

*From the desk of Pierre Beaudry*



# THE MUSIC OF THE MAGNETOSPHERE AND THE QUESTION OF TIME-REVERSAL

(A study on the epistemology of forecasting)

In memory of Jerry Pyenson

By Pierre Beaudry, 20110928



*“Curiouser and Curiouser!” Cried out Alice (she was so much surprised, that for the moment she quite forgot how to speak good English). ‘Now I’m opening out like the largest telescope that ever was! Good-bye feet!’ (for when she looked down at her feet, they seemed to be almost out of sight, they were getting so far off). ‘Oh, my poor little feet, I wonder who will put on your shoes and stockings for you now, dears? I’m sure I shan’t be able! I shall be a great deal too far off to trouble myself about you: you must manage the best way you can – but I must be kind to them,’ thought Alice, ‘or perhaps they won’t walk the way I want to go! Let me see. I’ll give them a new pair of boots every Christmas.’*

*“And she went on planning for herself how she would manage it. ‘They must go by the carrier,’ she thought, and how funny it’ll seem, sending presents to one’s own feet! And how odd the directions will look!*

*ALICE’S RIGHT FOOT, ESQ.  
HEARTHROUGH,  
NEAR THE FENDER,  
(WITH ALICE’S LOVE).*

*‘Oh dear! What nonsense I’m talking!’”*

Lewis Carroll.

## FOREWORD:

---

*Since humanity is currently facing an existential galactic threat from the weakening of the Sun's activity during the Solar System's present 62-64 million year cycle, it becomes all the more important to think about how the Biosphere intends to protect itself against the magnetic storms that are expected to increase in the immediate future period ahead. As Lyn emphasized again recently, it is high time that humanity begin to understand the science of forecasting based on the method of increasing energy-flux density. It is from that standpoint that I investigate the magnetosphere. Since I am not a physicist, but an epistemologist, I will not investigate the matter from the standpoint of physics as such, but from the vantage point of mind. So, think of the magnetosphere as the mind of the planet in the same way that you might think of your mind as being the magnetosphere of your body.*

---

## INTRODUCTION

The science of weather forecasting should really start from the universe as a whole, that is, from the end and not from the beginning. For our purpose on Earth, it should focus especially on the study of how the Galaxy, the Solar System, and, at least six of its planets (Mercury, Earth, Jupiter, Saturn, Uranus, and Neptune) all have their respective magnetospheres defining the conditions of their weather systems. My intention is not to study the inner working of these magnetospheres, but to investigate how the magnetosphere of our planet may reflect how the human mind works. This means that if you wish to know what the weather is going to be tomorrow, you must look in your mind first. If you haven't done that, then, you have no idea what time it is from the standpoint of the universe as a whole, and how the universe affects change in our planet in particular.

In other words, if you want to know anything about the future of this planet, you must start by understanding your mind and understand how human beings will think at least a hundred years from now. The reason for this is simple. The future state of existence of the Biosphere of this planet will reflect the future state of the mind of humanity at that time, and this is the state of mind that mankind must create now if it wishes to survive. Why? Because this form of time inversion that starts from the future is what commands and measures change in the universe. It is a unique capability of human beings, because only human beings are capable of willfully shaping a future that is not a reaction to the past. For example, when Samuel F. B. Morse painted his *Gallery of the Louvre*, a lot of people thought he was reacting to the past, but, in fact, he was forecasting what the future artistic culture of the United States should become.

Why, then, should we study the magnetosphere and the Van Allen belts? Because it is through the magnetosphere that axiomatic changes in the density of ions and electrons occur for the benefit of the Biosphere of our planet in the same way that axiomatic changes reflect progress in the human mind. The magnetosphere acts as a protective measure for the weather patterns of the planet as a whole as a natural

security system, but also as a function of change and growth in the Biosphere by increasing its power. *I see the magnetosphere as the government of the planet, by the planet, and for the planet.*

Therefore, it is from the magnetosphere that the idea of NAWAPA, for example, must begin with the assumption that when man is able to properly control the water systems of the Earth, with increases in energy-flux density measures, all weather events of the planet, such as tropical storms and hurricanes, etc., become friendly protectors of human progress provided they are coordinated from within the magnetosphere. Consider, then, that going through the magnetosphere is like Alice going through the looking glass; you don't really know what you are going to find on the other side; but, when you pay attention to what it was intended to shield you from, or shield from you, then, you are beginning to pay attention to its intention. What is the intention of a mirror: to reflect something or to hide something from you? So, we must look through this looking glass and pay attention to the intention, here, because cosmic radiation intends to kill you, and you better be ready when this angel of death comes for you. So, unless you wish to have Earth end up like Mars or Venus, both of whom lost their oceans and atmospheres to cosmic radiations, it is vital to understand the intention behind the magnetosphere. What is it doing, why, and for whose benefit?

## **1. IS THE MAGNETOSPHERE A REGISTER SHIFT FOR THE BIOSPHERE?**

However terrifying the magnetosphere may appear at first sight, from this side of the looking glass, it is actually very friendly, because it acts as a dynamic protective shield against enemy forces that come from beyond, primarily from the galaxy, the inter-planetary system, and the Sun, itself. This was first noted by James Van Allen when, in 1955, he put a Geiger counter inside of a rocket to detect and locate the charged particles of the inner and outer regions of the Earth's magnetic field. Van Allen discovered that the magnetosphere acts like a self-governing process that life, itself, has created for the protection of the planet as a whole, so, it must reflect some of life's characteristics. For example, the magnetic field seems to work the way ideas do, resonating with the mass of wave-particles by directing them into higher energy-flux density states through the different layers of the Van Allen belts, in the manner of a multiply-connected Riemannian manifold. That is the characteristic of anti-entropy.

When you look at this field from the poles to the equator and from the equator to the poles, you witness a symphony of [Chorus waves](#) that you could not hear if you looked at it in any other way. That is the symphony of the Northern Lights sounding off spiraling chants along the magnetic lines of the magnetosphere of the Earth and intersecting the electrical current rings around the poles. (See **Figure 1**) The heavens sing: listen! What is that angelic music intended for? What is the tonality of its tuning? Then, look at this same site, but from high above, from the position of the galaxy. (**Figure 2**) What do you see? You have now, like Alice, also lost sight of your own two feet, because you don't have a leg to stand on. Your physical eyes are now blind. You can only see with your mind's imagination what appears to be a series of immense wave motion residues remaining from an ancient galactic war. The waves stretch outward in the celestial winds, hovering far above the landscape of the planet, like the shredded relics of flags that have withstood ravages of some ancient millennial battle that nature waged against the

Earth, and appearing to be getting ready to fight another battle all over again. This is like a Thirty Billion Year War.

When this happens, however, you should not be too worried because, as Alice found out, it's just that, in this domain, things tend to get "curiouser and curiouser." The reason this is happening to you is because you are going through the experiment of an axiomatic change, as if through a looking glass. This change coincides with the present world economic crisis and will not be understood by very many people, because this change will be willfully determined only by those who are willing to risk everything for the future.

One of the most curious aspects of this magnetosphere activity is that its process of generation creates a wave-particle system which appears to function like the range of a register shift in the well-tempered musical system of J. S. Bach. I don't know if anyone has ever reported this, but the timing of the magnetosphere, especially when it is viewed from the musical pitch tuned at C-256, appears to be based on the classical Lydian divisions of the octave that Bach discovered and worked out in his preludes and fugues. This implies that the Van Allen belts must act as a register shift for all living processes on the planet as a whole, that is, act as a transforming passing tone for living processes from a lower level of energy flux-density to a higher level of power. Moreover, this transformation process is also very suitable as a weapon of epistemological warfare against our internal and external enemies; because, if you follow the northern lights from Canada to Russia and to China, you will discover that the music of the magnetosphere sings the international anthem of the American-Eurasian Landbridge. But, the first question that this resonance poses for your mind, in a very unique way, is the function of time. What is the behavior of time inside of the magnetosphere?

The problem that most people have with time is that they treat it like empty space. An hour, for example, is an empty interval of 15 degrees of longitude on the surface of the Earth. However useful these degrees may be for measuring and determining the local time of day on the ground, they have nothing to do with time. These markers are merely derivations of space and their scalar values are not real properties of time but merely fractions of rotation. Furthermore, none of those radial markers work inside of the magnetosphere, because all radial angles are modified as if they were going through a distorted lens, the time lens of change. So, just as empty space does not exist, neither does empty time. This, then, begs the question: what is the most important property of the physical universe that time relates to? Lyn's answer to this question represents an actual fundamental breakthrough, beyond Einstein's concept of time in general relativity. For Lyn, physical-time is the measure of physical action. Lyn developed a most profound consideration:

*"All the leading aspects of physical science presently relevant to the foregoing matters, should be situated in a view of an alternative, prospective continuity of physical-economic progress. This should be referenced to the succession summarily represented by the successive achievements associated with the contributions of Bernhard Riemann and Russian Academician V.I. Vernadsky, achievements through the progress of physical science, to what is the proper reality of human life.*

"That just stated here, is not the "final word;" it is the anteroom to a higher-ranking, more profound consideration. That higher consideration, is the fact that neither the physical domain, nor the notion of time, are respectively independent "factors." Scrap the silly category of "space."

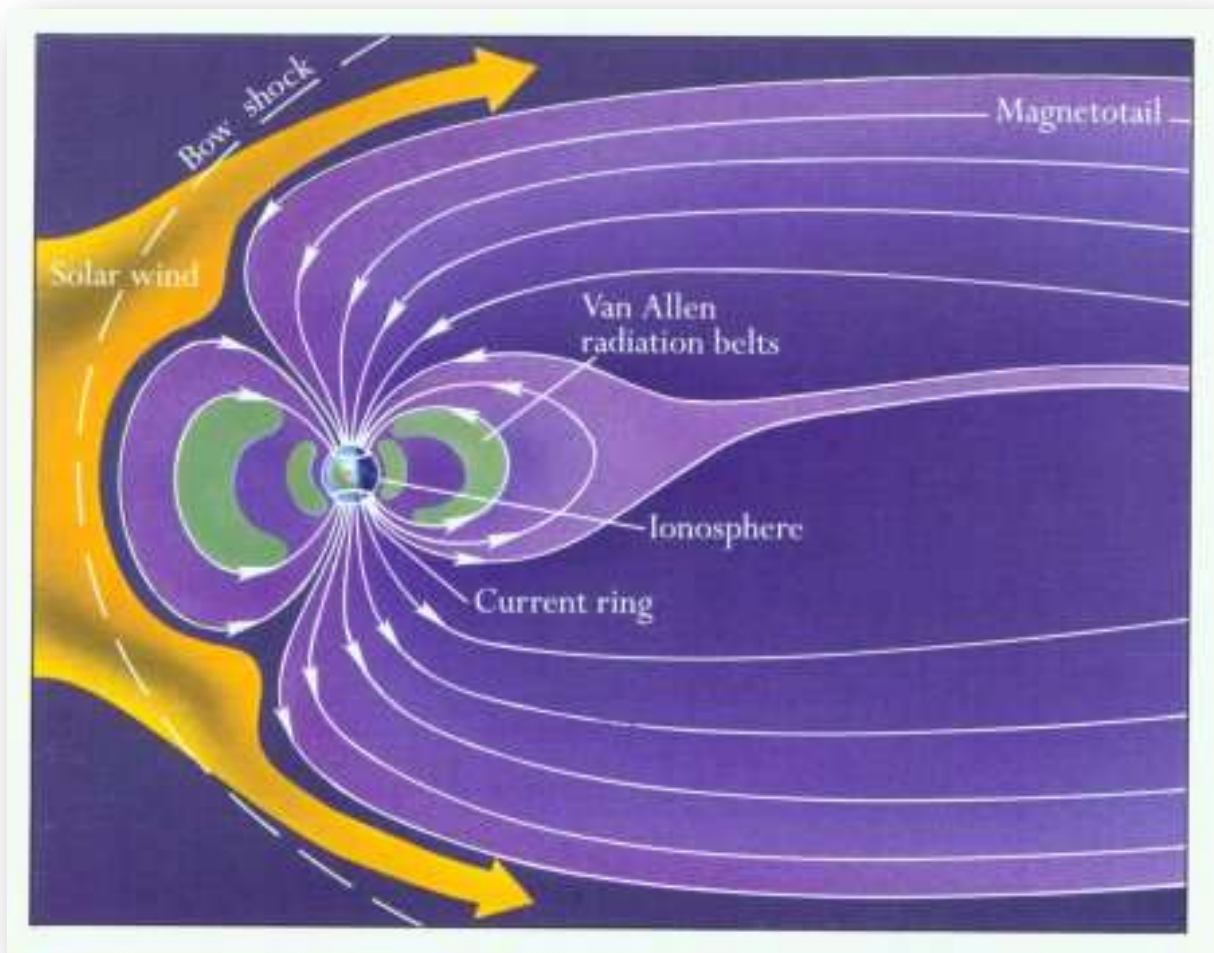
The implication is, that putative domains of neither physics nor physical time, are truly independent factors; *only the living process of physical-time*, exists. The implication is, as I have repeated with increasing emphasis, that, in this universe, the essential form of existence and its existences, could be nothing different than that view from the parapet of physical time.” (Lyndon LaRouche, [What & Where is Your Mind?](#) EIR, September 4, 2011, p. 17)

This poses very nicely the ontological question that physical existence itself is inseparable from time: *if time is the measure of physical action in the universe, that is to say, the measure of anti-entropic change in physical existence, then, what is the measure of time?* I have addressed this question in previous reports (*Epistemological Implications of Time-reversal*, CD + DVD, Leesburg Virginia, 2011), but I have not related it, so far, to an explicit case of physical science. This is what I will now do.



**Figure 1.** The Northern Lights and the music of the magnetosphere.

First and foremost, how do you shape the future before it happens, and how do you shape it in such a way that by starting from the future, you don ‘t react to the past except to cause it to change? Secondly, how does time measure change in the magnetosphere of the Earth, and how do you correlate time between the periodical sunspot activity of the Sun and the Van Allen belts activity? Thirdly, how can the weather system of the Earth be modified through the filtering singularity system of that magnetospheric time correlation?



**Figure 2.** “As the speeding solar wind hits the Earth’s magnetic field, it creates a shock wave, compresses the forward side of the field, and stretches the far side into a long *magnetotail*. The field traps particles into the donut-shaped *Van Allen radiation belts*, which then protect the Earth against the wind. The interaction of the wind and the Earth’s field generate two rings of electrical current that flow around the magnetic poles (which are offset relative to the rotation axis) and that in turn create the aurora.” (From *Stars*, J. B. Kaler, Scientific American Library, Freeman, NY, 1992.)

## 2. THE IMPORTANCE OF TIME-REVERSAL IN HIGHER ENERGY-FLUX DENSITY.

*The most curious aspect of time is its asymmetrical property of reversibility.* This does not mean that you can travel in time, but, rather, that time is continuously acting on the physical universe causing non-equilibrium changes of higher states within itself, from the future back to the past, and then back to shaping the future again, and so on. The point, here, is not the silly notion of time-travel, but the singular

form of reversibility of time through which the universe changes anti-entropically. In that sense, a physical event not only occurs in time, but also progresses by means of the future time to come. This means that time is the fundamental factor of change in the universe as a whole. And, paradoxically, time is the unique property that the universe has at its disposal for eliminating the possibility of thermal death, because it is the measure of anti-entropic change in the physical universe. From that vantage point, time is directly related to the immortality of the human species, especially in the form of the simultaneity of temporal eternity, as I demonstrated with the Rabelaisian peace of Gargantua. (See Pierre Beaudry, *The Mind-Game of Changing Principles in Time (2011725)*.)

If time were to be understood properly, therefore, as being the measure of anti-entropic change, then, its most important and determinant property would be understood as final causality; that is, causality from the future. Causality is what the reversibility of time is all about. For example, those who believe in entropy and in the Second Law of Thermodynamics say that the direction of time is determined, for any two events, by the fact that the prior state of existence is the cause of the later state. That sort of process may have some sort of mechanical appeal, like floating balls hitting one another on an ocean without a shoreline, but from the vantage point of causality, it is a backassward notion of time. However, for someone who believes in anti-entropic progress, the opposite is true. It is the future state of the universe which represents the source direction of change for the preceding state, because progress of the future, by the future, and for the future of mankind can only occur from such an inverse function. That is the reason why, if you wish to accomplish anything, you must always start from the future, never from the past. That is the paradoxical shape of time-reversal in the American credit system, for example, and what this means for mankind is self-government, not what the British call “governance.” However, this difference is not simply a matter of preferential choice, but a matter of willful self-determination, because the difference between the two views is the difference between a citizen and a peasant, and, therefore, the difference is a matter of life and death between republicanism and oligarchism. Think of it this way: credit is immortality.

This is the ontological nature of the paradox of time: the future comes first, and the past is always the tail end of the future, not the other way around. Don’t make the future dependent on the past, but the past dependent on the future. As Lyn put it: “Yeah, but don’t tail the future, in the sense, from the past. You have to see everything in a different light. You have to see what is shaping the future; not as what is a reaction to the future, but as what is going to shape the future. You can forecast a particular event, but that doesn’t mean you’re going to forecast a trend in events. What you have to forecast is a trend, a direction in the course of events.” (Lyndon LaRouche, *NEC Meeting*, September 17, 2011.)

That direction of time-reversal raises several crucial questions. Why would the magnetosphere use time-reversal? How does this conception of time apply to electromagnetic processes? How is the electromagnetic domain self-organized? How does the magnetosphere transform magnetic storms into tropical storms? How does an increase in energy-flux density of electrons get generated inside of the magnetosphere of the Earth, and how can such an increase act as a register shift dynamic that measures the impact of cosmic radiation on the Biosphere? How does the Biosphere go from a lower register to a higher register shift by means of the magnetosphere? How does the magnetosphere shape the future by this sort of self-government?

### 3. THE SELF-GOVERNING FUNCTION OF THE MAGNETOSPHERE.

How is the magnetic field of the Earth generated? At first glance, the magnetic field of the Earth seems to be produced, among other things, by its rotation and by the convection motion of its iron liquid core inside of the Earth. That, in itself, represents a doubly-connected motion, but it is not enough to get the job done unless it is understood as a self-generated motion of a living process. In other words, the magnetosphere is not produced by the Sun from the outside, but as a self-reflexive process from the inside. What is required is a self-governing process such as life. And, life is generated from a higher principle of causality which comes from mind and has been able to use that dual motion causing the generation of a dynamic shield of self-protection for the Biosphere as a whole during billions of years. Therefore, I like to think of the magnetosphere as an inverted byproduct of the Biosphere, like its suit of armor.

The irony is that all of the hurricanes and tropical storms that are currently exploding all over the planet, for example, are actually part of a natural security system that the Biosphere projected into the magnetosphere and that living processes constantly generate during billions of years with the collaboration of the planetary motions. These hurricanes and other such weather phenomena are measures generated to protect life itself from the threat of magnetic storms coming from the galaxy and from the solar winds. It captures them and transforms them for the benefit of mankind. In other words, the magnetic field not only traps cosmic radiation into donut-shaped radiation manifolds around the Earth, called Van Allen Radiation belts, but it also provides mankind with a self-generating dynamic system of anti-entropic functions that operates as a transforming shield against cosmic radiation that constantly bombards the planet. These storms are quite welcome, therefore, provided that mankind can organize NAWAPA type systems around the world in order to cope with them.

Now ask yourself the question: how is an increase in energy-flux density of electrons generated inside of the magnetic field of the Earth? What is required is a multiply-connected manifold made up of different types of waves that intersect the radiation belts at different frequencies. That multiply-connected interaction will cause electrons to accelerate and increase or decrease in relative energy-flux density. Chorus waves are only one of several types of electromagnetic waves which accelerate electrons by causing them to spiral along the magnetic field lines. Here is how Los Alamos National Laboratory plasma physicists Geoffrey D. Reeves, Anthony Chan, and Craig Rodger described the process of change:

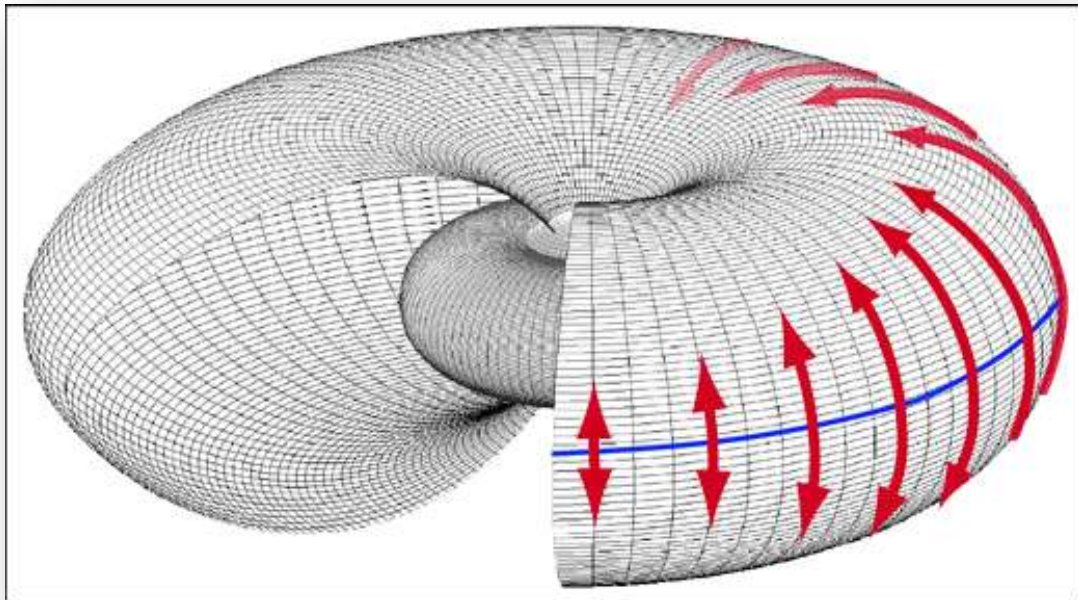
“As an electron moves along and gyrates around a magnetic field line, it may encounter an electromagnetic wave with frequency, polarization, and wave vector such that the electron experiences a constantly directed electric field in its own rest frame. This electron can extract energy from the wave, causing the particle to accelerate. Such processes (including gyro resonance and Landau resonance) are collectively referred to as local wave-particle acceleration because they do not rely on radial transport across field lines. [...]

“VLF chorus waves were the primary (but not the only) mechanism for accelerating electrons discussed at the Rarotonga workshop. Observations and theory point to several important characteristics of chorus waves: They form near the magnetic equator, propagate away from the equator in both hemispheres, and are damped before they can be reflected back toward



the equator (**Figure 3**). As a result, MeV electrons resonate with the waves in the same manner during each half of their bounce motion for net energy gain. Several recent studies have presented indirect but compelling evidence of this mechanism. For example, *Horne et al.* [2007] documented satellite observations of VLF chorus waves in strong electron acceleration events, such as those seen during storm recovery. These acceleration events occur deep in the radiation belts, where radial diffusion is expected to be slow.

“As the plasma sheet electrons drift eastward from midnight to noon, the characteristics for generating chorus waves, and perhaps more important, the conditions for damping these waves, change. Theory and observations suggest that in predawn local times, chorus waves are damped before they can propagate very far from the magnetic equator. At postdawn local times, chorus waves propagate to higher latitudes and possibly grow in amplitude. Radiation belt electrons spend different amounts of time at different latitudes depending on the angle between the local magnetic field and the particle velocity vector (pitch angle). Thus, the effect of chorus waves varies with local time.”(Geoffrey D. Reeves, Anthony Chan, and Craig Rodger, [New Directions for Radiation Belt Research](#), July, 2009.)



**Figure 3.** “Chorus waves propagate from the equator following a specific pattern. Electrons that are injected on the night side drift eastward toward noon. Near midnight, chorus waves are strongly damped and stay near the equator. As the electrons drift, their distributions change, allowing chorus waves to propagate to higher latitudes, where they may also further intensify before they eventually lose their energy.” [see Bortnik, J., R. M. Thorne, and N. P. Meredith (2007), Modeling the propagation characteristics of chorus using CRRES suprathermal electron fluxes, *J. Geophys. Res.*, 112, A08204, doi:10.1029/2006JA012237.

To encapsulate the significance of this Los Alamos breakthrough, the reader must realize that *by changing from the traditional method of radial diffusion to a method of gyro-resonant wave-particle interaction, the Los Alamos research group was able to make an axiomatic breakthrough from a quasi flat Earth Euclidean geometry to a Riemannian physics. They went from the singly-connected manifold of the circle to the doubly-connected manifold of the torus, that is to say, from a fallacy of composition to a more truthful process of physical change in the real world.* That is what made this change a major advance. It may not appear to be big, but it is big. It is known to be big by those who did it, because it makes the appropriate epistemological connection between the creative process of the magnetosphere, and the creative process of the human mind. The two are as like-minds.

Reeves, Chan, and Roger have been studying radiation belt storms for several years and have developed an exciting new approach to outer space weather forecasting along the lines of energy-flux density of electron activity in the galaxy's cosmic radiation and in magnetospheres of our solar system. As a member of the Space Science and Application Group of the Los Alamos National Laboratory, Reeves has been in the forefront of studies of geomagnetic storms driven by the magnetic field of the Earth and has been attempting to develop new phase-space density models in order to better understand the dynamic nature of the Van Allen radiation belts.

The group developed a new model for radiation belts dynamics and for a more accurate space-weather forecasting model. For example, in 2007, Reeves worked with Yue Chen and Reiner Friedel to demonstrate that the traditional approach which was formerly used to explain how large-scale electric and magnetic fields energized particles by the method of radial diffusion that Van Allen had initiated had to be replaced with a new method of gyro-resonant wave-particle interactions. This method is able to more precisely evaluate the electron phase-space density (PSD), that is to say, evaluate the increase in energy-flux density through a Betatron/Fermi relativistic acceleration (From thermal to ultrarelativistic energies ( $E \gg 0.5$  MeV), thus providing "unambiguous evidence" of locally shaped wave-particle accelerations. During the large geomagnetic storm of January 1997, for example, observations indicated the presence of anomalies when they "showed flux enhancements deep in the radiation belts that were more rapid than expected" and which could not be explained by the traditional method of radial diffusion.

When electrons feed off of those waves, they accelerate and increase their energy-flux density to a higher level and they are made to resonate within ranges of Ultra Low Frequency (ULF) to Very Low Frequencies (VLF), the so-called Schumann resonances, which can vary anywhere from 1 to 10 hertz. This indicates a definite anti-entropic tendency of the system. One of the effects that such interactions produce between the activity of the solar winds and the Earth's magnetic field is the creation of two electrical rings around the north and south magnetic poles which produce the Aurora Borealis. Those VLF waves are otherwise classified as [Chorus waves](#) which sing the musical anthem of the magnetosphere through the anomaly of these rings. This is where the galactic messages from the heavens come in loud and clear.

Furthermore, note that by moving from the equator to the polar latitudes, the electrons increase in energy-flux density much within the same equatorial-polar range as do sunspots during their cycle of about 11 years to 13 years. How much of this correlation is significant, I do not know, but I find this to be an important correlation, because the activities of the radiation belts should be in direct proportionality

with the sunspot activity in the Sun. When the sunspots are at a minimum, the weather on Earth is cloudier and cooler, and when the sunspots reach a maximum, the weather is sunnier and hotter. Why is this phenomenon an important question? Basement member, Peter Martinson, identified the periodical phenomenon in what Dr. Richard Altrock of the National Solar Observatory in New Mexico called “the rush to the poles” in the crown prominences:

“He (Altrock) takes the average, and then lines it up on a time axis, so that what you have is time going this way [to the right]; and then the vertical is how intense this iron line was at different altitudes of the Sun, specifically in the corona. And what you see is, it seems periodic. There is a migration down to the equator, and the migration takes about 11 years. Very nice. It doesn’t coincide exactly with the cycle of the sunspots that we see, but it’s an 11-year cycles, so we believe that it’s correlated very closely.” (Peter Martinson, [\*Vanishing Sunspots: A Window Into the Creative Universe\*](#), EIR, September 16, 2011, p. 54.)

That appears to be a beautiful doubly-connected anomaly of time-reversal that is reflected in astrophysical processes. The “rush to the poles,” as Altrock called it, appears to be, indeed, a Lydian modular periodic function which is also observable in the Van Allen belts. This may be the missing link that Martinson pointed to as existing between solar activity and the Earth’s magnetosphere. As the authors Reeves, Chan, and Roger reported on their own resonance hypothesis:

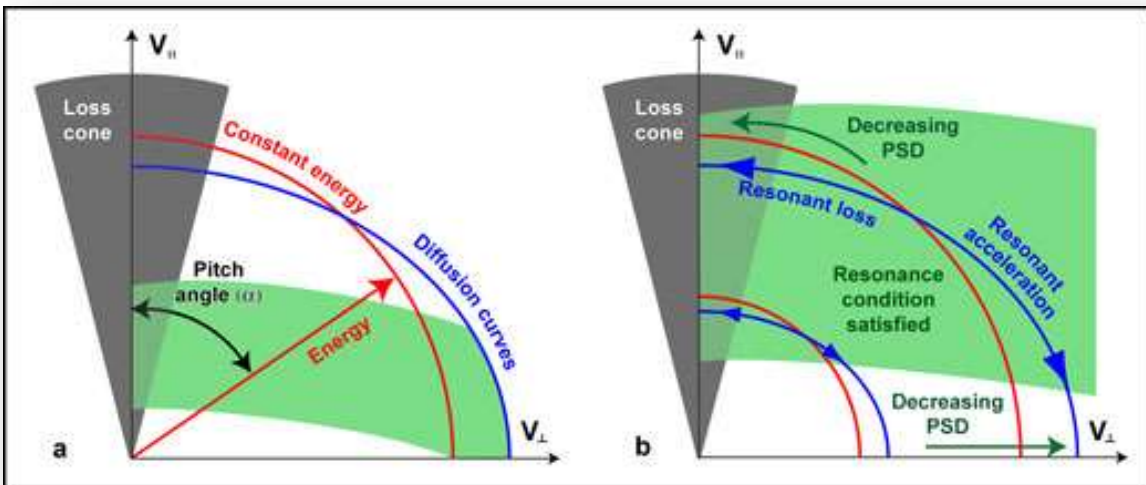
“The Earth's radiation belts have fascinated and puzzled scientists for more than 50 years. Scientists know that extremely energetic electrons and protons are trapped in the geomagnetic field, but how did they get so energetic? Measurements show that the radiation belts can change in intensity by many orders of magnitude, but what makes them change so dramatically? Solar activity and interplanetary disturbances affect the belts' structure and characteristics, but what are the processes that connect cause to effect? Researchers do not yet have answers to these fundamental questions. However, recent observational and theoretical work has led to a growing consensus on the new directions in radiation belt research that will be the key to answering these questions. [...]

“The Rarotonga radiation belt workshop resulted in remarkable agreement on several key topics in radiation belt studies: the importance of local acceleration in electron radiation belt dynamics, the role of electromagnetic "chorus" waves (a specific class of electromagnetic waves) as the source of that acceleration, the competing role that chorus waves play in depleting the radiation belts, other candidate processes for acceleration and losses, and the new theoretical tools and numerical models that can be used to quantitatively test understanding” (Reaves, Chan, and Roger, [\*New Directions for Radiation Belt Research\*](#), July, 2009.)

The most exciting feature of this electromagnetic resonance is reflected in the way in which electrons can move from lower to higher flux density, according to their directions and pitch angles from the equator to the poles of the magnetosphere by making anti-entropic leaps and thus causing axiomatic changes in the system as a whole. Is there also, here, a “rush to the poles?”

“The particular conditions of wave power spectral density and plasma conditions will determine the range of pitch angles and energies over which resonance occurs, represented by the shaded green areas. (Figure 4) Within the resonance region, diffusion will move particles from regions of higher to those of lower phase space density (flux over momentum squared). Phase space density decreases with increasing energy and for pitch angles nearly parallel to the magnetic field.” (Reaves, Chan, and Roger, Op., Cit.)

Don't get bogged down with the details of the mathematical analysis; think of the dynamics of how the energy-flux density is increased. Reeves, Chan, and Roger have shown in their *New Directions for Radiation Belt Research* that it is the MegaelectronVolt (MeV) energies that resonate with the appropriate ultralow frequencies (ULF) of the [Chorus waves](#) that get the job done, and without radial transport for their accelerations. VLF [Chorus waves](#) are classified as electromagnetic whistler mode waves. (Resonance is from ultralow frequencies ULF to very low frequency VLF <1 to tens of kilohertz range). This is the flat and awkward illustration that the authors have reported. A doubly-connected manifold illustration would have been required here.

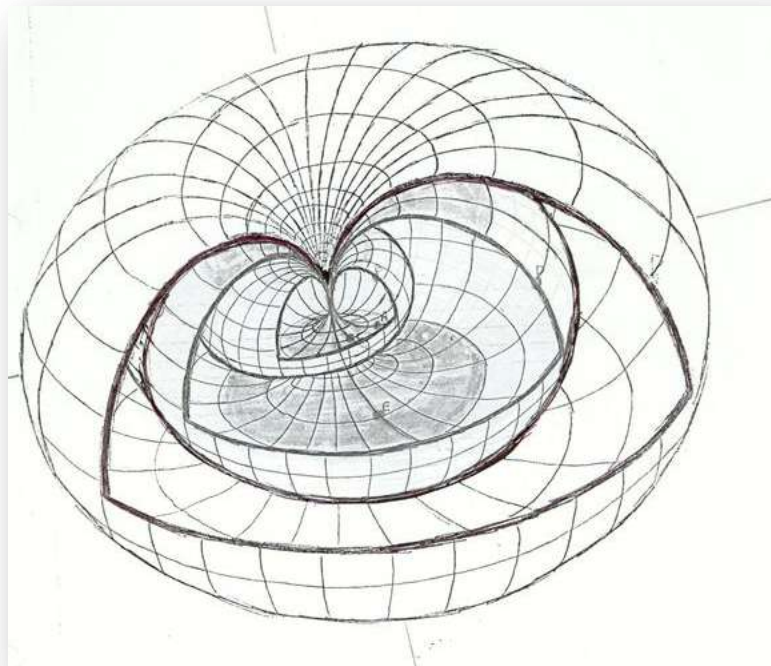


**Figure 4.** “A schematic of energy and pitch angle diffusion from resonant chorus wave interactions. Constant energy curves are represented in red. The resonance conditions are satisfied for pitch angles and energies represented by green areas. The axes represent velocity parallel and perpendicular to the magnetic field; higher velocities (and thus higher energies) have lower phase space density (PSD). (a) Resonantly interacting electrons will move along the diffusion curves (blue), changing both energy and pitch angle. (b) An expanded detail showing the resonance interaction region and effects. Lower PSDs are found in the loss cone and at higher energies. Within the resonance region, these gradients can cause energy and pitch angle diffusion that scatter electrons into the loss cone or cause them to accelerate and move toward  $90^{\circ}$  pitch angles. The resonances that control energization and pitch angle scattering are thought to play a critical role in radiation belt dynamics.”(Geoffrey D. Reeves, Anthony Chan, and Craig Rodger, *New Directions for Radiation Belt Research*, 16 July 2009)

It is the timing factor of the future that is important to reflect on in this doubly-connected electromagnetic process. Soon, the Sun will create an event in the magnetosphere which will change the future of our planet forever. This is the type of event that you must anticipate and know in advance how it's going to happen, and why. What form will the wave-particle interaction of the electron extract as an increase in energy from the magnetic field, we don't know, but we know that it will happen in time, that it will increase in power, and that we better be ready when it happens, because we have to know in advance what the causal function of acceleration in time is all about, if we wish to survive as a species. If you expect, then, the time of the change to be measured by the Lydian bouncing resonance of an axiomatic time-reversal inversion, then, there is a good chance that you might arrive at where you want to go. However, although you may not know where you are going to end up, at least, you will know how to get there.

#### 4. HOW TO CONCEIVE OF AN AXIOMATIC TIME-REVERSAL INVERSION?

A time-reversal inversion is a threefold action of change that is necessary if mankind is to be saved from the disaster of the next great kill in the Biosphere. The first thing to be done, in order to be in time with this process, is to stop reacting to fear itself; that is to say, stop fearing what will happen to you if you tell the truth and you say publicly what everybody thinks privately. Secondly, start shaping the future according to your ideal of mankind. That is to say, project yourself into an axiomatic time-reversal inversion process in which you think only of what mankind has to become, as if it had to go through the following triply-connected manifold. (**Figure 5**)



**Figure 5.** A Riemannian Multiply-connected manifold reflecting the idea of the different Van Allen belts. The three different manifolds represent different axiomatic levels of higher energy-flux density which are interconnected by singularities of time inversion harmonics. The Manifold can be used to represent the axiomatic phase-space changes of magnitudes occurring inside a magnetosphere as well as inside of your mind.

Thirdly, such a Riemannian multiply-connected manifold was Cardinal Mazarin's principle for solving the conflicts of the *Thirty Years War* (1618-1648). As I have reported elsewhere, this is the inversion that your mind has to go through if you wish to establish a Second Peace of Westphalia in the world today. So, hitch this ideal of mankind to Lyn's three-power agreement among the United States, Russia, and China. Once this is done, you can bring in more partners in the arrangement and apply the same problem solving solution. That is also the combination that opens the safe of self-government as opposed to governance.

As I discussed in *The Mind-Game of Changing Principles in Time (2011725)*, the geometry of the *Peace of Westphalia* (1648) implied the solution of the three body problem in which A must discover ways to solve the conflicts between B and C. The same principle of problem solving applied to the magnetosphere will also solve the problem of the "great kills" when a wave-particle encounters another more powerful wave which has the same directionality, frequency, and resonance, but which has a much higher energy-flux density. Then, such an electromagnetic process is submitted to an axiomatic change which causes electrons to accelerate and increase, in turn, their own energy-flux densities into a process that will have a life of its own. Current theories demonstrate that not only are such transformations capable of accelerating relativistic electrons, but that such a transformation can also be done politically. As electrons extract energy from the mother Chorus wave, the process will cause them to go into an inversion process through which they will also be given the power to increase the energy-flux density of the entire system that protects the Biosphere as a whole.

The interval of action that remains to be imagined in physics, but not in mathematics, becomes the time remainder and the curvature of its inversion. If you consider, as Lyn emphasized, that there is no longer any space, then, what remains to be done is to conceive of how the curvature of time, as the action of change that is glued to physical existence, represents a unique sort of axiomatic osculation. Ontologically speaking, this process must be expressed as a singularity that goes into a self-generating process of becoming changed into a higher form of existence through an increase of energy-flux density; that is to say, through a higher density of singularities per centimeter of surface area.

Take the case of the evolution of life on Earth as an example. The wrong way to look at evolution is to look at it as a process of change that progresses from the past to the future. That is a most reactionary way to look at it. In the process of evolution, the state of living beings never depend on the pervious state of living species in the Biosphere, but on the next higher state of existence in the universe as a whole. The law of evolution, therefore, is not to be found in the lineage of successive previous forms of life, but in the successive singularities of change that reflect the mind of the universe as a whole. And, that comes from the future, not from the past.

Think of this process as if you were moving on the other side of the mirror as Alice did in *Through the Looking Glass*. Imagine that you begin to enter into the mirror, as she did, and you start to go through an inversion of yourself, as if the image of yourself was turning inside out everything that you

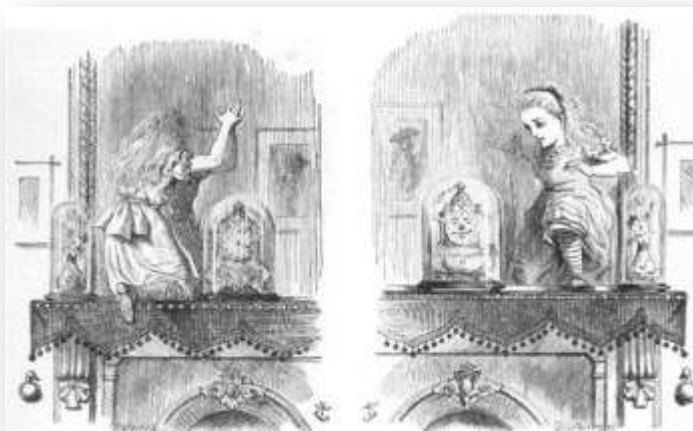
believed in; that is, where left becomes right, and right becomes left, and everything else in between becomes opposite to what it was before. Think of this process as becoming the inverse image of what you know yourself to be, like in a mirror which reflects, in every way, everything contrary to what you think you are, but which is the inverse of yourself inside of you. Then, as you find yourself of two minds between change and no change, you willfully decide to become the complete inversion of yourself, but still connected to yourself, as a completely changed person; the same but different at the same time. The change must be such that your childhood friends would say at the sight of you: “He is no longer himself! This is definitely not him!” If they say that, then, you know it’s really you!

What has happened is not alienation. What has happened is that you have gone through something that, under normal circumstances, would be considered as impossible. For example, how could you put a right hand glove onto a left hand? Is that not an impossibility? It cannot be done, because left and right hands are asymmetrical. They are opposed as your image in the mirror is the reverse of you, and where your right hand reflection is actually the left hand of your image inside the mirror, the opposite of you. In a universe that is anti-entropic, inversions are not only possible; they are necessary. And, contraries do meet and become one, but in a funny kind of way, as if through the chirality inversion of a mirror, like Alice did by going through to the other side of the looking glass. How can such an experiment be of significance for our physical universe?

### **CONCLUSION: IT GETS “CURIOUSER AND CURIOUSER.”**

What you must do is to think how you can miraculously replicate what Alice did by going through the mirror. The curious image you want to tickle your imagination with, here, is the following: put your head through the mirror, which is the most difficult part, and next, grab yourself by the back of

your shirt collar, and fling the rest of yourself through the mirror. That should do it nicely.



To give you a fleeting sense of what the underlying idea is, don’t try to hit your head against a mirror, you will only crack your head. Do the following experiment. Wear an oversized woolen glove on your right hand and put the finger tips of your right hand onto the finger tips of your left hand, as if you were praying for a miracle to happen. Extend your two hands in the form of a ball and ask a friend to pull the sleeve

of the glove from the wrist of your right hand over to the wrist of your left hand. So, peel the glove off all the way by pulling and pushing it until it fits completely and continuously over your left hand. There you are. You have done the impossible! This is the sort of process of inversion that takes place inside of your mind when you discover a new universal physical principle. It is as if you had gone to the other side of

yourself, and pulled yourself inside-out from there, looking back at where you were just a moment before, and discovered how easy it is to do the impossible.

This is the sort of singularity which must be occurring in the process of electromagnetic increase of energy-flux density of the magnetosphere in order to make living processes progress go to a higher state of existence on Earth, every 62-64 million years. For the human mind, this change takes place when you go from oligarchism to republicanism, that is, when someone says publically the truth of what everybody thinks privately. Something like that must occur inside the axiomatic transformation of all anti-entropic process of change, at the very moment that the angel of death flutters its wings overhead. But, don't be surprised if during this overhead process, you hear hellish thunderclaps as opposed to angelic Chorus wave music. Furthermore, if the perception image of this glove experiment is clear, the mental image of the change that occurs in the mind is not as obvious, and your thought should be something like what St Paul had described in Corinthian 1,13, as "**going through a glass darkly**," but in time. Now, approach the question of time as Lyn developed the idea in *WHAT & WHERE IS YOUR MIND?* And ask yourself: How does time capture existence? Lyn answered as follows:

"If you wish, you may view what I am about to say now as "speculative;" then, for that case, consider the snare which traps you once you were tempted to play with what might appear to be merely a harmless bit of what seemed to have been "speculative" play. It is now appropriate to sense yourself as captured by the lure of *physical time*.

*"Let "time" be the measure of physical action.* Now, attempt to measure existence in time; how might you escape that embrace which united the two? Whence did that "time" come into existence, except by that which measures it? "Space-time" cannot be the union of something which might be compared to a union of two variable magnitudes; try to disentangle the union of the two without losing the existence of both! Time, which is inherently to be measured as action in, and of physical processes, and time, whether relatively forward, or otherwise, measures—e.g., "measures"—physical processes. That might appear to be a silly thing to say; but, it is precisely the honest silliness of the appearance which attracts, and, perhaps, entraps our imagination; "imagination" regulates the way in which we must act.

"Months back, I presented the idea of a notion of apparent reversal of the direction in physical time, that as implicitly an intended refutation of the notorious folly of Pierre S. Laplace respecting the concept of simple minded time. There has been a study of the implication of such a view of the function of what is fairly measurable as a notion of a case of a reverse physical time by a notable associate since that time. Only the applications of explicitly *physical* cases, are convenient for elementary studies of this case; but the lure of the matter becomes, as Alice said, "curiouser and curiouser." " (Lyndon LaRouche, [\*What & Where is Your Mind?\*](#) EIR, September 16, 2011, p. 18.)

Thus, in the "curiouser" case of the glove experiment described above, *imagine space-time as being totally ontologically dependent on each other*. Like the *doubly-connected envelope* of a catenary-tratrix, they cannot be conceived as independent variables, because throughout the motion of their being, one cannot have any existence without the other. However, this is not only space-time, but physical-space-time, as Lyn restored the notion for the creative process of cosmic radiation. Therefore, the principle of unity of those three variables can be represented as a *catenary-tratrix-envelope*. Let time



represent the peeling measure of electromagnetic action (the *tractrix*); let space represent the location of change in gravitation (the *catenary*); and let the change from righthandedness to lefthandedness express the physical existence (the *envelope*).

Nicholas of Cusa had a similar understanding of this same principle of *catenary-tractrix-envelope* in collaboration with Brunelleschi, and which was later further developed by Leonardo. Consequently, Cusa developed a conception of the principle of time and causality as the folding and unfolding activity of what he identified as a mental “door” accessing the idea of God in the simultaneity of eternity:

“Trusting in Your aid, Lord, I return again to find You beyond the wall of the coincidence of folding and unfolding, and as I go in and go out by this door of Your word and Your concept, I find the sweetest nourishment. When I find You as the power that unfolds, I go out: when I find You as the power that alike folds and unfolds, I go in and go out alike. I go in, passing from the creatures to You, their Creator, from effects to the Cause; I go out, passing from You, the Creator, to the creatures, from Cause to effects. I go in and go out simultaneously, when I perceive how going out is one with going in, and going in [is one] with going out. In this manner, one that reckons does alike fold and unfold, for he unfolds the power of unity, and folds number in unity.” (Nicholas of Cusa, *The Vision of God*, p. 53.)

Thus, the physical space-time interval of universal change in the universe is measured by a similar *catenary-tractrix-envelope* principle, as a triple-sided concept, but provided it is constructed with the Leibniz method of inversion of tangents as a *measure of change* between what is finite and what remains unbounded. This is how I see the measuring of higher energy-flux density in the physical-space-time of the magnetosphere. From there, indeed, as Alice recalled her experience of losing sight of her own feet, the case gets “curiouser and curiouser,” because, with creativity, the end should always be where you should have started from.

FIN