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# THE GEOMETRY OF LYNDON LAROUCHE'S DOMAIN OF DISCOVERY OF PRINCIPLES

Dedicated to the FUNDAGES Educational Project of Colombia

By Pierre Beaudry, 2/4/2025

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## FOREWORD:

As I was finishing writing my last report, [LOVE OF MANKIND \(AGAPĚ\) IS THE HIGHEST GOOD](#), on December 23, 2024, I realized that it was only in the form of the *simultaneity of temporal eternity* that love of mankind (*agapĚ*) could secure human immortality; that is, the way to live in what Lyndon LaRouche identified as the time of creativity, the time of the domain of discovery of principles.

One year ago, LaRouche supporter Oscar Mauricio Valenzuela Cardenas, from Bogota, Colombia, invited me to give a Zoom class on the subject of the “Human Mind.”<sup>1</sup> I was not able to accept his invitation at that time, so, I now take this opportunity to dedicate this report to his work and to his students.

The Platonic idea of “temporal eternity” raises another question besides that of how to best make use of your time, the question is: what is the geometrical process of discoveries of principle?

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<sup>1</sup> Oscar Mauricio Valenzuela Cardenas is the Academic Director of the FUNDAGES Educational Project, Director of the OMVAC Creative Campus, and co-founder of the Lyndon H. LaRouche Jr. Study Center. Oscar reported that “FUNDAGES is the name of the Educational Project where children and young people are taught with a curriculum based on the ideas of Lyndon LaRouche and his collaborators.”

These are not easy questions to answer, even though they have been teasing the human mind for thousands of years, and my own over the last sixteen months of the last two years, as the density of accumulation of the following five reports indicate:

**107. WHY THE DISCOVERY OF LYNDON LAROUCHES TEMPORAL ETERNITY IS THE KEY TO PEACE TODAY**, March 11, 2023

**108. LOCATING TEMPORAL ETERNITY AS THE PHYSICAL SPACE -TIME OF MANKIND**, April 15, 2023

**109. ANALYSIS SITUS AND TIME-REVERSAL CAUSALITY IN TEMPORAL ETERNITY**, May 20, 2023

**113. LYNDON LAROCHE'S PRINCIPLE OF TEMPORAL ETERNITY AND PLATO'S PRINCIPLE OF ANAMNESIS**, November 6, 2023

**130. HOW PREESTABLISHED HARMONY COMES FROM THE FUTURE**, September 16, 2024

I must finally try to answer these questions relating to the geometry of the human mind, because the time has now come when mankind has finally arrived at a moment of tension in history such that a crucial axiomatic change, a fundamental moment of transformation has begun to take place worldwide, where temporal eternity has taken the form of the time that humanity is able to determine the directionality of a new and higher orientation for the progress of the universe, an orientation which is derived from a series of discoveries of principle that a great number of human minds must make in the immediate future ahead, and in which causality must be discovered as coming from the future, by time-reversal reciprocity, as opposed to from the past like in sense perception, which has been misdirecting mankind for centuries. So, let me give you a sense of this new form of time, which I have been reflecting on intensely for the last two years.

### **TIME-REVERSAL, RECIPROCITY, AND TEMPORAL ETERNITY**

As the centerpiece of his August 31, 1996 keynote address to the Reston Labor Day Weekend Conference in Virginia, Lyndon LaRouche introduced, for

the first time publically, a completely new and revolutionary concept of time, which he identified as “Time-Reversal” for the construction of an economic process.

Among other domains of application, LaRouche also indicated Classical motivic thorough-composition, because music is the most natural form of art which reflects the principle of motion of a galactic planetary system within which a form of doubly-connected cyclical action takes place. This is very significant because it is only by considering the galactic planetary system as a whole that one can provide the kind of concept of time that is required for understanding temporal eternity as the time of creativity. Furthermore, LaRouche emphasized “the crucial role of Carl F. Gauss’s treatment of the subject of ‘biquadratic residues’ in constructing an adequate representation of any mathematical function which purports to address the implications of “time-reversal” as the form of time required for creative thinking.”<sup>2</sup>

“Time-reversal” is also the most obvious aspect of the geometrical timing construction of biquadratic residues, because the process of generating such residues does not come from the past, but from the future; the reason being that causality is expressed as an inverse process of time.

This is the most difficult aspect of Lyndon LaRouche’s conception of economics, because it is in complete opposition to the ordinary way of thinking about time and causality. For sense perception, causality always proceeds from the past to the present, and most people have problems understanding biquadratic residue causality for that reason, because biquadratic residue causality always proceeds inversely from the future to the past.

The following Figure 1 illustration will, hopefully, help the reader to make the required axiomatic adjustment.

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<sup>2</sup> Lyndon LaRouche, [\*The essential role of ‘time-reversal’ in mathematical economics\*](#), EIR, Vol. 23, No. 41, October 11, 1996, p. 19.

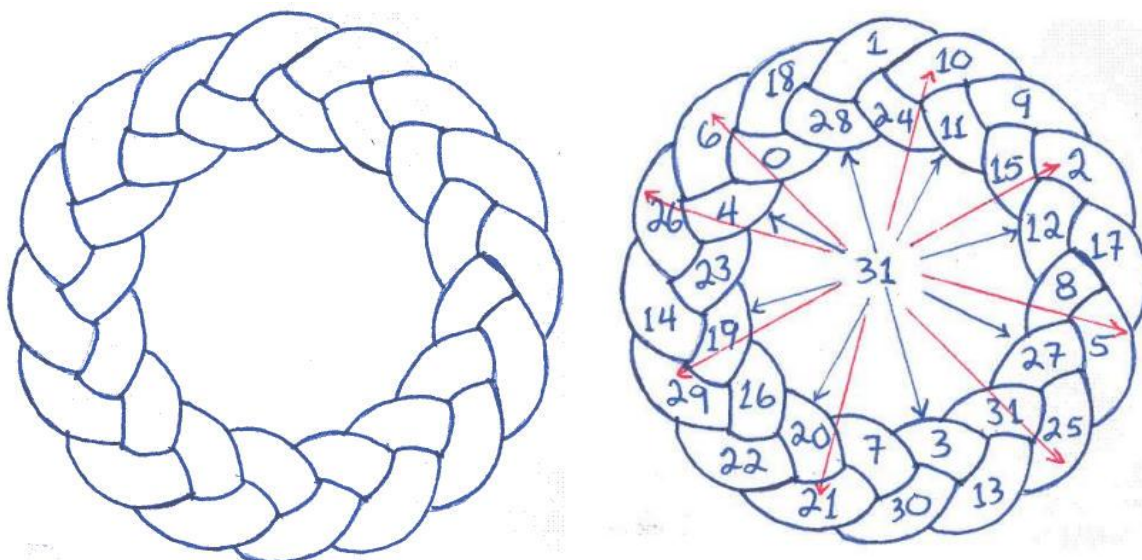


Figure 1. Reciprocity is the underlying principle of biquadratic residues.

Figure 1 shows that all of the numbers ordered successively into the same rotating torus motion of doubly-connected circular action demonstrate a preestablished harmony of any future number no matter how large it may be, because the torus geometry of biquadratic residues can always predict the position of the next future number ahead of time by time-reversal reciprocity; that is, within the framework of simultaneity of temporal eternity. In fact, you can always determine where a number appeared in the past by first locating where its reciprocal will be located in the future.

The preestablished harmony of reciprocals of Figure 1 demonstrates that there exists a natural geometry of numbers, which expresses the most elementary form of motion inside of a galactic planetary system like that of a planet cycling around the Sun. The process is the same for the human mind. In fact, the idea is to identify the daily cycle and the yearly cycle of your mind as being the same self-reflexive time as that of the Galaxy. Furthermore, in Figure 1, the reciprocity of number positioning makes it such that each number is established at the end of its corresponding time-length, in such an order from the very same beginning as all of the others. Thus, such a time and place expresses for each moment the transfinite time of reciprocity which is the time of simultaneity of temporal eternity.



Similarly, Lyndon LaRouche established the concept of time-reversal in the simultaneity of temporal eternity as the essential form of temporality for all discoveries of principle, which he formulated as follows: *“How might one represent, mathematically, a function in which an event in the future might serve as the apparent cause for an event in the present?”* The problem this poses is that the cause and effect timing process, which no longer moves from past to future, can only be conceived as such from the vantage point of future reciprocals. Causality must now be conceived as going from the future to the past. Thus, LaRouche considered “time-reversal” as *“the most important of the fundamental issues confronting mathematical physics today. It is also a key, axiomatic issue in the field of natural law, and, in a related way, important for cleansing theology of certain cultish, intrinsically pagan superstitions, which have no proper place in the teaching of Christianity, Judaism, and Islam.”*<sup>3</sup>

However important “time-reversal” may be considered to be for the domain of science, both its forward and backward directionalities must be conceived as coming from a self-reflexive process of doubly-connected cyclical action. In the physical domain, in spite of the linear appearance of sense perception, it is the cyclical nature of the “becoming” of galactic planetary systems, understood as a doubly-connected cyclical processes as a whole, which is the way to understand any concept of temporality of both the physical universe and the human mind. LaRouche defined this time vector process as a “generalized transfinite,” from the standpoint of Plato’s idea of higher hypothesis of “Becoming” and from Georg Cantor’s idea of the “Transfinite”:

“The consideration (hypothesizing) of these three, each well-defined notions of higher hypothesis, illustrates the significance of the term hypothesizing the higher hypothesis. This mental activity locates us ontologically within a domain which Plato terms ‘The Becoming.’ This definition of ‘Becoming’ Georg Cantor equates to his generalized Transfinite.

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<sup>3</sup> Lyndon LaRouche, [\*The essential role of ‘time-reversal’ in mathematical economics\*](#), EIR, Vol. 23, No. 41, October 11, 1996, p. 19. These topics may be taken up at some future time.

“This poses, as Cantor emphasizes, the equivalence of what Plato identifies as the ‘Good’ to what Cantor designates as his ‘Absolute.’ This Becoming, or generalized transfinite, corresponds to the highest possible ontological significance of physical space-time, as does Cantor's generalized transfinite. This, generalized, corresponds to what this writer chooses to identify, descriptively, as ‘Temporal Eternity.’ That descriptive term, Temporal Eternity, is required to distinguish a transfinite notion of "eternity" from the ‘timeless absolute’ of the Good.

“That Good or Absolute, is defined by hypothesizing the generalized ‘hypothesis of the higher hypothesis.’ The resulting conception can be nothing but the bounding of Temporal Eternity by an intelligent, timeless Absolute which is efficiently coincident at each moment, in each place, with all moments and places of all Temporal Eternity: The Absolute One, the Good.”<sup>4</sup>

Thus, the “Good” is the boundary condition of temporal eternity in the sense that it is the determining feature of all actions when they have the explicit intention of developing mankind for the improvement of the universe as a whole.

### **CONSTRUCTING THE UNDERLYING SPHAERICAL PRINCIPLE OF THE FIVE PLATONIC SOLIDS**

The point of constructive geometry is to show how the invisible domain works. Temporal eternity, or the time of transfinite process of change, is the road-map which LaRouche created in order to guide us to the higher geometrical forms of creative thinking, which he defines as non-entropy (living) as opposed to entropy (dying). However, the road doesn't get that complex right away. First and foremost, it calls for mastering elementary constructive geometry as the children in Colombia are doing by working out the geometrical construction of the Platonic solids' spherical principle. The question is: how do you construct the spherical principle of the five Platonic solids? (See Figure 2.)

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<sup>4</sup> Lyndon LaRouche, [\*The Truth About Temporal Eternity\*](#), Fidelio, Part I, Vol. 3, No. 2, September 1994, p. 16.

The key point to understand, here, is to make the difference between constructing the Platonic solids themselves and generating their principle of composition. This is how you are actually demonstrating the dynamic of universal composition of transfinite space-time which underlies the creative process instead of simply constructing its results.<sup>5</sup>



Figure 2. Student of the OMVAC Creative Campus of the FUNDAGES Educational Project in Colombia expressing her joy for having constructed the three elementary spheres of composition of the Five Platonic solids.

The two photos in Figure 2 were taken inside the Alfonso Prieto Vargas astronomical observatory, which is part of the Lyndon LaRouche Study Center that will soon be inaugurated in the FUNDAGES Educational Project. The question these photographs raise is why do you require three spherical constructions to generate the five solids? Why can't you have just one sphere doing it? What is missing here?

<sup>5</sup> See also a report I published on 8/19, 2022 for LaRouche's 100<sup>th</sup> birthday:

[LYNDON LAROUCHES CONCEPT OF THE -  
HIGHER HYPOTHESIS AND THE GENERATIVE PRINCIPLE OF THE PLATONIC SOLIDS](#)



First, temporal eternity comes simply and naturally to all human thinking persons, as a flash of curiosity, a sense of exploration of what is on the other side of what we already know to be outside of our limited knowledge, because the tendency of not being satisfied with what we “already know” is built into our minds, as a natural teaser to explore what is beyond the horizon of our mental limitations. The teaser is about the magnitude of the physical universe as a whole.<sup>6</sup>



What the human mind looks for, beyond the limit, lies on the other side of what it “already knows.” In that sense, looking for the unknown part of what our mind wishes to know is another way of looking for the domain of temporal eternity or for the transfinite. (See Figure 3.)

Figure 3. “*Looking into the transfinite of temporal eternity*,” woodcut engraving by unknown artist from [Camille Flammarion's \*L'Atmosphère: Météorologie populaire\* \(1888\)](#).

The question is, how can we use what is beyond our own imagination for the improvement of the mental powers of mankind? LaRouche already identified three constraints that our minds are required to take into account in order to increase our mental powers; that is, epistemologically speaking, increasing the power of human

<sup>6</sup> The woodcut engraving from Flammarion (Figure 3.) has no title and no author, yet it is a rare illustration which has a Cantorian transfinite quality to it, Therefore, the question is what can be expected beyond the mountain, over the horizon, or beyond the heavens, and how can it be expressed geometrically?



thinking per capita, increasing the domains of human investigation per capita, and increasing the thinking of everyone per human household. But, how is this to be done?

Such a multiply-connected economic function must also be accompanied by an increased number of new discoveries of principle, thus determining an increased degree of perfectibility of our society in realizing such progress for mankind as a whole. These new discoveries of principle must not only reflect an increase in knowledge of the different domains of investigation and their subject matter, but they must also reflect an increase in terms of changes and improvements in the noospheric domain of the universe as a whole, such that the universe may respond accordingly.<sup>7</sup> So, how do you increase such mental powers?

### THE HYPOTHESIZING OF THE HIGHER HYPOTHESIS

Apply this noospheric model of *hypothesizing of the higher hypothesis* to the last six hundred years of European and American development up to the end of World War II, especially beginning with the French and Italian Renaissance of Jeanne d'Arc, Louis XI, Filippo Brunelleschi, Nicholas of Cusa, and Leonardo Da Vinci, and you will discover to what degree the present historical period represents a crucial moment of axiomatic transformation for the whole of mankind. The benefit of looking at such a particular segment of history comes from the fact that the present period is the period of the most rapid rate of increase in human thinking power ever known in human history. That is the reason why the present world axiom busting moment is so unique in all of human history. LaRouche stated the matter conclusively:

“The truth of Temporal Eternity is mastering the hypothesizing of the higher hypothesis, as the efficiency of that quality of change is measured for us, as better or poorer, in terms typified by the physical economist's notion of *per-capita, per-household, and per-square-kilometer values* for not-entropic improvement of relative potential population-density. The same principle of universally intelligible natural law can be expressed

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<sup>7</sup> See Lyndon LaRouche, **THE ECONOMY OF THE NOOSPHERE**, EIR News Service, Inc., Washington D.C., 2001.

approximately in many ways, as has been the case down through the ages. It is expressed most precisely in terms of physical economy viewed as that has been described here.”<sup>8</sup>

Ask yourself: how can I apply such a “*hypothesizing of the higher hypothesis*” geometrically to the five Platonic solids with the use of a single sphere? In other words, how can a single integral spherical composition include all of the geometrical constructive principles of the cuboctahedron, the icosadodecahedron, and the tetrahedron? The answer is: *by discovering how time reversal is the measure of change because change is the measure of time reversal*. Such is the constructive principle of the integral Pythagorean sphere of the five Platonic solids: (See Figure 4.)



Figure 4. The integral Pythagorean 10-circle sphere for generating the five Platonic solids.

### **APPLYING THE GAMA BIQUADRATIC PRINCIPLE TO THE RIEMANNIAN MANIFOLD AND TO THE FIVE PLATONIC SOLIDS**

Two years ago, I developed from the well known Riemannian biquadratic manifold surface, a new method for constructing the five Platonic solids, which

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<sup>8</sup> Lyndon LaRouche, [\*The Truth About Temporal Eternity\*](#), Fidelio, Vol. 3, No. 2, September 1994, p. 23.

were generated exclusively from the cyclical motion of a calculating machine ribbon rotating inside and outside of itself as in a Moebius strip; that is, eight times in and out altogether, forward and backward, clockwise and counterclockwise (See Figure 5.). For lack of a better term, I called this vector directed principle a biquadratic GAMA principle, because the idea was to generate a Galactic biquadratic torus involving Geometry, Arithmetic, Music, and Astronomy (GAMA). (See Figures 5, 6, and 7)

The point I made in 2023, as I am making again now, is that it is the directionality of the multiply-connected vector motion of time which becomes decisive and not the finished product at the end of the process. In other words, if you wish to construct the GAMA principle of the Platonic solids, it is the principle of biquadratic motion which is the subject of interest, not the Platonic solids, as such, but the process that generates them.<sup>9</sup>

Things will always come as a surprise to you if your timing is dependent on clock time, and especially if you are convinced that time is money. A good example of this is the unforeseen “Sputnik shock” that the American Stock market received on Monday morning, Jan 27, 2025, when the news came that the Chinese were, with their new DeepSeek computer system, more advanced in AI technology than the American giants, ChatGPT and Grok. The reason for that success is that Chinese civilization is a self-generating “civilizational state,” as Zhang Weiwei demonstrated in, *The China Wave, Rise of the Civilizational State*.<sup>10</sup> The reason this process will never fail you comes from the fact that when things are self-generated, they are always predictable and you can never be caught by surprise when you set your watch on such a process of temporal eternity. Take the case of Figure 5.

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<sup>9</sup> See my 2023 report:

[RIEMANN'S ANALYSIS SITUS CUSAS METHOD OF UNFOLDING AND ENFOLDING AND THE GAMA PRINCIPLE OF COMPOSITION.](#)

<sup>10</sup> Zhang Weiwei, *The China Wave, Rise of the Civilizational State*, World Century Publishing Corporation, 2012, p. 3.



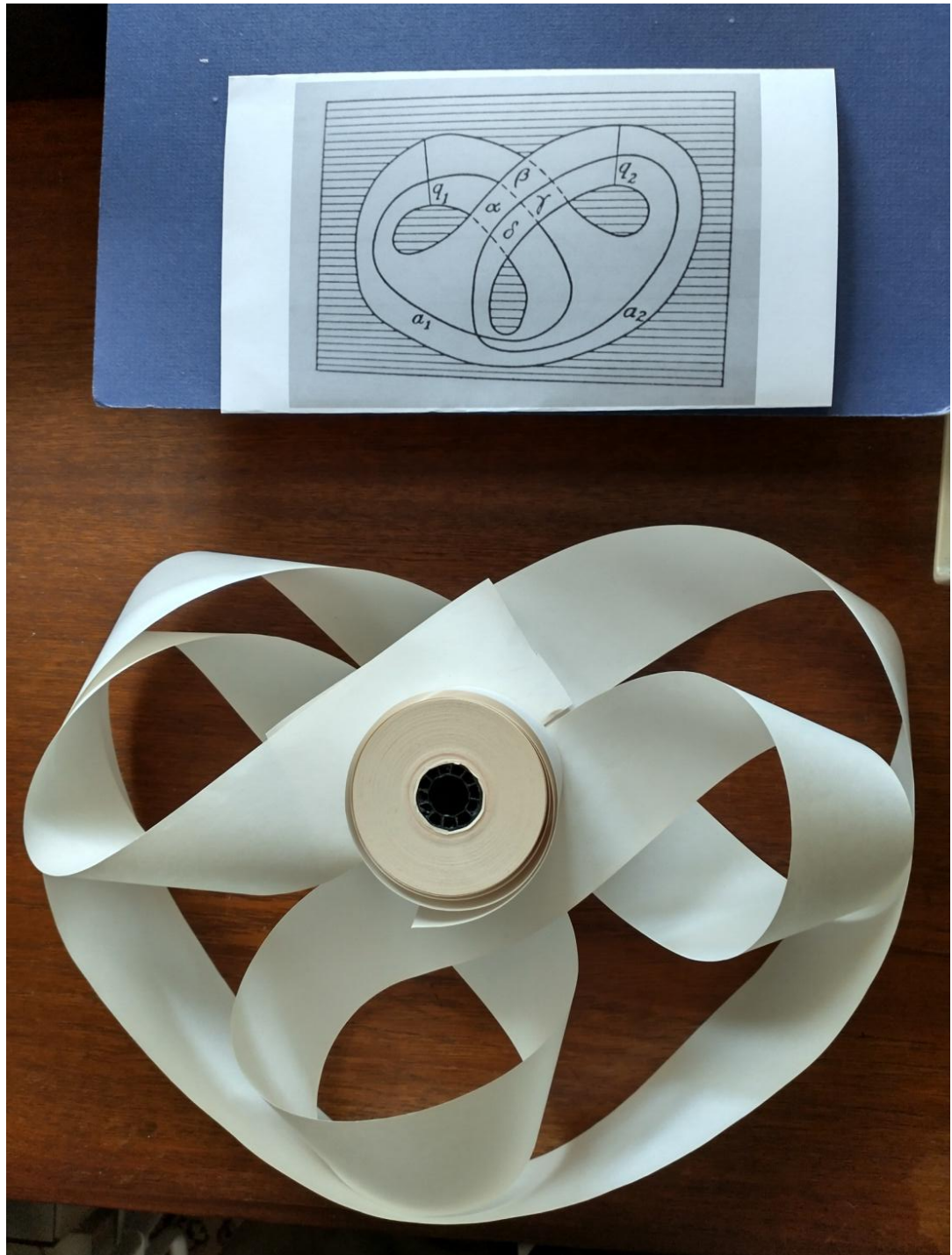


Figure 5. Applying the Moebius biquadratic principle to the Riemannian manifold.

In Figure 5, there is a single clockwise rotation outside the Moebius strip plus three counterclockwise rotations, followed by a second continuous clockwise

rotation on the inside of the same strip, followed by three more counterclockwise rotations. Thus,  $2 \times 4 = 8$  cycles.



Figure 6. Folded and enfolded cycles of a calculating machine tape into knots will form pentagons which, when closing onto themselves, will generate the dodecahedron.

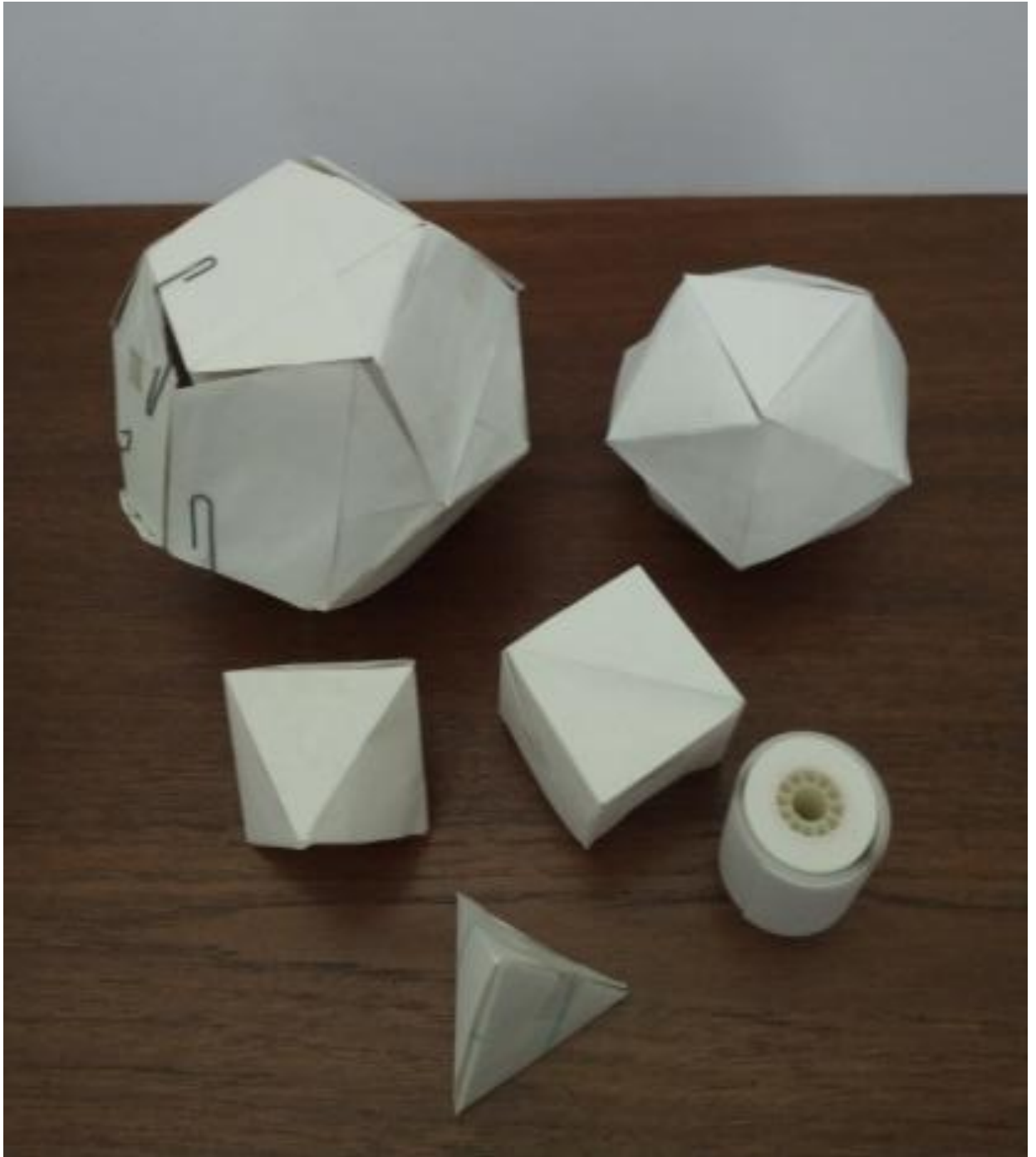


Figure 7. The same process applies to the five Platonic solids.



## VERNADSKY'S AND LAROCHE'S TIME VECTOR OF THE NOOSPHERE

Almost a century ago, Vladimir Vernadsky stated:

“21 [...] Time is not a dimension of metric geometry. Of course, time can be expressed in geometry by a vector, but it is obvious that such a representation of time does not subsume all of its properties in the natural phenomena studied by the naturalist; it provides him nothing real by way of knowledge. He has no use for it.

“Twentieth-Century science is now at a stage, when *the moment has arrived to study time, in the same way as we study the energy and matter filled space*. Minkowski's time, considered as the fourth dimension of Euclidean space, does not correspond to the time, which is actually observed in physical space. We should not forget that in concrete scientific work, we, generally speaking, are not dealing with the abstract absolute space of geometry. At every step, we are dealing with the much more complex *real space of Nature*.”<sup>11</sup>

Half a century later, Lyndon LaRouche elaborated further:

“Vladimir Ivanovich Vernadsky's systemic principle of human nature is a universal principle, which is uniquely specific to the crucial factor of the existence of the human species. For example: ‘time’ and ‘space’ do not actually exist as a set of metrical principles of the Solar system; their admissible employment for purposes of communication is essentially a nominal presumption. Since competent science for today can be expressed only in terms of the unique characteristic of the human species' role within the known aspects of the universe, the human principle is the only true

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<sup>11</sup> Vladimir Ivanovich Vernadsky, *Problems of Biogeochemistry II*, 21, Uzkoie, June 1938. Quoted from Lyndon LaRouche, *THE ECONOMICS OF THE NOOSPHERE*, EIR News Service, Inc., Washington DC, p. 316.

principle known to us for practice: the notions of space and time are merely useful imageries. ”<sup>12</sup>

In his *PROBLEMS OF BIOGEOCHEMISTRY II*, Vladimir Vernadsky further identified that his view of time was closer to the Riemannian conception of space-time than to anyone else he knew:

“22 [...] From my discussions with geometers, it has become clear that the geometry, corresponding to the required conditions, has not yet been elaborated. According to indications by Academician N. N. Luzin and Professor S. P. Finikov, it is possible that it is one of the geometries of the Riemannian type; perhaps one of those pointed to, but not elaborated , by Cartan. This geometry reduces all space to a point, endowed with *the germ of a vector* (Emphasis added).

“It were desirable, that these questions attract the attention of geometers. The investigative work of naturalists, in reality, always employs the mathematical constructions of geometers. Without them, it cannot develop correctly.”<sup>13</sup>

With humanity's ability to master this higher conception of temporal eternity, Vernadsky made the point that human beings are able to change their own personalities and, in doing so, they become able to increase their powers over the universe by causing cosmic geological processes to change as a whole. This change, in itself, represents a major transformation in time:

“We are living in a brand new, bright geological epoch. Man, through his labor – and his conscious relationship to life – is transforming the envelope of the Earth – the geological region of life, the *biosphere*. Man is shifting it into a new geological state: Through his labor and consciousness, the biosphere is in a process of transition to the *noosphere*. Man is creating new biogeochemical processes, which never existed before. The

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<sup>12</sup> Lyndon LaRouche, [\*Four New Laws to Save the USA Now! Not An Option: An Immediate Necessity\*](#), EIR, December 17, 2021, p. 4.

<sup>13</sup> Vernadsky, Op. Cit., pp. 317- 318.

biogeochemical history of the chemical elements – a planetary phenomenon – is drastically changing. Enormous masses of new, free metals and their alloys are being created on Earth, for example, ones which never existed here before, such as aluminum, magnesium, and calcium. Plant and animal life are being changed and disturbed in the most drastic manner. New Species and races are being created. The face of the Earth is changing profoundly. The stage of the noosphere is being created. Within the Earth's biosphere, an intense blossoming is in process, the further history of which will be grandiose, it seems to us.

“In this geological process – which is fundamentally biogeochemical – a single individual unit of living matter , out of the totality of humanity – a great personality, whether a scientist, an inventor or a statesman, - can be of fundamental , decisive, directing importance, and can manifest himself as a *geological force*. This sort of manifestation of individuality, in processes of enormous biogeochemical importance, is a new planetary phenomenon. It emerged, and began to manifest itself ever more sharply and profoundly in the course of time, *during the most recent ten thousand years*, on the background of billions of years of the prior history of the biosphere, when this phenomenon did not exist.”<sup>14</sup>

### **THE PREESTABLISHED GEOMETRICAL CLOCK OF THE SIMULTANEITY OF TEMPORAL ETERNITY**

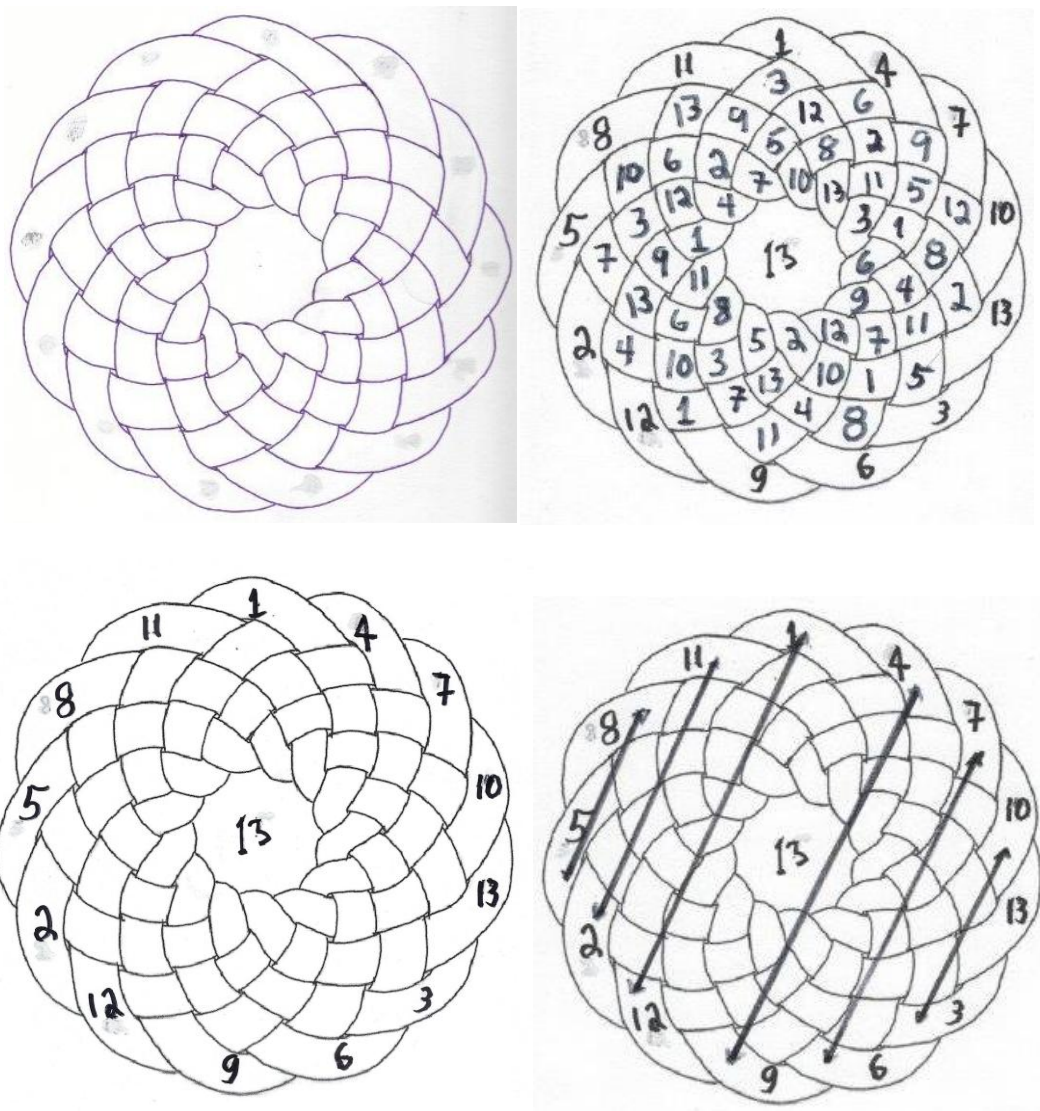
As a geometer, I am adopting, here, the idea that Vernadsky suggested from the Riemannian time-line “*with the germ of a vector.*” Imagine that the “Temporal Eternity” spectacle that the author of the Flammarion Woodcut is admiring has a time-line vector which can be adduced from a cyclical three-dimensional torus of increasing power and from which you are able to generate a temporal eternity clock cycle which functions, clockwise and counterclockwise, for an indefinite

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<sup>14</sup> Vernadsky, Op. Cit., pp. 278-279.



period of time; that is, as long as you wish to calculate Gauss's and Riemann's idea of biquadratic reciprocity.<sup>15</sup>



$$1+6+10+8+9+2+12+7+3+5+4+11 = 6 \times 13 = 78$$

Figure 8. The preestablished harmony of the Temporal Eternity Clock of 6 (mod. 13), or  $P/T = 6^n/13$ . All of the numbers of the 12 discoveries of principle taken two by two  $[1+12]$ ,  $[6+7]$ ,  $[10+3]$ ,  $[8+5]$ ,  $[9+4]$ ,  $[2+11]$  are preestablished as reciprocals of 13.

<sup>15</sup> See my report: [ANALYSIS SITUS AND TIME-REVERSAL CAUSALITY IN TEMPORAL ETERNITY.pdf](#), p. 15.

In fact, just for the fun of it, imagine that the time-line pattern of the temporal eternity of Figure 8 replicates the way true human time works within the reciprocal dynamic of your own mental discoveries of principle. Again, think of the process of rotation as being that of a doubly-connected cyclical Poloidal and Toroidal action, which reflects the rotating of planets around a galactic solar system.

## TWELVE DISCOVERIES OF PRINCIPLES

- 1) Gauss, Poincot, Riemann (Torus of biquadratic residues);
- 6) Plato (Soul of the World, Moving Image of Eternity);
- 10) Roemer, Fermat (Speed of Light, Least Time Principle);
- 8) Theaetetus (Five Platonic Solids);
- 9) Bernoulli, Leibniz, (Brachistochrone, Least Action Principle);
- 2) Thales Theorem (Height of the Pyramid);
- 12) Carnot, Monge, Poncelet, Leibniz (Constructive Geometry);
- 7) Roberval, Pascal, Huygens (Cycloid, Conics, Isochronicity);
- 3) Bach, Beethoven, Mozart (Lydian Musical Reciprocity);
- 5) Kepler (Solar System Harmonic Field);
- 4) Raphael (The School of Athens, Transfiguration);
- 11) Cusa, Leonardo Da Vinci (Isoperimetric Theorem);<sup>16</sup>

Imagine that the **12** numbers identified around the rim of the torus as reciprocals represent **12** different discoveries of principle that you have made at different times throughout your life-time, and within which such an approximate succession form of resolution of singularities takes place in order to improve the functioning of the world economy. This is the best geometrical metaphor I can think of to express the time function of Lyndon LaRouche's idea of *increase in potential relative population-density, the least-time principle of the universe*.

As the arithmetical case of **6 (mod. 13)** shows the constant progression of **1, 6,10,8,9,2,1,7,3,5,4,11,1**, (because the first power **6x6** divided by **13** gives a residue of **10**, then the next power **6x6x6** divided by **13** will give you the residue of

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<sup>16</sup> The twelve discoveries of principle are organized to work like biquadratic residues. The eight red and underlined ones are the reciprocals which pertain to the subject of creative space-time for the human mind as well as for the physical universe.

8, etc.), similarly the torus construction shows that **6** units of action time **6** waves moving clockwise leads you to residue **10**; then, **6x6x6** leads you to residue **8**, etc. This doubly-connected cyclical construction of the torus represents the appropriate form of geometry for biquadratic residues, whereby all of the powers of **6** divided by **13** accounts for the ordering of all of the residues of the cyclical series before taking you back to **1**. Thus, **1** wave leads to **6**; **6** waves lead to **10**; then, **10** waves lead to **8**, then **8** waves lead to **9**, and **9** waves lead you to **2**, etc.<sup>17</sup>

Reciprocity is the key concept to look for, here, because this is the principle which is the most flexible and which represents the most centralizing force that can maintain a constant increase in change of such a living system of increasing power in our universe. It is for that reason that I consider the principle of reciprocity as the central principle of this entire process of temporal and immobile eternity because it is the power which stabilizes and orients everywhere around the world the vector of love of mankind as the fundamental principle which is necessary to unite mankind and which I will now attempt to articulate geometrically with the study of Figure 8.

First and foremost, following the first four reciprocals (colored in red and underlined), the vector oriented torus follows a time-line which has been conceived as a *constant becoming of new discoveries of principle in the simultaneity of temporal eternity* at some moment during your lifetime. This means that anywhere you may find yourself to be located inside of such a time-frame torus, you must think of yourself as making things change, in the here and now, and only for the improvement of mankind. This cannot be understood with ordinary clock-time, because the motion that is being affected is constantly changing by axiomatically increasing one's own changing power of intervention all the time and by time-reversal. That is very significant.

Rotate clockwise the total number of Poloidal rotations required to complete the entire system of **78** Toroidal waves of Figure 8 by starting at **1** and finishing at **1**. Do the mathematical calculation yourself and see what you get. The entire cycle

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<sup>17</sup> To facilitate the process, the number waves can be counted clockwise on the outer rim of the torus.



will be completed in accordance with the following ordering of the residues; that is,  $1+6+10+8+9+2+12+7+3+5+4+11 = 78$  ; which is the entire cycle of power residues  $6 \times 13 = 78$ . This is the only arithmetical process I know where addition, subtraction, multiplication and division all come to work together for the same collaborating purpose of constantly changing the power of the human mind, as if from a preestablished harmony coming from the future.

Such a multiplying power is the equivalent of dividing by **13** all of the powers of **6** for the purpose of establishing their biquadratic residues on the rim of the torus cycle as a means to go to the next step. Thus, as Figure 8 demonstrates, *Temporal Eternity constantly increases its back and forth power motions by adding a new Poloidal wave residue to the previous power of 6. Each new wave-residue, thus, resolves all of the dissonances between the multiple Poloidal power of 6 and their Toroidal divisibility by 13; that is, resolving all Poloidal/Toroidal power proportions of 6 (mod. 13) within their geometrical ratios of  $P/T = 6^n/13$ .*

In other words, the residue number located at the end of each poloidal wave represents the means of resolving discontinuities between the Poloidal and the Toroidal relationship of such a doubly-connected cyclical action as within an arithmetical form of reciprocity of biquadratic residues, similar to a galactic planetary system. The significance of each residue, therefore, is that it reflects the number of Poloidal waves that must further increase the power of the whole system by way of coming back to itself as a constant reciprocal *axiom buster power*. This is how the human mind develops its own increasing powers of creativity.

Such a temporal eternity clock represents, therefore, a power function which includes an indefinite axiomatic self-modifying process as in the process of improving your own mind; that is to say, by representing a modular time measuring vector, which is constantly changing like a least action memory function.

## LYDIAN RECIPROCAL WITHIN THE MUSICAL INTERVALS OF THE TWELVE TONE SYSTEM

A good way to show how biquadratic geometry is effective in changing dissonances into harmonic resolutions is the Lydian musical principle of composition. Take the above twelve discoveries of principle two by two as duals of a more or less permanent series of six reciprocals: **(1+12)**, **(6+7)**, **(10+3)**, **(8+5)**, **(9+4)**, and **(2+11)**. The reason number **13** is excluded from this reciprocal process is because it is not a residue of **6 (mod. 13)**. It reflexes, in fact, the discovery of the principle of reciprocity itself, the One of the Many!

I relate this form of Gaussian-Riemannian geometry primarily to reciprocals because the discoveries of principle I have made during my life time are best ordered in this way by such a principle of space-time. Those discoveries act on each other at a distance, without my being conscious of it, and by modifying each other in accordance with newly introduced axioms. For this constant reason, it is the principle of reciprocity which dominates this higher domain of temporal eternity, which works very much like the rise of China as a “civilizational state,” as Zhang Weiwei described in his book, *The China Wave, Rise of A Civilizational State*. Reciprocity is, thus, both the starting point and the geometrical closure of the whole system within which all of the discoveries resonate harmonically as if inside of a Leibnizian preestablished harmonically constructed geometry:

**1) Gauss, Poincot, Riemann (Torus of biquadratic residues)**

**12) Carnot, Monge, Poncelet, Leibniz (Constructive Geometry)**

The torus becomes activated when you rotate your finger clockwise through the waves which correspond, each, to the residues corresponding to the number of power waves on the outer edge of Figure 8. For example, the second step **[10]** is the crucial least time principle which establishes temporal eternity in its original form of isochronicity **[7]** in connection with the Lydian Modality of musical composition **[3]**. One merely needs to listen to the reciprocity among Bach, Beethoven, and Mozart, in order to understand the function of such a harmonic collaboration:

**10) Roemer, Fermat (Speed of Light, Least Time Principle)**

**3) Bach, Beethoven, Mozart (Lydian Musical Reciprocity)**

Such a Lydian biquadratic proportionality becomes the form of musical composition as best expressed by Bach, Mozart, and Beethoven. The reciprocal relationship is the fundamental feature of the process of this higher domain, because it is the biquadratic partitioning proportionality of the human voice which represents the highest form of harmony in the universe as expressed by those three artists with their respective placing of the human voice. The placing of the voice and the identity of principles may vary, but their geometrical arrangement will always be in accordance with such biquadratic residue orderings as shown in the modular Lydians.

However, the timing of their clock is not “chronological” but “axiomatical”; that is, following the geometrical pattern which God used for the creation of the soul of the universe, as Plato wrote in his *Timaeus*: “And in the center He put the soul, which He diffused throughout the body, making it also to be the exterior environment of it, and he made the universe a *circle rotating inside of a circle* (Emphasis added), one and solitary; yet by reason of its excellence, it is able to know itself, and needing nothing else but knowing and loving itself, it sufficed to itself. Having these purposes in view He [God] created the universe as a happy god.”<sup>18</sup>

Such discoveries of principle are ordered according to the multiple powers of **6** with respect to **13**; that is, according to the number of space-time Poloidal/Toroidal rotations between them. Therefore, **1** poloidal cycle of **6** units of action rotates to **6**; then, **6** poloidal cycles of **6** units rotate to **10**; then, **10** poloidal cycles rotate to **8**, and so forth, until the whole process completes the entire cycle and comes back to itself after the indicated self-transformation. This can be viewed as progress of axiomatic changes in constant temporal eternity.

The total number of **78** waves that may be used in such a system depends on the relationship of power between Poloidal and Toroidal cycles; that is, depending

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<sup>18</sup> Plato, *Timaeus* 34b.

on the number of residues of the number of circles rotating inside of the other circle. The next number to be expected to come from the future can only be discovered by counting the number of cyclical actions required between the constancy of those two Poloidal and Toroidal powers.

The entire performative process of this temporal eternity cycle of discoveries of principle is, therefore, completed when the process of change comes back to its transformative starting point **1**; that is, when it is happy to get back to itself, after having made one last discovery of principle along the way [13], which brings closure to the power of Relative Potential Population-Density as LaRouche first indicated. That is what Plato called a “happy god.”

## THE GALACTIC PLANETARY ORBITS AND THE EQUAL-TEMPERED MUSICAL SYSTEM

THE PLANETARY ORBITS AND THE EQUAL-TEMPERED MUSICAL SYSTEM							
by WILLIAM BOHDAN							
PLANETS	ASTRO. UNITS	Log. 10X	ADDED CONSTANT	MULTIPLE CONSTANT	CYCLE EQUIVALENT	MUSICAL CYCLES	PLANETS
MERCURY	(P) 0.310	0.5086	+2.496	x 128.8	255.97	C = 256	MERCURY
MERCURY	(A) 0.470	0.3279	" "	" "	279.25	C# = 271.22	MERCURY
VENUS	(P) 0.715	0.1457	" "	" "	302.72	D = 287.35	VENUS
VENUS	(A) 0.725	0.1397	" "	" "	303.49	Eb = 304.44	VENUS
EARTH	(P) 0.983	0.0074	" "	" "	320.52		EARTH
EARTH	(A) 1.017	0.0073	" "	" "	322.42	E = 322.54	EARTH
MARS	(P) 1.379	0.1396	" "	" "	339.46	F = 341.72	MARS
MARS	(A) 1.661	0.2204	" "	" "	349.86		MARS
ASTEROIDS	(P) 2.2	0.3424	" "	" "	363.32	F# = 362.04	ASTEROIDS
ASTEROIDS	(A) 3.6	0.5563	" "	" "	393.13	G = 383.57	ASTEROIDS
JUPITER	(P) 4.95	0.6946	" "	" "	410.95	Ab = 406.37	JUPITER
JUPITER	(A) 5.45	0.7364	" "	" "	416.33		JUPITER
SATURN	(P) 9.006	0.9545	" "	" "	444.43	A = 430.54	SATURN
SATURN	(A) 10.074	1.0032	" "	" "	450.69	Bb = 456.14	SATURN
URANUS	(P) 18.288	1.2622	" "	" "	484.05	B = 483.26	URANUS
URANUS	(A) 20.092	1.3030	" "	" "	489.31		URANUS
NEPTUNE	(P) 29.799	1.4742	" "	" "	511.36		NEPTUNE
NEPTUNE	(A) 30.341	1.4820	" "	" "	512.37	C = 512	NEPTUNE

Figure 9. A first approximation of the Lydian divisions of the equal-tempered musical system and the Galactic Planetary Orbits of our solar system.

Figure 9 shows why the universe is so happy. There is a very unique relationship between the Solar System and the Equal-Tempered musical System,



which I discovered during the 1980's. It was several years after having discovered Kepler's correspondence between music and astronomy that I began to see the necessity to investigate the geometry of music. The discovery came slowly but surely after I made a crucial first connection between the Lydian divisions of the octave and the motion of our galactic planetary system as a doubly-connected cyclical action similar to that of biquadratic residues.

When Plato identified the world soul as created by God, he emphasized that it was not modeled with the same geometrical characteristics as He had used for making bodies. Plato also reported the different timing features of mind and body: "He made the soul in origin and excellence prior to and older than the body."<sup>19</sup>

The soul of the universe was created as the principle of space-time independent of the universe as a whole, which includes the creation of the celestial sphere and the principle of motion which composes and moves it in every direction within temporal eternity. My guess is that God created the soul first because He wanted the universe to respond to the command of the human mind. Here is the way, however difficult it may be to conceive, that Plato hypothesized the idea of temporal eternity:

"Whereas he made the soul in origin and excellence prior to and older than the body, to be the ruler and mistress, of whom the body was to be the subject. And he made her of the following elements and in the following way. From the being which is invisible and unchangeable, and from that kind of being which is distributed among bodies, he compounded a third and intermediate kind of being. He did likewise with the Same and the Different, blending together the indivisible kind of each with that which is portioned out in bodies. Then, taking the three new elements, he mingled them all into one form, compressing by force the reluctant and unsociable nature of the Different into the Same. When he had mingled them with the intermediate kind of being and out of three made one, he again divided this whole into as

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<sup>19</sup> Plato, *Timaeus* 34b.

many portions as was fitting, each portion being a compound of the Same, the Different, and the Being.”<sup>20</sup>

This is a very difficult text to understand because it deals with both invisible and visible things. My hypothesis is that Plato uses a “Riemannian” sort of timeline “with the germ of a vector” as a triply connected pathway for integrating the Same, the Different, and the Being into Unity, which leads him to the idea of the created image of temporal eternity. Plato identified this higher form of time as a “moving image of eternity:”

“When the father and creator saw the creature which he had made moving and living, the created image of the eternal gods, he rejoiced, and in his joy, determined to make the copy still more like the original, and as this was an eternal living being, he sought to make the universe eternal, so far as might be. Now, the nature of the ideal being was everlasting, but to bestow this attribute in its fullness upon a creature was impossible. Wherefore, he resolved to have *a moving image of eternity* (Emphasis added), and when he set in order the heaven, he made this image eternal but moving according to number, while eternity itself, rests in unity, and this image we call time.”<sup>21</sup>

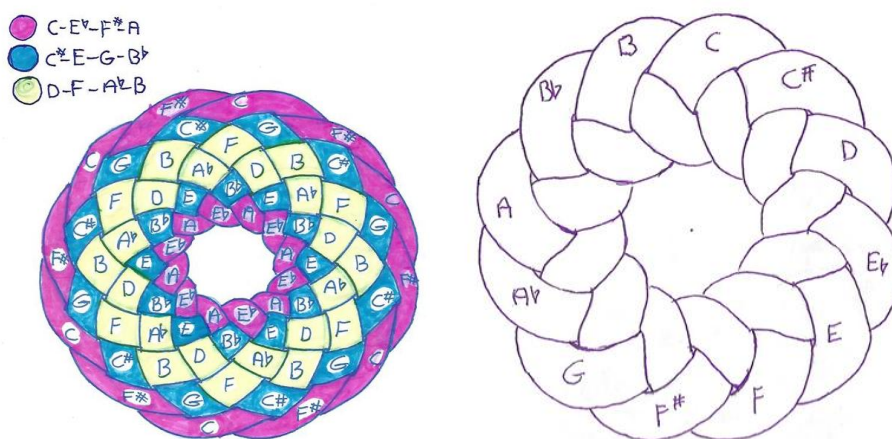


Figure 10. Three separate Lydian spirals generating one another: [C-Eb-F#-A-C], [G-Bb-C#-E-G], and [F-Ab-B-D-F] linked into one.

<sup>20</sup> Plato, *Timaeus*, 34b-35b, Translation by Benjamin Jowett.

<sup>21</sup> Plato, *Timaeus*, 37d.

In Figure 10, I see this process as being part of a complex spherical-torus motion that is exemplified in Beethoven's partitioning of the musical octave into three Lydian spiral actions. The figure shows the same coincidence of opposites as in Plato; that is where two opposite and dissonant voices can be brought into a higher resolution of unity for the purpose of transforming dissonances into harmonic classical artistic composition. The first lawful ordering feature I began to look for in such a cycle was the presence of reciprocals, because they represent the lawfulness of a naturally preestablished harmony. The second lawful ordering is the Lydian divisions of the octave. It was with those two crutches that I was able to adduce the following results:

## CONCLUSION

Eighty three years ago, in September 1942, Hannes Alfven wrote an axiom busting short report, ["On the Existence of Electromagnetic-Hydrodynamic Waves"](#) (PDF), in which he stated:

“If a conducting liquid is placed in a constant magnetic field, a mechanical motion in the liquid will in general give rise to an e.m.f. [electromagnetic field], which produces electric currents. The interaction between the magnetic field and these currents causes mechanical forces which change the state of motion of the liquid.

“Thus the application of a magnetic field to a conducting liquid causes a mutual interaction between hydrodynamic motion and electric current. Thus kinetic energy can be converted into electromagnetic energy and vice versa. This mechanism makes possible the existence of a kind of combined *electromagnetic-hydrodynamic wave*, which – as far as I know – has as yet attracted no attention.”<sup>22</sup>

Similarly, and in the hope that I am not too late in this connection either, no one – as far as I know – has ever answered the question: Are the musical positions of the Planets the result of such Electro-Magnetic-Hydro-Dynamic (EMHD) waves? I merely suspect that Alfven's (EMHD) discovery of principle had the

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<sup>22</sup> [Magnetohydrodynamic waves - Alfven 1943.pdf](#).

same purpose of electrifying the human mind into making new discoveries of principles as Kepler had done when he attributed to the solar system the power of musicality.

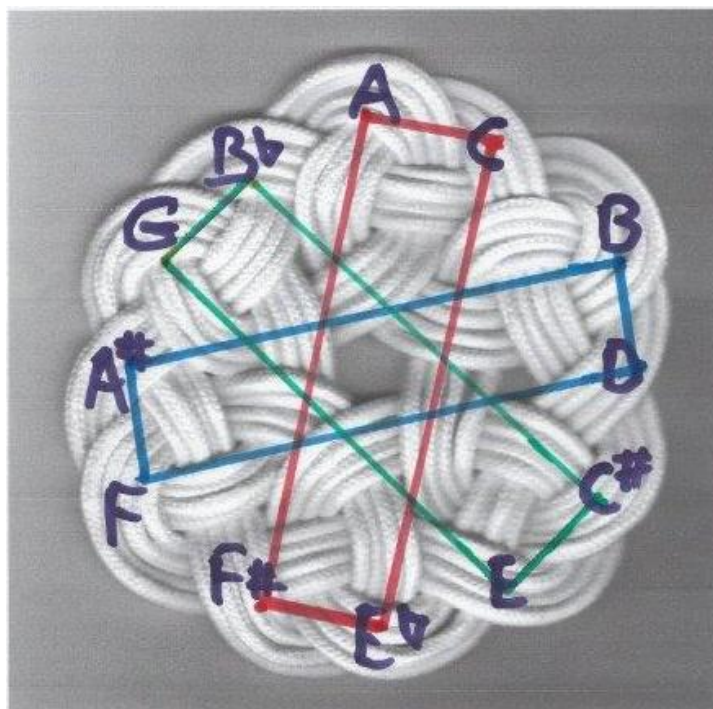


Figure 11. The successively ordered clockwise series of the twelve tones of the musical scale and the three sets of Lydian reciprocal divisions self-generating and resolving themselves like biquadratic residues.

What do these three sets of Lydian biquadratic reciprocals of Figure 11 tell us? First of all, they tell us that all actions are the same and opposite at the same time and in the same manner, continuously, and reciprocally. I have interpreted this strange anomaly as pertaining to the Lydian geometry of classical artistic composition; that is, as a process of resolving dissonances through the classical voice register shift ordering principle. Note how **C** and **F#** are cross-reciprocals like **A** and **Eb**. Each such unit of musical action forms a closed dissonant quadratic spiral action: [**C, Eb, F#, A, C**]; [**G, Bb, C#, E, G**]; and [**F, Ab, B, D, F**].

This knotted complex of three Lydian spirals has a very curious epistemological characteristic similar to that of biquadratic residues. Not only does Figure 11 reflect the continuous series of the musical scale, **C, C#, D, Eb, E, F,**



**F#, G, Ab, A, Bb, B**, as a repetitive time-line sequence, but the 6 inversion twists, which are included as time-reversal processes, show that the three quadratic sets of Lydian spirals are ordered as three reciprocal series which generate each other counterclockwise in such a manner that the red spiral [**C, Eb, F#, A, C**] generates the green one [**G, Bb, C#, E, G**]; the green spiral generates the blue one [**F, Ab, B, D, F**]; and the blue spiral generates the red one [**C, Eb, F#, A, C**]. Such a unity of musical composition is not simply a mishap along the way. It reflects a higher principle of composition as a common modality of composition in Bach, Mozart, and Beethoven.



Figure 12. Beethoven's *Sonata quasi una fantasia*, Opus 27, No. 2, first movement, measures 31-39.

Figure 12 shows how two such Lydian spirals act together as the generating principle of Beethoven's Piano Sonata Opus 27, No. 2 in C# minor.

**FIN**