 1950
he published the book I didn't read it
until 1968 but that impact on me
personally just redirected my whole life
my lifelong interest emerged in a
completely different direction I was the
founder and publisher of a 10 issue
series on Velikovsky that became the

first issue became a number-one
bestseller on several campuses and this
book Velikovsky reconsidered is a
collection of articles from that series
Velikovsky's message in a nutshell
planetary instability within human
memory human memories count as evidence
and electricity was highly active many
people reading worlds in collision did
not adequately
appreciate perhaps that Velikovsky was
vitally interested in the way in which
electromagnetism could answer the
dilemmas that would not be answered
under Newtonian paradigm the comet Venus
nothing seemed more preposterous to
astronomers in this fundamental
challenge left by the Velikovsky
evidence that the words and the symbols
for comets and the stories about comets
were the stories of the planet Venus
Velikovsky insisted that the planet Mars
was intimately involved in a phase of
upheaval the earth and humanity
powerfully affected deeply affected by a
close approach a planet of the planet

Mars on more than one occasion and in these events he highlighted the role of the cosmic Thunderbolt which has become a signature theme for us within the electric universe movement and for some of us just knowing that Velikovsky had an idea about the earlier dominance of the planet Saturn this was not much in the public domain at all as I got to know Velikovsky but I couldn't let go of the this background conversation that Velikovsky had things to say about the original role of the planet Saturn earlier in the Solar System history and so I made a special effort to track down key ideas of Velikovsky on the planet Saturn I went to the triple AF symposium on Velikovsky 1974 in San Francisco and that gave me a really vivid feeling for the nature of the the challenge Velikovsky was so he was so fundamentally dismissed and and the the conflict so unresolvable that I had to accept that anything I would develop in terms of a life's work and I was a well underway in February 1974 but I had

to just accept that it would be an extremely difficult challenge to continue work up to the level of producing conclusions that I would see as reliable given the nature of this huge divide a seemingly irreconcilable divided between Velikovsky and mainstream science

I developed a most special interest in the mythic age of Saturn received a contract with Doubleday in 1975 my book the Saturn myth was published in 1980 and then there was a subsequent evolution of a theoretical framework but to which I gave the name the polar configuration I came to believe very strongly that a focus on a configuration of planets close to the earth several thousand years ago just ahead of the advance of the emergence of the first civilizations whatever timeframe your own chronological thinking would put to the emergence the first appearance of civilized consciousness with all the unique emphases on symbols and writing and ritual practices kingship and so on

whatever that date is it occurs out of a
prior epoch
of history that was much much different
so I want to actually today address a
little bit about the phase before the
rise of civilization which it so caught
my attention everything the Saturn myth
related to the earliest symbols of
humanity expressed by the great
civilizations but it's clear that there
was more to it it became crystal clear
that there are a set of forces that work
against a novel idea in the sciences and
that includes the distal cost of
challenging authorities but actually
hanging even more deeply is cut to the
cost of being wrong

I mean having to recognize that
something was claimed that we had
claimed a high had claimed it could not
be supported and had to be changed now
and the fact is there were critical
junctures in the history of my own
research my personal investigations
forced me to revise things that I had
felt strongly previously a kind of

conviction but that gradually unravels
under further research and then over all
of this there is this huge influence of
the uniformity principle as today so
before we just fire up our computers
feed in the movements of the planets and
we think we can announce where the
planet Mars was in 2020 300 BC something
so fundamentally erroneous in this
assumption that it's just about well
it's the first thing to confront in
serious
search in catastrophist history the idea
that what happened in the past will
happen again also infected all of the
earlier cultures they were all awaiting
the recurrence of doom today they
celebrated it every New Year's the
catastrophic transformation and
reemergence of the world they
constructed on earth sacred temples and
cities as replicas of a formation in the
sky the cosmic temple the cosmic city
and there is a pervasive influence of
this assumption and a kind of
identification between the the motives

of the gods and our own motives so we
grow angry we get married we commit
crimes and so on we argue we go to war
that the gods did the same
as far as the method of the research
that will redeem itself step by step as
an investigation unfolds cross-cultural
points of agreement must be a first
level of the investigation because
that's the reflection of a shared
experience and the subject of this
investigation is entirely focused on a
global experience all global archetypes
must be included because there was a
myth making epic and that myth making
epic is the source of the global
archetypes highest priority goes to the
earliest sources because they were the
closest to the experience and there's an
observable gradual degradation over the
centuries where the archetypes are
progressively lost or adapted to local
circumstances and interpretations so the
authenticity is highest closest to the
event and this is a a worldwide
experience out of which the great

civilizations themselves arose so all of
the defining features of the early
civilizations have to be a part of this
investigation
and that makes unavoidable this
requirement that we be open to new
possibilities because so much of what is
to be explored in the mythic archetypes
globally registered mythic themes will
never find an explanation in
conventional terms no archetype ever
recorded globally in other words ever
identified by cross-cultural
investigation will ever find an
explanation in anything that we
experience today it's it's that
fundamental a
dichotomy and if the events suggested
here actually occurred how could we know
if planets were actually hovering close
to the earth engaging each other
dynamically electrically cosmic
Thunderbolts passing between planetary
bodies how do we deal with evidence that
has remained hidden as evidence for
thousands of years everything comes down

to patterns that have no explanation but must have an explanation because they are global and they are all inseparably connected to each other

acid tests of a new perspective an emerging reconstruction of the ancient past will have to integrate a field of evidence ranging from archaeological the historical testimony respect is from earth become absolutely essential laboratory analogies of discharge phenomena are equally essential planetary science the features on planetary surfaces that are not explained in the terms of the uniformitarian principle radical alteration of surfaces and abundant evidence of electrical sculpting from one planet to another and of course the test of logical consistency we do not indulge contradictory assertions a contradiction means that a correction is absolutely mandatory

now let's see I want to go back to a period of human history with which I had many conversations with others in the

1970s in the 1980s but when I got into the birth of the civilizations as a dominant focus that took over it precluded me from giving adequate attention to ideas I had originally considered and conceived in advance of the polar configuration as a principle and before the counting of time means there are no there are no chronicles there's evidence there's archaeological evidence there are there pictures carved on Stone but there is no referent historically no reference archaeologically to give you a fixed marker except dating processes that are themselves subject to a great deal of criticism but we're talking about before the birth of the first civilizations a very familiar form the rotund goddess I've picked up dates suggested around 3,500 BC I pay little attention to variations in de Deena I'm just personally satisfied that we're going to be going through a period of confusion as to how you find reliable reference with respect to dating but this goddess

figure it caught my attention there
there are a few people here I think with
whom I discussed an idea about the
goddess figure the the rotund goddess
the prehistoric goddess before the rise
of the great civilization
there's something compelling and because
I was moving into a sense of planetary
upheaval I couldn't get away from the
idea this possibility that this rotund
goddess figure was actually an earlier
or signified an earlier phase of
planetary alignments or gathering in the
sky in a cloud of dust or gas I never
used in these discussions the word
plasma because I had I hadn't ever even
heard of such a word way back then but
the mother goddess a very popular study
today but look for an explanation of
this strange figure I was in imagining
planets before the emergence of a polar
configuration just immersed in a gaseous
environment presenting many many
different rather weird formations that
suggested to humans on earth perhaps a
feminine form

there's something compelling about the
underlying consistency of the ideas at
the same time the lack of precise Accord
is at least as obvious but I've never
found in any attention I've given to the
Prius this prehistoric phase and
specifically this mother goddess figure
I've never found anything remotely
satisfying as an explanation other than
this possibility that there was a
celestial condition and planetary bodies
gathered in the sky
fed this human idea of a great mother
now some of you will be familiar with
this form and it where we're out of the
Paleolithic period fully into a
Neolithic phase of human history earlier
the earliest emergency emergence of the
great civilizations in Egypt and
Mesopotamia and this is different
what is opening up here in terms of my
own lifelong work is a sense that
something fundamentally new appeared in
the sky and this is associated with a
Neolithic goddess form you see these
forms heavily emphasized in Egypt for

example from where this comes and I have asked myself a year after year is it possible that a coherent explanation of what occurred between that Paleolithic cave art phase and then a Neolithic phase where goddess forms emerge then quickly there are stories told about goddesses and so on that they have no prototype I mean these are the first stories told by the earliest civilizations I see that figure of the goddess is indicative of a transition but then that drew my attention back to what is missing in our understanding of the pre civilized state the artwork the gathering of artists and caves painting beautiful images on the walls of the cave now I want to just suggest an idea and then see if this can be is this confined substantiation in some of the evidence I'll present but here's the idea there was a phase of history before the rise of the civilizations in which the earth moved through a cloud of gas and dust plus rocky material deadly Falls of debris from the sky forced

humans into caves and in that environment of deprivation they experienced a yearning for what was lost and what was lost was under whatever name a culture might use the happy hunting ground this open expanse of about natural abundance on earth that ended in horrific catastrophe driving human beings into the refuge of caves the happy hunting ground they yearned for a return to that human condition of abundance and natural ease so having a frame of reference with respect to the occasion an occasion of catastrophe forcing humans to retreat the caves where they yearned for a return to paradise raises a question then about that natural environment we're human beings driven to find that refuge in a cave nothing speaks more powerfully for this possibility of material falling from the sky threatening life than a dolmen the in many instances the most imposing structure is a roof and I could not I have never found in any specialized

study of prehistoric art and pre
civilized communities I've never found
an explanation that made any sense for
the rise of dolmens I mean all the way
from northern Europe to Korea you find
these things but then also you have the
occurrence of humans retreating to caves
in the American Southwest and so on so
there's something to be explored here
that hasn't even been touched yet in the
conventional treatments of these
subjects and there is also a profound
sense of incompleteness a desperation
perhaps to find protection that's not a
completed structure if they're
interrupted

everything is so crude there's no
architectural beauty to any of this so
what was what was driving this human
activity and in a rather narrow layer
of human history nothing of the sort
before that layer and nothing afterwards
comparable to this isn't this an
indication of a desperation for
protection it struck me then well if the
cave was a place for some humans to

retreat and dolmens were another form of protection I wouldn't expect to find a dolmen right outside the cave so it seemed rather an interesting test and I haven't found any dolmens that were in located in very close proximity to a cave but both the presence of humans in caves and the construction of dolmens as protective measures with a certain sense of desperation implied in the crudeness and so this was not an epoch of the in the human past where humans had the luxury of artistic splendor and so on which comes very shortly thereafter was humanity threatened by rocky debris falling from the sky there's a kind of transitional phase indicated where something like protection Iraqi protection begins to merge with a larger artistic and maybe even religious formalism and the nodular temple complex is a good example of that but one begins to take the subject up would find plenty plenty of examples that are suggestive of a transitional phase I need to jump ahead here then there is the myth making

a book and this is an entirely new explosive emergence of imaginative expression where there's a bit of absurdity it involved almost nothing is naturalistic except parts of the human figures and animal figures that are combined in these preposterous ways I was originally I was eventually satisfied that all of these representations were due to an overarching requirement to use naturalistic symbols to express aspects of the phenomena being experienced we're often a mere human figure or a mere animal in its natural appearance was not sufficient to capture the country the complex features of what was being experienced this is in close this experience you would place very close to the beginnings of the first civilizations with the sense that the civilizations themselves emerged right out of this experience and provoked by this experience multitude of bizarre combinations of natural forms that were needed to

capture the details of what humans were experiencing around the world a bearded serpent a feathered serpent a fiery serpent and so on all of the most prominent archetypal images of serpents and world mythology are ludicrous but it is significant that they all exhibit the defining features of comets with the first emergence of a language of comets in the early astronomies the language is the language of comets was the language of a planet and we'll get right to it to that and speaking of absurdity there there has to be an explanation for the things that could never make sense in terms of our familiar reference because features such as the single eye well this is worldwide we can't dismiss these things just because they have this appearance of absurdity but everything as it comes to be expressed with the expansion of artistic representation everything just appears completely disconnected from what we know what we actually observe and yet the signs and symbols of that human experience are

global just shadows
nothing to give them real life or
believability leading to the question
what was the age of gods and wonders
there would not be a civilization
emerging let's just say 5,000 years ago
that failed to remember a mythic age of
gods and worth gods and wonders the gods
ruled for a time and then they went away
now is that a natural story to tell it
just seems too well focused on a human
memory that has to have an explanation
and why did we stop believing in the
gods well we stopped believing because
the natural order no longer supported
any of the myths every myth became
absurd against a test of natural
experience why then the mythic
archetypes not one second here when did
I start 10 19 okay if I could if
somebody could give me a three-minute
warning
I'll have a good sense as to how to wrap
it up ten minutes left super thank you
one of my favorite quotes of all time
all that the earth inherits will be what

will he assures us that's Berossus be
consigned to flame when the planets
which now move in different orbits all
assemble in cancer so arranged in one
row that a straight line may pass
through their spheres talk about absurd
there's no there's no basis in human
experience ever in planetary history
deposit this sort of primeval state of
things and yet it is exactly what we
would expect from the evidence that a
configuration of planets hovered close
to the earth a polar configuration as I
called it initially in 1972 involving
planets in alignment with an axis
running right through the centres of
these spheres and associated with a
primeval time that occurred and then
disappeared fell into confusion giving
way to Wars of the gods archetypes stand
out Saturn as the all-encompassing
sphere of heaven a preposterous idea
Venus the animating heart and soul the
feminine glory of heavens
this was the mother goddess in ancient
Egypt always called the eye of raw raw

the primeval Sun not our Sun today but
the the founder of the world of the gods
in primeval times always associated with
the rise of civilization itself the
connection of Mars mythically to the
innermost reddish masculine heart of the
heart the Egyptian haben Hattie the male
apart within the larger sphere of the
hata heart
and Jupiter hidden behind Saturn in this
phase we never seem to have a sufficient
opportunity to take on the Jupiter
aspects of this configuration even
though from the very first formulation
of a configuration I had Jupiter hidden
behind Saturn and the story is
absolutely fundamental and one of my
promises of the past year that I've
expressed to a few people is that I'm
going to bring the notes on to
out into the light of day because that
started way back in 1972 and there are
many hints of people picking up that
this is actually a critical part of the
story of Saturn Saturn gives way to
Jupiter as a a kind of reincarnation of

himself it's the Jupiter emerges as the
younger version of Saturn and this is
the new year's festival underlying
concept the primeval universal sovereign
gives way to a rebirth of himself and
each of these most fundamental
archetypes reveals an aspect of what
I've called the great conjunction which
defines the polar configuration an
alignment of planets unlike anything
that we observe in our own time basic
themes to explore if you open up this
field of investigation for yourself the
idea of a primeval unity always
associated with the Golden Age
remembered as an undifferentiated form
of the sky great conjunction of the
first time which means the beginning of
time this planetary configuration can be
traced back to the myths and symbols of
how time began that means how the
counting of time began how kalindra chol
systems were inaugurated on earth
central Sun is the heart of creation
that's a global theme and then the
astronomical traditions that central Sun

is consistently identified as the planet Saturn even Helios was archaic Lee remembered as Saturn and the central Sun had a station in the place it was the axis of the turning sky at the celestial Pole all of the heavenly bodies moving visually around that Center the identification explicitly in Mesopotamia of Saturn as Hamas the Babylonian sun-god shamash is explicitly named as the planet Saturn and of course no one has ever explained why in various astronomical traditions Saturn was not just associated with the Sun but was located at the celestial Pole the Chinese one D for example probably out of this whole field of research nothing is more important than the creation legends but the importance of the creation legends only emphasizes the essential discovery that the creation legends emerged out of human experiences it wasn't remote speculation backwards or anything of that sort the creation legends involved human beings recounting how the gods themselves in the beginning

of time created a huge towering edifice
in the sky as their homeland this is the
land of the Gods the place where the
Wars of the Gods occurred the place of
creation and this evolving configuration
in the sky I have proposed is the entire
subject of world mythology and I'm
satisfied sufficiently now with the
integrity of that evidence to say there
there are no other myths than those that
relate to the history of the book of the
polar configuration no other mythic
archetypes so I'm not making a statement
about a local story or anything of that
sort but if you find a global pattern I
will assure you that it will have an
inseparable connection to every other
global patterns and the net and the
aggregate effect of those connections
will be the story of world mythology
global patterns mean everything because
they couldn't be there without the human
experience that's the idea to carry
forward in this investigation once it
begins to register nothing will look the
same Venus was always the mother goddess

in every land no nothing in the appearance of Venus that could be identified either in any I mean from any vantage point on earth or anything of that sort would have any bearing on this universality of Venus as the mother goddess and Venus as the great comet there's been a great deal of discussion of the cometary aspects of Venus you can find many video presentations relating to the comet Venus on the Thunderbolts project website the Thunderbolts project YouTube channel and so on Mars is the cosmic warrior wielding a cosmic Thunderbolt that looks nothing like lightning cosmic Thunderbolt no connection to the appearance of lightning association with the ancient warrior and identified as the cosmic mark as the planet Mars Mars also presented as a great pillar or world mountain stretching between the earth and the center of the sky the domain of the gods themselves in primeval times I've really not in recent years said anything about the primeval seven but

people asked people on the Saturn
mythical seven lesser bodies in the
presence of Saturn
what are they and I just identified
as the primeval 7 another worldwide
theme how much how's my time doing right
now bill two minutes perfect the jovian
New Year deserves much more
investigation than has been published
and I do know that there are individuals
who are bringing significant research to
this subject and I hope that folks here
will keep their eye out for the
emergence of this story I do intend
myself to add to this discussion on the
jovian new year myself this is actually
the place for me to stop that all right
two minutes yeah okay

[Applause]

[Music]

[Music]

[Music]

[Music]

[Music]

dr. bill Mullen classics degree from
Harvard in 1968 and PhD from University
of Texas postdoctoral fellow at Berkeley
I mean the man's been all over the place
but he's finally put down roots since
the 80s at Bard College in New York but
we're glad that he uprooted himself long
enough to be here with us today dr. bill
Mullen Thank You Tweedledee so
hieroglyphics and the ancient sky
remembering assimilating easing forever
a little over 40 years ago and as we've
been saying in the Bible 40 years means
a very long time this 40 years ago I had
the youthful presumption to write an
essay entitled a reading of the Pyramid
Texts published in the Talbots Paul say
series Immanuel Velikovsky reconsidered
reading in that title meant of course
interpretation today matured I hope by
those forty years I will be giving you
another reading of the Pyramid Texts and
other Egyptian writings you should be
forewarned that by reading I mean not

only interpreting but also a good
measure of reading out loud with these
texts and therein Cantore rhythms my
interpretation is summed up in my four
gerron's
verbal nouns in my subtitle so
remembering assimilating easing forever
in these gerunds refer to structures of
thought habitual to the priestly scribes
who composed texts for the dead the
same structures of thought I will argue
so as for fundamental and omnipresent
ways in which Egyptians thought
accommodated itself to cosmic
catastrophes and ultimately learned to
cease to fear them to forget them at its
simplest forgetting came to take the
form of the fading away of an earlier
meaning of a single hieroglyphic into a
non cataclysmic later meaning let's
begin by looking at a single
hieroglyphic on the title here the so
called
I of Horus it is a Falcons eye the
vertical line an enclosed area to its
left or plausibly enough interpreted by

Egyptologists as the typical black line
coming down from the Falcons head though
you will find other interpretations in
this room to the right however is a line
curving in on itself a curl and this
line is simply not to be found on
Falcons

I'm sure because I checked with a cadet
and the falconry Club at the United
States Air Force Academy and with due
diligence he sent me copious Falcon
photos and none of which was the
mysterious curl to be seen in recent
work F Cochrane whom I hoped would be
here to speak after me has argued that
this curl is the hair of the comet Venus
whose rampage on earth and sky he
associates with the planet Mars he
argues forcibly in unpublished work but
also in a chapter in his recent 2010 on
fossil God's and forgotten worlds the
chapter the Horus star that Horus is
none other than the name for the planet
Mars and the two goddess Hathor is none
other than the name for Venus the curl
on the eye of horus he argues would be

specifically depicting the hair of Venus
in cometary form
the curl cochran points out can be found
on the red crown one of the two crowns
of the Pharaoh as commonly depicted as
wearing a mysterious curl moving up from
the Crown's base and this curl can be
found in representations accompanying
other hieroglyphic texts independent of
either the Eye of Horus or the red crown
another such glyph is a this is another
this is the second of my Horus with the
red crown the white crown together Anna
on the moving up from the right the curl
another such glyph is a disc with the
famous your Reyes affixed to it on the
far left a Cobra that spitfire we do not
see such a thing in today's sky the
third gift is a circle with four sets of
parallel lines inside converging on its
center this is on the far right used in
words for city or town it's standard
interpretation is of two crossroads
intersecting enclosed in a disc there's
no evidence of circular walls or actual
streets intersecting at right angles

there any relation to the plan of a
normal Egyptian city Dave Talbot has
shown the dominance of this figure in
cultures around the globe and sees it as
visible in the ancient sky and
interpreted by different cultures as
different forms it does not in any
obvious way depict the way Egyptians
design cities for Talbot it is the
celestial City one of his many
archetypes
which are counterintuitive because they
are not seen in today's world
my final glyph the second from the left
is the simplest a circle with a dot in
the middle to be found as part of the
spelling of the word raw
it is used in everyday phrases such as
rah Neb translating everyday translate
it every day and fitting the context as
such but why a dot in the middle of the
circle
my thesis can be summed up and
symbolized by the last of these
hieroglyphs
if this glyph as Dave Talbot has been

arguing for 40 years
once depicted the presence of a smaller
planet in front of a much more massive
one and we've had the great pleasure of
seeing this in glorious color and just
now a presence of a planet aligned
between it and our Pole and therefore
seen from the earth as it's at its
centre the larger disk the larger planet
and the the discs of the point in the
center or the small circle in the centre
you must also have over long time come
to be used by Egyptian writers of
hieroglyphic language to mean simply the
Sun we see today in other words it was
read by Egyptians as the Sun who's
reliable rising in the east and setting
in the West were symbols of stability
and sent eternity an older understanding
of a glyph had faded into a newer one as
an example of a better and is example of
this latter meaning here is the famous
adoration of Raw at the beginning of the
papyrus of ani adoration of Roffe when
he rises in the eastern horizon of
heaven can you see the the circle with

the dot at the center just as one of
five components of a glyph over the
second word row all right so we have it
spell it with a mouth and an arm row we
have the picture row and then we have
the symbol of a god all right so this is
a perfectly normal use of it in Egyptian
which let me use this one cosmic cliff
now to unveil the four somewhat cryptic
participial nouns or jaren's which form
my subtitle remembering assimilating
easing for every taken as an ensemble I
will argue they bring to the surface
some of the deepest patterns of meaning
in Egyptian texts and in no instance
better than in the process by which this
glyph comes to mean our daily Sun I will
give examples of these Jarrod's at work
from two representative sets of Egyptian
writing an earlier and a later the first
from the Pyramid Texts of the Old
Kingdom specifically from the spells of
the pyramid of who knows the oldest to
contain inscriptions by the way here you
can see a reconstruction the funerary
temple leading down to the Nile the

causeway the mortuary temple greeting
the body or sarcophagus and then if you
look at the schematic diagram once
you've arrived at the enter entrance you
can see a burial chamber I don't know if
I should get into using this or not but
the sarcophagus is brought through here
it arrives at a burial chamber and the
ritual of resurrection is to get the
Kings body out of the sarcophagus at
this western side and move into this
eastern side from which Polaris will be
happy to remember there is an exit for
the Kings soul headed north all right
inside you can see how splendidly
preserved the hieroglyphs are there
stars on the ceiling and various designs
here but then if you look at most of the
wall is perfectly preserved hieroglyphs
only a one break and
this is as though you were reading in
the world's oldest book because most
stable book the pyramid has no space
into which to collapse so it remains
stable and the lifts are in stone and
legible and we can read them today the

second set of inscriptions is from the
book of the heavenly cow in the New
Kingdom I will show you the Helena cow
right now it is from the scene on the a
number of New Kingdom teen tombs most
particularly the Hall of columns and the
tomb of Seti the first and to get a
better glance you can see how the cow is
heavenly or celestial because the bark
of the Sun goes across it like this and
sets there we will come to the story
about how this cow became the heaven on
which the Sun moved in a just a moment I
want to make clear that by using old and
New Kingdom examples I am just by the
way making a point that there's no
essential difference between the two in
other words don't expect that I will
find in the Pyramid Texts secrets about
the ancient sky different than those I
find in the New Kingdom texts alright
this is one pattern I see earlier and
later so let me in a way in a
preliminary way go through my jaren's
with examples in the order in which I've
arranged them I will then use examples

from my two sets of texts to to show
their evident pattern of meaning in the
Egyptian mind and proceed from there the
first round gerund remembering
designates the narrating of these
anomalous events in the sky which
affected the earth catastrophic lay
Egyptian literature is curiously
deficient
in straightforward tales of world
destruction by celestial beings more
often in Egypt such events are just
alluded to in a cryptic phrase or
cryptic if the reader does not already
know the story but both a narrative and
an illusion are forms of remembering and
I will treat both as such by looking at
my two chosen texts assimilating next is
my word for the omnipresent spells by
which the deceased becomes one God or
another in simple declarations such as I
am raw such assimilation is to be seen
in all mortuary texts not just royal
ones as god of the dead Osiris has pride
of place in the Book of the Dead which
anyone wealthy enough could Commission

ascribe to fashion for his tomb in the
well-known papyrus of Ani from which I
showed you the first line a second ago
we read incessantly of Osiris on me
doing this or that of the next world
Osiris Ani converted into the god
Osiris assimilated into the great God in
the Pyramid Texts the King is commonly
assimilated into the being of the
greatest of all gods Hotepwaset
term easing is a short word for a lovely
process it refers to the many ways in
which the deceased is said to be at
peace and at ease peace consists of
doing things deemed Pleasant in Egyptian
life sailing in a stately bark barge
such as a God might sail in smelling a
lotus playing a board game wandering in
Pleasant fields such as the Greeks would
call elision these mortuary texts allude
occasionally to catastrophes in the for
time the combat between Horus and Seth
or the raging of the eye of the Sun or
the eye of Horus but for the most part
they speak of present and it
recurrent serenity the eye of Horus is

too clear to have been returned to the
deceased like Horus the deceased has
been judged by the court of the gods and
found vindicated as reward for his
purity the deceased has spells from
mounting to the very bark of the Sun
itself there he is said perpetually to
reverse the sky from east to west in the
company of this most radiantly visible
god of the present the idea of a
perpetual present takes me to my last
gerund a word I made up for evering I
use it as a transitive verb for what the
spells of the scribes mean to affect for
the deceased the King will live for
millions of years in eternity and
everlasting us he's entered a state of
being which is totally secure and whose
changes are only those of a cosmos
dominated by the unending circling of
the Sun psychologically one may say that
all anxiety whether triggered by memory
of world destruction or by the thought
of personal death has been allayed and
once we admit psychological thinking it
is easy to go further in analyzing the

true dynamic of this forever
it is denial a denial enabling amnesia
forgetting so now let's go through
quotations from the two sets of texts I
mentioned at the beginning each of which
represents one or more of the four
processes to which these two texts are
devoted in a brief paper such as this
one you must of course take my word for
it that I have not been selective for my
own purposes

I submit that my reading of either of
these two texts in their totality the
book of the heavenly Gao or the Pyramid
of Lunas will find that my for Gerrans
are the dominant themes and that they
are representative of the body of a
gypsy or Egyptian

mortuary tax as a whole so we begin with
remembering to be red parks and also in
the tomb of Seti the first in the
narrative of how tours destruction of
mankind a story dear to all the test
refers for its explicitness raw the self
begotten and self created and the
creator of mankind by the weeping of his

eye that grown old and weary and it had
come to his attention that humans were
complaining of his age and plotting
against him the Council of the Gods
approved his response that his eye be
brought to him with all its destructive
power

let sure I go forth it wise to the
council and destroy for you those who
revile you with slander for there is no
I whatsoever that can go before it and
resist it when it makes its progress in
the form of hot or hot or and another
version then went forth a segment slew
the rebels so many of them that raw
repented and called her back
come come in peace hot or for the work
is accomplished but the goddess found
the destruction of humans too sweet to
stop she waited about in their blood
until a divine ruse distracted her
Mandrake's and beer were added to the
human blood she had shed and mashed into
a potent brew which made her so drunk
that she lost her interest in her
rampage a remnant of human beings were

left in which rock took no more interest
this narrative contains all the elements
found around the world for a great
memory of destruction visited by sky
beings on inhabitants of the earth a
high God becomes cognizant of the
vicious imperfections of the humans he
created
through his agency some being from the
sky destroyed vast portions of humanity
in the end though the God repents and
relents enough for some humans to be
alive to tell the tale of their distance
to their descendants and in so doing
deposit some kind of meaning for it when
we look for remembering now in the texts
of the Pyramid of Una's
we find the great catastrophes only
tersely alluded to in spells whose
primary purpose is to facilitate the
Kings rebirth and felicity since these
spells are often wrapped repeated in
later pyramids and that of unas was the
name of different pharaohs inserted i
will generalize by referring not to
Eunice but simply to the king and one

extended passage the spells repeatedly
begins king except the eye of horus the
vicissitudes of that eye above all on
the combat between Horus and Seth are
then named in the set of phrases except
the Eye of Horus which went away which
Seth trampled which he pulled out which
he carried off on which he caused
devastation which escaped from Seth
which he rejoined and the so called
resurrection ritual by which the
sarcophagus is brought into the final
burial chamber the Kings Herald tells
him to go to your father to autumn who
has given birth to Horus in his identity
as the one at which the earth shakes and
the sky trembles in such language there
is never an overtly narrative intent the
phrases of the spell subsumed the past
and are always aimed at transformation
of the King in the present I of Horus to
come high and big towards the king
behold King you were more soul and more
in control
the gods of the Mont Nile remembering
thus is for the sake of transforming

cosmic disturbance and in so doing
bringing the king to ease control
exultation my next gerund assimilating
refers to the recurrent assertion that
the deceased is some Godhead or other
the proportion between narrative and
spell are reversed in my new Ingham New
Kingdom and Old Kingdom texts the New
Kingdom book of the heavenly cow
consists mostly of the elaborate
narrative I have summarized after hot
Wars all but total destruction of
humankind we next read of the old sons
determination to retire what he wants it
turns out is to distance himself from
earth and humans and to mount up to a
new sky one provided for him by not at
his command in the form of a cow note
trembled because of the new height of
the sky so rah decreed that supports of
the sky come into being only after a
complex of narrative a complex narrative
of the instating of a new world order
does the instruction briefly turn to the
deceased and provide him with spells to
assimilate him to a godhood I am this

pure magic which is in the mouth and in
the body of raw I am raw the luminous
one I am raw amid his court his nine
made of magic I passed by uninjured I
belong to the flame which the soul of
fire thus you see narrative morphs into
spells by which assimilation to raw is
consummated in the old kingdom the
spells of the Pyramid Texts are likewise
aimed at assimilating the deceased into
multiple gods they contain no extended
narrative but abound in such
assimilations the spells have one
difference from our New Kingdom texts
and the Pyramid Texts the
King assimilates himself not just into
the gods of creation and regularity but
also the ferocious gods who have shown
themselves capable of wreaking havoc in
the cosmos
sometimes he takes on Horus his face and
destructive power the king will come
with his faith that of the great God who
is Lord of rage who grew among the end
who grew strong from the injury to him
Horus will grant you the fire of his I

that it's circle or around that it put
tempest among the evildoers put its well
under the primordial God's he will
strike shoes armed from under the sky
this is one hieroglyphic texts where at
the very end of the second line you can
see for transformations into Horus and
the last hieroglyph is the falcon all
right

sometimes Horus is mentioned only in the
background and the Kings threatening
presence in the sky is claimed as
something unseen before shaking in the
sky we saw something new say that
primordial gods Court are the nine gods
Horus is in the light the King will take
hold of the sky will open its orbit the
king is Bane sometimes the King spreads
terror all on his own the king is baying
to the heart is the son of shoes heart
extended to the limit with scorching
lights the king is the fire and the top
of the wind to the sky's limits to the
Earth's limit when the arms of the
lightning bolts had become discharged
why am need I stress here that the

terror is a new electrical phenomenon I
now enter the second half of my proposed
structuring easing and forever ring the
two gerunds which move away from the
terror in tomb from terror in two modes
of forgetting it

listen to the sweet details of ease
inserted at the final stretch of
narrative in the book of the heavenly
cow in a spell efficacious for whoever
shall recite the words of this
composition behind his ears shall be
pure and natrone and sweet-smelling
salve shall be on his lips he shall be
arrayed in a new double tunic and his
body shall be purified with the water of
the Nile easing in the book of the
heavenly cow has as its conclusion
spells to enable the deceased to move
around after death some of its promises
are negative sentences of protection
such as I pass by uninjured
I belong to the flame which is the soul
of fire

I have no adversaries among men God
spirits among the dead or at anything in

the whole of this land others make more
positive promises as for anyone who
knows the divine words and the spells in
his mouth he can ascend and descend
within the sky the entire composition
comes to an end with such promises short
but decisive in stressing the ease the
deceased may enjoy through its spells to
turn to the Pyramid Texts there are this
easing of the king is not always purged
entirely of catastrophic consciousness
as so often in any court the Kings power
may be part of his beauty as in this
spell how fair the sight how pleasant
the beholding to God say of this God's
going forth to the sky atop him his
souls that he sides his terror at his
feet his magic more often though the
serenity of the king is wedded to his
assent to the company of the heavenly
deities in orderly movement you shall
become clean in the cool waters of the
stars
shall board the bark of Raw on the
shoulders of Horace Oh ferryman who
faces forward fetch for the king the

latter whose name is salve of
contentment on the back of Osiris that
the king go forth to the sky upon it
that he escort raw in the sky we come at
last to the gerund I made I made use of
forever hang in the book of the
celestial cow
the most striking affirmation the king
will take his place forever in the order
of the new cosmos occurs in an
illustration on the wall there the king
shown three times with his skirt and his
urias joins the company of a male God
eternity and a female God
everlastingness and in both cases the
activity is holding up the sky with a
support to show you the next slide your
more particularly are the Eternity with
the name thereof below it's him and
everlastingness with the name below here
so they are joining the king in holding
up the sky all three like shoes support
the new sky which raah has mandated and
which is now made up of the sky goddess
nut as a cow in which - who's in - whose
body rah has retired from earth and the

underworld the accompanying spells can
veil the same message the one who
recites this spell shall live in the
necropolis and respect for him shall be
greater than for those who are upon
earth if they ask what are your names
the answer is eternity in everlasting us
then they are bound to say this is truly
a nod the language could not be clearer
that there is a new world order and that
it is to last for

what we see at the end of the book of
the heavenly cow occurs far off and
throughout the Pyramid Texts there the
celestial melding of serenity and
orderly motion leads naturally to an
assertion that the new order brought
about by the Kings arrival in the sky
will be stable and at ease forever on
heaven and earth alike he will remain
undisturbed by any memory of terrifying
phenomenon the King's house in the sky
shall never perish the Kings seat on the
earth will never end most tenderly the
king becomes the son of autumn rah in a
perpetual embrace autumn rah your son

has come to you the King has come to you
it resolved him to you encircling with
your arms this is the son of your body
forever we have the same archetype here
as Christ returning to sit forever at
the right hand of the Father so I have
proposed a schematic separation of
smells into four processes or four
gerron's

but we have already seemed some
overlapping and my survey would not be
complete without giving you one example
in which all four gerron's are conflated
from the Pyramid Texts the King has come
from the isle of flame the king has put
order in the place of chaos the king is
he who owns the linens guarded by the
Cobra of fire during the night of the
great flood that comes from the Great
Goddess the King will appear as the fair
god as the water lily at the nose of raw
when he comes forth from the place of
radiance every day there is an implicit
remembering of a deluge brought by a
major deity during the night of the
flood

comes from the Great Goddess note also
that the King is implicitly assimilated
into raw or Horace in his possession of
the Urrea spit fired his enemies but
most of the imagery invokes pleasurable
ease the King appears is the beautiful
water lily which Ross smells on his
coming forth and the final phrase
constitutes the purest
of affirmations of what I have called
forever Aang when it comes forth from
the place of radiance every day here we
have its concise and affirmation as of
the assuring ly recurrent as any that
Egyptian culture was accustomed to make
every day rah Ned as I said at the
beginning is more literally every Sun
and the same disc with a circle at the
center of it is used in the spelling of
raw when he smells the water lilies
fragrance the kinds of language I have
quoted throughout will not be unfamiliar
to any one who has had any exposure to
Egyptian civilization this civilization
claims a long memory of the past it is
replete with humans who are or who

become divinities its elite is
everywhere depicted in positions of ease
except perhaps for the Pharaoh sallies
forth in a decisive battle which
annihilates an enemy armies such as
danger artists images of I would simply
stress that it is the last of my Forge
errands which is the best-known Egypt
has long represented the - presented to
the world a lapidary facade of stability
and perdurable order his prestige
deferred to by such general venerable
Greek visitors as Sola Herodotus and
Plato in conclusion I wish to set up a
paradox consisting of two terms which
seemed at first incompatible but on
further inspection are complementary the
first term I take from Thunderbolts of
the Gods we would not be going too far
to suggest that civilization itself was
a bursting forth of new and creative
forms of remembering all harking back to
some aspect of a primeval conflict
between order and chaos second term of
my paradox is one known to any
philosopher of memory namely that we

remember some things only by forgetting
others memory has to be selective in
order not to overwhelm us
so I would add to the truth of Talbot
and Thornhill sentence and other truth
that civilization was also a bursting
forth of new and creative forms of
forgetting through selectivity and
selectivity about remembering the past
can lead to denial about what is
possible in the future the primary
denial in Egyptian culture is that the
New World Order established by Roz
removal to the sky described in the book
of the celestial cow could ever again be
undone the Pharaoh himself is depicted
as helping eternity in everlasting us
hold up the sky in the illustration of
this book on the tomb walls if the
deceased is to accompany rah in his
barks perpetual daily traversal from
rising to setting and if daily is
expressed in the two words every Sun and
there is nothing to be feared in the
future the Egyptian afterlife may
resemble that of the Blessed and the

Christian heaven but there is no
apocalypse or Last Judgment preceding
the consummation of Christian beatitude
and the beatific vision for cultures
with a profound sense of the
fragility of the cosmos in which man is
but the servant of the gods
and a gloomy underworld is our last
station one does better to turn to the
civilizations of Greece and Mesopotamia
in Egypt for evering becomes a form of
forgetting thank you

[Music]

approaching the Deep Impact mission of 2005 NASA educators developed a guide for teaching young students about the nature of comets since astronomy is an extraordinarily complex subject the educators aimed to engage the students imagination the title of the instructors guide was make a comet model and eat it to learn about comets nature's dirty snowballs youngsters engaged in a hands-on exercise called the thermodynamics and chemistry of ice cream among the questions the children were asked to explore what visual observations do you make about your ice cream comet what are you able to tell by using your fingers to feel the ice cream comet what are you able to tell about your comet using only your sense of smell what are you able to tell about your comet adding your sense of taste what explanations do you draw about the composition of your comet the NASA instructors manual concludes with a final query of the young student what is a comet ice cube or ice cream deep

impact will help us find out the data
from Deep Impact will tell us a little
about how the comet formed blob of water
or snowball of crystals that came
together now let us all close our eyes
and do as the NASA educators have
implored our youngsters to help
enlighten a new generation about the
wonders of dirty snowballs those
primordial aggregates of Isis and dust
those freezing cold blobs that slowly
accreted billions of years ago in our
solar system's infancy let us daydream
softly of ice creams delight us savor
the cool refreshing sensation as your
tongue gently laps at that sweet and
creamy treat of course you cannot taste
or touch or smell a comet on earth but
one sense at our disposal can teach us
much about the Comets elusive nature
open your eyes and return to reality
what do you see the images on your
screen are of a dirty snowball
comparable and Composition to slowly
melting ice cream
at least that is the story that

scientists and educators have promoted
to our youngsters for roughly half a
century do you believe what you've been
taught or do you believe what you see
let us lay daydreams aside and consider
what is self evident that this cometary
nucleus possesses a brutal terrain a
complex body tortured with cliffs sharp
edges boulders and rocks let us
contemplate what we see that this rough
rocky creature was torn from a planet
carved as if by fire blasted burnt black
and expelled from the atmosphere of its
original world let us see that this
desiccated material was immersed in a
cloud of debris the ideal prediction for
its fields of rocks and stones littering
its roasted surface let us see this
gross physical testimony the scars of
lightning of the Thunderbolts of the
Gods witnessed by ancient peoples around
the world as they rained like hell fire
in interplanetary wars let us see that
the force that lights our cities and
connects the entire world is the same
force that permeates and shapes the

entire universe let us see that not all
scientists believe in snow white fairy
tales that the astonishing revelations
of the Rosetta comet mission were
explicitly predicted by proponents of
the electric universe let us assimilate
what is plain before our eyes evidence
that speaks to us across vast distances
of time and space beseeching us to lay
down our fairy tales and to finally see

[Music]

Science portrays that our corner of the Universe is nothing special. At the heart of the assumption lies the Copernican principle which states that humans on Earth are not privileged observers of the Universe. Not only is our solar system highly unusual, but our Sun is not a run-of-the-mill star. It is a yellow dwarf star which, you may think, together with white dwarf stars, should be common elsewhere, but unfortunately this is not the case at all. And instead, red dwarf stars are by far the most common star in the Milky Way and they present some rather large problems referred to as the Red Sky paradox. Most stars in the Universe are red dwarf stars; they outnumber stars like our Sun by a factor of five. According to mainstream astronomy, these stars also last about 20 times longer in comparison to our star. This means that none have reached the end of their Main Sequence lifespan during the assumed age of the Universe. Here, I must caveat both of those, as there is a different way of looking at this problem, which we will explore in a little while. So, let's return to the Red Sky paradox.

If red dwarf stars are the most common star, and are also so stable, we should also not consider ourselves to be special.

The very fact that we are not orbiting a red dwarf star, but instead the not-so- common yellow dwarf, and yet we have not found any other forms of intelligent life elsewhere in the Universe.

This presents rather an interesting problem that is dubbed the Red Sky paradox.

A new paper attempts to examine this in more detail. As solving this paradox may provide guidance for targeting future remote life-sensing experiments. Red dwarf stars are an attractive prospect for the search for extraterrestrial life. They emit less energy in comparison to our Sun, which would mean any planets orbiting them would need to be closer to the star in order to reach the habitable temperatures. In the paper, the author outlines four possible solutions to the Red Sky paradox. Resolution I - An Unusual Outcome.

The first possibility postulates that nothing is different about the emergence of intelligence between yellow dwarf stars and red dwarf stars. We are simply an unusual member by finding ourselves around a yellow dwarf star.

If the rate at which life emerges around both types of stars is similar, then Earth is an outlier with a hundred-to-one chance of forming.

This does however, create tension with the Copernican principle. Resolution II - Inhibited Life under red sky. Here, the idea is that red dwarf stars create environments that are not supportive of life compared to yellow dwarf stars. Consequently, life evolved far less often around red dwarf stars. They estimate that this could be as much as a hundred times less likely.

We know that red dwarf stars have the highest flare rate of any star type, and because the planets would need to be much closer to the star, due to the low output from these types of stars, it puts any planet in the firing line of these massive super-flares.

Resolution III - A Truncated Window for complex life. The concept here is that life has not had enough time to emerge around red dwarf stars. The reasoning for this is that terrestrial worlds forming in the main sequence habitable zone of red dwarf stars, will be subject to an initial phase of higher radiance, potentially pushing them into a runaway greenhouse state

that persists even after this phase is over.

Resolution IV – A Paucity Of Pale Red Dots.

Here, the idea is that planets forming around red dwarfs may be more uncommon, especially in the habitable zone, compared to yellow dwarf stars.

Currently, around 16 percent of red dwarfs have exoplanets that are rocky, but maybe this is not the norm.

These surveys sample the most massive and brightest red dwarfs, but what if the smaller ones, of which we know very little, don't have any rocky planets in their habitable zone?

Since the low-mass red dwarfs are the most common, this could mean that the habitable zone rocky exoplanets are a hundred times less common around red dwarf stars in comparison to yellow dwarfs. In this case, intelligent life is rare amongst the cosmos and spawns universally between red dwarfs and yellow dwarf stars. This would mean that the vast majority of known Earth-sized temperate planets around red dwarf stars are somehow inhospitable to life, or that they rarely host habitable worlds.

Now, there are some immediate questions

that this research raises. Firstly, why are red dwarf stars so much more common than yellow dwarf stars? The mainstream explanation here is that they are so small, and have such low mass, they evolve very slowly. An estimation puts their main sequence lifetime at a hundred billion years. This, they claim, is why there are many red dwarfs. Bigger stars come and go as slowly the number of red dwarf stars grows and grows.

In the Electric Universe, stars are not thermo-nuclear, but instead, are electrically powered.

So, if this is the case, why would we see more red dwarf stars than yellow dwarf stars?

The assumption is that the type of star is not determined by what stage it is on on the mainstream's idea of the evolution of a star. Instead, it is determined by the electrical input and the environment the star resides in. Red dwarf stars are just receiving a lower input compared to a yellow dwarf star, which in turn receives less compared to a blue star. As the input changes, it can cause a star to change from a red star all the way up to a blue star.

Observations show that stars do seem to undergo sudden changes after brightening events.

So, why would we see more red dwarf stars in the

Electric Universe? I see that there are three different ways of explaining this. The First - Stars form in pinches along filaments. Research shows that these stars can be ejected from the central filament.

I have done a separate video on the slingshot mechanism which you can find on my channel: See the Pattern.

This means that as stars are initially born at the heart of the filament, they start near the highest current density and will burn bright blue. Depending on the kick they gained from the filament, they will slowly start to move further away from the central axis, where the current density steadily decreases, meaning they will become redder in color.

The Second option - Although most stars are created close to the center of the filament, the filament itself is not stationary and could move slowly over time. This means that most stars will not end up being close to the center, and over time, as it migrates, more stars would have reduced current density due to their location.

And lastly - High-powered stars are more likely to experience electrical stressing. In simple terms, this means that the incoming current is too great for the surface

area of the star to be able to deal with.

There is a significant excess of charge.

In some cases, this can lead to the star splitting in two, a process referred to as fissioning.

The two smaller stars would end up with a greater combined surface area to deal with the current.

This process could also impart a kick to either one, or both of the stars, once more leading to it moving further away from the highest current density location of the filament. It is also possible that a combination of these factors is at play, rather than just a single one. The next question is the question of where intelligent life is likely to develop.

Here, it is interesting to point out that the article only focuses on the contrast between a yellow dwarf and a red dwarf star.

What about the other star types? Larger and brighter stars are probably less hospitable, but what about the cooler stars? If we examine brown dwarf stars, you will quickly realize that these are just as common, if not more common in our Milky Way.

The problem until recently has been detecting them, as they are even fainter than red dwarf stars.

But new studies reveal that the Milky

Way is filled with brown dwarf stars.

Again, here the three possible reasons

I outlined for red dwarf stars would

equally work for explaining why brown dwarf

stars are more common than yellow dwarf stars.

But surely, life could not survive around a brown

dwarf star. They are cooler and smaller than red

dwarf stars, but also seem to show strong flaring

events. This is often how they are actually detected.

Certainly, if you look the goldilocks

zone, which is where they consider life

to be habitable around a star, this

is almost on top of the star itself.

At first glance, this would appear to be a non-

starter. But the assumption here is that life

starts on the planet. Brown dwarfs are similar to

our gas giants, and now scientists have suggested

that life could survive in the upper

layers of a brown dwarf atmosphere which

have temperatures and pressures similar to Earth's.

This could then provide a springboard for life to

migrate to planets that could

have been ejected from the star.

Is it possible that planets and life could exist

within the plasma sheath of a brown dwarf?

This is not something that I have

investigated yet, but it is one of the
Electric Universe theories that the
Earth was once part of Saturn, which at
the time was a brown dwarf star.

Within the envelope could life evolve
and would this hide their existence from our
view? Could this be a different way of
explaining why we have not
discovered life elsewhere?

There are many open questions this concept
raises that are worth considering further.

[Music]

The Electric Universe understanding portrays the prevailing cosmology as substantially misguided, and challenges almost every facet not established by rigorous experimental and testing results. In other words, the scientific method.

Here is a quote regarding this view from Halton Arp, "After all, to get the whole universe totally wrong in the face of clear evidence for over 75 years merits monumental embarrassment and should induce the modicum of humility." The Electric Universe paradigm development has been primarily focused on the things that we can apprehend with our senses, from the microscopic level, looking down, to the telescopic level, looking up. But mostly on the directly tangible level.

On just these three levels, there is an overwhelming abundance of evidence, both in phenomena and structure, that show that the physical universe aspects, galaxies down to cells, all work electrically. Much if not most of this should be obvious, and would be, if an extensively faulty paradigm hadn't taken hold of academia and mainstream cosmology,

and thus didn't obscure the thinking. For instance, welders and machinists familiar with electric discharge machining, get the electrical cratering and scarring aspects immediately, usually exclaiming that it's obvious that these are not primarily from impacts.

Electrical engineers often find other aspects to be easily assimilated and accepted.

But many plasma phenomena on this triune level are not that familiar. For example, Birkeland currents, double layers, plasma cells, red sprites, blue jets, plasma elves and Peratt instability formations. And these haven't been widely understood.

Also, plasma phenomena can be quite complex, besides being outside of our normal experience.

Let me just mention a few major aspects out of a dozen or so in the prevailing cosmological paradigm that are misguided or faulty.

The most egregious is the Big Bang which was introduced by Georges Lemaitre in 1927, and which was buttressed by the equally egregious Theory of Relativity by Einstein.

Quite simply, 'Relativity' is unnecessary because the finite universe is the needed frame of reference for everything inside of it.

Until recently, thanks to the James Webb Telescope, the Big Bang has been the prevailing view.

Another, 'redshift equals distance', has been thoroughly discredited by Halton Arp and his associate astronomers. And another, 'stars powered by nuclear fusion', the fusion actually takes place on the surface of the photosphere, not in the core, and is driven by the impinging Birkeland currents. The fifth is 'gravity' instead of electricity being the foundational force at work in organizing, structuring and controlling the physical universe of galaxies, stars, planets etc. Let me reiterate a few frank reminders about our investigative limits.

It should be understood that, below or above the directly tangible level, we have to rely on only one of our senses - sight, vision. Below the level of the various microscope tools, or beyond the various telescope tools, when thinking about the material universe, the aspects and attributes of phenomena and structure cannot be apprehended directly by any of our five senses. We can only do

experiments and get clues as to what we are dealing with and then we can only build models for them and/or project metaphors from our tangible experience upon them.

I suggest that we don't know what we think we know. This restricted domain on the lowest level includes the basic atomic particles and we can only get blurry visual interference patterns of nuclei, their shape and where they are located and arranged in material. Until lately, theory has claimed that atomic nuclei must be symmetrical in three dimensions, either spherical or flattened spheroidal.

Now, we can confirm that some nuclei are pear-shaped and thus pointed in a direction.

This development, the implication of which is not widely understood, actually sweeps away much current cosmological theory.

Even the orbital model of the atom has not been confirmed and part of the time it must be discarded in atomic thinking.

Take a look at the stellar work of Edwin Kaal, who developed the Structured Atomic Model known as SAM, a significant improvement over the inadequate orbital model.

As an ex-chemist, long uncomfortable with the orbital model, I favor a most dense packing model.

But Kaal must be given great credit for going in the right direction. On the other end of the spectrum we should be mindful that outside of our limited solar system exploration via rocket probes and satellites, we have only electromagnetic radiation given off by radiating bodies or structures that we can access through our telescopes.

No direct chemical analysis to determine material or molecular structure.

No physical analysis to determine density, specific gravity, index of refraction, hardness, viscosity conductivity, etc.

No application of tape measures, scales, hydrometers.

Just and only patterned electromagnetic radiation, visual and radio astronomy with which to work.

So, down on a more fundamental level again, concepts that we have often can be little more than speculation. We have a tendency to project the orbital metaphor down to the atomic level but this has already been challenged.

Mainstream thinking has imagined quarks below the atomic particle level, and the Electric Universe talks about sub-sub-atomic particles as positive or negative subtrons.

The point is that beyond sensationalism, there is little justification to present these 'physics flights of fancy' to the public as knowledge or fact.

Let's also be mindful that all of our relevant observations have taken place from a platform within familiar, non-redshift-determined distances within the heliopause, and essentially within a platform perpendicular to the axis of the Sun. When considering bodies outside this arena of our platform in more distant outer space and beyond that, we are projecting from our own environment and then speculating. We actually don't know enough about the true distances, the true sizes, and the attributes of the region such as charge differentials, ether densities, field strengths, etc., to confidently extend meaningful values on the decrease of force within distance squared. Electrical Universe theoretician Wallace Thornhill even suggests that the attractive force that we call gravity actually turns repulsive at some point. The Electric Universe lays a theoretical foundation for all of this on the lowest particle level by positing just and only two electric charge carriers of negative and positive matter particles,

just and only three dimensions, just and only
two forces, electrical attraction and repulsion.
Being a stickler for a correct terminology,
I point out that the traditional four,
electromagnetism, gravity, the strong nuclear and the weak
nuclear, should not be called forces, but rather force
sources or initiators. Not to mention that the
EU considers the latter three to be aspects of
electromagnetism and dipolarity.

Linear motion, orbital motion and
reciprocal motion, oscillation, vibration,
resonance also have a fundamental role.

Finally we have the aspects and
constrictions of the geometry of three
dimensions, which is the basis for polarity,
Along with sequence of events, what we
call time, these generally account for or
undergird all other physical phenomena.

Also, in the Electric Universe paradigm, the definition
of energy is that it is always matter in motion.

And, like time, not something mystical, nor a thing in
and of itself. So, let's deal with the Michelson-Morley
experiment of 1887, that has been widely
interpreted as proving there is no ether.

The overlooked phenomena in the Michelson-
Morley experiment by Paul Marmet.

Abstract, "We show that Michelson and Morley used an oversimplified description and failed to notice that their calculation is not compatible with their own hypothesis that light is traveling at a constant velocity in all frames. During the last century, the Michelson-Morley equations have been used without realizing that two essential fundamental phenomena are missing in the Michelson-Morley demonstration." "We show that the velocity of the mirror must be taken into account to calculate the angle of reflection of light. Using the Huygens principle, we see that the angle of reflection of light on a moving mirror is a function of the velocity of the mirror. This has been ignored in the Michelson-Morley calculation. Also, due to the transverse direction of the moving frame, light does not enter in the instrument at 90 degrees as assumed in the Michelson-Morley experiment." "We acknowledge that the basic idea suggested by Michelson-Morley to test the variance of space-time, using a comparison between the times taken by light to travel in the parallel direction with respect to a

transverse direction is very attractive. However, we show here that the usual predictions are not valid, because of those two classical secondary phenomena, which have not been taken into account.”

”When these overlooked phenomena are taken into account, we see that a null result, in the Michelson-Morley experiment, is the natural consequence, resulting from the assumption of an absolute frame of reference and Galilean transformations.

On the contrary, a shift of the interference fringes would be required in order to support Einstein's relativity.

Therefore, for the last century, the relativity theory has been based on a misleading calculation.”

Well, I certainly agree with that.

There is at least one other explanation for why the Michelson-Morley results are invalid. If the ether with increased density is somewhat partially entrained by either the solar system or the Earth, Michelson- Morley would be invalid.

Of all the violations of philosophical concepts and metaphysical principles, probably the worst and most insidiously pervasive, concern ‘nothing’ and ‘infinity’. ‘Infinity’ cannot be applied to any aspect of the physical universe.

Of course, there is no such thing as ‘nothingness’.

On a fundamental-philosophical level, there can be no voids of nothingness in the material universe.

Thus, because of both sound evidence and reasoning, the Electric Universe paradigm has confidently settled on the conclusion that the volume of the physical universe is filled with an ether.

In other words, the existence of an ether is axiomatic. Currently, the thinking is that this ether is composed of polarizable neutrinos, where these are all but empty matter/particles or packages that have vanishingly small amount of mass, energy, dipolarity and friction.

If you build a universe of three dimensions that can't have any voids of nothingness, then you have only two regular polyhedrons that can fill or tessellate, volume with no voids. Those being tetrahedrons and cubes.

So, if we think of shape, we should probably think of ether particles as having one of these two forms.

Note, holographic universe enthusiasts would say at this point that we have crossed the border into a different realm, and are deep into projecting a topological shape metaphor onto it.

But, since other more substantial particles and objects apparently move without significant friction through

this ether medium, the particles must be quite flexible and compressible. 'Squidgy' in my words. Try not to think of fish swimming through water. Their frictionless surfaces, along with their vanishingly small mass, would generate vanishingly small viscosity. We also need to think of force as something tangible and not as something theoretical. We should also note that when we feel a substance with our fingers, it is not the atomic material that we feel with our tactile facility, but rather the electric repulsive force from the material. So the bottom line in this page of the EU ledger is that, since there is no 'nothingness' between objects or particles, and when there is no contact between atoms in this instance and every other one, force is transmitted across distance by contact between the ether particles. The EU model sees the ether medium as a key part of a proper construction of physical reality.

[Music]

it is the planet of a thousand mysteries
the scarred terrain of Mars defies all
conventional geology dendritic Ridge
systems covered its entire surface from
the massive noctus labyrinth IC to the
walls of countless winding channels or
reels to the cliffs of giant mesas they
climb the towering scarp of olympus mons
and descend the walls of the olympus
mons caldera they run for thousands of
miles along the vast trench of Valles
Marineris dendritic Ridge complexes
appear on radically different formations
planetary scientists envision a wide
range of geological processes that work
volcanic activity erosion uplift and
expansion surface rifting or surface
collapse but none of these processes can
create the sharply cut dendritic forms
found here only one force is known to
produce these effects an electric
discharge to a dusty surface and the
process has been demonstrated in
laboratories for more than 200 years
what might it mean if the baffling
features of this planet can all be

produced in the laboratory with electric

arcs

what might it mean for the future of

science if Mars was once immersed in

electric discharge from pole to pole the

Thunderbolts project invites you to

explore the possibilities

you

Welcome to Space News

from the Electric Universe,

brought to you by The

Thunderbolts Project™

at Thunderbolts.info

Recent episodes of Space News from

the Electric Universe have provided

a ground-breaking foundation for a

new beginning in Earth geology.

Thunderbolts contributor, Andrew Hall, has

introduced his hypothesis for the formation

of familiar geological features, not from

incremental processes over eons of time

but rather due to high energy electrical

discharges in Earth's unique atmosphere.

In this episode, Hall concludes his

video series with a closer examination

of evidence for dramatic electrical

scarring of our planet's surface.

In part 1 "A New Beginning" we introduced

the evidence of electro-hydrodynamic forces

that built mountains

in an instant.

The evidence is frozen into the shape

of land exactly as it occurred.

Let's review: An arcing current creates

a shock wave, that ablates the land,
raising a rooster tail of molten materials
to form the core of a mountain.

The expanding gas and
reflected shock wave
create an exploding
mushroom cloud in its wake.

And the updraft it forms provides
sustaining energy to the shock envelope
by drawing supersonic ground winds
through the standing waveform.

The supersonic ground
winds are channeled
by the shock waves to form
triangular buttresses.

A mountain displays
triangular buttresses
in a near perfect mold of the
waveform that created it,
even displaying complex pressure
variations within the waveform.

We've seen waveforms that displayed
expansion and contraction,
characteristics of super-imposed
transverse and longitudinal waves.

We've seen waveforms that

display harmonic repetition
caused by shock wave reflection.

We've seen how the
elasticity of the substrate
and the shock wave interacting
in critical ways,
producing effects that we can
analyze, measure and quantify
from the known behavior
of shock waves.

Now let's look at some
electromagnetic effects.

The stratified layers of
triangular buttresses
are often segregated by
mineral composition,
this is evidence of
electromagnetism.

An electric field will ionize particles;
the magnetic field will sort them.

The results can be dramatic.

Stratification is evident at all
scales from large scale landforms
to the morphology of the rock itself,
right down to the microscopic scale.

The shock waves are

energized with current.

The shock wave is a

highly stressed region,

a dramatic shear zone of pressure,

temperature and current density.

Current coarsing through thin shock

waves molds the electromagnetic fields

in the coherent form

of the reflected shock

and sorts the material according

to its dielectric properties.

Arc flash necessarily has a

magnetic field surrounding it.

Magnetically generated horizontal

rotation seems to modify the winds,

adding momentum to one side and taking it

away on the other, creating asymmetry.

Polarization is seen here in this colorized

Schlieren photo of a supersonic shock wave.

It can produce a mild rotation

effect as seen on this mountain,

that displays triangular

buttresses on both sides,

indicating inflowing wind

that meet in the upground.

Or it can form shear winds

in opposite directions

leaving buttresses on one

side of a narrow ridge

or it can even scoop a

valley within a mountain.

One feature that appears often

is where an arc contacts ground.

The result is a blowout, a crater

blasted into the mountain.

These features are typically

asymmetrical craters

with the spill-out on one or

both sides of the mountain.

This mountain has

been split in two.

It appears in these instances the arc is

finding a conductive path beneath the ground,

perhaps a mineral

deposit or aquifer

and sends a forking tendril

to connect with it.

More evidence of the electrical

arcing that creates the mountains

is displayed in an unusual

way on Mt.Kavushku in Iran.

Here is the result of two arcs

interfering with each other.

The footprint of Mt. Kavushku
is seen in this overhead view
as the large symmetric
oval to the lower right.

The second astrobleme is the smaller kidney-shaped
hill connecting with it at the center.

Both are ringed by blast zones.

Here is a closer view.

Triangular buttresses can be seen
on both sides of the mountain
surrounded by the concentric
pressure ridges of the blast zone.

This view's been rotated,
so the small ridge along the bottom of
the frame is the second astrobleme.

What's unusual is that the second astrobleme
has cut the end off of Mt. Kavushku.

The second shockwave sliced
the tip of the mountain away.

Do you see how the sections have
fallen forward like slices of bread?

And the second arc deposited
entirely different material
between Mt. Kavushku
and its head.

The head still displays triangular
buttresses from inflowing supersonic winds.

The tip of the mountain has been
displaced forwards and sideways.

But if you piece it back
together, it fits nicely.

The shock events happened
almost simultaneously,
which is evident in the
pressure wave patterns
caused by shear winds between
the two blast zones.

The stratified layers show the opposing
directions of winds meeting at a shear zone,
which attests to the fact that it was
created in a single arc blast event.

The land didn't split apart
to separate the mountain.

Two forks of an arc reclosed and one
shock wave sliced the other apart.

Large mountains are also
built the same way.

Now that you recognize triangular
buttresses as shock wave forms,
let's look at what the
rooster tail can do.

You will recall the rooster tail is
like what you see behind a speed boat,
something like this.

This is the Mt. Fitzroy
group in Patagonia,
the southern end of the Andes on
the Argentinian-Chilean border.

The clean granite faces are a famous
challenge to big-wall mountain climbers.

You can see why.

You can also see how the rock
is layered almost vertically
at one orientation in the core and
another orientation on the flanks.

Its height is a little
over 11,000 feet.

The core of the mountain has been sucked
up into a series of narrow shards
by the rooster tail of an
extremely powerful shockwave
created by an atmospheric
arcing current.

Its flanking ridges are
layered onto the core,
welded in parallel,
stratified layers,

perpendicular to the
wind that made them,
oriented radially
towards the core.

And triangular buttresses show their
consistent angles of reflection
on the western flanks.

Here the Sun catches the large
triangular features well in this view.

Of course, other big mountains
were made this way too.

I can't think of the
name of any right now
but we will find some
new case studies soon.

There is a great deal more to be
said about the electric earth.

You are watching the results of
a new research as it unfolds.

Arcs in the atmosphere, blistering
mountains with arc blasts,
is not all there is to
the form of the Earth.

However, there had been ten
visually evident similarities
presented between mountain

forms and shock waves.

Skeptics like to say extraordinary claims require extraordinary proof.

For mountains to display the exact features of shock waves, including repeating reflected standing waveforms, superpositioned transverse and longitudinal wave expansion and compression, harmonic reflection, wind- and shock-oriented stratification, pressure ridges, normal shocks, waveform compression and cancellation, waveform instability, expansion fans and boundary effects, all of which collectively point to a single coherent shock event of their origin, begs for a coherent explanation.

No uniformitarian theory provides that.

The arc blast model does.

Others with perspectives and skills that complement mine are involved.

As we gather and prepare new evidence for presentation, please stay tuned.

Thank you!

For continuous updates on Space
News from the Electric Universe
stay tuned to
Thunderbolts.info

[Music]

Our solar system is unusual in many ways and one of the strangest features is the asteroid belt. Mainstream science will tell you that these are just the remnants of the formation process of the solar system. Jupiter is said to have halted the formation of a body in its zone. Others have speculated that this was the remains of a destroyed planet.

Velikovsky felt Venus was a newly-formed body that had been ejected from Jupiter.

Venus at this stage was like a comet with a large tail. When Mars clashed with Venus, asteroids, meteorites, and gases were torn from the trailing part of Venus and began a semi-independent existence, some following the orbit of Mars and some other parts. The Electric Universe would build on this concept but would place the origin of Venus in Saturn, not in Jupiter. It therefore stands to reason that these asteroids hold the clues to understanding what might have happened to our solar system in the past. Vesta is one of the largest objects in the

asteroid belt, second only behind Ceres.

It has a diameter of 326 miles. Its mass constitutes a staggering nine percent of the mass of the Asteroid Belt. It is also the brightest asteroid that is visible from Earth. It was first discovered back in 1802 by Heinrich Olbers.

He proposed that these two objects (Ceres and Vesta) were the remnants of a destroyed planet.

Vesta's density is lower than those of the four terrestrial planets, but higher than most of the asteroids and all of the moons in the solar system, except Io.

In 2011, Nasa's Dawn mission arrived to study the asteroid.

In 2012, an analysis of its shape and gravitational field concluded that it was not in hydrostatic equilibrium. They speculated that it has a more dense core at the center.

Vesta has been identified as the source of a very common class of meteorite which makes up about six percent of the meteorites which fall to Earth. It boasts some remarkable features across its surface.

One of the largest is the Rheasilvia basin which almost rivals Olympus

Mons in terms of height.

And this is located on the southern pole.

Astronomers believe that an impact was responsible for excavating about one percent of the volume of Vesta and producing the smaller fragments that rained down on Earth.

The crater itself looks like no other crater I have ever seen, but we will return to this point in a little while.

All over the surface there is evidence of scarring; many of these so-called craters have sharp edges with no spray marks and are more likely indicative of electrical etching, where material is removed from the surface during repeated discharges. If you look at the entire surface, you will start to notice what looks like troughs running across the entire length of the asteroid. These have presented astronomers with quite a mystery. Some have speculated that they might be the remnants of a cataclysmic impact. When you examine the location of these troughs, they do seem to ring around two massive craters.

Now astronomers usually try and date

features by a process called crater counting.

Here the assumption is that the craters will occur randomly. Older surfaces would therefore have been hit more often than younger ones and will therefore display more scars. But when they examined the craters on Vesta, they found that there wasn't enough information to solidly determine how the basin and troughs were related to each other. This means that they cannot conclusively link the age of either crater to the age of the troughs. When we examine the images of both poles of Vesta, something rather remarkable stands out immediately. They simply do not look like craters at all. In the south pole we see the elevated part off-center in the basin.

All around the basin the land is higher with what appears as a much sharper ridge to the right.

All along the left and leading both the top and bottom, we see marks that, if this was a much larger body, would be interpreted as erosion due to water flow.

Yet, there is no flowing water on Vesta, nor has there ever been any. Further out, to the upper right-hand side are the trench lines

that encircle about three quarters of the area.

These features and their connection are really not as obvious when you examine individual images on the surface.

Now many of you will recognize these types of features from Mars, where electrical scarring reshaped the landscape.

Here we seem to have uncovered a relic like no others. Here are examples of dome craters. The southern, and to a lesser extent, the northern basin, has very clear rampart edges.

Slightly off-center, in the southern basin, we also find the peak which is not visible in the northern hemisphere.

More remarkable is the river-like shapes that seem to fan away and towards the central basin. They are very reminiscent of those found on Mars and also Earth, although in the latter case most now contain water in the form of rivers, hiding their origin from view.

The other pole on Vesta also contains some very strange land features, none more striking than what appears as large areas which are very smooth. They are located around, and inside many of the large craters.

We also see examples of dome craters,
which is a clear sign of electrical
discharge. So how can we account for all
of these phenomena at once?

Electrical discharge experiments readily
produce craters with central peaks. Wal
Thornhill envisions that twin Birkeland
filaments, rotating around each other,
would create the dished peaks.

The large basin also has sides that appear
on three of the sides to be hexagonal
with a large distortion appearing on the
left-hand side of the basin. Hexagonal
edges are observed in some plasma experiments,
but also in examples like the north pole
of Saturn. All the scarring we see probably
stems from the event that caused its creation.

If there was a large discharge between
two large bodies in the solar system,
this is likely to have excavated
material from the surface of one of them.

This is the origin of the asteroid belt.

These boulders and dust would have been
torn away from the parent body. In the
near-vacuum of space, the large discharge
would have structured according to Don Scott's

model, with a series of concentric shells,
with smaller filaments within each of these,
as we saw in Peratt's experiments.

Now I'll be honest, explaining all of these
features at once is extremely difficult.

But here are four possible ways that we could
explain all of the features as we see on Vesta.

The first one, a body the size of Vesta
would act as a focus for a Birkeland
current, due to the presence of a
high density of charged particles.

In this case a discharge would tend to pinch in
at Vesta. At a certain threshold the discharge
beam would start to break up into
smaller vortex-like current bundles
and these will tend to pinch at the
surface of the asteroid, causing the
material to be etched away. The
ridges along the equator might be
caused by discharges that occur from the equator,
out to the first shell of the Birkeland current.

An alternative explanation is that a discharge
occurred directly onto Vesta. If we assume the
asteroid had a spin before the discharge and
that the removal of material from one pole would
alter the stability of the spin axis and

might cause an effect similar to the tennis racket theorem, where the instability of one of the three axes of rotation can cause the object to flip over, and then back in rapid succession.

Could this account for both poles being etched?

Examining the surface features, we see spiral marks in the northern pole region.

Are these caused by etching as Vesta turned over from one side to the other?

Did the filaments then break down even further, leading to much sharper and smaller etching lines on the southern hemisphere? Was enough material then etched out of the southern pole to stabilize the rotation, stopping a further flip? The third possibility is something called cathode spots. Now an electrical comet acts as a cathode and the Sun acts as an anode, and the assumption is that comets are essentially more negative in relation to the object like the Sun.

Could Vesta have become more negative and less positive with respect to a nearby highly charged body such as Venus?

If this is true then it discharged to

the surface similar to the first one that we discussed, and then a phenomenon, called cathode spots, could explain some of the etching marks that we see along the equator of Vesta. As the material was excavated during the discharge, fine dust would be ejected around Vesta, which would be partially ionized. This plasma forms a ring around the equator. This is inherently unstable and causes the formation of cathode spots, or short-duration arcs to the surface. These melt the surface material. They ionize it and produce dense plasma with copious electrons which can in turn enhance the cathode emissions further. These energized electrons form a highly conducting plasma channel to the first cylinder of the larger discharge channel. These arc discharges often create the form of grooves pitted out of the surface of the cathode. The last possibility is slightly more radical. Now some of you will be familiar with a series that I created showing Anthony Peratt's concept of how galaxies form in a plasma universe. What he discovered was that plasma

sheets tend to break down into filaments, which in turn tend to pair up and wrap around each other. There was a delicate balance between the repulsion of like charges at short range and the long-range attraction due to the magnetic field each filament created.

This means that as the two filaments approached, an area is created between the two filaments where local material, which is not part of the filament, gets compressed. In Peratt's model, this central area would eventually form the galaxy. What if an ongoing discharge between two larger bodies was ejecting material and dust into the surrounding space? The discharge channel was becoming unstable and breaking down into smaller filaments, which in turn started to spiral around each other.

Could this actually compress the material between the filaments back into a sphere?

Peratt described the compression area as being similar to those conditions that Eric Lerner had tested in his laboratory using a dense plasma focus device.

Could this environment lead to secondary

discharges that etched out the marks that we see?

Now Peratt was very clear that he felt there were no jets that would exist from the core to the two filaments. Instead, he saw these as plasma bridges that, depending on the viewing angle, would look like jets. But it was also clear that he did not model the core in his simulations. So what we see as just large asteroids, actually contain many secrets that help us to try and reconstruct the circumstances under which they formed. The more we examine these lumps of rock, the more that they reveal about the cataclysmic electrical events that have shaped our past.

[Music]