From the desk of Pierre Beaudry

THE PLASMA UNIVERSE IS A MATTER OF MIND

By Pierre Beaudry. March 20, 2012.

"And the emphasis, for us, is placed largely on the question of the fact that living processes, first of all, living processes' increase in the power drives the universe of our experience; and secondly, that the creative powers of mankind, which are unique to mankind in our experience, drive the universe, in turn, as a higher form of authority in the universe itself." Lyndon LaRouche.

"If nature can execute such organization in the plasma focus, she can certainly do so with the primordial plasma." Winston Bostick.

"We are going to need a lot of axiomatic pinch effect instabilities to make the world grow peacefully."

Dehors Debonneheure.

Figure 1. An Oligarchical Pinch Effect.

FOREWORD

Is there proportionality between the human mind and the universe? If so, what determines it? The irony present in all galactic plasma studies is that plasma physicists have the opportunity to replicate the immense magnitudes of the galactic creative activity of the universe as a whole inside of the apparently small area of their own minds, and demonstrate how that idea works in their laboratories. Christian Birkeland, Irving Langmuir, Hannes Alfvén, Winston Bostick, and Anthony Peratt have all experimented this during their amazing discoveries of principle of the Plasma Universe.

The central paradox of that principle, common to all of those scientists, is that the fusion process of the human mind is the paradigm for the behavior of the universe as a whole. They all demonstrated, each in their own way, that the universe grows anti-entropically. As a byproduct of their experiments, these physicists have eradicated from the domain of science a number of fallacies of compositions underlying the so-called "visual universe," such as the "Big Bang" gravitational model, dark matter, and black holes. This report is aimed at emphasizing the epistemological significance of this Plasma Universe as a Matter of Mind within the following seven sections.

INTRODUCTION: THE FUSION KEY TO INCREASING ENERGY FLUX-DENSITY.

The crucial question that is posed by the higher principle of a fusion process is not how to eliminate instabilities, but rather, ***how to control the increase of instabilities inside of the Plasma Universe***. This is a proportional problem which was first established socially in 1648 as the principle of the Peace of Westphalia, which brought the solution to the Thirty Years War. The discovery of this principle demonstrated how a fusion process must universalize an axiomatic change in a manner that generates a higher level of energy flux-density for all of the nations of the world and sheds, once and for all, the oligarchical principle. Unfortunately, this principle has been either ignored or denounced since that time, explicitly, by the current crowd of British imperialists. Meanwhile, mankind must create a new clock by means of which increased time-values for higher energy flux-density must be realized, somewhere within the physical space-time range of 10^{11} and 10^{12} cm^3/sec.

In other words, the answer to the question of when we can have commercial thermonuclear fusion will not come until the axiomatic change of a fusion process becomes understood as a replication of the

unique power of change that the creative human mind is capable of accomplishing, by unifying humanity behind the same future intention of acting for the benefit of others. It is only from that vantage point that thermonuclear fusion can become feasible, commercially and worldwide. Plasma instabilities are the tickets to a future Peace of Westphalia.

The condition for this future to be realized now, however, is that mankind succeeds in creating the appropriate field distortion with the sharp tongue of truth, as would a sharp knife blade inside of a Plasma Focus Apparatus. Only then, can a self-governing plasma process be replicated as the power of truthfulness that is generated from the future of mankind in mind and from all around the planet. The key to this success resides, therefore, in the elimination from this planet of the predatory function of the oligarchical principle which functions as the inverse of this process. (See **Figure 1**.)

The answer to the question of fusion feasibility does not lie in the physical behavior of the plasma itself, but in the political will of mankind to create the ideas that will reverse the current oligarchical domination. Unless you understand the human mind, and you begin to consider the fact that human minds must go through axiomatic changes by a willful inversion of their former ways of thinking, then, the control of fusion power will not be at hand for the human species to realize its extraterrestrial mission.

Therefore, the key to success resides in how you will register and experiment this idea in your own mind first; that is, from the top down and by remaining on top of it. That experiment will not require any expensive machinery, but it will require that you be on top of it all the time. So, be aware that you might have a formal understanding of that new principle, but still be under it. That will not give you the functioning principle. You might not have to use anything else but your own mind, but it has to work as a scientific plasma physics laboratory. So, unless you have sold your soul to someone else, you can experiment the fusion process, free of charge, and discover the underlying universal physical principle of the Plasma Universe with the following thought-experiment as **A MATTER OF MIND**.

1. A PLASMA UNIVERSE VERSUS THE SO-CALLED "VISUAL UNIVERSE."

During the first decades of the twentieth century, Swedish astrophysicist, Hannes Alfvén, hypothesized that the Universe was composed of 99.9% of ionised gas, or plasmas. This means that the universe is dominated, primarily, by electromagnetic forces rather than by the so-called Newtonian gravitational attraction of bodies at a distance. From that vantage point, a plasma universe is also based on the explicit rejection of entropy as the fundamental law of the universe. This means that whatever anti-entropy you can demonstrate to exist in the laboratory of your mind is valid for the universe as a whole. This is why it is necessary to gage plasma scaling magnitudes of laboratory work as the measure of change that applies to galactic phenomena like turbulent flows generated inside of air tunnels apply to real aircraft flights. One is the test case of the other.

Alfvén conceived the idea of a universal proportionality between the human mind and the universe which involved the axiomatic jump of a triply-connected epistemological change in our

conception of the physical space-time. He suggested a scaling proportion of the universe that was based on the factor interval of 10^9 (that is 1 followed by 9 zeros), which is required among the four domains of 1) Laboratory plasmas 10-¹, 2) Magnetosphere 10^8, 3) Interstellar clouds 10^{17}, 4) Hubble distance 10^{26}. (See **Figure 2**.) He further emphasized that whatever mental creative resources you can introduce into a plasma laboratory can become valid for this universal proportional expanse of the anti-entropic universe as a whole.

During the second half of the 20th Century, two plasma physicists, Winston Bostick and Anthony Peratt demonstrated the feasibility of Alfven's new idea of a plasma universe. Bostick wrote: ***"If nature can execute such organization in the plasma focus, she can certainly do so with the primordial plasma."*** (Winston H. Bostick, ***Stockholm, August 1956, Revisited***, Transactions on Plasma Science, IEEE, Vol. 17. No. 2, April, 1988, p. 71.) From that moment on, plasma became the way to understand that the universe and the human mind were based on the same creative model, and so was ***ambiplasma,*** as Alfvén called the interaction between matter and antimatter. In collaboration with both Alfvén and Peratt, Bostick made the following crucial demonstration in 1986:

> "A 32-year-old hypothesis of the formation of barred-spiral galaxies (Bostick 1957, 1958, 1986; Laurence, 1956) which become ***coherent-self-exciting homopolar generators*** (my emphasis) has recently gained confirmative support from 3-D, particle-in-cell computer simulations (Nielsen et al. 1979; Buneman *et al*. 1980; Peratt *et al.* 1980, 1984, 1986). Such galaxies should be able to convert an appreciable fraction, *f*, of the energy from their gravitationally-collapsing plasmas to coherently-increasing magnetic energy via their ***coherent, self-exciting, homopolar-generator action*** (my emphasis). The following simple calculation shows that the resulting mutually-induced magnetic repulsions (Len's law) between neighbouring galaxies are greater than the gravitational attractive forces between the galaxies. The observed expansion of the Universe can be thus simply accounted for without recourse to the 'Big Bang' hypothesis, with its unaccounted-for mysteries. (W. H. Bostick, ***The Hubble expansion as ascribed to mutual magnetic induction between neighbouring galaxies***, Cambridge Journals Online, 1988, Volume 6, Issue 03, Stevens Institute of Technology.)

This meant that the plasma studies in the laboratory became the new measure by means of which one could judge what sense-perception was not able to establish scientifically with its bundles of contradictory evidence. As for the Big Bang theory, Alfvén had already dismissed it as a myth created by a Belgian priest, Abbé Georges Lemaitre, in order to explain creation. "I was there when Abbé Georges Lemaitre first proposed this theory […] He said in private that this theory was a way to reconcile science with St. Thomas Aquinas' theological dictum of ***creatio ex nihilo*** or creation out of nothing." (Hannes Alfvén (1908-1995), The Royal Institute of Technology, Stockholm. Extracted from Anthony L. Peratt, 'Dean of the Plasma Dissidents', ***The World & I,*** May 1988, pp. 190-197.)

By 1986, the time had come to abandon the fallacies of the so-called "visual universe." The mental conditions of the experimental phenomenon were becoming an integral part of experimentation, and the laboratory work on plasmas was becoming the new standard for science as a whole. That was the year when Hannes Alfvén caused a paradigm shift to take place with an axiom busting paper entitled, ***Model of the Plasma Universe.*** He wrote:

> "An attempt is made to construct a model of the 'plasma universe' which is claimed to be an alternative to the traditional 'visual universe' based mainly on observations in the visual octave. Besides the Hubble expansion, there is also a 'knowable expansion,' which means that knowledge originating from plasma experiments in the laboratory is spreading to the magnetospheres and, it is predicted, sooner or later, will also penetrate astrophysics in general." (Hannes Alfvén, ***Model of the Plasma Universe***, IEEE transactions on Plasma Science, Vol. PS-14, No/. 6, December 1986., p. 629.)

The implications of what Alfvén wrote did not merely relate to the new spectrum of the Plasma Universe which ranges from gamma and X-rays, which are the wavelengths of plasma phenomena, to infrared and radio waves, but, most importantly, to the fact that our knowledge can no longer be based on sense perception. This meant that aside from observing a universe based on sense certainty, we are now able to understand the real universe with more mental certainty, because our senses are merely giving us shadows of the properties that belong to the real physical universe, the Plasma Universe.

The point to be made is that a Plasma Universe is a Matter of Mind not a matter of a sense perception object. This does not merely mean that the space-scales of the visual universe and of the auditory universe are different, and even sometimes contradictory in nature; it also means that the characteristics of a Plasma Universe no longer fit the metric of a "Sense Perception Universe" and that the fundamental reality that changed it was an entirely new notion of time that had never existed before. Not only was the plasma focus oriented to the future, but such a future was uniquely capable of being grasped as a means to change the past.

The most immediate realization of this new "measure of time," beyond what Einstein had already brought us with relativity, was the completely revolutionary role of proportionality that laboratory plasma studies had endeavoured to project from that moment on. It was no longer the visual universe which dominated our understanding of the universe, but the ***future oriented proportionality of thinking which had to go on inside the laboratory, between the scientist, the experiment, and the different anti-entropic knowledge expansions of the cosmos***. From that moment on, it was that new matter of mind function which defined the nature of timing in the heavens, not the heavens which defined the nature of timing in the laboratory. This was a complete revolution in its own right. As Alfvén put it:

> "As there are good reasons to suppose that the *basic* properties of plasmas are the same everywhere, we can depict this extrapolation as a 'knowledge of expansion' which started from laboratory research. With the advent of the space age, which made possible ***in situ*** measurements in the magnetospheres (including solar magnetosphere, heliosphere, solar wind region) , the ***knowledge expansion*** (my emphasis) increased in strength and is now on its way to reach out as far as spacecraft go.
>
> "It is very important that it proceed further out. Indeed, astrophysics will be changed very much when (sooner or later) the ***knowledge expansion reaches interstellar and intergalactic regions.*** (my emphasis)

"Extrapolation of laboratory and magnetospheric research demonstrates that the plasma universe has properties that differ from those of the traditional visual universe in many respects." (Hannes Alfvén, Op. Cit., p. 630.)

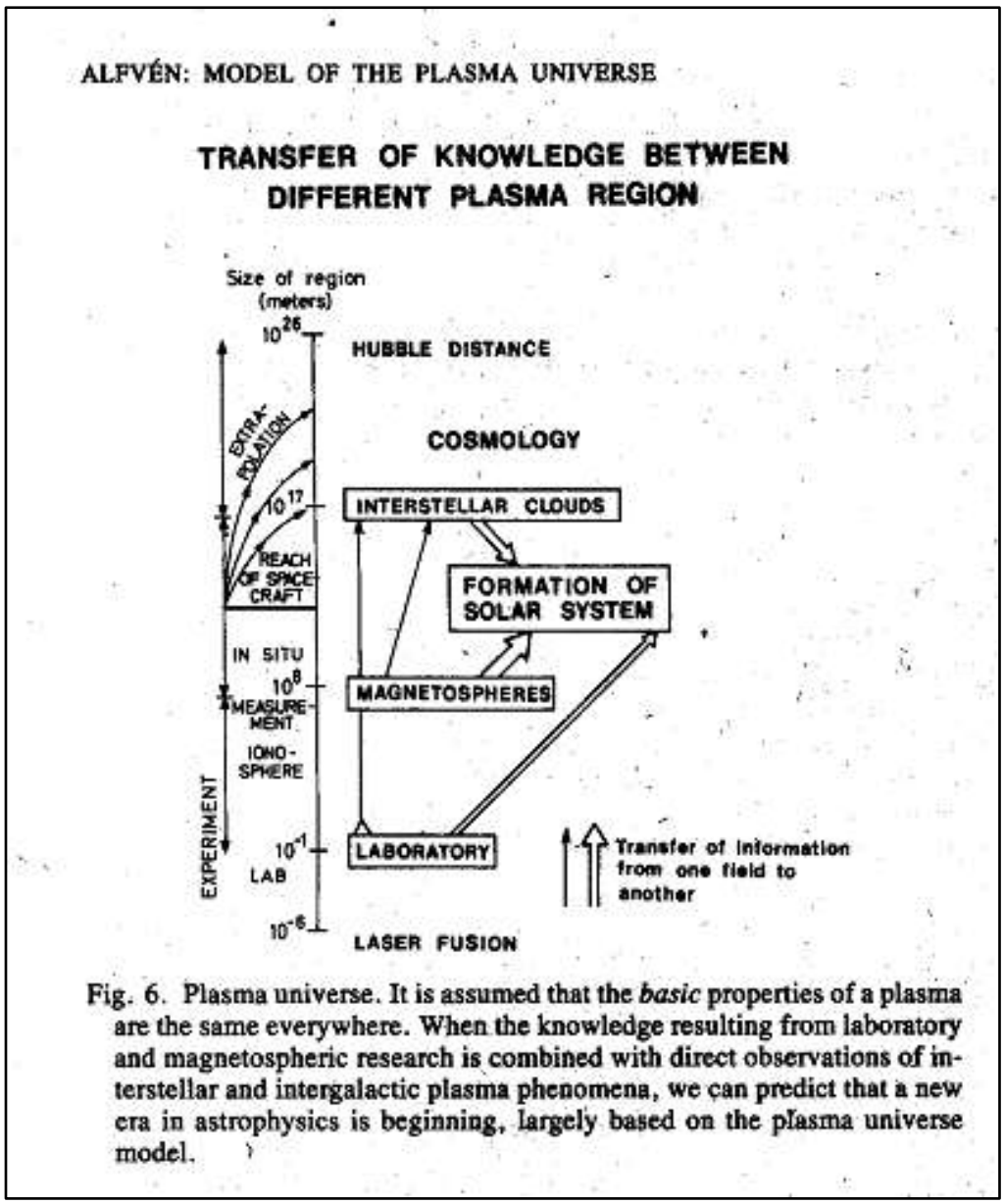


Fig. 6. Plasma universe. It is assumed that the *basic* properties of a plasma are the same everywhere. When the knowledge resulting from laboratory and magnetospheric research is combined with direct observations of interstellar and intergalactic plasma phenomena, we can predict that a new era in astrophysics is beginning, largely based on the plasma universe model.

Figure 2. Hannes Alfvén's model of the creative mind in relationship with the Plasma Universe. This is how Alfvén established scientific forecasting as an integral birthright of the human mind. From ***Model of the Plasma Universe***, IEEE transactions on Plasma Science, Vol. PS-14, No/. 6, December 1986.

From the standpoint of epistemology, Alfvén was quite conscious that he was introducing a new paradigm shift into the scientific fabric of society, but he was also painfully aware that the necessary axiomatic change did not go beyond the pragmatic reaches of our spacecraft capabilities, that is, had not

yet included the limits of the unknown within his reach. How do you go beyond the limitations of the unknown? How do you change the time of an experiment in a way that it is not clocked against the time of a spacecraft, but against the axiomatic creative power of the human mind? Alfvén knew that plasma was the shape of the future. He understood that the transfer of knowledge between different plasma regions of the universe was the idea that was going to secure the future of mankind. In fact, that was the way the future had to become present in the every day lives of all human beings. He was able to forecast, for example, what form the future was going to have, because he had incorporated a new form of galactic time into his daily experiments, from the top down. A burst of radiation that lasted a few microseconds in the laboratory incorporated several magnitudes of 10 to the 9^{th} power, or 1,000,000,000 years, which is the lifetime of a quasar inside of a galaxy.

Such a relationship to galactic time had never existed before in human knowledge. Consequently, Alfvén had to establish the new paradigm based on a new concept that I would identify as a ***relative-proportional-plasma-space-time-reversal-process*** that required four new conditions: 1) that plasmas are generated by both magnetic fields and electrical fields, 2) that plasmas increase their power through the pinch effect, 3) that homogeneous plasmas be replaced by inhomogeneous plasmas, and 4) that electrical currents and filamentary currents of interstellar clouds be conceptually associated.

In this regard, one of the most significant contributions of Alfvén's was to consider that interplanetary space was not a vacuum that vibrated only when a few heavy bodies like comets, planets, and stars went through it, but that it was filled with electrical and magnetic currents that vibrated with different, yet proportional resonances of the human mind, which left their non-visible signatures everywhere across the electromagnetic spectrum. His 1930 hypothesis that interplanetary space was filled with plasma electromagnetic activity was received with total scepticism from the pundits of oligarchical science, and the official scientific reaction to his creative work is still hostile to his hypothesis today.

Alfven's new orientation of axiom busting in the domain of astrophysics was aimed, among other things, at putting an end to the so-called "Great Debate," or what had been identified as the Shapley-Curtis Debate on the "visual universe." This debate was a typical example of the futility of sense certainty, but it still controls the podiums of our universities today. The debate took place at the Baird auditorium of the Smithsonian Museum of Natural History in Washington DC, on April 26, 1920. Two papers were presented before a large crowd of scientists and ordinary citizens on the subject of "***The Scale of the Universe***."

The issue was to decide whether the Milky Way represented the totality of the universe, as Harlow Shapley was arguing, or if other phenomena, such as Andromeda and other nebulae, were actual distant galaxies, which Heber Curtis advocated. The real underlying issue of the debate, however, was the question of human creativity and the creativity of the universe as a whole, but that question was never raised openly by any of the participants. At any rate, the result of the debate both contestants were considered right and wrong, but on the grounds of their mutual fallacies of composition of their visual universe. Unfortunately, the real underlying intention of the debate was left out, which would have been a great opportunity to address the role and mission of man in the cosmos.

The so-called "***Scales of the Universe***" begged the question of the human mind as the scaling measure of the universe, but, this question was never even "perceived" by most of the participants. The

debate should have, at least, shown that the evidence, based on sense perception, was faulty on both sides of the debate, because they were merely debating questions of shadows projected on the wall of Plato's Cave.

Instead of using the debate for the purpose of expanding our knowledge of the universe, both parties were scrambling for crumbs of sense certainty to fill the stomach of their illusions. It was not until astronomer Edwin Hubble was able to identify a variety of stars in the Andromeda Galaxy (M31) that American citizens began to realize that there existed billions of galaxies and trillions of stars outside and behind the Milky Way. But this did not relieve our society from the blindness of the visual universe. One more time, our citizens missed a great moment of irony.

2. A CLASSICAL ARTISTIC IRONY OF GALACTIC PROPORTION

Imagine the following composition by Anthony Peratt (**Figure 3**.) as a studio portrait whose composition represents three beautiful double radio galaxies: Fornax A, 2355 + 490, and 3C315. How do you discover the different ironies that Peratt has composed into this tableau? How can you establish the connection between artistic composition and scientific discovery, as Lyn has been suggesting for the last twenty years, and maintain that outlook from the top down? Examine the following composition (**Figure 3**.) as an irony and ask yourself what is there to know and to not know about it?

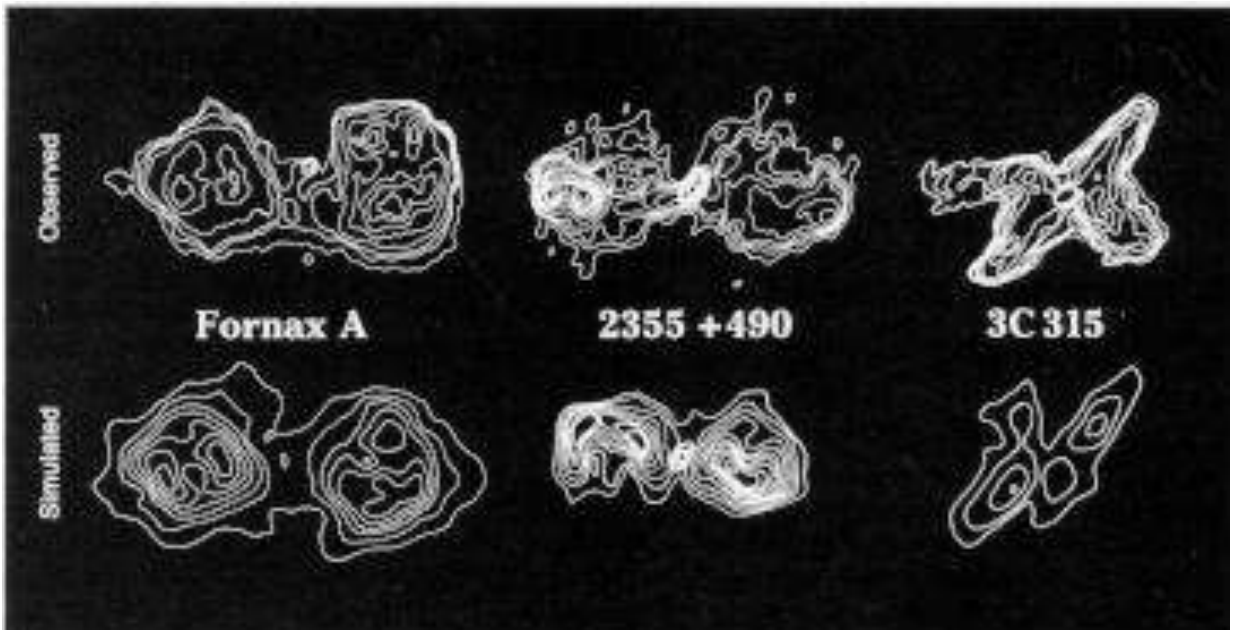


Figure 3. Anthony L. Peratt, ***Double Radio Galaxies***, in ***Plasma Cosmology***, Los Alamos National Laboratory, 1986.

How do you know when an irony of classical artistic composition is also a matter of scientific discovery? You know it when both art and science reflect a third and higher level of knowledge, the level that Cusa identified as learned ignorance.

The top row shows, from left to right, three radio telescope observations of three different double galaxies taken from three different parts of the sky and reflecting three different radio snapshots of their respective evolution. Project those cosmic auditory radio expressions with corresponding laboratory plasma simulations as shadows projected through an invisible series of transcendental phase-spaces onto the wall of Plato's Cave. The bottom row shows the computer simulations of a single laboratory plasma experiment at three different moments of its evolution in physical space-time. Where are the ironies in this scientific artistic composition? The first irony is located in the fact that the times of the different cosmic observations and the times of the plasma simulations coincide, as if in the simultaneity of physical eternity. This ***Double-Radio Galaxies*** portrait is like a galactic ***School of Athens***! The different assembly of people and events are gathered from different octaves of time, but have all come to be unified in a single representation, a single unity of effect.

Study this unity of effect closely in connection with the idea of time reversal inside of the composition and you will discover the significance of what Lyn has been inferring when he said that creativity is the way to address things beforehand; that creativity occurs in the future before the event of the discovery takes place. In the present case, the idea that there could be such an extraordinary correspondence between laboratory plasma and galactic plasma had been conceived by Alfvén 30 years before it was actually demonstrated to be true by Bostick and Peratt. But what had not been conceived before these laboratory experiments, and still remains nebulous for many, is the fact that a dual time function of relativity and of proportionality of physical space-time was the boundary condition that held that unity of effect together.

This first irony, therefore, is located in the fact that each of the two time intervals between the three different galaxies, at the top, represents a span of time of about 20 million years, while the intervals between the different moments of this unique laboratory plasma experiment, in the bottom, represents a few microseconds. When you project one set of shadows onto the other set of shadows, as if through a conical projection of millions of years long, from 10^{-6} to 10^{26} years, everything is mapped as being the same including the proportional magnitudes of time. This is how the creative time reversal process of the human mind becomes the paradigm of galactic time, because nature's time in a single plasma focus experiment and nature's time in the evolution of a galaxy have the same proportion. You have now the ability to forecast what a dual radio galaxy will be like millions of years into the future.

Thus, what is emerging, here, is a new concept of physical space-time which is doubly-connected to represent a new mental power of both relativity and proportionality between the subject and the object of scientific study, which has never existed before, and this is creating a new way of understanding the universe. Our knowledge of the universe has changed the universe, between the very small and the very large, as well as between the human mind and the mind of the universe. This new way of looking at the universe and at man's intervention in the universe is what Leibniz had identified as the coincidence between microcosm and macrocosm. This is also what Cusa had identified as the necessary root of discovering the power of learned ignorance.

Furthermore, from this vantage point of Cusa, there is a second irony. The noise of the radio signals that are proportional between the laboratory plasma and the cosmic plasma tells you more about what you don't know than what you do know about them; and it tells you that what you don't know must become an integral part of the knowledge that you are required to have if you wish to understand the universe as a whole. ***The shape of that new knowledge of the universe, which includes what you don't know about it, is the actual curvature of the future.***

The idea of including your ignorance within your knowledge is not a spurious matter. It is an essential component for any one who wishes to deal with a Plasma Universe, that is, with the galactic domain. The point is that the plasma domain is one of those few areas of knowledge which demand that you go beyond your native sense perception and engage in creating new perceptors for the purpose of discovering the unknown. For example, when scientists began to inquire about the noise coming from far away galaxies that people picked up on radio waves, they began to realize that new instruments like radio-telescopes of Green Bank West Virginia (NRAO) were required to interpret these strange signals. So, a whole array of new technologies were created in order to push the boundary condition of human ignorance a little further out.

Moreover, this is the way to approach the question of antimatter, for instance, because antimatter first manifests its existence by not being there, by demonstrating its contrariness to matter because we do not have, yet, the appropriate perceptors to identify it, and because we have been brainwashed into thinking about antimatter in the oligarchical form of elementary building blocks. That is a lot of nonsense because, as a result, man cannot understand why antimatter cannot be perceived. So, to clarify this point, I propose that you consider the unknown of the future in the following triple manner:

The unknown takes three general forms: the first unknown is not known because it is not yet known, the second is not known because it is ignored, or is prevented from being known, and the third is not known because it is incomprehensible. Antimatter energy is of the first category, Fusion energy is of the second, and God the creator is of the third. Our job is to understand the nature of all three, as if by a single pinch effect; that is to say, by unblocking the second in order to make way for the first to become known from the intention of the third.

However, bear in mind that the more you know about the universe, the more you must realize how little you know, because after you have made a new discovery of principle, there remains even more unknown than before, and although there will always remain a greater part that remains to be known, through the discovery of new perceptors, the most important part of the unknown will remain unknown to us because our mental apparatus must understand it as incomprehensible. This is, above and beyond all perceptors, the most important insight that Cusa provided for us to understand learned ignorance.

In other words, Cusa provided us with a beryl lens to scrutinize the creative physical space-time magnitude of the human mind, which must be used if we are to go through Plato's Cave from laboratory plasmas to organized thermonuclear fusion in the cosmos, and from there to organized matter-antimatter interaction, and to a higher organization of the universe beyond. That mental lens makes you discover both relative and proportional processes of physical space-time in the simultaneity of physical eternity. This is what Lyn inferred when he said: "So mankind, by discovering something, is actually creating something. By discovering something which is a principle, we apply it, because it is a principle. And by

applying a principle which was not known to us earlier, we change the universe, wilfully." (Lyndon LaRouche, ***NEC Meeting*** for Tuesday, March 13, 2012.)

The Peratt irony of creative time is such a doubly-connected arrangement: it is relative in the vertical manner (top down) and it is proportional in the horizontal manner (from the future to the past). The two times interconnect with each other at 90º. For example, the time it took to generate the left galaxy corresponds to about 20 million years after the first interactions between the two original clusters began to interact, and the time of the laboratory plasma burst corresponds to a few microseconds. As time increases toward the right of the composition, the intervals between each computer simulation represent proportionately 20 million years later. Again, the irony is that you can determine 60 million years of galactic time, from the top down, and identify their changes reasonably well, relative to a time lapse of a few microseconds, and without having to leave your laboratory; that is, if you are on top of it. The shape that this dual-time takes is the ubiquitous lapse of creative time: being there and being here at the same time, universally and locally in a ***relative-proportional-plasma-space-time-reversal-process.*** Such is the time of the simultaneity of physical eternity in a Plasma Universe.

3. THE EPISTEMOLOGICAL SIGNIFICANCE OF THE PINCH EFFECT

"On the same time scale on which the stability is lost, the pinch is heated."

Winston H. Bostick.

When Benjamin Franklin made his first experiments with a kite connecting with the plasma pathway of a thunderbolt, he was not merely teasing the electrical sky; he knew in advance what was going to happen, even though it had never happened before. Franklin was setting an example for future generations by demonstrating that man had the Promethean mission to master the Plasma Universe through understanding the significance of the pinch effect.

The most successful approach from among all of the Fusion experimental methods in Fusion research, today, is the Plasma Focus approach that has been developed extensively by a former member of the Fusion Energy Foundation, the deceased Winston Bostick, who was one of the first physicists to develop the concept of a Plasma Focus Apparatus with associate scientist, Vittorio Nardi, starting during World War II.

Franklin at Benjamin West's house.

Benjamin West's portrait of Benjamin Franklin.

Figure 4. Benjamin Franklin experimenting with the pinch effect of a bolt of lightning.

The Plasma Focus is the best method for understanding plasma fusion because a Plasma Universe grows by means of axiomatic changes, the same axiomatic changes that are necessary for the human mind to develop its creative powers in time. As Lyn extensively demonstrated for the human mind, a Plasma Universe axiomatic change requires a high density of non-linear singularities, and a sharp edge of truth that generates willful instabilities throughout the field of experimentation.

Both Bostick and Nardi were the two original researchers to develop the hypothesis whereby controlled instabilities were the necessary components for the creation of an increase in energy flux-density within fusion plasmas. The whole question, therefore, comes down to how to master this type of change with the right amount of distortions confined in the plasma chamber of a Plasma Focus Apparatus.

A tremendous amount of distortions or instabilities is created when the perpendicular function of what is called the Theta (θ) Pinch generates kinks that cut through the concave and the convex sides of the central inductive plasma sheet, simultaneously, **Figure 5**(15), in order to change the plasma to a higher level of energy flux-density through the creation of neutrons. The sausage-and-kink type of instability transforms the plasma field into a tiny plasma nodule, as in Bostick's Figure 3 shows, and subsequently reorganizes itself into a toroidal solenoid as in Bostick's Figure 20. (**Figure 6**.)

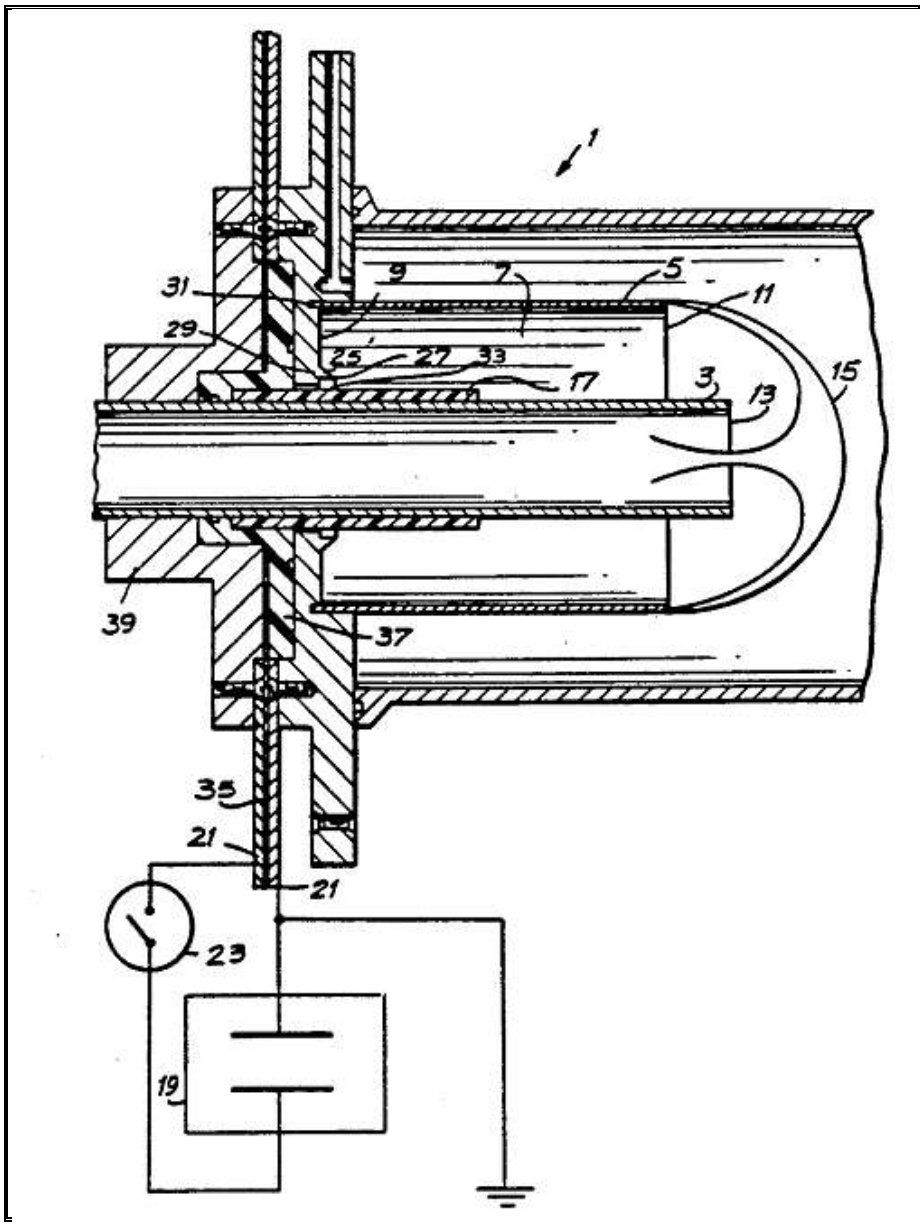
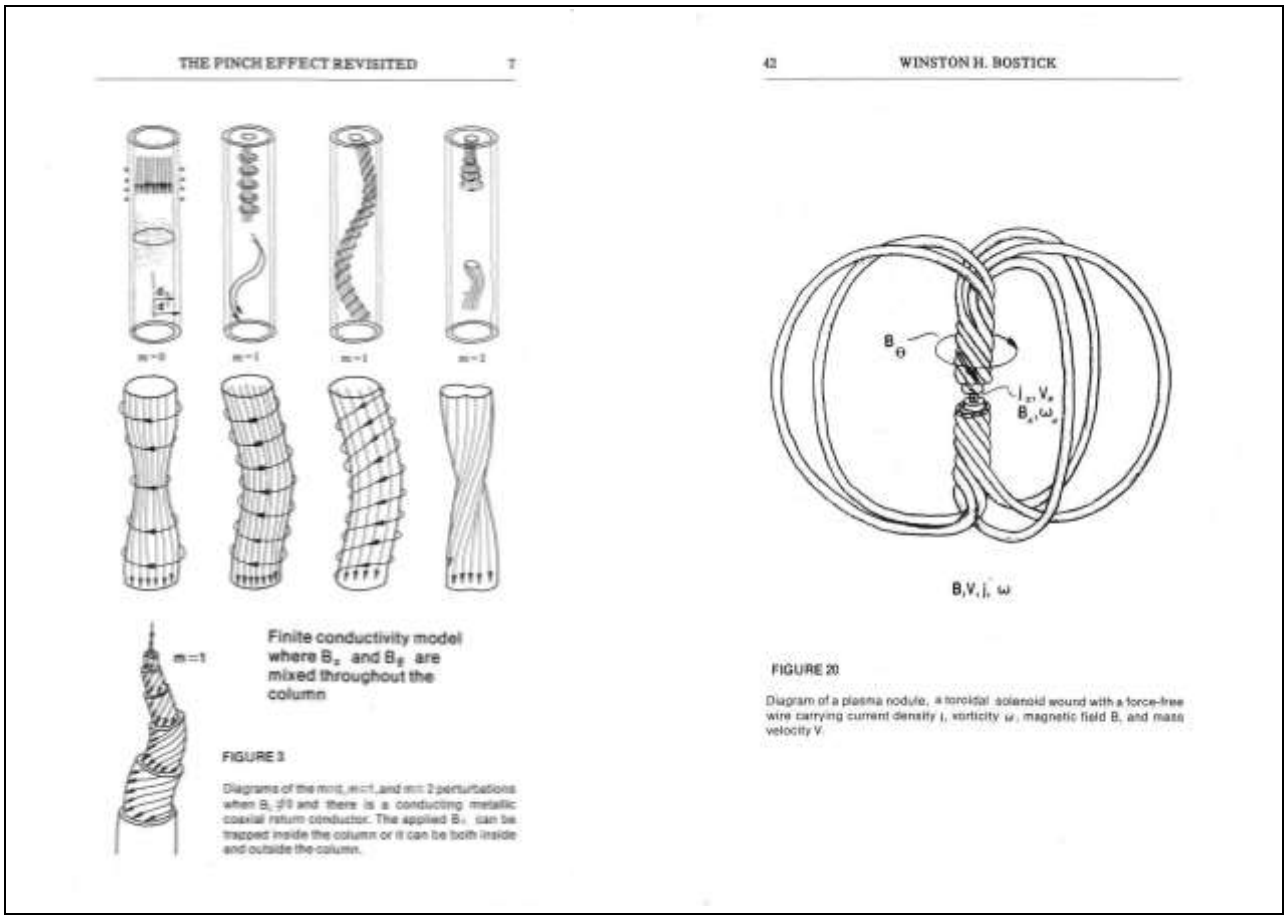


Figure 5. Vittorio Nardi's Plasma Focus Apparatus. American patent of December 24, 1991. "A schematic sectional view of a cylindrical symmetric plasma focus apparatus […] It comprises inner 3 and outer 5 coaxial electrodes displaced from each other by an interelectrode gap 7. Typical values for the dimensions of electrodes are 118 mm and 138 mm axial length for the outer and the inner electrodes 5 and 3 respectively, measured from the breech wall 9. Their respective diameters are 10 cm (id) and 34.3 mm (od). The electrodes have respective muzzle ends 11 and 13 at which the current sheet 15 forms during operation of the apparatus. A sleeve 17 of electrically insulating material such as alumina or pyrex is disposed between electrodes 3 and 5, closely encircling (to within industrial tolerances of about I mm) the inner electrode 3." (Vittorio Nardi, ***United States Patent Number 5,075,522***.)

A contradictory phenomenon is generated where the repulsion of opposite currents are turned into a fusion process generating upwards of 100,000 neutrons. The energy is captured and transformed into the most useful and cheap form of commercial electrical energy. The same condition applies to any other discovery of principle.



THE PINCH EFFECT REVISITED 7

Finite conductivity model where B_z and B_θ are mixed throughout the column

FIGURE 3

Diagrams of the m=0, m=1, and m=2 perturbations when $B_\theta \neq 0$ and there is a conducting metallic coaxial return conductor. The applied B_z can be trapped inside the column or it can be both inside and outside the column.

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B,V, j, ω

FIGURE 20

Diagram of a plasma nodule, a toroidal solenoid wound with a force-free wire carrying current density j, vorticity ω, magnetic field B, and mass velocity V.

Figure 6. Winston H. Bostick, ***The Pinch Effect Revisited***, International Journal of Fusion Energy, Vol. I, No. I. These visualizations do not represent elementary building blocks, but universal forms of ***analysis situs*** preconditions of change that are about to take place and have not yet come to be.

As Bostick put it:

> "The pinch-effect magnetic field will impart energy to the plasma by adiabatic compression (in the dynamic pinch), by shock heating, by Joule heating, and by various instability mechanisms, and that in these processes, the plasma can be expected to acquire an energy density approximately equal to that of the magnetic field." (Winston H. Bostick, ***The***

Pinch Effect Revisited, International Journal of Fusion Energy (IJFE), Fusion Energy Foundation, March 1977, Vol. I, No. I, p. 5)

What Bostick is calling for is to focus scientific work on a higher form of universal action in the universe as opposed to the reductionist and oligarchical view of elementary particles as building blocks of the universe. The so-called elementary particles considered as the building blocks of the universe are a complete fallacy of composition, simply because the Many cannot rule over the One. And the point that Bostick is making is that it is the unique nature of that plasma action itself which is to proceed from the top down as a self-generating process of increasing energy flux-density in the system. This is precisely the type of axiomatic shock treatment of change that is everywhere active in a plasma universe, because its thermonuclear fusion reflects the creative process of the universe as a whole.

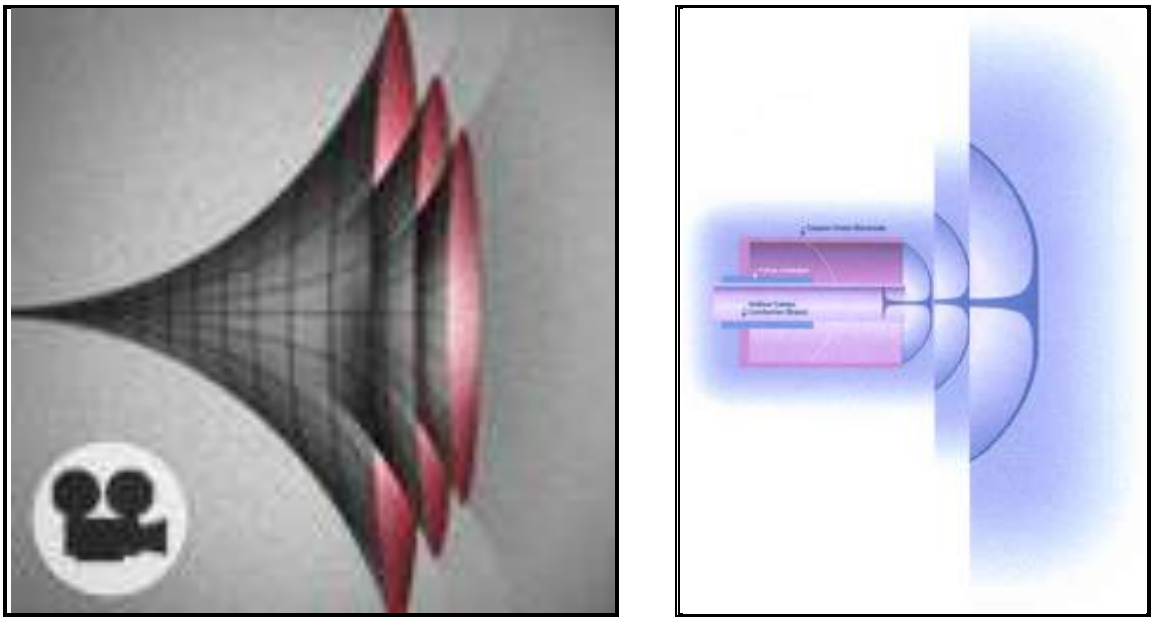

Figure 7. Vittorio Nardi's Plasma Focus Apparatus reflecting the process of the pinch effect increase in Energy Flux Density.

Imagine that the Nardi Plasma Focus Apparatus represents a singularity for expanded anti-entropic processes in the universe in the same conceptual manner that the Basement Team has begun to develop the idea to a series of self-generated hyperbolic cones to illustrate Lyn's concept of increases in Energy Flux Density. (**Figure 7**.) Then, such a Plasma Focus Apparatus pinch effect becomes an expression of the type of measure of change that is required to implement this type of anti-entropic process in society as a whole. Once this principle is internalized and applied socially, a commercialized form of Fusion Energy becomes feasible under the condition that the world unites politically behind a

New Peace of Westphalia based on a world credit system guaranteed by the Glass Steagall Act of America.

Pinch effects are also the sort of instabilities known as dissonances in the well-tempered musical system. For example, Beethoven introduced such dissonances in the third movement of his Piano Sonata Opus 27. This is the most beautiful example of an axiomatic measure of change, which shows how fusion plasma has to be organized in order to gain energy as rapidly as the pinch instability produces fusion, proportionately. Very few classical artistic compositions have had the power to realize such a fusion process in the human mind. Note especially the high density of singularities in the axiomatic change occurring near the end of the third movement. The beauty of this instability is that although Beethoven inserted it near the closing of the piece, it has to be activated from the very beginning measures in order to become infectious throughout the entire piece. The One must always impregnate the Many, even before the composition begins as such. It is a matter of mind, not of sound, from the top down.

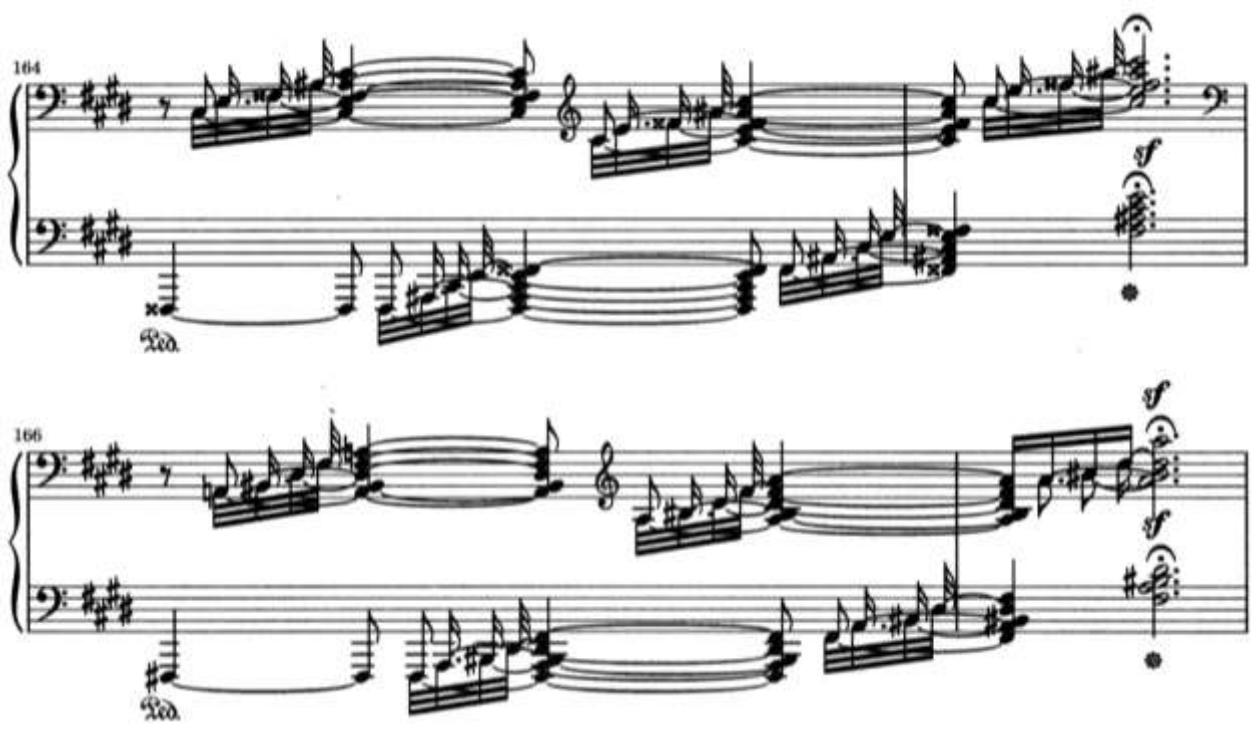

Figure 8. The axiomatic singularity of the Third Movement of Beethoven's Piano Sonata Opus 27. Measures 164-167 represent a unique classical artistic-type of pinch effect that is present throughout the entire sonata from before the initiating measures of the first movement until after the end. This is the type of singularity that should resonate throughout the future LaRouche New Just World Economic Order.

4. A FEW HISTORICAL HIGHLIGHTS OF THE PINCH EFFECT

The crucial question of the instability became the focus of the Fusion research work for several decades following and Bostick formulated the crucial ambiguous state of the thought experiment in the following manner: "On the same time scale on which the stability is lost, the pinch is heated. In making a practical thermonuclear machine of the pinch type, one must therefore arrange for the plasma to gain energy fast enough to overcome radiation losses, but not so fast as to destroy pinch stability in times insufficient for appreciable fusion to occur." (Bostick, ***Pinch Effect Revisited***, IJFE, Vol. 1 No. I, p. 14.)

This was both a political and an epistemological problem of the first order, because, politically speaking, the pinch is not always successful. What Bostick described was both a practical result of plasma physics and one of the greatest mental acrobatic results of creative thinking of the 20th Century. He compared the competing research teams as performers in a three ring circus. As he put it: "One must recognize that the pinch effect research at this moment (1956) was not a side show to CTR circus involving the stellarator, Ogra, mirror machine acts: the pinch effect was **THE** featured show in the **MAIN RING**." (Bostick, ***Pinch Effect Revisited***, IJFE, Vol. 1, No. I, p. 12)

However, by 1963, it was "gradually conceded" for practical reasons that the research on the pinch effect was not going to succeed in accordance with monetarist timing of delivery expectation. One of the practicalities was that mathematics could not deal with turbulence. The other practicality was the idea that turbulence was an unfortunate phenomenon that had to be eliminated at every opportunity. So, the best way to get rid of turbulence was to stop the funding. As usual, this monetarist timing was wrong. That was when "the leaders of the CTR programs in various countries eventually decided that a self-pinched plasma column had no future as a CTR magnetic-confinement fusion reactor, and financial support for pinch-effect research came to be drastically curtailed and in some cases eliminated." (Bostick, ***Pinch Effect Revisited***, IJFE, Vol. I, No. I, p. 16.)

This is when the funding began to flow out of the pinch effect research to go into the Tokamak concept and shifted the orientation towards ***eliminating the instabilities instead of controlling them***. Shutting down funding for the Center for Turbulence Research was an axiomatic mistake. The error was to refuse to recognize that the function of turbulence in nuclear physics was the analogue of an axiomatic shift in economics. During his entire career, American physicist Richard Feynman had identified turbulence as "the most important unresolved problem of classical physics." Half-joking on the matter of turbulence, Feynman reported to the British Association for the Advancement of Science: "I am an old man now, and when I die and go to heaven, there are two matters on which I hope for enlightenment. One is quantum electrodynamics, and the other is the turbulent motion of fluids. And about the former I am rather optimistic." (Parviz Moin and John Kim, ***Tackling Turbulence with Supercomputers***, http://www.stanford.edu/group/ctr/articles/tackle.html) Moreover, the Russian side of the pinch effect history still remains to be written.

5. THE EVOLVING PLASMA UNIVERSE AS A LIVING PROCESS OF THE FUTURE

"The intention of the future is always to change the past." Dehors Debonneheure

Consider that a galaxy is an actual living process that is generated by plasma. When in 1923 Langmuir borrowed the term "plasma" from the medical domain to apply it to the galactic domain, it was not simply because the processes of ionised material were "life-like." He realized that electromagnetic developments were processes that reflected the living principle at the level of the galaxy, and which had greater long-lived extension than on earth.

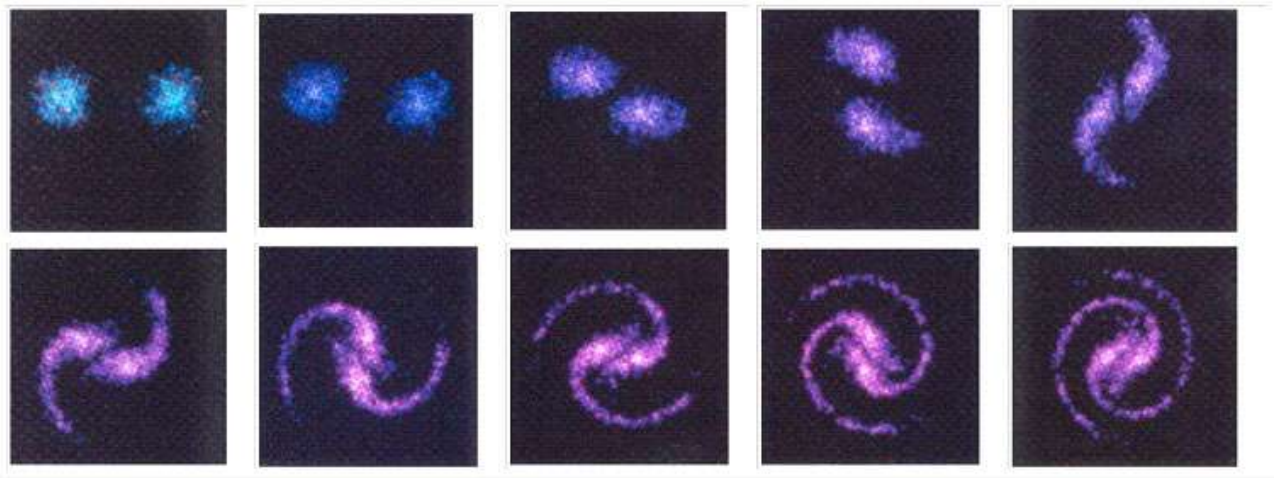

Figure 9. Anthony L. Peratt, ***Plasma Cosmology***, Los Alamos National Laboratory. 1986. Plasma simulation of a barred galaxy evolution through Birkeland filaments. The two interacting galactic plasma blobs on the upper left are 260,000 light-years apart and are being transformed into a single spiral galaxy. The ten snapshots represent a time-span of nearly 1 billion years. How time changes!

The idea of a computerized simulation of a galaxy formation was developed by a student of Alfvén, Anthony L. Peratt. In 1986, Bostick updated his 1958 research paper on ***Possible Hydromagnetic Simulation of Cosmical Phenomena in the Laboratory*** under the title Experimental Study of Plasmoids in which he demonstrated that by "firing several sources simultaneously, it is possible to simulate the production of spiral galaxies and barred galaxies." Alfvén attended Bostick's presentation at the University of California Radiation Laboratory, Livermore, California, and during the discussion period he asked Bostick if he could "find a relevant ***criterium*** for the existence of plasmoids in astrophysics." Bostick responded by saying: "The speeds we have are comparable with the astronomical speeds; one can say that we have the same order of magnitude in the speed situation. Concerning the densities we are way out by a factor of 10^{15}. All these things have to be worked out more in details." (Bostick, Experimental Study of Plasmoids , p. 98.) It was at that time that Peratt began to develop his computer simulation of a plasma experiment that replicated a spiral-galaxy from the rotation of two quasars. When scaled to the

appropriate cosmic magnitudes, the frame of the physical space-time laboratory simulation showed that the interaction lasted the proportional lifetimes of quasars, which are 10^8 and 10^9 years. Again, this is an irony of ***relative-proportional-plasma-space-time-reversal.***

The concept of the Birkeland amperian currents generated as force-free filaments of increasing galactic strength began with ***The Norwegian Aurora Polaris Expedition of 1902-1903***, when K Birkeland discovered, for the first time, that aurora borealis originated from the sun as opposed to from earth, like everyone thought at the time. However, in 1986, it was Winston Bostick who discovered in his laboratory that the spiral galaxy and the barred spiral galaxy were efficient ***unipolar generators*** that transformed gravitational energy into rotational energy, and that the whole process generated ever-increasing magnetic energy. As a result, Bostick showed that the magnetic forces of the galaxies were much greater than gravitation, and he concluded that "the consequent repulsive mutual magnetic induction between neighboring galaxies thus produces the Hubble expansion without recourse to the currently popular refuge of the 'Big Bang.'"(***Stockholm, August 1956, Revisited***, p.71.) Bostick confirmed in laboratory what Alfvén had reported; that the "Big Bang" theory was nothing but a fallacious argument that Abbé Georges Lemaitre had concocted in 1927 in order to accommodate his theological convictions.

While plasma physicists are busy examining the physical results of their experiments, they cannot help but to seek in their minds for the conducting mechanisms. Although they may often times be blinded by the details of their empirical data and their visual apparatus, they never forget that the creative process of plasmas is a matter of mind that is foraging the future. They do not live in the present, they live in the future, and, when they discover that the behavior of plasmas correlates with the great galactic processes of the past, their sense of time becomes completely transformed, because they realize that within the few microseconds their plasma takes to develop in the small, the pin-point camera of their machine projects onto the wall of Plato's Cave the moving shadows of millions of years of galactic change into the future. This is what a laboratory plasma does: it actually projects your mind millions of years back and forth from the future.

Since this idea of living in the future has never existed before as a state of existence for mankind as a whole, and its full effect on mankind has not yet been historically realized, the plasma physicist has the moral responsibility to develop in the laboratory of his own mind, and for the rest of mankind, the dynamic flow of how the future changes the past. This is how the not so mysterious self-generating process of ***unipolar induction*** works, because you afterward generate more out of it than you have previously put into it. Such is the nature of the future changing the past in a plasma universe. The reason why the future's intention is always to change the past, and not the present, is because the present does not exist as such. From the standpoint of the future, the present is always the past, and most emphatically, the oligarchical past that must be shed from that future. And that is what has to be changed by means of this ***unipolar induction*** process.

The idea of ***unipolar induction*** is best understood as Weber developed it in his 1841 paper in which he coined that name. ***The process consists in increasing electrical voltage through a conductor moving around a magnetic field, and inversely, through a magnetic field moving around an electrified conductor, both acting at right angle to each other.*** Unfortunately, modern engineers have no

understanding of this process at all which they attribute to the British reductionist Faraday. As a result, they don't understand why this self-inducing energy generating process demonstrates how higher energy flux-densities are created in the universe as a whole. Bostick insisted on this point when he applied the generation of ***unipolar induction*** to the plasma focus:

> "The circuit (of ***unipolar induction***) thus provides an avenue and instrumentality for Nature to engage in equipartition between rotational kinetic energy and magnetic energy. The Stevens' experiments (Bostick 1986) with the plasma focus which shows the current sheet in the plasma focus to consist of plasma-concentrated, paired, Beltrami-like, vortex filaments, where local magnetic energy density and rotational kinetic energy densities are equalized, caught the theoreticians by surprise. To the best of the author's knowledge, no one during the 35 years that the pinch effect had been known and the five years (1961-1966) that the plasma focus had been known predicted that such a beautiful morphological path to energy equipartition would be played out in Nature's plasma focus theater. If Nature is capable of so easily outwitting the theoreticians in the matter of plasma focus and the pinch, there is little to prevent her from doing so in the galaxy." (Bostick, ***The Hubble expansion as ascribed to mutual magnetic induction between neighboring galaxies***, Laser and Particle Beams, Vol. 6 Part 3, 1988, p. 405.)

Thus, since the creative process of the human mind is the paradigm of how change is determined in the laboratory of one's mind, one may consider the following hypothesis. A future matter of mind project to be considered in laboratory might be to determine how a ***unipolar induction*** process such as generated by Birkeland force-free current filaments might be used as magnetohydrodynamic pathways for space travel between galaxies. The fuel, of course, would be tapped directly during travel time.

CONCLUSION: THE SOLUTION TO THE BRIGHT-NIGHT-SKY PARADOX

It is interesting to note that throughout history, most people will believe that black is white or that day is night, because of their enslavement to sense perception. In 1610, Kepler posed the following paradox: "If the universe had an infinite number of stars, wouldn't the dark sky of night be as bright as day?" Kepler was teasing his fellow man, and more specifically the Catholic theologians of his days who had argued that the universe had to be finite and required a beginning, a boundary, and an end, in order to justify the oligarchical Theology of Thomas Aquinas. The argument was made that the universe had to be ***finite and bounded,*** otherwise an endless number of stars would light up the night sky as bright as day. Big bangs, black holes, and dark matter were also the fruits of similar, but more recent oligarchical luminary arguments.

In reality, the argument was not at all based on the underlying assumption that the universe was finite, but that it was a "visual universe." On the other hand, the paradox is immediately resolved when the real universe is understood as a ***finite, yet unbound*** creative process of "***knowledge expansion***," as Alfvén had established. Moreover, when Alfvén stated that the real universe was 99.9% plasma, he was

not speaking of the "visual universe," but of a universe that is predominantly a matter of mind. It is in that sense that the future is rapidly becoming the new residence of mankind.

In that sense, therefore, understanding this new principle of time does not mean that man is merely required to scrutinize the electromagnetic spectrum, which accounts for the complete array of living radiations that galaxies emit before stars are ignited into visible light, and after they have faded from visible sight. Man must also, most emphatically, recognize himself as the only creature of this universe who has the God-given power of developing this top down ***relative-proportional-plasma-space-time-reversal-process*** between the earth and the next anti-entropic horizon of the heavens. That must become the new direction of the Noosphere. It is, therefore, man's moral duty and responsibility to improve on building that future eternal residence from the top down, but only by remaining on top of it.

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