
A TRANSFINITE AND EXPANDING UNIVERSE

Reflections on Lyndon LaRouche's use of the term "transfinite."

by Pierre Beaudry, 2/12/17

INTRODUCTION

« The universe is transfinite because its curvature of metaphysical space-time grows through the density of change in tension between positive and negative curvature, everywhere, and at the same time, in mind and in matter. »

Dehors Debonneheure

The understanding of the unity of our multifaceted world is the most important and most difficult challenge in capturing how the universe works as a whole. The reason this is the case is because a transfinite matterofmind conception is required in order to understand how the universe expands. This means that we must not only eliminate the failed epistemological notions of *discreteness* and *linearity* from our habits of thinking, but that we must also eliminate the epistemologically flawed notions of believing that things are made up of *points* and *holes*.

The fallacy, here, is that most scientists believe the universe to be constructed in accordance with a *linear* Cartesian coordinate system of *discrete* elementary building blocks which are made of *points* and *holes* in the small as well as in the large. Yet, the universe has the curvature of a continuum of changing physical and mental space-time which is everywhere increasing in energy-flux-density in the small as in the large within the material domain as well as in the mental domain.

This is so because the universe didn't start with a "Big Bang," as the Jesuit Belgian priest, Georges Lemaître, made believe at the end of the 1920's, but rather, it started as a process of transformation based on *the least action of high-density transfinite correlations between positive and negative curvature, everywhere isochronically in the universe as a whole.*

The time has come when scientists must stop fixating on their mathematical measurements of *linearity and discreteness* and go back to retrieving the lost knowledge of *universal principles of physical space-time least action*, as Lyndon LaRouche demonstrated the necessity in his 1988 paper on the notion of the transfinite. At that time, Lyn had come to the following conclusion in harmony with the Monad concept of Leibniz. Lyn wrote:

"Knowledge is a unity, as the universe is a coherent sort of unity such that every true law in any facet of the universe's activity is also a law of equal efficiency in every other facet. True knowledge is thus a most precious gem of many facets, such that, looking into the heart of that gem through any one of these facets, we are afforded a view of the deeper interior, which is the same interior seen from the vantage point of each and every other facet.

"For this reason, it is not permissible to represent any facet as truth, except as we show implicitly that it is a true projection of the interior common to, and thus subsuming the many facets. When that has been the approach to representation of the fruit of work of polishing any one of the facets, the reader is thus enabled to look deeply into the soul of the author, and to infer what the same author's approach would be to the peculiar subject-matter of any other facet.

"That becomes, thus, the reader's implied responsibility: not to impute to such an author anything contrary to that implication."
[\(LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988, page 72 of 72\)](#)

Thus, the idea of transfinite has come to replace the traditional notion of metaphysics in the function of representing the relationship of mind and matter between discrete Cartesian manifold of sense perception and the complex Gaussian manifold of the creative human mind. As Lyn put it:

“If we are ignorant of the history of science's treatment of this fallacy of naive sense-perception, and if our ignorance encourages us to combine naive ideas of sense-certainty, with the false notion that deductive method is *reason*, the result is formal, deductive Euclidean geometry. The adoption of such a view of Euclidean geometry as the axiomatic basis for physics, yields the views of that hoaxster Galileo Galilei, of Rene Descartes, the mathematical schema adopted by Isaac Newton.” ([LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#) page 6 of 72.) [...]

“Instead of the popularly misunderstood meaning of the term *metaphysics*, the nineteenth-century development of the mathematical physics of the complex domain chose the term *transfinite*, a term which correctly implied its relationship to the notion of those *finite* functions situated within a Cartesian or neo-Cartesian notion of *discrete manifold*.” ([LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), page 8 of 72.)

In other words, what is collected in the form of X, Y, Z on the discrete manifold is appropriately connected to a higher projection which is causally transfinite to it. Therefore, phenomenology of the discrete manifold is nothing but a shadow of this higher metaphysics, and both must be correlated accordingly.

1. THE FALLACIES BEHIND THE BIG BANG THEORY AND BEHIND THE SEARCH FOR A HUBBLE CONSTANT

“The best illustration of an axiomatic transformation is located in the change by inversion between positive and negative curvature.”

Dehors Debonneheure

It was reported on January 26, 2017 that the universe was expanding faster than expected and that the evidence was demonstrated by several Hubble Telescope pictures of far away galaxies. (See **Figure 1**)

In his article, Brian Koberlein reported that it had been known for almost a century that the universe had been expanding, but that we still didn't know precisely at what rate the galaxies were receding from us. Koberlein came directly to the point:

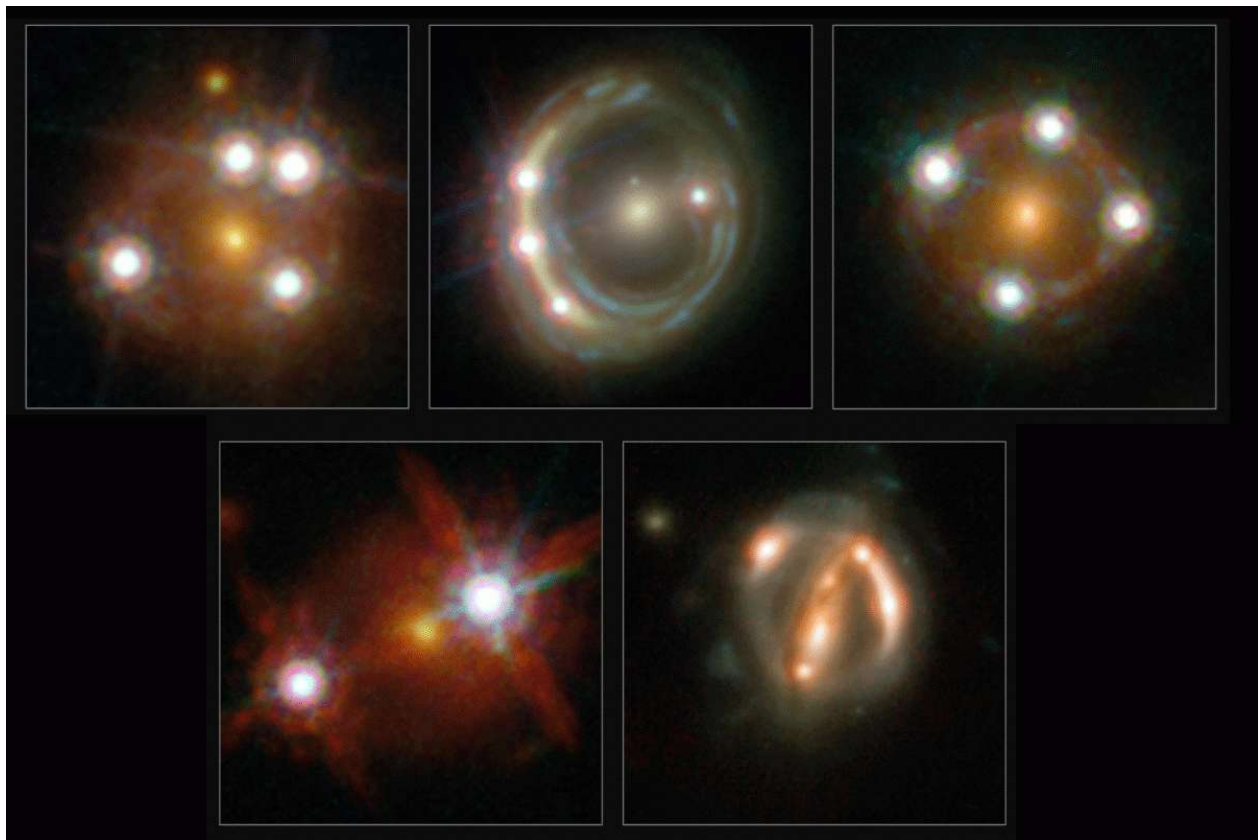


Figure 1 Cosmic sense perceptions projected onto the dimly lit wall of Plato's Cave. Five lensed galaxies used to measure the Hubble constant. Credit: ESA/Hubble, NASA, Suyu et al.

“Now a new method of measuring cosmic expansion may settle the issue, but it also raises more questions.

“It all comes down to a physical parameter known as the Hubble constant. The bigger Hubble constant, the greater the rate of cosmic expansion. The value of the constant also tells us the age of the Universe. If you trace the expansion backwards through time, you reach the point where the Universe was extremely hot and dense, commonly known as the big bang.” (Brian Koberlein, [The Universe Is Expanding Faster Than Expected, But New Results Raise More Questions](#), January 26, 2017.)

Why is this approach to cosmology and astronomy all wrong? Because it does not ask the right questions and it reduces science to a mere mathematical game of measuring distances between perceived objects that go bang in the night. Such an approach is easier than asking and answering the tougher questions as to why the universe is so well-ordered and why it works as it does. In other words, the key question is: “*How do fundamental principles of universal metaphysical space-time work?*”

Let's put these “discoveries” that Koberlein reported on to the test of Plato's Cave. It is that correction which needs to be addressed. Three main fallacies of composition are implied:

1. The first fallacy is that the images of the Hubble telescope are given as true knowledge when they are merely optical lens projections of sense perception.

2. The second fallacy is that the distortions of such images on the wall of Plato's Cave are not taken under consideration because they are given as self-evident certainties of what the universe is in reality.

3. The third fallacy is that the more precise the images are, the truer is our knowledge of them.

These three fallacies are typical distortions of the truth implicit in each and all such simple linear projections of the process of change. If one were to account for the effects of positive and negative curvature imposed by the complex actions

of multiply-connected circular action upon circular action in the universe, one would have a better reading of what is true or false when using this otherwise very useful instrument known as the Hubble telescope.

2. PLATO'S CAVE: A COMPLEX MANIFOLD OF POSITIVE AND NEGATIVE CURVATURE

“The secret to Plato’s Cave consists in using the right kind of searchlight lens looking for ships that reflect anomalies off the shores of history.”

Dehors Debonneheure

Those images, which the Hubble makes visible for the first time ever, cannot be taken as self-evident from this experiment, but, rather, must be presented as deformed shadows of a reality that is projected from a transfinite domain.

No matter how perfectly the Hubble sense perception lens are polished, the images they will give us from the Cosmos will always be merely visual perceptions projected onto the dimly lit wall of Plato’s Cave. Therefore, it is not sufficient to bring more precision to the quality of projections onto the wall of Plato’s cave or to improve the lighting in the cave itself, because no amount of perfectibility of the projective instruments, or improvement of the lighting condition of the cave itself, will be enough to acquire a true knowledge of the universe. What you need is the right kind of mental lens. This is how Lyn referenced the question of Plato’s Cave in his paper on the transfinite. He said:

“There are three aspects to this fable of "Plato's Cave," three conceptions which have repeatedly, insistently reasserted themselves in physical science, over the millennia since. First, the notions associated with naive sense-certainty depend upon overlooking crucial evidence proving that the images associated with perception are not simple mirror-images of the sensory experience which prompts them. Second, that although sense-perception yields us only distorted images of reality, sense-perceptions,

although distorted images of reality are nonetheless shadows of that which is real; in modern language, they are *conformal projections* of that which is real upon our senses. Third, that because of the fallacies of sense-perception, on the first count, but also because of the *conformal projective* character of them, on the second count, our sensory apparatus is a magnificent scientific instrument, if we but learn to read its dials competently.

“The failure, and also the refusal of so many to observe that simple lesson, is the chief cause of the irrational mysticism which even most scientific professionals superimpose upon the subject of mathematical physics' complex domain. This common difficulty would not exist, if those befuddled professional ladies and gentlemen would acknowledge that the trans- finite asserts no more than the following.

“Physics shows us that ontological actuality is located in that transfinite-functional realm of the complex domain, not the discrete manifold of naive sense-certainty. It is demonstrated that the constructible representations of ontological actuality, in terms of transfinite functions are, by their very construction, the objects, singularities, whose conformal projection is the images of sense-perception.” ([LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), page 69 of 72)

Consider **Figure 2** as an imaginary perception provided by the Hubble telescope which is projected on the wall of Plato's Cave. Note how everything in that projection is based on a continuous scaling of *linearity and discreteness* in accordance with sense certainty. Now, apply Lyn's transfinite correction onto the same figure. Can you tell what is missing? Where is the difference between a conformal projection of the complex domain and the sense perception image of the discrete manifold? Can you see that you have to reconstruct the true image of reality only by means of correcting this factor of distortion of the imagination?

What is required, in reality, is not to improve sense perception but to improve the composition of your mental apparatus. Your lens of sense perception is perfect as far as it does its job. It's the mind you have to correct in order to

make human beings aware of the nature of the fallacy, and of the necessity to examine the distortions of this fallacy in order to improve human knowledge. *The problem is in the mind, not in the perception.* In order to realize that, you must discover how and why your perceptual apparatus gives you distorted images of reality. The point to understand is that things are never what they appear to be. How do you come to know that? Take the case of a Riemannian-Beltrami conformal projection and look for the characteristics of anti-entropic singularities.

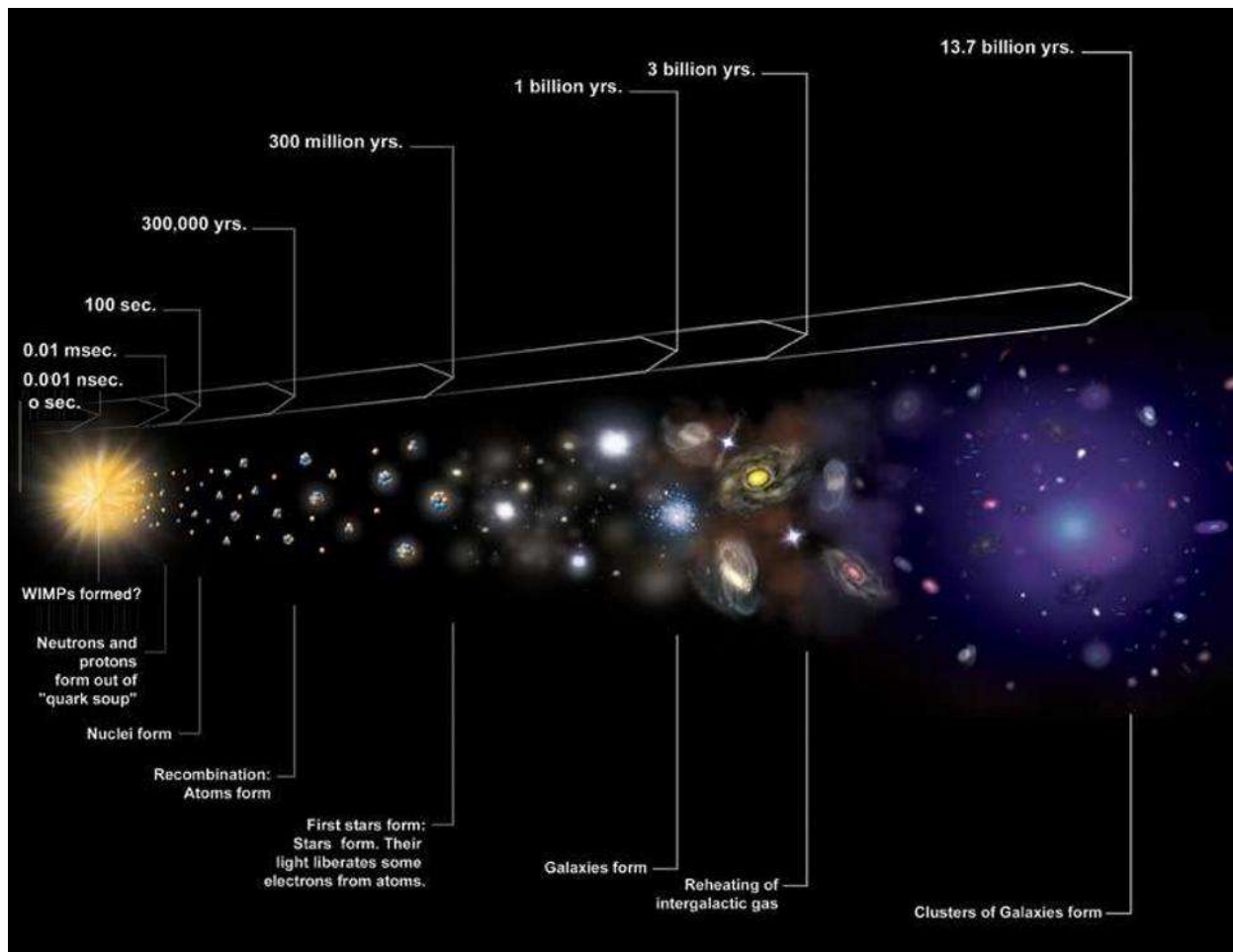


Figure 2 “A visualized history of the expanding Universe. Images credit: NASA / CXC / M. Weiss.” (Ethan Siegel, [We Still Don't Know How Fast The Universe Is Expanding](#), January 12, 2017.)

3. THE CONFORMAL PROJECTIVE CHARACTERISTIC OF ANTI-ENTROPIC SINGULARITIES

“It is useful to make the difference between ordinary thinking and creative thinking, because ordinary thinking always relates to what appears to be self-evident to sense perception, while creative thinking always requires looking for something that is not there.”

Dehors Debonneheure

First of all, consider that the way the universe works is based on the principle of economic expansion. Therefore, start with the principle of expansion. In his paper on the transfinite, Lyn identified the fundamental principle of anti-entropic economic growth by relating the Leibniz principle of *power-density* to the principle of *potential population-density*. Lyn wrote:

“The possibility of effective use of a higher level of technology is conditional upon the *power-density* available, both per-capita, and per unit of land-area. The two have a combined expression as *power-density* per capita unit of population-density. The required physical definition of *power-density* is supplied in an appropriate setting, later in this report. It is sufficient, at this point, to state that the level of *technology* which can be effectively employed in a society is delimited by the *power-density* per per-capita unit of land-area. ([LYNDON LAROCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), page 27 of 72.)

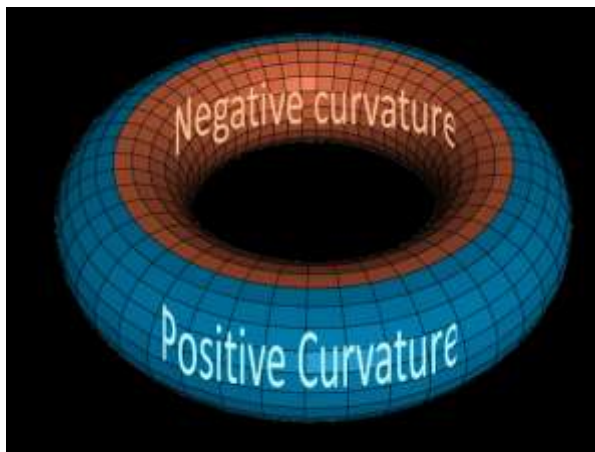
The Leibniz idea of the ratio of *power-density to improvements in technology* is the equivalent of a self-developing principle, a sort of boot-strap principle which can be illustrated by the old publicity jingle of the Taillefer sales pitch for their sausages in the Province of Quebec, which stated: *“They are fresher*

because more people eat them, and more people eat them because they are fresher.”

This is similar to the self-generating homopolar electromagnetic principle which drives the Galaxy forward, because it functions the same way as the LaRouche principle of increasing relative-population-density. *“Technologies improve because more people use them, and more people use them because they are improved.”*

What I have identified as the Taillefer Principle is not a joke; it is a self-generating correlation between *economy of labor* and *increase in energy-flux-density* of mental powers per capita and per square kilometer; that is, the dynamic combination of Cusa's *isoperimetric principle* of positive curvature and of Leibniz's *least-action principle* of negative curvature. The main obstacle to understanding this correlation, however, lies in the current fallacious trend of our present Internet controlled information society. Why? Because the computer generated information function, in and of itself, is contrary to such a creative process of new ideas.

Humanity can only upgrade economically if the history of mankind is understood from the standpoint of the Leibnizian constraints of such a relationship of *power-density* to the resulting technological benefits of its willful intention and consequences. As Lyn showed, the Leibniz requirement for understanding his idea of *power-density* is entirely based on the ability to *modulate* positive curvature with negative curvature.



The simplest form of this *modulation* is represented, geometrically, by the Torus. A more complex illustration of such a process is best represented in the form of a classical artistic composition, as I will show.

Figure 3 Torus is a closed surface of positive and negative curvature.

What is the role of negative curvature in all of this? The Torus geometry has an equal amount of positive and negative curvature rotating together, sufficient to create a balance of unity between opposite forces as they move together in different directions, isochronically, thus keeping the universal activity of least action motion to be equally and efficiently distributed in each and all of the facets of the universe, in the small as in the large.

What increases the power of *energy-density* of such a complex motion is the form of least action that is generated by the motion of vortex formations in the center of the Torus twist, as plasma physicist, Winston Bostick, represented the motion within a tight pinch-effect singularity inside of a plasma process.

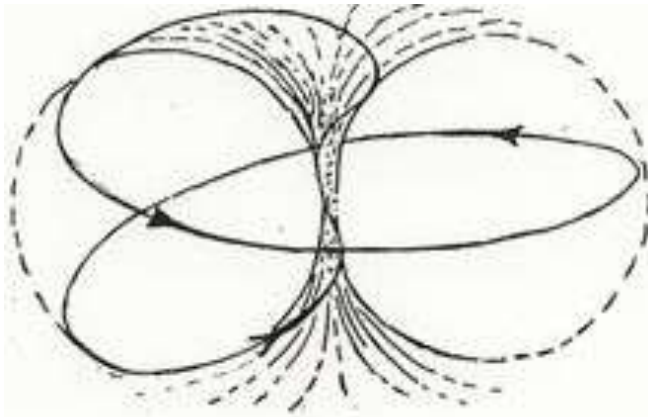


Figure 4 Vortex formations twisting a surface of positive and negative curvature into a pinch-effect inside of a Torus similar to the one generating the curvature formation of the Archytas solution for the doubling of the cube.

What happens in the *power-density* of a tight pinch-effect was thoughtfully illustrated by artist Caroline Bouchard-Montoux's composition in which she fused together the contradictory nature of opposites between slavery and freedom, in her painting *Juan de Pareja and Las Meninas, 1990-93*. (Figure 5)

Simply by inserting the Velasquez portrait of *Juan de Pareja* into *Las Meninas*, as if to make a joke, Bouchard-Montoux compounded the irony that Velasquez had already introduced in the mirror reflection inside of his own painting and, in so doing, she was able to identify how the creative process works. The fact of adding the presence of Velasquez's slave-assistant in front of the scene may appear to add to the confusion at the discrete level of simple sense perception,

but, in reality, it confirms the very nature of the galactic ambiguity of the creative process, which is to change the way the spectator thinks about artistic composition.



Figure 5 [Caroline Bouchart-Monteux](#), *Juan de Pareja and Las Meninas*, 1990-93.

Creativity is not found in the oligarchical domain. With this act of irreverence, she was able to capture the reason why breaking the propitiating shackles of the prisoners in Plato's Cave is the very purpose of artistic composition. Bouchard-Monteux wrote:

“My modest version simply points out that the artist's studio assistant, Juan de Pareja, immortalized by Velasquez in the great portrait in the Met, was himself a painter and was seen wielding brushes in the vicinity of the Maids while it was in progress. Most likely, he was just working nearby on his own painting and accidentally found himself in a position to add to the famous spatial and psychological ambiguity of Velasquez's masterpiece.”
(http://russellconnor.com/gallery_32.html)

There are several invisible vortices of negative curvature between each of the five visible objective-subjects inside of that painting, but who are there only to get you to seek why they are contrary to each other as they are watching you. You are not looking at this painting; this painting is looking at you. The clincher is that the viewer is made to believe that Velasquez is actually painting the portrait of the royal couple whose image is faintly replicated in the mirror of the darkened back wall, and which is also watching you. However, it takes only the flash of a moment, in the simultaneity of eternity, for the observer to realize that Velasquez is actually painting your portrait, as the observer who is missing from the scene.

The fact that Velasquez is painting someone who is missing, but who should be included, there, is precisely what struck Caroline Bouchard-Monteux's imagination; and therefore, the observer is put in the position of becoming as creative as the artist, as the design of classical artistic composition requires.

Therefore, this galactic view of the creative process reveals that what the artist must draw out of this turbulent scene is the appropriate measure of high density of singularities from the complex domain that the human creative mind has to go through when it passes through the excruciating region of a self-reflexive axiomatic transformation of negative curvature to a higher dimensionality of positive curvature.

Read my report on [VELASQUEZ'S LAS MENINAS](#) and see how the historical context behind that painting represents the fight against going along to get along. You may recognize the political reason why *Juan de Pareja* was the actual subject matter of *Las Meninas*. However, it is the negative curvature of the density of discontinuities among the different subjects which reflects the transfinite nature of the creative process in the struggle with the slave-master relationship. For the creative mind, slavery is not a physical but a mental condition to be liberated only by willingly walking out of Plato's Cave. As I brought to Lyn's attention in that report in 2011:

“When you look at the universe as a whole, you are not simply looking at one big expanse of things rotating all around your head, making you dizzy; you are looking at the process of creativity which also includes you, as a mirror of its totality, and which is something that appears to be quite within your reach. However, at the same time, you are looking at what is not there, in the here and now, in the large as well as in the small, and that is, in fact, what makes everything that you perceive possible. You are looking at something that is at the same time a maximum and a minimum, the non-visible macrocosm and microcosm of the creative process itself, through the micromacro sensor lens of Nicholas of Cusa, known as the beryl stone. Similarly, when you look at creativity through that lens, you're not looking at something mysterious that seems inaccessible to you; you are actually looking at three things in one which are also looking at you at the same time. You are looking at: 1) an object of study that is outside of you, 2) a conception of this object inside of you that you are creating, and 3) an alteration of physical space-time that is transporting this subjective-objective affair beyond its current state of existence. In fact, that is how a rigorous scientific experiment should be set up. Metaphor functions this way by inference. As Lyn put it: ‘Because Classical composition goes *outside* the present, outside what already exists, into that which has *yet to exist!* That's the essence of creativity. To introduce a state of affairs into the universe, which did not exist before that.’” (Lyndon LaRouche, *Weekly report with Lyndon LaRouche*, December 7th, 2011.) That is also the

etymology of the verbal action of the Greek *meta-phora*: trans-*port*, or going beyond the present state of being.

“Thus, if you wish to account for change in the universe, you have to establish such a triply-connected inferential process as the basis of your experimentation of the unknown and establish ways to transport yourself to a higher level of consciousness into the future of a past. However, if one of those three components is missing, your conclusions will not be valid. They might appear to be true, but they won't be. The actual nature of experiencing the universe is, therefore, found in the constant changing nature of this triple function in your imagination, whether you are in the large or in the small.

“What makes this triple operation unique among all universal physical principles is that it is performative; that is, it does what it says it does, at the same time that it takes you to a higher domain. In other words, this complex operation changes the universe by demonstrating how its own intervention eliminates the illusion of empty space among the object, the subject, and the interactions of the three elements of its performance. It is this triple function properly articulated which forms the characteristic of the metaphorical creative process by means of which you can fuse the opposites into a higher unity of anti-entropic knowledge of, and action on, the universe.” (Pierre Beaudry, [VELASQUEZ'S LAS MENINAS](#), p. 2)

So, in conclusion, the royal couple that you see reflected in that rear wall mirror of the Velasquez painting creates a conflicting situation inside of you. The presence of what is not there is barely noticeable, and yet, it tells you that *you are divided between what you wish to be and what you don't want to become*: this mirror reflects the freedom-necessity paradox of change in human society, the fight between oligarchism and republicanism; that's the asteroid belt of the human mind. That is the axiomatic crisis that the entire Western World is going through today.

Which road are you going to take: Creativity or going along to get along? That's the choice that every human being is confronted with during his entire lifetime and, the problem is that *you cannot look the King in the eye and kiss his royal ass at the same time*. This is what the *Juan de Pareja* of Velasquez is

pointing out by staring at you; the issue of going along to get along is the crucial battle to free your mind from the shadows of Plato's Cave.

4. THE NEGATIVE CURVATURE SINGULARITY OF THE ASTEROID BELT

“The most important thing to discover about the asteroid belt is the significance of what is not there.”

Dehors Debonneheure

A close study of Kepler's Third Law shows that the asteroid belt region of the Solar System is a region of change from positive to negative curvature that the complex rotation of the Sun had shed from the envelope of its multiply-connected motion when it was originally formed through a polarized fusion process. The Anomaly that was generated at the asteroid belt region was formed through a high density of singularities between F and G, a harmonically turbulent area of axiomatic change which also corresponds to the negative curvature of the Arithmetic-Geometric-Harmonic mean region of the musical system as a whole. This high density of singularities was noted by Lyn as a very special form of change generally expressed by the inversion of a surface of positive and negative curvature. Lyn wrote:

“For similar reasons, Kepler's laws prescribe a definite distribution of the content of that envelope, as in spiral arms, to such effect that the higher ranks of the periodic table are concentrated in the inner planets, this side of the asteroid belt, and the gaseous giants beyond. In this configuration, the orbits of the planets are not determined by their relative masses, but their relative masses are determined by the determination of their orbits in a Keplerian way.

“The point we are stressing, by aid of these illustrations, is the qualitative difference between a mathematical physics premised upon a *non-Euclidean geometry*, and a mathematical physics whose mathematics is of

the formal deductive sort associated with the *finite mathematics* of a *discrete manifold*.” ([LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), page 36 of 72)

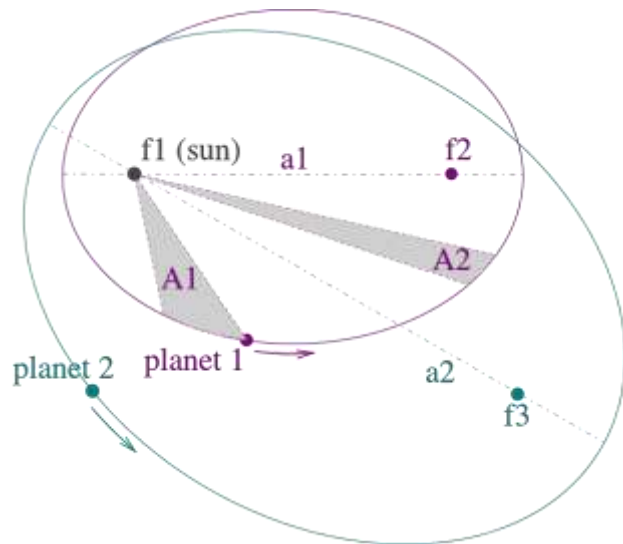
The change from a non-Euclidean geometry to a Euclidean geometry, that is to say, from a higher complex manifold to the lower discrete and finite manifold, is fundamentally characterized by a tight-pinch-effect inversion of passing from negative curvature, to zero curvature, to positive curvature. This change is expressed by Kepler's Third Law of Motion which defines the proportional relationship between the distance of the planets from the Sun and their orbital periods in such a way that “*the square of the orbital period of a planet is directly proportional to the cube of the semi-major axis of its orbit.*” Such a complex space-time projection, in essence, expresses the curvature of the Solar System as a region which can be characterized by both positive and negative curvature.

Figure 6 “Illustration of Kepler's three laws with two planetary orbits. (1) The orbits are ellipses, with focal points f_1 and f_2 for the first planet and f_1 and f_3 for the second planet. The Sun is placed in focal point f_1 .

(2) “The two shaded sectors A_1 and A_2 have the same surface area and the time for planet 1 to cover segment A_1 is equal to the time to cover segment- A_2 .

(3) “The total orbit times for planet 1 and planet 2 have a ratio $a_1^{3/2} : a_2^{3/2}$.”

(https://en.wikipedia.org/wiki/Kepler's_laws_of_planetary_motion)



Don't get bogged down into the details of calculations, here; think of Lyn's reference to the change of facets of the universal gem. It is the concept of the *isochronic space-time curvature* which is important to grasp in the relationship between physics and aesthetics; that is, in the relationship of two different facets of the gem of the universe in a manner such that you are able to discover the validity of the same principle for both physical science and artistic composition. This is not simply a multidisciplinary exercise; this is a change of axiomatic outlook of the universe as a whole from the top down. So, ask yourself: "What is missing in the curvature of **Figure 6**?" Then, look at **Figure 7** and ask yourself the same question: "What is missing in this representation of a discrete and finite manifold of the solar system?"

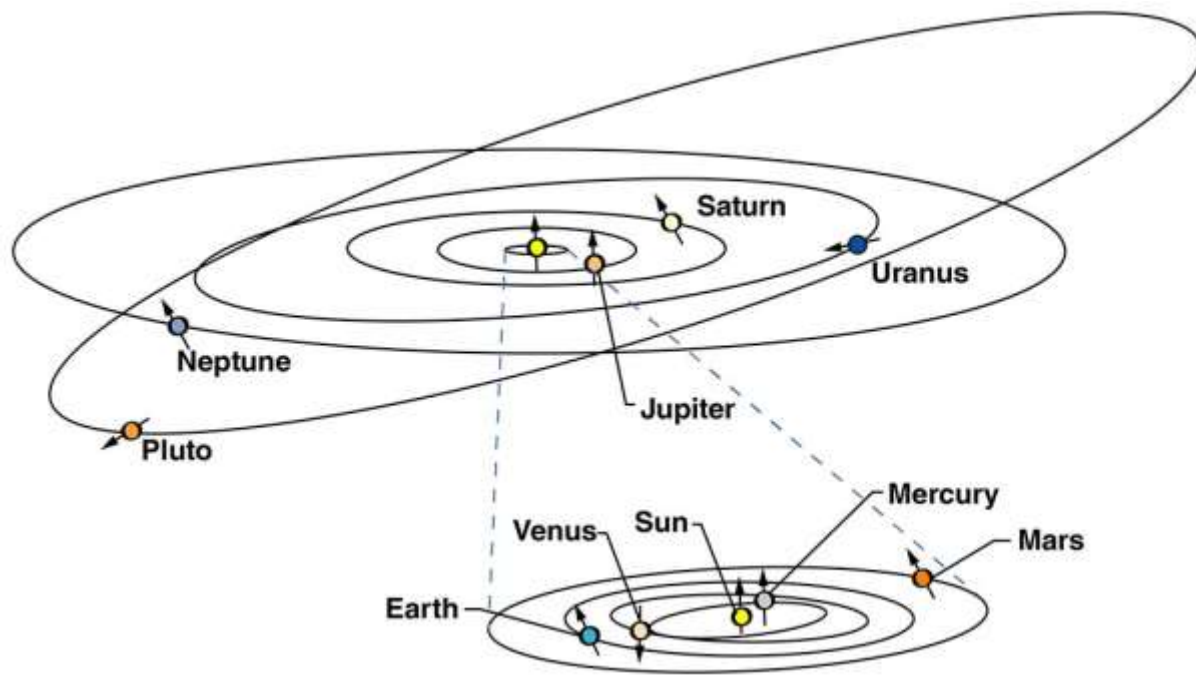


Figure 7 NASA.gov

What is missing is the conical projection of the asteroid belt. The two images of the inner planets and of the outer planets are projected without showing the crucial function which separates them and which defines the Solar System as a



whole. Why is there no orbit of Kepler's broken planet between Jupiter and Mars? This is a most important question because it is the harmonic ordering of that Asteroid Belt range which defines Kepler's Third Law as a change of register similar to the Bel Canto voice register-shift which defines the soprano and tenor voices.

Figure 8 Luca della Robbia's *The Singing Sculpture*, representing the register shift of the Asteroid Belt. (Gettyimages.)

In other words, what is missing is what caused Kepler to discover that a planet had exploded within the well-tempered range of the Solar System and that such a singularity reflected the same ordering process as the voice register shift within the musical system of Bach's Well-tempered Clavier. (**Figure 8**) What exploded was the old geometry of a small hard surface inner planet and what came into existence beyond the Asteroid Belt was a new geometry that formed giant gas planets with their multiple moons. That axiomatic change was as if the Asteroid Belt represented the remains of what was left over from the former geometry within the process.

Similarly, in the human mind, a process of axiomatic change takes place when one breaks with the axioms of former knowledge in order to effect a change from a lower energy-dense manifold to a higher energy-dense manifold. This is the change that is effected in the history of science as well as in the register shift of the singing human voice. This is how Lyn identified the historical process:

“This includes a feature of *non-Euclidean geometry* referenced prominently by the twentieth-century *neo-Euclideans* of Special and General Relativity. In place of a Cartesian space of the X, Y, Z, and T orthogonal axes, space itself is "curved" in the manner implicit in assuming that a unit quadrilateral is characterized by acute or obtuse interior angles, rather than right angles, and is therefore variously spherical, hyperbolic, or elliptic. Such a curvature of space defines that physical space-time as self-bounded geometrically.

“The curvature of physical space-time was already explored, especially relative to the physics of vision, by Leonardo. Leonardo proved, for example, that relative to reflection of light, or transmission through a flat glass surface, or through a curved lens, the physical space-time of vision is not rectilinear or spherical, but elliptical or parabolic. This involves his treatment of the problem of the *caustic*, a matter already investigated by Brunelleschi in respect to developing the construction of the dome for the Cathedral of Florence.

“Kepler made a kindred discovery, that the orbital (least action) pathways of the planets are elliptic, rather than circular. On that account, Kepler defined the need for a general solution to the nature of elliptic functions as one of two leading requirements, including the differential calculus, he bequeathed to his successors. Later, Gauss's reexamination of Kepler's work led not only to a solution of the problem of defining harmonic orderings among elliptic functions, but, as from this point of reference in his work on the arithmetic-geometric mean, the elaboration of a higher form of synthetic, *non-Euclidean* geometry.” ([LYNDON LAROUCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), 35 of 72)

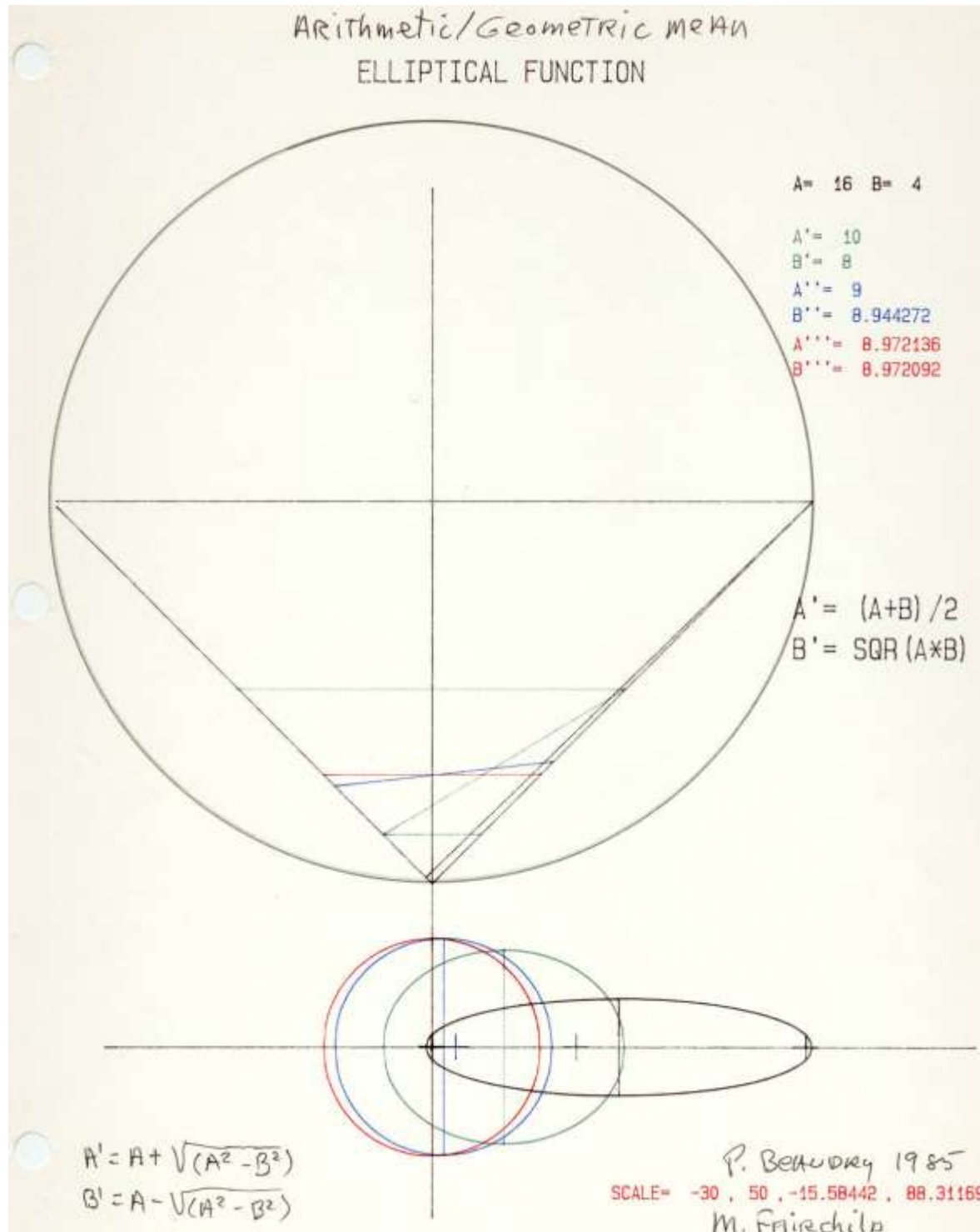


Figure 9 Conformal projection of a Gaussian complex/discrete manifold projecting an elliptical function following the principle of the arithmetic-geometric mean.

5. THE FALLACY OF TREATING SINGULARITIES AS “POINTS” AND “HOLES”

Lyn's most crucial idea in axiomatic changes is the notion of *density of singularities*. In fact, what characterizes a transformation from one manifold to another manifold is the Riemannian notion of singularity that marks a discontinuity between them and which represents a region of turbulence or dissonance associated with the isochronic features of negative curvature within an otherwise region of positive curvature. Lyn wrote:

“It is unacceptable that we associate with the regions of singularity in the positive surface of a Riemann Surface, the notions of a singularity defined by either a *point* or a *hole*. The problem has some similarities to that of the logical gap between successive Lattices A and B. To the degree we conceptualize a singularity as a *point* or a *hole*, we sustain a crippling difficulty in the effort to define what is occurring during the corresponding intervals of a Riemann Surface Function.

“The suggested approach to a solution, a way of ridding ourselves of these troublesome *points* or *holes* of singularity, is to *modulate* a Riemann Surface with Beltramian negative curvature. Such *modulation* would be a hypothetical option for resolving the problem of conceptualizing continuity.” (page 59 of 72.)

The reason why “*points*” and “*holes*” are inadequate is because they are derived essentially from underlying sense perception assumptions of “*discreteness*” and “*linearity*,” and they are contrary to the continuous function of a “*modulation*.” Take the following musical *modulation* of a dissonance as an example of “bridging” the discontinuity of a singularity in a continuous manner.

It is the negative curvature register shift singularity of F# which determines the harmonic ordering of the process of four of the six human voice species: soprano, tenor, mezzo-soprano, and baritone and, therefore, the dissonances of the Lydian Geometric Mean series get resolved into key signatures representing the

Lydian intervals of the Harmonic Mean series. In this case, it is the Geometric Mean spiral action of F#, A, C, Eb which generates the key signatures of C# E, G, and Bb. No other key signatures will be more appropriate to those voice species.



Figure 10 Opening measures of Mozart's Fantasy in C minor for Piano, K. 475 based on the self-generating [Lydian Principle](#).

The fact of adding a dissonant singularity of negative curvature to an otherwise harmonic process of positive curvature is a simple example of how the dissonance is resolved by bridging the discontinuity between dissonance and consonance. *The point is to discover how to navigate through the turbulent zone of high density of singularities without disintegrating.*

Lyn wrote the book on how to do this. His argument is centered on the transfinite Lydian quality of the J.S. Bach's *A Musical Offering* known as the "royal theme" motivation (*Motivführung*) which was given to Bach by King Frederick "The Great" of Prussia and that Mozart used as the principle of construction for his Fantasy in C minor for Piano, K. 475. Lyn defined this motivation simply as follows: "The art of musical performance is premised upon the creative powers of human memory." ([That Which Underlies Motivic Thorough-Composition](#), originally publishes in August of 1995 and republished in EIR, February 10, 2017, p. 57) Listen to how Mozart established that creative memory by resolving the dissonances of the two opening measures of the Fantasy, K. 475: Since the dissonance of F# and Eb can be resolved into G and D, as C goes to B, so will the dissonance of Ab and F# be resolved into the octave of G, G', as if through the memory inversion of a mirror image. (See Lyndon LaRouche, [Mozart's 1782-1786 Revolution in Music](#))

The subject is simple, but it is difficult to fully grasp if you don't play any musical instrument and if you don't intend to change your bad habits of not singing Bel Canto. The point is to discover how to go through the singularity of a dissonance in order to cause a change which takes you to a higher level of mental powers. The purpose or the intention of the design (*Motivführung*), as in the method of composition of the American painter, Benjamin West for instance, is to increase and secure the energy-flux-density of your mind. And, the secret lies in the memory function of constructive geometry. As Lyn once put it: "***Believe nothing that for which you cannot give to yourself a constructive proof.***"

As in the case of a transonic singularity that jet-pilots have to anticipate in their flights, the musician must anticipate what direction he must take just before entering the region of turbulence. That is why a musician must always start from the end of the composition and never from the beginning of it, because he has to ***go to the limit first.***

The dissonances of negative curvature determine the type of continuous actions which are going to bridge two discontinuous successive states in such a way that it will remember what is to come in the future; and everyone can understand that because this process is primarily how the human mind works.

As Lyn said: "The same result is presented by the mapping of the creative-mental processes. Creativity, as located within the zone of 'turbulence' within a creative-mental process, has the topological characteristics of a Socratic method, whose crucial feature is negative curvature." (Page 66 of 72.) It's the function that your memory performs within the negative curvature of your recollection that counts. The same behavior can be adduced to singularities of the sub-atomic domain and of living processes. All they have to do is to remember what they already know, as in the memory of water. As Lyn said:

"In a sub-atomic regime congruent with a Gauss-Riemann form of Keplerian physical space-time curvature, negative curvature corresponds to what are referenced as strong nuclear forces, and Riemannian curvature to the corresponding weak forces. From this standpoint, in the nucleus, the possible configurations of protons and neutrons appear as arrays of

singularities, so representable, in first approximation, by an Archimedean series treated as an extension of the platonic series of Kepler's astrophysics. From the standpoint of topology, the Archimedean series confronts us with the same considerations which lead us to consider negative curvature.

“That, for example, implies topologically, that the neutrino problem of nuclear fission must be treated as a characteristic reflection of such a configuration in sub-atomic physical space-time. It implies, more fundamentally, that the unified field of Riemannian physical space-time is defined in the combined terms of reference associated with modulation of Riemann space of positive curvature by regions of singularity associated with Beltramian negative curvature. This latter proposition rests not upon what are regarded as sophisticated sorts of reticulations in mathematical physics; the proposition, or something conceptually-functionally equivalent to it, flows entirely from the simplest sort of axiomatic considerations, in the vein of this report.” (Page 62 of 72)

Thus, in the course of the mere span of about 2,500 years of human history, we have come to the point of achieving a humbling sense of ourselves respecting the universe as a whole. Not accidentally, however, this is happening at the same time that the galaxy has entered in its greatest moment of turbulence in centuries.

Viewed from the vantage point of the complex/discrete manifold of conical spiral-action, the Geometric Mean spiral action of F#, A, C, Eb pivoted on F# generates the Lydian singularities of the Harmonic Mean spiral-action of G, Bb, C#, and E. In turn, the Harmonic Mean spiral-action generates the Lydian singularities of the Arithmetic Mean spiral-action of F, B, D, Ab, which completes the cycle by generating the Lydian singularities of the Geometric Mean spiral of F#, A, C, Eb that you started from. It is the motivating tension (*Motivführung*) of the memory function among these three mean spiral actions that you want to focus on when you study the Mozart Fantasy K. 475, because it's principle of composition of such a design which changes the way the human mind thinks. (Figure 11)

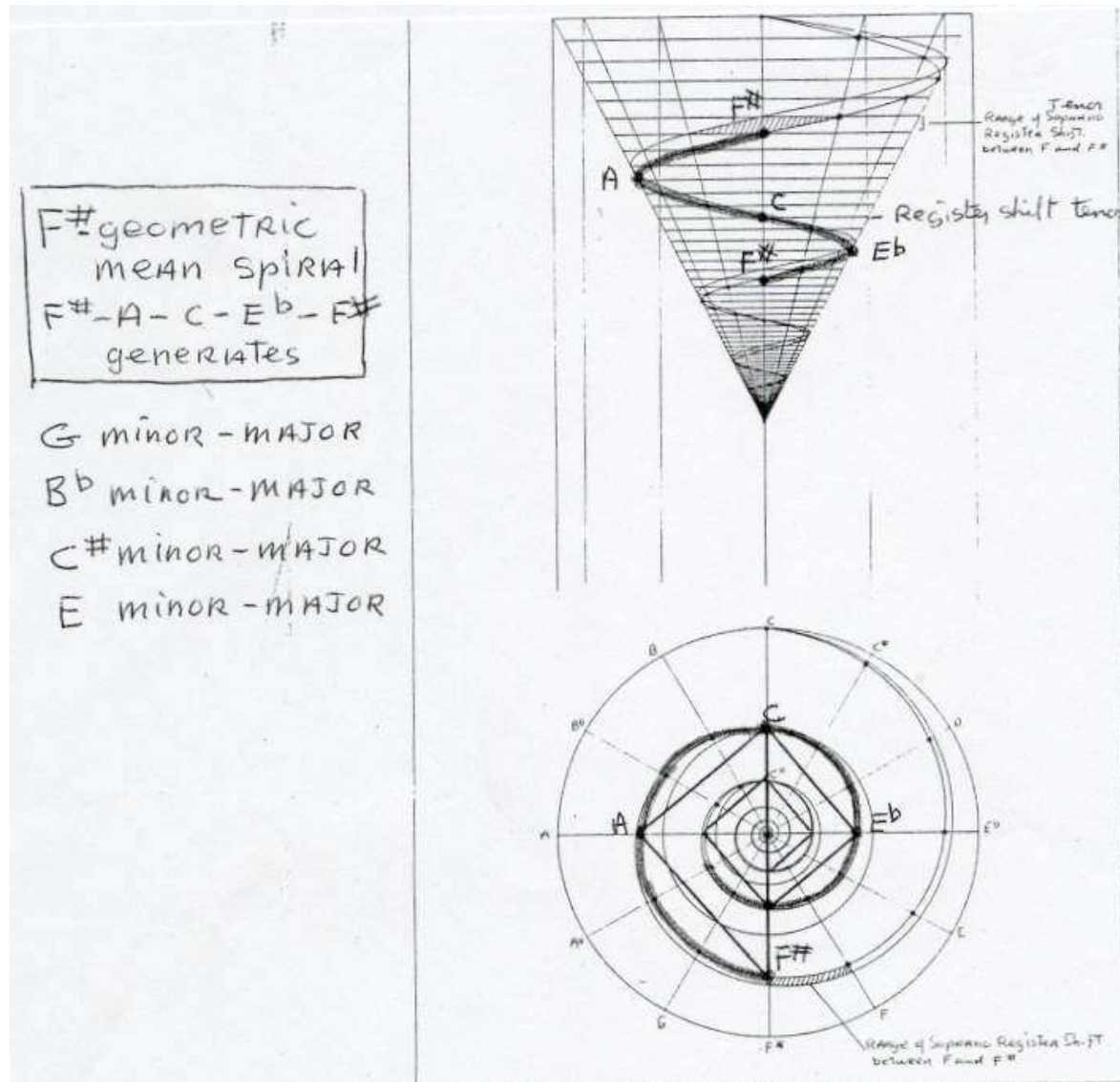


Figure 11 Conformal projection of the Conical-spiral division of Lydian intervals onto the discrete manifold.

This process of self-generating a *high density of singularities* from a conformal projection onto a discrete manifold is probably the simplest way of expressing how a dissonant musical surface of negative curvature relates to a musical surface of positive curvature. The most amazing aspect of this Mozart revolution, however, is that such a motivation (*Motivführung*) reflects the principle of design of the universe as a whole by generating and consuming itself in that performative transformation process.

The point to be stressed is not that we are a small speck being swallowed by the immensity of the universe; this is simply another fallacy of sense perception. The point is that we must become proud and humbled with respect to our own inquiries into fundamental principles which reflect to both the design of our mind and the design of the galaxy we live in. Our minds are similar to the universe as a whole. And, the truth of this galactic sharing moment is of the greatest significance for the historical outcome of future human expectation. And necessarily, this transfinite question must also resonate through politics.

If you include in the current turbulent moment of history the decrees that President Donald Trump has recently signed into law, you will begin to understand the paradoxical significance of this axiom busting process of history. Will Trump gain the respect of the people and will he truly exercise the political power of the one who is “seated first” (*prae sidens*) and above all others?

The irony, here, is that during an axiomatic transformation, the heat always goes into opposite directions as required by a surface of negative curvature. The process is such that a new dimensionality emerges within the inversion of such an envelope of axiomatic change. The results of such a process of change cannot be predicted; however, the overall behavior of the process can be forecasted, because, in the end, the victorious outcome shall be the one which will have followed the least action pathway that unifies the opposites. Otherwise, the whole shebang breaks down.

The paradox resulting from this inversion of negative curvature can be represented by the fight between the American principle of self-government and the imperialist principle of the British Empire. The political surface of negative curvature reflects the following: the Queen of England has been forced to go out on the limb with her “royal conventions,” in order to gain control over President Trump during an expected state visit, while 1.6 millions of her most supportive subjects have signed a petition to prevent Trump from coming to London. This tension inside of the British Empire will increase, as time goes by, and it will tend to either change the British system or destroy it. The fate of the Anglo-American-neo-con Empire is what hangs in this balance of negative curvature. Which way

the balance will finally tilt, no one knows, but the pathway is inevitable and perfectly foreseeable as demonstrated in Schiller's *Ibykus Principle* of poetic justice.

The reason why you know how you can forecast such an outcome ahead of time is because of your ability to think by means of time reversal. As Lyn summarized the point for music in his paper on motivic thorough-composition:

“Thus, the paradox is situated. The unfolding of the second type of idea, the idea of the composition in the process of becoming, proceeds in a forward sense of time, from the first interval of the composition to the concluding tone. The idea of the composition as a completed entirety, the first type of idea, is represented as its impact of the completed performance upon the uncompleted performance, upon the process of reproducing the performance yet to be completed. The first idea stands, thus, as representing a reversed ordering in time, in contrast to the naive sense-perception of the performance.

“Contrast to this the viewpoint of the naive observer. He would tend to the proposition, that at any point in mid-performance, the idea of the composition in progress is based upon the “non-teleological,” cumulative effect of what has been presented up to that relative point of time in the performance. In fact, at every point of a competent performance, it is the future (the idea of the work as a completed entirety), rather than the events of the relative past, which exerts the dominant influence on the manner in which each performed interval must be shaped.

“That is the paradox, the crux of the matter: The idea is shaped in both forward and reverse directions. That topological anomaly is the most crucial single fact about the role of memory in controlling the artist's performance.” (*That Which Underlies Motivic Thorough-Composition*, originally publishes in August of 1995 and republished in EIR, February 10, 2017, p. 59)

CONCLUSION

Thus, a matterofmind transfinite universe requires that the universe be represented as an expanding series of mental and physical complex and discrete manifolds, everywhere isochronically-interconnected in a new form of mental space-time.

As Lyn demonstrated, this change in our view of the universe is aimed at representing the reality of the fact that “*knowledge is a unity*” with the universe as a whole, which means that the truth about the human mind is that it must follow the principles which underlie the fabric of the physical universe itself and, therefore, must reflect the unity of such a transfinite principle as a true knowledge of the One and the Many as it emerges from Plato’s Cave.

The implication, here, is that this unity of knowledge must be reflected in such a manner that each facet of change in the universe is present and resonates, isochronically, in every other facet of that universe, like a transfinite series of nested manifolds; and the truth of it cannot be expressed outside of that multifaceted quality of the universe as a whole.

This means that no single individual and no single facet of knowledge can ever represent the truth, because the multifaceted truth of the universe understood as a transfinite series of nested manifolds cannot be projected through a single facet. The truth of this universal beryl gemstone, therefore, can only be replicated through the interior makeup of each and every other facet of change in accordance with their community of principles. That is why Lyn concluded: “*For this reason, it is not permissible to represent any facet as truth, except as we show implicitly that it is a true projection of the interior common to, and thus subsuming, the many facets.*” ([LYNDON LAROCHE, THE MEANING OF THE TERM 'TRANSFINITE,' 1988](#), page 72 of 72.)

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