A TRIPLY-CONNECTED HIGHER HYPOTHESIS

A higher hypothesis of spiral action with Cusa, Leibniz, Gauss, Einstein, and Fert

By Pierre Beaudry, 4/24/2016

FOREWORD

This report is about the limit of knowledge; that is, about the fine line between what I know and what I don't know. And, the reason why I have to connect what I don't know into what I already know is because, otherwise, if I don't, I will never know how far I can go into investigating new domains and new ideas. So, the first question that I must ask myself is: "What is the external boundary of what I know, and how does what I don't know fit into it from the outside?

Let's stop a minute and reassess where we are in this investigation of Cusa and Leibniz. In the recent papers I focused on what is not known nor could be known, i.e. God, perfection, etc. Here, I intend to investigate what is known, can be known, and must be known. Later, I will bring these two opposites into a unified field, hopefully, in the delightfully ironic way that Cusa did in his ***De Docta Ignorantia***. (The Doctrine of Ignorance, the Knowledge of Ignorance, the Knowledge or Doctrine of What is Not Known, Learned Ignorance, the Unlearned Doctrine, the Knowledge of What's Not There, etc.)

INTRODUCTION

> ***"A new scientific truth does not as a rule prevail because its opponents declare themselves persuaded or convinced, but because the opponents gradually die out and the younger generation is made familiar with the truth from the start."*** Max Planck

This report is investigating the following higher hypothesis: In a triply-connected electromagnetic field system, like the Magnetosphere of the Earth, there exist two fields acting in opposite motions, one electrical and the other magnetic, which are coaxed into a unified position by a third field, that of gravitation, whose role is to eliminate the differences between the other two. Such a higher hypothesis may appear to be an impossible task to prove, but, if something is not impossible, it is probably not worth attempting to explain.

In our galaxy, there are also three motions which are (*a*) the spiral galactic motion of the Sun, (*b*) the solar orbital motion of the Earth, and (*c*) the axial spin of the Earth. Similarly, in the human mind, there also exists a triply-connected motion of least action causing transformations of axiomatic ideas. This motion is based on three principles of action which are (*a*) Corinthian I, 13 reflected in the Mazarin principle of the benefit of the other of the Peace of Westphalia, (*b*) the Leibniz principle of sufficient reason of the Monad, and (*c*) the Cusa-Gauss principle of congruence of biquadratic residues.

My question is: Is this triply-connected form of axiomatic action congruent with Albert Einstein's Theory of Special and General Relativity and with Albert Fert's discovery of Giant Magneto Résistance (GMR), as a higher hypothesis is congruent with hypothesizing the higher hypotheses of what Lyn defined as the domain of all classical motivic thorough-composition?

1. ABOUT THE GALACTIC TRIPLE-CONNECTEDNESS

"Believe nothing that for which you cannot give yourself a constructive proof."

Lyndon LaRouche

As I have previously reported, there are three forms of circular action within the Val Allen Belts system, which act on each other in such a manner, that they create singularities which cause anti-entropic increases in energy-flux-density, from the top down, into all living processes on Earth.

Such a complex curvature of space-time is very difficult for scientists and ordinary citizens to understand, including myself, because, like public opinion, the world of physics conceives of the physical world within the logical framework of continuity and simplicity of motion, within a very reductionist sense perception of time, whose assumption is that it is the past moment which causes the present moment to exist, and the present moment which causes the future moment to come. For them, the past is always what determines the future, and there is no way to go around that. People have a hard time conceiving of a complex spiral action with changes in different directions at the same time.

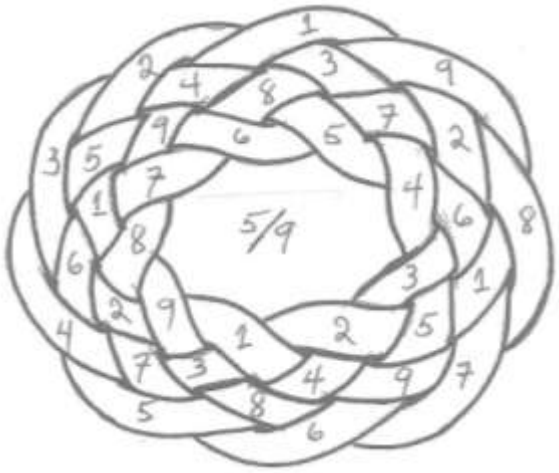


Figure 1 The Solfège Torus wave function with a P/T ratio of 5/9. This wave function shows how the Treble and Bass clefs work as a clockwise wave series of five units per wave, moving 1 to 5 to 7 to 8 to 4 to 2, and back to 1; thus, leaving out 3, 6, and 9 to be resolved counterclockwise also starting from 1. The process reflects the Gaussian principle of "***congruence***." See my report: **THE SOLFEGE TORUS**.

In modern times, Carl Friedrich Gauss was the first to understand this complex domain process as belonging to a higher epistemological domain of the human mind, which he expressed simply as a principle of "***congruence***" in the very first article of ***Disquisitiones Mathematicae***, where he stated: "**1. If a number *a* divides the difference of the numbers *b* and *c*, *b* and *c* are said to be congruent to *a*; if not, *b* and *c* are noncongruent**." (Carl Friedrich Gauss, ***Disquisitiones Arithmeticae***, New Haven, Yale University Press, 1966, p. 1.) He was followed primarily by Riemann and Einstein.

This discovery of principle among numbers does not imply that the Universe is mathematical or logical; that would be a very stupid and arrogant assumption to make. Too many mathematicians have made that mistake. So, I advise to stay away from such mathemagicians, unless you want to reduce your thinking to a deductive method of reasoning as in the Euclidean Q.A.D., and think with a crooked mind for the rest of your life. The worst aspect of this form of brainwashing comes from the Newtonian-Cartesian-Bertrand Russell form of action-reaction which destroys your creative ability to think from the future.

It is not mathematics which measures the universe; it is an ordered space-time measure of change which measures the universe and makes it progress. And the way to change is with the spiraling multiply extended motion of physical-space-time; that is, the Cusa-Leibniz-Gauss-Riemann "quantum" of least action. Here, Gauss is in agreement with Cusa and Leibniz who had also discovered a similar "congruence" in their respective researches on God and on the notion of preestablished harmony in the universe. I refer more specifically to **DE CONIECTURIS** by Cusa, and **THE MONADOLOGY** by Leibniz.

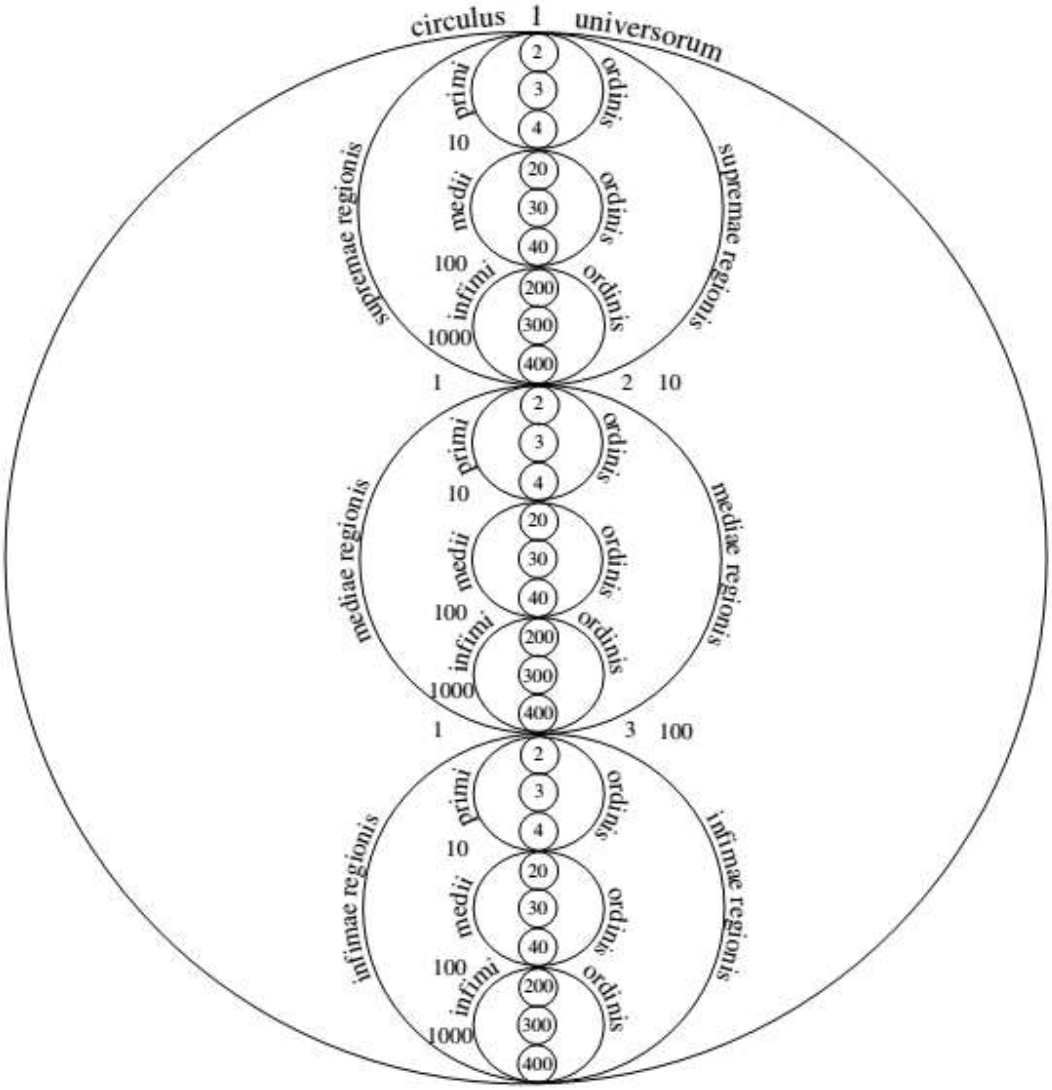


Figure 2 Cusa's idea of a contracted multiply-connected universal least action as a contracted reflection of the Trinity to the third power. "If, as the subject-matter requires, you look at the diagram with your mind's eye, then mysteries that are surely important and that are hidden to many will be made known to you." Cusa, **DE CONIECTURIS.**

What Cusa is expressing with this diagram (**Figure 2**) is the idea of how the triple connectedness of the universe works in an arithmetic form of interplay

contracted from the idea of the Holy Trinity within the enfolding unity of three numbers 3, 9, and 27. This is an elementary congruence among three numbers that Gauss later took to a higher epistemological level in his papers on biquadratic residues.

Cusa showed, in a playful Lydian manner, that all of the numbers from 1 to 40 can be derived from variations of adding and subtracting combinations of numbers 1, 3, 9, and 27. Gauss showed, in a similar playful manner, that the indivisibility of two numbers, relatively prime to each other, that is relatively dissonant to each other, can be made congruent to a third by transforming the residues of powers of the smaller one (Poloidal) with respect to the larger one (Toroidal) into wave motions. See my report on **NICHOLAS OF CUSA AND THE PRINCIPLE OF CREATIVITY**.

The Gaussian discovery implied that from the standpoint of prime number relationships there existed another triply-connected form of congruence among three numbers, which is also in concordance with the Cusa Lydian principle of the Trinity, and which was reflected, most emphatically, inside of the Galactic type of ***triply-connected spiral action***.

The reason why such an epistemological approach to a dynamic motion of the human mind is difficult for mathematicians to understand is because the framework from which such a triple motion must be conceived of is invisible to sense perception and is, therefore, inadequate for a deductive mind which is used to thinking of a physical object as something that is perceived to exist in itself, in empty space, and is carried without changing by a single motion into only one direction at a time.

Three different simultaneous motions imply the introduction of discontinuities, inversions, and changes, which all take place in different directions. Similarly, a single body being submitted to three different actions will undergo discontinuities, inversions, and changes. Such a triply-conjugated action also implies a playfulness that most scientists are afraid to engage in, because they have to solve the three-body-problem as a matter of course.

Such playfulness has been most characteristically employed by Bach, Mozart, Beethoven, Schubert, Schumann, Brahms, Mendelssohn, etc., for the purpose of classical artistic composition, and whose most elementary sequence of Lydian modality can be found in the ***First Prelude in C-Major*** of Bach. That is the modality which has been identified by Lyn as derived from the principle of the higher hypothesis of thorough-composition:

> "The Beethoven Opus 13, like the Opus 111, like the Mozart *Ave Verum Corpus*, is an example of the same method (i.e., higher hypothesis) of ordering of successive modalities, the which one had met in earlier applications of this Bach-rooted discovery, such as Mozart's six Haydn quartets and the K.475 keyboard Fantasy. Mozart's derivation of the role of the Lydian mode in the works such as that *Ave Verum Corpus*, or the significance of that mode in Beethoven's Opus 132, are expressions of the hereditary pervasiveness of that principle of musical higher hypothesis, the which Wolfgang Mozart adduced from this study of Bach's *A Musical Offering."* (Lyndon LaRouche, ***The Essential Role of 'Time-Reversal' in Mathematical Economics*****,** Part I, The Schiller Institute, October 3, 1996**)**

What Lyn developed during the period of the nineties represents the most advanced form of hypothesizing ever presented in the history of science to this day. Not only did he use Plato's ***hypothesizing of the higher hypothesis*** as the proper universal form of scientific knowledge for all time, but established, performatively, the dynamic by means of which a higher hypothesis is also a member of a series of ***hypothesizing the higher hypothesis*** which determines, in the simultaneity of physical eternity, every other higher hypothesis within its subsuming power in a triply-connected manner. This is how change by time reversal becomes the characteristic action of universal self-development.

2. EINSTEIN'S INSIGHT INTO THE HIGHER HYPOTHESIS.

> ***"Unless you include in your knowledge the dimensionality of what you don't know, you won't really know anything, because you will always be missing the limit of what you know."***
>
> Dehors Debonneheure

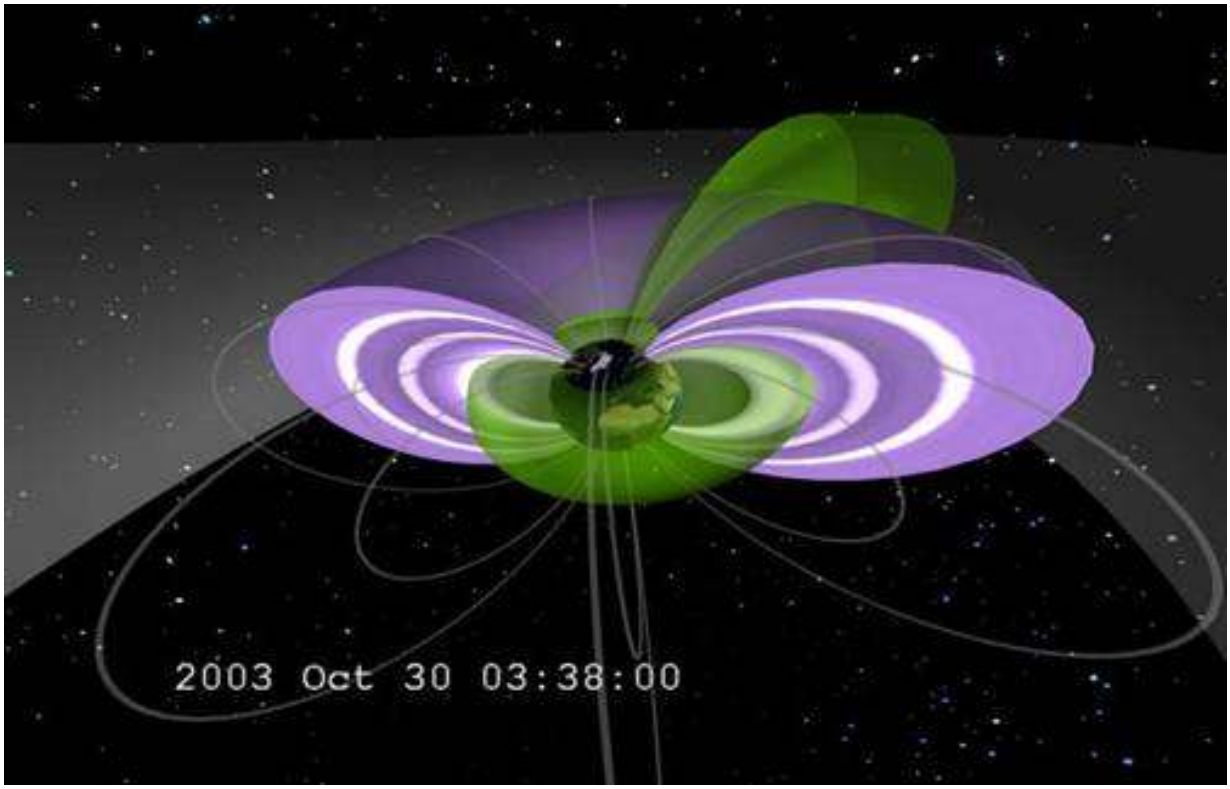


Figure 3 **NASA Model of Earth's 3 Major Fields** : An artist rendition of the triple form of least action among the Van Allen belts, the Magneto pause, and the Plasma pause.

The effect of generating a doubly-connected wave function like that of the Lydian torus, for example, causes an axiomatic change to occur when the curvature of physical space-time is transformed from a simple circular action to a doubly-connected cylindrical action; thus, the process requires that the mind go from the sense perception domain of Euclidean flat space to a Gauss-Riemann complex

space of negative curvature, similar to that resembling the surface of the empty center of a doughnut or the surface of a saddle. As a result, your notions of space and time are completely changed. Familiar things no longer look the same when conceived in different directions all at once, and your old deductive knowledge can no longer cope with such a new situation. In other words, you can no longer build three dimensional surfaces like Platonic Solids with two dimensional materials. Einstein identified such a change as follows:

> "In gravitational fields there are no such things as rigid bodies with Euclidean properties; thus the fictitious rigid body of reference is of no avail in the general theory of relativity. The motion of clocks is also influenced by gravitational fields, and in such a way that a physical definition of time which is made directly with the aid of clocks has by no means the same degree of plausibility as in the special theory of relativity."(Albert Einstein, ***Relativity: The Special and the General Theory***, translated by Robert W. Lawson, Mockingbird Classics Publishing, 2015, p. 131.)

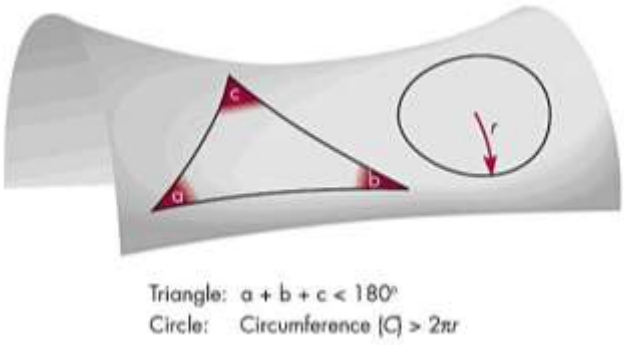


Figure 4 The projection of a triangle and of a circle onto a saddle surface of doubly-connected negative curvature shows that such a surface no longer exists in a Euclidean world, because space has changed to become anisotropic.

https://myweb.rollins.edu/jsiry/Einsteins_insights.html

Accordingly, objects in doubly-connected space change into two different directions at the same time and do not respond to what our sense perception is used to apprehend in the flat Euclidean universe of space and time. For example, sense perception apprehends the present as a non-existent passing point between the past and the future. However, the mind, on the other hand, can apprehend time in the simultaneity of physical eternity; that is, by including past, present, and future as one single continuum of transformation, at once, in opposite directions.

From that epistemological standpoint, the Euclidean plane is nothing but a reductionist sense perception view of the multi-dimensional universal domain of change. It is a crutch that humanity has been made to walk with for millennia in order to avoid change. The time has come to abandon such a crutch. In fact, both Newton and Euclid failed to understand the complex nature of the real physical universe for the same reason that they failed to apprehend Cusa's and Leibniz's notion of God. The case of the construction of the Pythagorean Theorem and the Meno doubling of the square demonstrates the point, as I have reconstructed in: **WHAT SHOULD HAVE BEEN THE FUTURE**.

This is the reason why Einstein emphasized that "God doesn't shoot pool." Einstein made a similar point about his principle of equivalence between inertial mass and gravitational mass by demonstrating that the curvature of physical-space-time can only be measured when space and time vary together. He wrote:

> "In contrast to electric and magnetic fields, the gravitational field exhibits a most remarkable property, which is of fundamental importance for what follows. Bodies which are moving under the sole influence of a gravitational field receive an acceleration, ***which does not in the least depend either on the material or on the physical state of the body.*** For instance, a piece of lead (heavy or massive) and a piece of wood (less massive) fall in exactly the same manner in a gravitational field (***in vacuo***), when they start off from rest or with the same initial velocity." (Ibidem, p. 84.)

The question is: Where does that acceleration come from? If gravitation does not depend on the action-reaction of masses at a distance, what does it depend on? How can three different galactic motions act on each other in such a way where they can determine their respective relative speeds as expressed differently in electrical, magnetic and gravitational fields?

During his 1971 Apollo 15 mission to the Moon, astronaut David Scott demonstrated, on location, that Galileo and Einstein were right in asserting that acceleration is the same for all objects subjected to gravity regardless of their

weight, even in the extreme case of a hammer and a feather. So, why is our sense perception so upset with this sort of experiment?

Figure 5 Astronaut David Scott of Apollo 15. **Play media**

The point to understand is that it is not the weight of objects which demonstrates the existence of gravitation; it is the negative curvature of change within the triply-connected motion of galactic-space-time. As Einstein noted in his discovery of the equivalence between inertial and gravitational mass, it is ideas which cause things to change from the outside and by similar non-linear processes. Why would the difference in weight of different objects falling with different accelerations matter, when their speed of fall is derived exclusively from a triply-connected motion which doesn't come from them? Einstein has a wonderful irony on this matter when he described the experiment of the man being pulled upward inside of a closed chest:

> "Relying on his knowledge of the gravitational field (as it was discussed in the preceding section), the man in the chest will thus come to the conclusion that he and the chest are in a gravitational field which is constant with regard to time. Of course he will be puzzled for a moment as to why the chest does not fall in this gravitational field. Just then, however, he discovers the hook in the middle of the lid of the chest and the rope which is attached to it, and he consequently comes to the conclusion that the chest is suspended at rest in the gravitational field." (Albert Einstein, ***Relativity: The Special and the General Theory,*** p. 89)

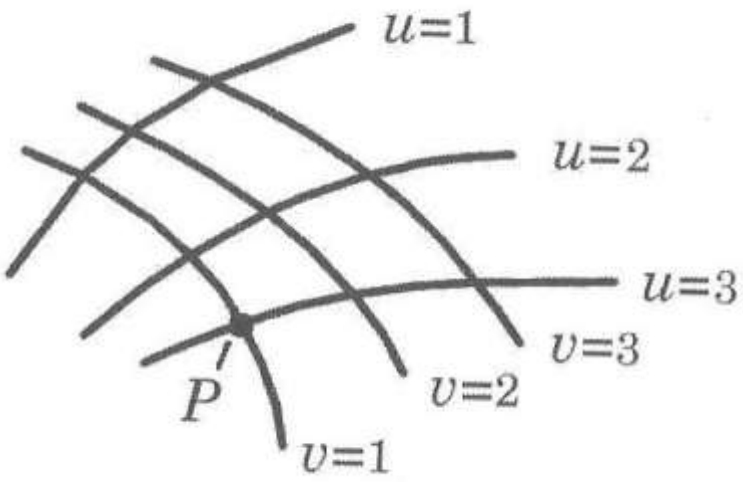


Figure 6 Changing Gaussian coordinates of negative curvature according to Einstein. (**Ibidem**)

3. THE CURVATURE OF THE PROPAGATION OF LIGHT AS QUANTA

It is in the domain of Cusa's ideas of man's knowledge of God as He knows us that the most important connection must be made between the nature of light in the physical universe and the human mind. The question, therefore, is: "How can I know myself as I am also known?"

Most emphatically, that ***connection*** is located in the relationship that Einstein made between the principle of relativity and the principle of the propagation of light. In fact, the Theory of Relativity has to do with the human mind and not with physical reality. Relativity is about how you think. As Einstein wrote in the previously cited book:

> "As a result of analysis of the physical conceptions of time and space, it became evident that ***in reality there is not the least incompatibility between the principle of relativity and the law of propagation of light,*** and

that by systematically holding fast to both these laws a logically rigid theory could be arrived at. […]

"There is hardly a simpler law in physics than that according to which light is propagated in empty space. Every child at school knows, or believes he knows, that this propagation takes place in straight lines with a velocity *C* = 300,000 kilometers / second.

"***At all events we know with great exactness that this velocity is the same for all colours [. . .] the velocity of propagation of light cannot depend on the velocity of motion of the body emitting the light. The assumption that this velocity of propagation is dependent on the direction 'in space' is in itself improbable.***" [The emphasis is mine] (***Ibidem***, p. 25-26)

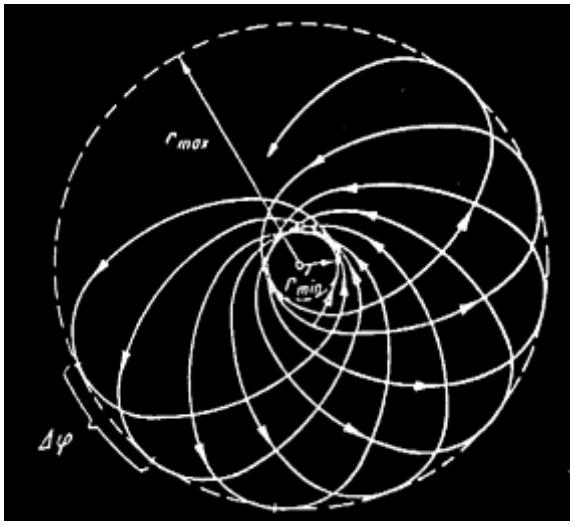
However, one more time, what we believe we know and what we know to be true are two different things. Here, Einstein is forcing us to shed our prejudice of sense perception. So my question is: Is it the multiply-connected motion of physical-space-time which causes light to bend? Is that what gravitation, electricity, and magnetism are reflections of?

Einstein was able to adduce the bending of light of distant stars from the vantage point of the variability of the gravitational field with respect to a triply-connected physical-space-time. Not only did Einstein overturn the simple-minded pairwise action-reaction physics of Galileo and Newton, but he also introduced a new non-linear conception of physical space-time in motion as a result of his insights. As he reported:

"Apart from this one [variation in the speed of Mercury's orbit about the sun], it has hitherto been possible to make two deductions from the theory which admit of being tested by observation, to wit, the curvature of light rays by the gravitational field of the sun, and the displacement of the spectral lines of light reaching us from large stars, as compared to the corresponding lines for light produced in an analogous manner terrestrially, i.e. by the same kind of molecule. I do not doubt that these deductions from

the theory will be confirmed also. [Confirmed by Eddington in 1919, and by Adams in 1924, respectively.]" (***Ibidem***, p. 137.)

Such anomalies in the curvature of light were proven to be correct by different people at different times, but not for the right reason. Most scientists have reduced Einstein's idea to some mechanical space bending effect, and in so doing, have neglected to identify the epistemological underlying assumption behind their experiments.



Similarly, one must consider the Mercury anomaly from the vantage point of a triply-connected epistemology, that is, from the standpoint of a doubly-connected toroidal process within the triply-connected galactic motion of the mind. Consider the artistic rendition of the Mercury perihelion precession as seen from the Earth against the background of the fixed stars; but with the assumption that the frame of the fixed stars is also moving.

Figure 7 The Mercury perihelion precession anomaly. The angular momentum is exaggerated. Source: **LANDAU and LIFSCHITZ (1967)**

The discrepancy in the orbit of Mercury is not caused by the pull of other planets, as Newton wrongly believed, but by the negative curvature of what has been interpreted as gravitational "frame dragging." (Einstein never used the expression "frame dragging.") Every planet has a similar toroidal curvature; however, Mercury being closest to the Sun has a quicker enveloping precession orbit, which has an orbital perihelion difference of 43 seconds of arc per 100 Earth years. The general relativity principle of such a gravitational negative curvature was supposed to be demonstrated by the 2004 launching of the Gravity Probe B satellite, but a 2008 **NASA report** concluded that the mission was unsuccessful.

The determination of the precessional motion of a planet is one of the most difficult observations to be made in astronomy and, consequently, it may have a great discrepancy with the theoretical determination of its motion. In a very daring report on the ***Explanation of the Perihelion Motion of Mercury from General Relativity Theory*** **(**Prussian Academy of Sciences, Berlin, November 18, 1915), Einstein demonstrated that the secular turning of Mercury in its orbital motion was not of 45 minutes of arc per Earth century, as it was observed to be by astronomers, but more precisely 43 minutes of arc in accordance with his Gauss-Riemann field equations. However, Einstein's demonstration was not made to assert the superiority of his geometrical approach to mathematics. It had another purpose altogether.

As I reported earlier in **THE PLATONIC SIGNIFICANCE OF EINSTEIN'S THEORY OF GENERAL RELATIVITY**, Einstein's intention was not only to demonstrate the validity of General Relativity, but also to demonstrate the epistemological validity of Plato's allegory of the Cave as applied to scientific knowledge. The truth to be restored, therefore, is that Einstein was not merely a physicist, but also a Platonic thinker whose purpose was to change the way people think.

An important part of this thought experiment came from a short paper that Einstein wrote in 1905 on the light quantum/photoelectric effect that he first published in ***Annalen der Physik***, Einstein wrote:

> "It seems to me that the observations associated with blackbody radiation, fluorescence, the production of cathode rays by ultraviolet light, and other related phenomena connected with the emission or transformation of light are more readily understood if one assumes that the energy of light is discontinuously distributed in space. ***In accordance with the assumption to be considered here, the energy of a light ray spreading out from a point source is not continuously distributed over an increasing space but consists of a finite number of energy quanta which are localized at points in space, which move without dividing, and which can only be produced and absorbed as complete units***. [Emphasis is mine]" (Albert Einstein,

Concerning an Heuristic Point of View Toward the Emission and Transformation of Light, Bern, 17 March 1905, Translation into English American Journal of Physics, v. 33, n. 5, May 1965, p. 2)

The reason why I emphasized the above section is because by throwing out the idea of continuity in the propagation of light, Einstein identified the epistemological condition for axiomatic changes both in the propagation of light and in the human mind, at the same time. Thus, let us examine the hypotheses of how the non-linear emission of light gets transformed in space-time as do the non-linear emission of ideas as ***gestalts*** in the human mind. This Einstein view of light as "quanta" is very close to the Leibniz idea of "monads," the nature of whose motion is to be "***never divided"*** and whose "***complete units***" are relatively closed on themselves. Quanta or monads reflect everything else in the universe.

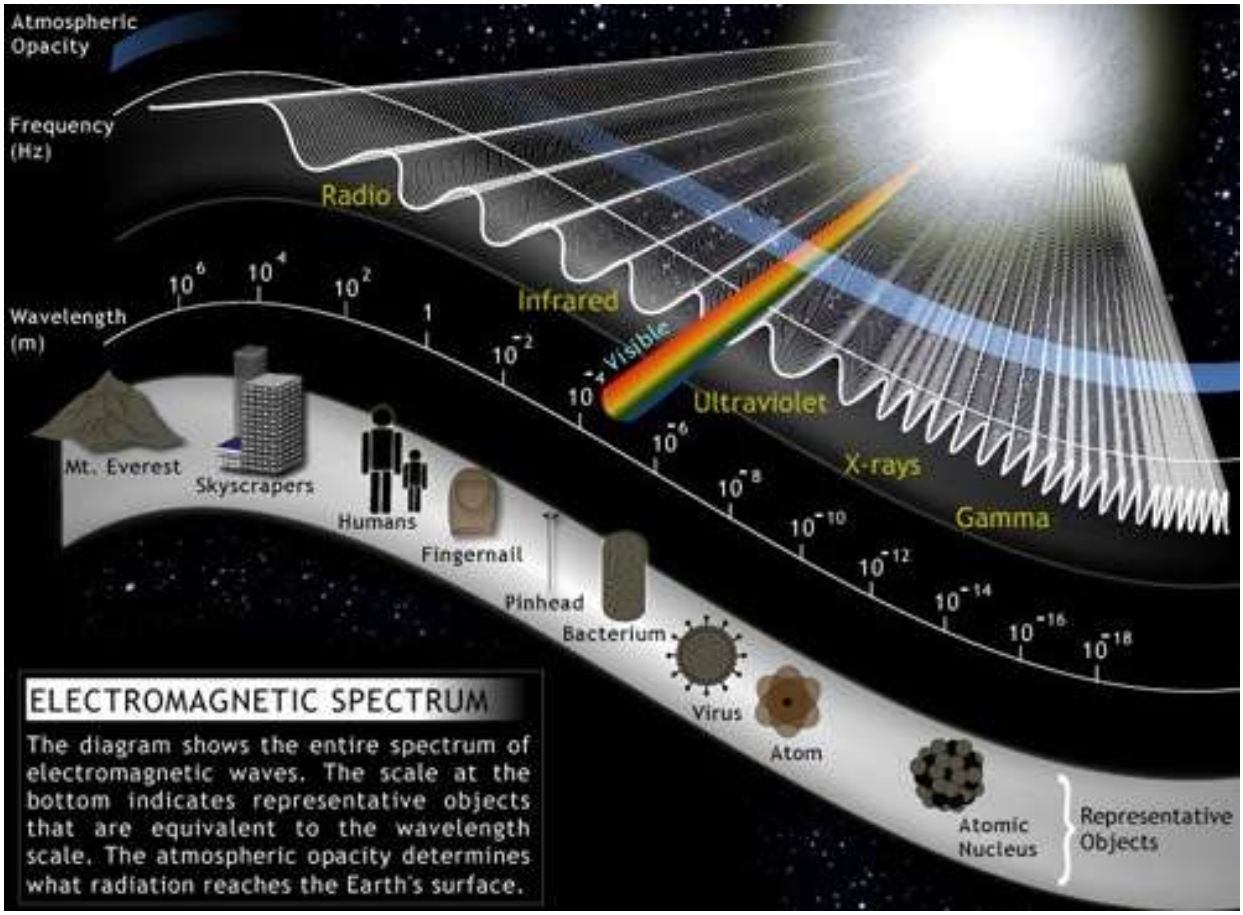


Figure 8 https://myweb.rollins.edu/jsiry/Einsteins_insights.html

As in the case of Leibnizian monads, there is "***fitness***" among the motions of quanta which comes from the fact that they affect other quanta and are also affected by them. It is such a "***fitness***" of effect, as identified by Leibniz, which expresses the universe as the best of all possible worlds; because if the parts did not fit the whole perfectly, there would be intervals of nothingness in the process of creation, and such a universe would not even be possible. This does not mean that the universe is homogeneous, continuously linear, and isotropic. On the contrary, the epistemological implications of this "monad" or "quanta" insight is that it has within itself a reflective process that replicates the creative process of the universe in an asymmetrical manner, as Cusa developed the idea in his many papers on God and, heuristically, in his diagram of the contracted image of the Trinity. (See **Figure 2**) From that epistemological vantage point, therefore, Einstein's hypothesis raises the question: "Why are quanta discontinuous in physical-space-time and how does that reflect the best of all possible worlds?" The answer to that question can be found in section 53 to 58 of Leibniz's MONADOLOGY. Leibniz wrote:

> "53. Now, since in the divine ideas there is an infinity of possible universes of which only one can exist, the choice made by God must have a sufficient reason which determines him to the one rather than to another.
>
> ***"54. This reason can be found in fitness, that is, in the degree of perfection contained in these worlds. For each possible has a right to claim existence in proportion to the perfection it involves. Thus nothing is entirely arbitrary.*** [My emphasis]
>
> "55. This is the cause for the existence of the best, which is disclosed to him by his wisdom, determines his choice by his goodness, and is produced by his power.
>
> "56. ***This connection of all created things with every single one of them and their adaptation to every single one, as well as the connection and adaptation of every single thing to all others, has the result that every single substance stands in relations which express all the others. Whence***

every single substance is a perpetual living mirror of the universe. [My emphasis]

"57. Just as the same city regarded from different sides offers quite different aspects, and thus appears multiplied ***by the perspective***, so it also happens that the infinite multitude of simple substances creates the appearance of as many different universes. Yet they are but perspectives of a single universe, varied according to the ***points of view***, which differ in each monad.

"58. This is the means of obtaining the greatest possible variety, together with the greatest possible order; in other words, it is the means of obtaining as much perfection as possible." (Gottfried Wilhelm Von Leibniz, **MONADOLOGY AND OTHER PHILOSOPHICAL ESSAYS**, translated by Paul Schrecker and Anne Martin Schrecker, The Bobbs-Merrill Company, Inc., Indianapolis, 1976, p. 156-57.)

The point that Leibniz makes, here, is that the universe is non-linear, and causality in the universe does not come linearly from the previous moment in time acting on the following moment, as Newton, Galileo, and the high priest of Cult of Apollo at Delphi, Plutarch, made believe in past history. Causality comes from the future, and progress in the universe depends on a transfinite process of increase in energy-flux-density of humanity as a whole. This means that human knowledge does not follow a linear time-line from the past, but a non-linear transfinite form of time reversal change from the future.

4. AN ANOMALY IN MAGNETORESISTANCE OF SPINTRONICS

This triply-connected galactic motion also means that the framework of homogeneous continuity and simplicity of space and time have to be overthrown and replaced by an appropriate conception of simultaneity of physical eternity, which encompasses past, present, and future in a single memory monad, and which

is moved only by time reversal from the intentionality of the future of mankind; that is, from the perspective of God's mind.

In other words, the most important notion of time is not the empty unidirectional instant called the present, which merely connects the past to the future; ***it is the anisotropic function of change by time reversal***. A good physical example of such a process can be found in the ***inversion anomaly*** of an electrical change of direction that takes place in Anisotropic Magneto Résistance (AMR), Giant Magneto Résistance (GMR), and Tunnel Magneto Résistance (TMR). Magnetoresistance corresponds to the change in electrical resistance of a conductor when an external magnetic field interferes with it to some degree.

In June 2015, an experiment from a team of researchers at ETH Zurich, led to the discovery of an anomalous occurrence of a change in direction of an electrical current with the inversion of electron flow in a metallic conductor.

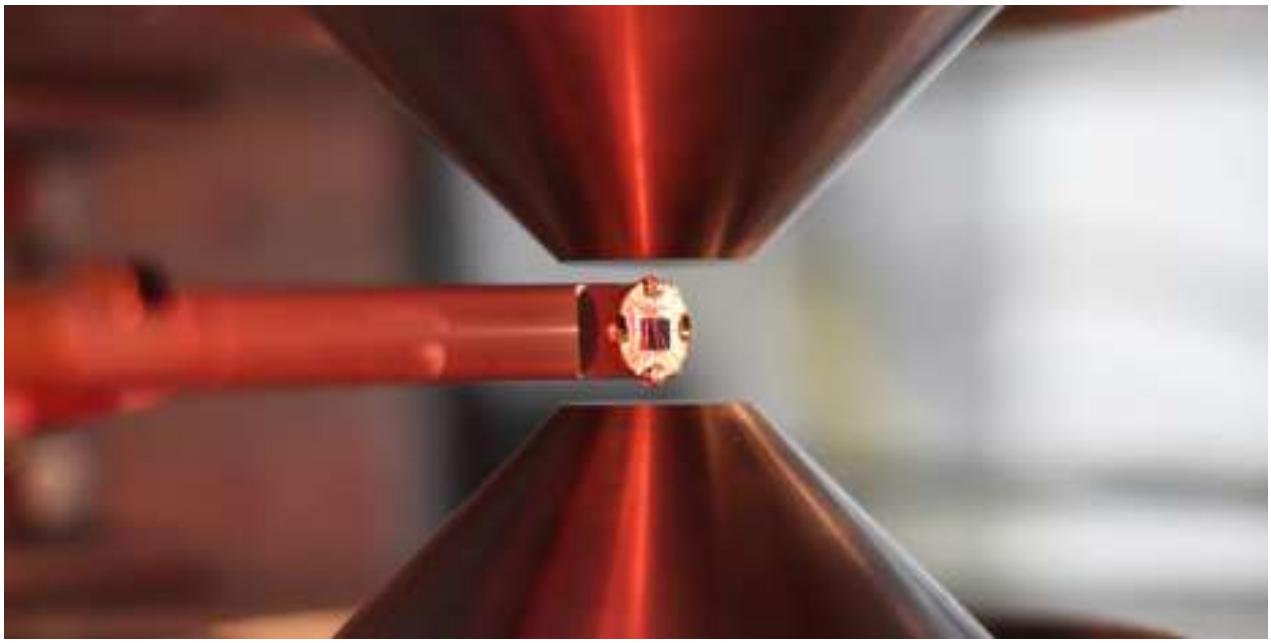


Figure 9 "A sample between the poles of an electromagnet. (Photo: Avci, Mendil and Gambardella / ETH Zurich)" **A new and game-changing magnetoresistance**.

Compare the discovery that researchers at Eidgenössische Technische Hochschule **(ETH) Zürich** made last year with an epistemological change in time reversal that includes all of future human existence and all of human memory, in the simultaneity of physical eternity. The ETH article stated:

> "The magnetoresistance of a conductive material normally remains the same when an electric current changes direction. 'However, a new magnetoresistive effect that we discovered changed when the electron flow was reversed,' Gambardella explains. 'This is very unusual in metals.' According to physical principles, these microscopic processes should remain independent of the direction of electrons in a metallic conductor." (Barbara Vonaburg, **A new and game-changing magnetoresistance**.)

Compare the result of this discovery with Cusa's, Leibniz's, and Gauss's view of how the human mind has to be known and understood from the vantage point of how God created mankind as the most "***fitting***" species giving direction to the universe under His guidance. Some people may think I am flying too high with this one, but, they are wrong, because, as far as you can see when you stand on the shoulders of these past giants, the application fits the epistemological principle of Plato's anamnesic time reversal process of mind.

GMR effects are today commonly used in many computer hard drives; but, this ETH Zurich discovery has not yet found any application in the new field of spintronics that Albert Fert had discovered in 1988, and the new domain of magnetic random access memory (MRAM) that is being developed today. You can find a performative animation about the magnetoresistance discovery Graphs of Albert Fert about GMR, **here**: Fert opened his Nobel Lecture of December 8, 2007, with an overview stating:

> "Electrons have a charge and a spin, but until recently, charges and spins have been considered separately. In conventional electronics, the charges are manipulated by electric fields but the spins are ignored. Other classical technologies, magnetic recording for example, are using the spin

> but only through its macroscopic manifestation, the magnetization of a ferromagnet. This picture started to change in 1988 when the discovery of the Giant Magneto Résistance (GMR) of the magnetic multilayers opened the way to an efficient control of the motion of the electrons by acting on their spin through the orientation of a magnetization. This rapidly triggered the developments of a new field of research and technology, today called spintronics and, like the GMR, exploiting the influence of the spin on the mobility of the electrons in ferromagnetic materials. (Albert Fert, **THE ORIGIN, DEVELOPMENT, AND FUTURE OF SPINTRONICS**, December 8, 2007, Unité Mixte de Physique CNRS/Thales, 91767, Palaiseau, and Université Paris-Sud, 91405, Orsay, France.)

As Fert put it: "This physics can be described by new types of transport equations in which the electrical potential is replaced by a spin and position dependent electro-chemical potential." (Ibidem. p 68) In his concluding remarks, Fert gave a nudge to future researchers by adding this crucial direction into the future: "Another perspective, out of the scope of this lecture, should be the exploitation of the truly quantum mechanical nature of spin and the long spin coherence time in confined geometry for quantum computing in an even more revolutionary application. Spintronics should take an important place in the science and technology of our century." (**Ibidem**, p. 78) If Fert's "spintronics" proves to be congruent with my epistemological hypothesis, then, this is definitely the direction of the future.

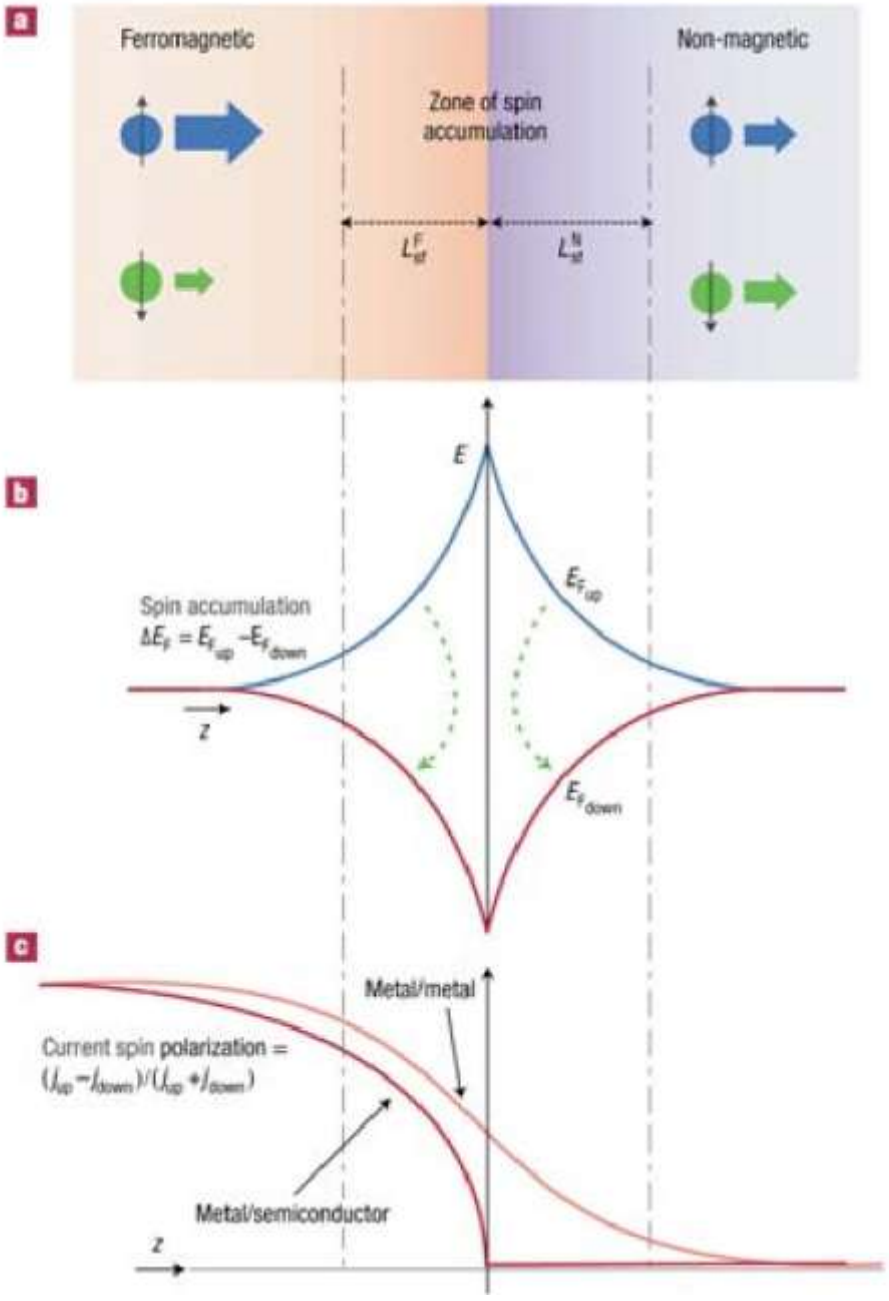


Figure 10 "Schematic representation of the spin accumulation at an interface between a ferromagnetic metal and a non magnetic layer. (a) Spin-up and spin-down currents far from an interface between ferromagnetic and nonmagnetic conductors (outside the spin-accumulation zone). (b) Splitting of the chemical potentials $E_F\uparrow$ and $E_F\downarrow$ at the interface. The arrows symbolize the spin flips induced by the spin-split out of equilibrium distribution. These spin-flips control the

progressive depolarization of the electron current between the left and the right. With an opposite direction of the current, there is an inversion of the spin accumulation and opposite spin flips, which polarizes the current when it goes through the spin-accumulation zone. (c) Variation of the current spin polarization when there is an approximate balance between the spin flips on both sides (metal/metal) and when the spin flips on the left side are predominant (metal/semiconductor without spin dependent interface resistance, for example)." (**Ibidem,** p. 67)

5. THE ANOMALOUS EXPERIMENT OF ANAMNESIA & CHIRALITY

"*Remember thyself*."
Dehors Debonneheure

What is in your mind when you think of your mind? Probably nothing, because you probably think of your mind as an empty vessel or some sort of container, which contains all sorts of facts, but which is like an empty shell when you leave the facts out of it. However, there is another way to look at your mind. Your mind is nothing else but what is in it; that is, everything that you know is your mind, and you are what you think.

If I ask you, what goes on inside of your mind when you try to examine how it works, you will probably try to recall some sort of activity which involves examining yourself and others, or remembering something you have done or learned before. If that is the case, then, your mind is nothing else but your active memory.

If you think as in the first case, you are thinking like Descartes. If you are thinking as in the second case, you are thinking like Plato. And, if you think like Plato, you will probably discover that what takes place in your mind is some sort of activity of trying to recall something that you are attempting to put in front of you for examination as if reflected from a mirror. That is called recollection or anamnesia (***ανάμνησίς***). Remember what Socrates said about such a practice: ***"Life without this sort of investigation is not worth living."*** (Plato, ***Apology, 38a***.)

Moreover, if you do the experiment of the mirror, you will discover two very different activities: your mind ***as it knows*** and your mind ***as it is known***. When the two are together, your thinking is performative; otherwise, it is purely descriptive. In other words, if you know yourself from both the ***inside out*** and from the ***outside in*** at the same time, you are doping good. However, here is the rub. By doing that, you have entered into a very paradoxical situation, because the two images you have of your mind don't match; the two don't fit into each other. They cannot be identical. They look alike, but they are inversions of each other. The experiment is such that it is as if you were looking at someone else in a mirror, in a situation where the two can touch each other, but cannot penetrate each other. You are in a paradoxical state and you cannot go, as Alice did, into the mirror and sort out that axiomatic difference. Why not?

Figure 11 "Why are you giving me that look?"

Don't think that the experiment of Lewis Carroll is insignificant; it is significant to the utmost, because it calls to your attention how the creative process is able to solve the paradox of going behind the mirror. Let's do something similar and have a look at some of the things that Carroll implied in his ***Alice in Wonderland***.

First of all, what you are looking at in a mirror is someone else than yourself. That's very easy to realize, because what you discover is not as you are, but as you appear to be to yourself; that is, as your other. That image is opposed to you and is not even the way you are perceived by others. No one sees you like that except yourself. It is simply your inversion, and working out this paradox can be a lot of fun. Let's see what comes out of that paradox.

When you look at yourself in the mirror, you don't see yourself; you see an inverse image of yourself. For instance, the image of your right hand is your left hand in the mirror, and the mirror image of your right hand is actually the reflection of your left hand. The image of your hands doesn't match with your real hands. Why not?

Not only does the mirror imply a face to face rotation, but it also implies a spherical opposition where the position of one cannot be identified with the other. That's what is called chirality; that is, the asymmetry of two similar things that cannot be superposed or coincide with each another. Thus, chirality implies three types of inversions rolled up into one: left and right, up and down, and in and out.

The differences between those three inversions are important, because the only thing you appear to be able to know about yourself is your inversion; that is, the outward part of yourself. The irony, here, is that you cannot see the inward part of yourself. You can only see the outward part of yourself, and the two don't fit, because you know that the image that you see is not who you are.

Take the example of the image of the Mars crater in **Figure 12**. When you rotate the left image clockwise or counter-clockwise, not only do your eyes see the left go to the right and the top go to the bottom, but they also see the out going in. This is a real anomaly because the two images are completely different and cannot

be identified with each other. One cannot coincide with the other for the same reason that a left hand glove cannot be worn on a right hand.

To be more to the point, there is an immeasurable measure between them, a barrier that cannot be crossed because there is no ***fitness*** between you and your image. If you don't believe me, just try to map the left image of **Figure 12** onto the right image. It cannot be done because one surface is the outside and the other the inside, and the two don't match.

Figure 12 The central peak of the Mars Nicholson Crater (left). Why does the upside-down view of the same image (right), appear to be a hole in the ground?

The reason for this anomaly is because the clockwise and counter-clockwise motions of two actions cannot coincide. That is why the primary motion of the mirror is like a circular motion. In a sense, light quanta, mirror image, spiral action, visual perception, and mind are very much alike in their respective activities, because they don't just have left and right handedness, they also have an inside and an outside, which live together in the unity of opposites; that is, in chirality. The best example I can think of for this sort of unity of opposites is found in the nature of the glove: If you turn a left-handed glove inside out, you will get a right-handed glove, and vise versa. When you think of it as an inside and outside object, a single

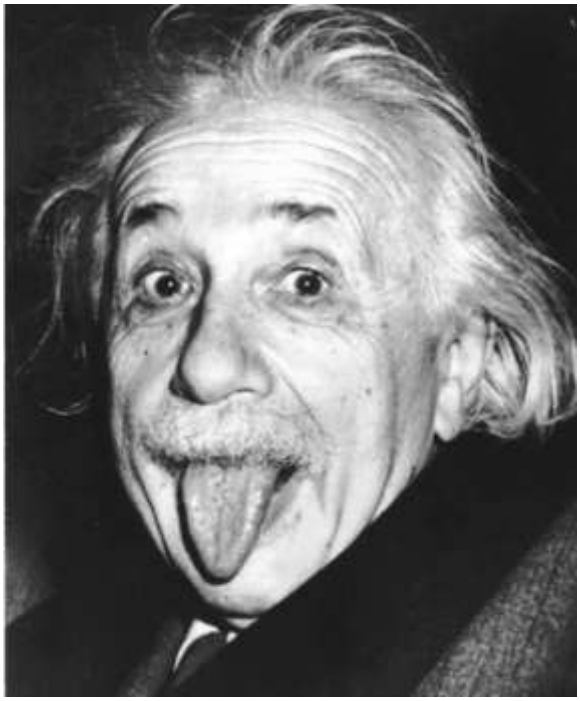
glove is actually a pair. A single glove is both itself and its inversion; it is both right and left-handed.

The most effective geometric construction for this two-sided-idea is the Möbius strip. On can construct such a strip by giving a half-twist to a strip of paper and bring the two ends together. (**Figure 13**) This coincidence of the two opposite sides gives an appropriate conception of the space we are trying to conceive by the inversion of a glove, or the inversion of a mind on itself. One of the most delicious ironies of this form of twisted space is that you can construct the Platonic Solids with the Möbius strip principle. If you wish to try that experiment, take a single strip of tape and fold it into 7 equilateral triangles or into 13 equilateral triangles. Rotate each of those two strips of equilateral triangles into a Möbius twist and tape their two ends together. Fold appropriately the triangles one against the other and you can generate the tetrahedron and the octahedron, respectively. A double twisted strip of 36 equilateral triangles can also generate an icosahedron. See my report on **LANTERNLAND**.

Figure 13 The Möbius strip. The inside and the outside are the same.

Chirality is also everywhere present in the physical universe. In physics, circular polarized light, for instance, has chirality, and electromagnetic wave propagation also has chirality. The spin of a particle can also be identified as having handedness. Pasteur noted that all living processes are dominated by chirality; that is, dominated by molecules called enantiomers because they are mirror images of each others.

Finally, the point I want to make is that mind also works on the basis of chirality, because, as Paul said in ***I Corinthians 13***, "…***now I know in part; but then shall I know even as also I am known."*** Agape is chirality. In other words, creativity could not exist without love of mankind because the discovery of new principles relies fundamentally on that form of asymmetry between human minds. But, love of mankind like chirality may take different surprising forms. For, instance, what did Socrates mean to say when he said: "*γνῶθι σεαυτόν"* (***know thyself***)? Was he warning against unexpected inversions in human relationships? (See **Figure 14**)



Possibly, because he expected inversions to take place in the human mind through self-directed axiomatic changes; that is, he knew that the key ingredient in change was laughter. Socrates understood that I am able to know myself only if I am able to laugh at myself. And, if that is the measure of asymmetry for love of mankind to exist, then, it must also be the measure for all discoveries of principle in the process of hypothesizing the higher hypothesis.

Figure 14 Einstein: ***"Laugh at thyself!"***

This implies that you can only know yourself as someone who is also becoming changed by means of accepting being laughed at by others. And, that is the key to becoming "***as also I am known***." Why? Because laughter is the inescapable result of making an axiomatic transformation, which causes your mind to go from a lower manifold to a higher manifold. In other words, laughter is the means of elevating yourself above the pain of having hammered your own personality; that is, as a means of constructing a shield against yourself as your

own worst enemy. ***Know thyself as also you are known*** cannot be done in any other way. That is what Leo Rostin called the ***Aha! Principle***:

"For twenty years Mr. Sokoloff had been eating at the same restaurant on Second Avenue. On this night, as on every night, Mr. Sokoloff ordered chicken soup. The waiter set it down and started off. Mr. Sokoloff called, "Waiter!"

"Yeah?"

"Please taste this soup."

The waiter said , "Hanh? Twenty years you've been eating the chicken soup here, no? Have you ever had a bad plate?"

"Waiter," said Sokoloff firmly, "taste the soup."

"Sokoloff, what's the matter with you?"

"Taste the soup!"

"All right, all right," grimaced the waiter. "I'll taste - where's the spoon?"

"Aha!" cried Sokoloff." (Leo Rosten, ***The Joys of Yiddish***.)

The difficulty that most people have with this way of thinking is that they can't laugh at themselves and, therefore, they have become incapable of recovering their lost ability to think from outside the box, from the top down. They have been made incapable of discovering that it is by having all others in one's self, through an agapic principle of development of mankind, i.e. through a win-win sense of being able to internalize and change all of mankind, present, past, and future ("***the result that every single substance stands in relations which express all the others.***"), that one can generate the idea of being the mirror of both "***knowing in part***" and knowing "***as also I am known,***" at the same time. This is the "***One Road, One Belt***" of Xi Jinping. This is also Leibniz's way of expressing the principle of the ***benefit of the other*** of the Peace of Westphalia as the expression of how man is ***also known*** by God as if in the simultaneity of physical eternity; that is, in accordance with ***Corinthian I, 13***.

However, that process can only be achieved through a contracted form which is perceived "***as if through a glass darkly.***" This is the process of how to be known by another, but not from the interior of the other; because no monad can change the interior of another. So, Americans should stop being unipolar by trying to enslave other people to their view of the world. Monads, or quanta, cannot be known in and of themselves, they can only be known through the effect they have on others and the effect others have on them; that is to say, they can only be known through the "***fitness***" of exemplarity by means of which each monad can perfect itself and change the universe for the better through that process, that is, by means of acting in the image of God.

Therefore, as Leibniz put it, the principle that mankind is looking to establish, permanently, on this planet is "happiness." That's what I call the ***Section 54 Principle***. As section 54 of the Monadology stated: ***"54. This reason can be found in fitness, that is, in the degree of perfection contained in these worlds. For each possible has a right to claim existence in proportion to the perfection it involves. Thus nothing is entirely arbitrary."***

CONCLUSION: HOW TO KNOW THE UNKNOWN OF ALL UNKNOWNS

Cusa and Leibniz have led us to discover what lies beyond the limit of knowledge by forcing us to investigate the nature of our ignorance through hypothesizing the higher hypothesis. This investigation into the limits of our knowledge is not a futile exercise as most people would tend to believe. This investigation makes you discover all sorts of unknown, some small, some large, some more important than others, and some special sort which we did not even suspect existed.

It is the unknown of this last category which is the most important of all: The unknown of all the unknowns. Why is it so important? Because such an unsuspected unknown causes an even greater inversion in your mind than any other form of unknown can do. The discovery of an unsuspected unknown creates

a new state of existence which opens the doors to the future of mankind in such a manner that it changes completely the ability of the mind to go back to the past in the usual way. It makes you go back to change the past.

This is the equivalent of going to the hidden side of the Moon without having to go there. It is the discovery of the unexpected; that is, the discovery of what is not supposed to happen on Earth, but which does happen without your knowing it by leaving the Earth behind. One of our French members from Rennes, Sébastien Drochon, had a very insightful way of expressing this paradoxical state of mind with respect to space discovery. He said: "Each space mission truly projects the minds of researchers into the unknown. It is a situation where what is most expected is the unexpected. That is the unknown of all of the unknowns. It is when man puts himself under such conditions that his creativity is pushed to the highest limit. Then, he is able to generate hypotheses in congruence with the laws of the universe." (Sébastien Drochon, ***La Chine Lance Le Défi***, ***Nouvelle Solidarité*** of March 18, 2016.)

In fact, the most exciting aspect of discovering the hidden face of the Moon is not the resources in minerals that are hidden there, but the immense treasure of the unknown knowledge that mankind will be able to access when man gets away from the visible face of the Earth. So, the most exciting aspect of this unknown knowledge is not the discovery of new economic resources. It is the discovery of what should be most expected from a creative mind: **THE DISCOVERY OF THE UNEXPECTED**.

This new state of existence, which most people try to avoid at all cost, because they don't like surprises, is the most necessary element for human survival, because the unexpected is the adrenalin of creativity. What is most vital for the survival of mankind is this ***unknown of all the unknowns!***? That is the reason man was created in the first place. That is the state of pure creativity. And the irony is that most human beings who have lived on this Earth have had a chance to experience this state of existence but have failed to discover its benefits. Such is the state of existence of the creative power of the human mind when it can no longer go back to the past in order to secure the future. It is a pure state of time-

reversal-change. But, this unexpected learned ignorance state is such that it can only be accessed universally by mankind when the whole of human history is changed.

The time has come for such a moment to come, because there is no greater achievement for all of mankind than to access the unexpected power to change the universe itself. Why? Because the access to such a new form of learned ignorance is the most natural state of mind that mankind has been striving to acquire by hypothesizing the higher hypothesis. And the reason why this is the true destiny of mankind resides in the fact that such an intention cannot be done based on any form of competitiveness, but only for the benefit of the future of all of humanity.

FIN