
LYNDON LAROUCHE'S TRANSFINITE HOLOGRAPHIC MEMORY

For my friend and associate, Ernie Shapiro

By Pierre Beaudry, 2/22/26



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Figure 1. Leonardo Da Vinci, Star-of-Bethlehem and other plants. “Modern science has known, since the collaboration of Luca Pacioli and Leonardo da Vinci, that healthy living processes are characterized by a kind of harmonic ordering.” Lyndon LaRouche.

FOREWORD

Reflecting a unique moment of correspondence between two scientific minds, Lyndon LaRouche wrote in 1987 a series of very crucial [Remarks on Gurwitsch's Method](#). By publishing this project, LaRouche was demonstrating how to restore the necessary human historical memory that is required to make the next step of progress beyond the present day governing Epstein corruption.

LaRouche compared his work to a holographic memory which would store records of information like holograms that can store large amounts of data within a small physical space.

LaRouche used human memory as a transfinite mental function similar to what Alexander Gurwitsch had done in his groundbreaking work in optical biophysics, and most significantly, on brain functions in a 1929 paper titled, *Der Begriff der Äquipotentialität in seiner Anwendung auf physiologische Probleme*. (*The concept of equipotentiality in its application to physiological problems*). LaRouche underscored the extraordinary importance of Gurwitsch's work in the following way:

“The relation between the processes of the brain's cortex and the possibility of human synthetic judgment as an activity coherent with such cortical processes, becomes a central concern. The spectroscopy of these functions, from the vantage-point of mitosis in general, defines the general approach under which investigation must be broadly subsumed. Therefore, the work of Gurwitsch is properly of extraordinary interest.”¹

It is essential that an entire section of LaRouche's remarks be quoted, here immediately below, because it reflects a transfinite holographic projection of his collaboration with Gurwitsch. The reader should make a special effort of connecting the quotes from Gurwitsch and LaRouche's text as a mental hologram: the issue is “*eros*” vs “*agape*”!

¹ Lyndon LaRouche, [Remarks on Gurwitsch's Method](#), EIR, May 8, 2020, p. 48.

THE TRANSFINITE AS ONTOLOGICALLY EXISTENT²

By Lyndon LaRouche, March 15, 1987.

“Gurwitsch apparently first elaborated the approach of most specific interest to me in a 1929 paper, ‘Der Begriff der Äquipotentialität in seiner Anwendung auf physiologische Probleme.’ In this, the reporter (Michael Lipkind) emphasizes, the notion of ‘brain continuum’ was suggested and considered with incredible profundity so characteristic of A. G. Gurwitsch:

‘According to this concept, the cortex presents a three-dimensional continuous non-structural constellation and all the structural histoelements are plunged into it and ‘impregnated’ by it... However, the continuum state is determined by excitations of the related neurons only to a certain degree, since the excitation corresponding to the ‘perception of the whole’ of the ‘image perception’ (‘Gestalt’) cannot be considered as an associative connection of the excitations of the neurons. The evidence is that the elementary excitations flow into the continuum as a common reservoir.’

“This is precisely what is readily demonstrated for the function of creative scientific discoveries within the developmental processes of entire economies. This can be no mere coincidence, since it is precisely the highest order of brain functions which determine this relationship of microcosm to continuum (macrocosm). The reporter continues:

‘The above abstract conception of the brain continuum was revived and concretized when the theory of the vectorial biological field was established (A. G. Gurwitsch, 1944). In light of it, the cell field as a dynamic principle, spreading over the cell borders to intercellular space, continuously constitutes current connection between the cells and the resulting integral field, in a single general indissoluble, continual whole, interspersed with

² Lyndon LaRouche, [*Remarks on Gurwitsch's Method*](#), EIR, May 8, 2020, pp. 48-49. This is a section of LaRouche's remarks on Alexander Gurwitsch's work in biology as presented by Gurwitsch's former student, Michael Lipkind.

‘points of condensation,’ or maxima, which are the intracellular areas of the cell fields. [An interesting observation, respecting recent researches into AIDS dementia] The actual integral field of brain areas is now the expression of the above abstract continuum. It has constant (invariant) characteristics, which finally are suggested to determine the general character of the individual organism, including physiological manifestations.’

“My own epistemological investigations into memory and the Riemannian physics of ordering of technological advances, suggests that human memory is essentially geometrically holographic, rather than ‘digital.’ We do not ‘recall’ a particular memory, but, rather, regenerate (reconstruct) that which is presented as a recollection, holographically. This brings us to another of the reporter’s key points:

‘Strictly speaking, the psychical sphere, although closely related to (being an attribute of) the physiological activity of the brain cortex, does not belong to reversible processes, as [do] other functional activities of the cortex or any other physiological system. Indeed, the irreversible psychological “maturation” continues during all of the individual’s life-time.’

“From my standpoint in physical economy, the reporter’s description of Gurwitsch’s concept echoes my own knowledge of the role of culture in the technological progress of society. The individual’s development is shaped by culture, but the individual who contributes or otherwise distributes valid scientific-technological progress, modifies the culture of the society in that respect and degree. The individual’s ability to modify the culture in this way is conditioned by the culture; the modification of culture so effected, determines the behavior of the society thereafter.

“Cultures which are transformed in a way corresponding to increase of potential population-density, manifest what might appear to be a directed series of cultural transformations, each associated within a corresponding enhancement of potential population-density. Culture defined in terms of such interaction of microcosm and macrocosm, corresponds to the unifying morphogenetic principle

of Gurwitsch. Culture is to society, in this respect, what Gurwitsch's principle is to the continuum of brain-function.

“The reporter emphasizes that the empirical study of brain functions from the vantage-point of Gurwitsch's principle must take into account two distinguishable classes of phenomena:

‘The first one, is the connection between the external stimuli and the psychical manifestations which can be designated as feelings. The second one, concerns the current, incessant stream of chaotic thoughts, which is a certain background for all the other psychical activities. [for broad purposes of description, I would not introduce a quibble— LaR.] These two, evidently quite different phenomena have a common basis, which is as follows. Analysis of both the cases inevitably reveals what is designated by A. G. Gurwitsch as ‘the break of continuity,’ or ‘the gap in the entirety’: these are, perhaps, imperfect translations of the notion introduced by A. G. Gurwitsch, in Russian, in the original manuscript (*Analytical Biology*, unpublished). This ‘break of continuity’ is meant to occur while analyzing the somato-physical and psycho-somatic chains of the process: such a chain is considered to be continual as soon as at least one parameter is common for both its parts—somatic and psychical. Both the ‘classical’ and Gurwitsch's points of view accept as evident ‘the break of the continuity,’ but both differ in principle in the further analysis.’

“Here, I introduce an important qualification. Where the reporter writes ‘the gap in the entirety,’ I read ‘singularity’ in the sense of Riemannian physics. Where he writes ‘the break of continuity,’ I read ‘discontinuity’ in the sense of Lejeune Dirichlet's principle of Gaussian topology, and as defined by Karl Weierstrass: another aspect of singularity.

“One of the convenient measures of ‘negentropy,’ as I choose to define it in physical economy, is as an increase of the density of discontinuities per interval of action. The relevant Cantorian theorem, on enumerability of discontinuities within an arbitrarily small interval of action, applies; this Cantorian theorem must be read not only from the standpoint of Weierstrass, but as a proposition in Riemannian

potential theory, as viewed, generated from radically constructive Gaussian synthetic geometry.

“This has a simple demonstration in physical economy, where the structure of the division of labor becomes richer in singularities in correspondence to raising of the level of technology and productivity, and where the density of such singularities of process-structure diminishes under influence of economic devolution.

“The remainder of the reporter’s account of this matter, respecting Gurwitsch’s work, speaks for itself. With one important exception, to be stressed next, my views are already implicitly identified above, or else the report is of such a nature that I should add no embellishment to it. There is one subsumed point, on the subject of ‘feeling,’ in which the reporter’s account oversimplifies the problems to be considered.” (End of Lyndon LaRouche’s statement)

TIME-REVERSAL AND THE TRANSFORMATION OF THE PAST HOLOGRAPHICALLY

The most essential idea to discover today is how to go from a nation-state citizenry to a world citizenry, and to a Galactic citizenry. How do you make that leap into the future? This is not an easy problem to resolve, because the intention behind the idea of the sovereign nation-state lies in the citizen’s ability to discover the significance and importance of *time-reversal*.

Here is the problem: most people think that their identity must reflect both their nation-state and its past history, because they believe their uniqueness comes from their nation’s past history. That is a fallacy of composition, because nationalism is an incomplete form of human identity. As Leibniz stated: ***“Provided that something of importance is achieved, I am indifferent whether it is done in Germany or in France, for I seek the good of mankind.”***³

The irony, here, is that Leibniz never considered himself to be a German citizen, or a European, but as a Citizen of Heaven. This irony is even more

³ Quoted by A. P. Coudert, *Leibniz and the Kabbalah*, Kluwer Academic Publishers, Dordrecht, Netherlands, 1995, p. 11.

enjoyable when one realizes that since the dissolving of the European nations into a European Union by the Maastricht Treaty of 1992, this international integration of nations has failed to become a competitive block against the United States, because the geopolitical idea of a “European Nation” concocted by the British Empire failed to establish their New World Order.⁴

The national identity of a people does not come from the past; it comes from the future. American and European citizens have failed to understand the true meaning of human sovereignty underlying the idea of nation-state as it was established by Nicholas of Cusa during the fifteenth century Italian Renaissance. The only successful attempt in establishing this idea was made in the United States, in 1776, but, tragically, the US is now failing, because its leaders have been unable to apply its own principle to other nations. The new motto has been changed to: “Keep your poor and wretched and send us your rich and healthy.” Although the United States succeeded in applying Cusa’s principle to itself in the beginning, it has failed to maintain it throughout its history. This has been our biggest mistake.

Thus, *time-reversal* becomes the most useful measure for properly recollecting history and for reestablishing man’s true human identity as being Galactic. Therefore, what must be understood from Cusa’s and Leibniz’s idea of nation-state was never truly implemented, because something crucial was missing during all of this time and was not understood until today; that is, the governing universal principle of *time-reversal* by the creative state of mind. As the case of China demonstrates today, Cusa’s idea of the nation-state must be applied as a “Win-Win” policy in every nation of the world.

Therefore, the effect that Nicholas of Cusa has had on society has to change. It cannot remain within the walls of the cloisters where only a few philosophy professors or some secluded mystics have access to his method. *The past has to be changed from the future.* In other words, what has to be retrieved from Cusa has to be changed in application and made to correspond to the Galactic conditions of mankind. But, the idea to be rediscovered is still hidden deep within the recesses of

⁴ See my report: [NICHOLAS OF CUSA AND TIME REVERSAL](#), June 1, 2015

Plato's Cave, where it has been hidden for more than half a millennium. The time has come to dig this out and change the past.

RAPHAEL'S 'THE TRANSFIGURATION' AS A RECIPROCAL GEOMETRY OF HOLOGRAPHIC MEMORY

What both LaRouche and Gurwitsch express in the above dialogue is not simple, because the appropriate geometry for the concepts of “*singularity*” and “*discontinuity*” is actually missing in current scientific knowledge.

The best way to express what is missing is in the language of torus geometry. How can the torus of complex numbers help us understand the holographic memory question that LaRouche refers to? What is a geometrical view of a *holographic memory*? It is a closed three dimensional storage area with a surface of positive and negative curvature, which reflects reciprocities and axiomatic transformations within the unity of your mind as in the universe as a whole. Go back to the axiomatic change that I discussed in 2018 with Raphael's *The Transfiguration* (1520) and you will see my point:⁵ See Figure 2.

Why is Raphael focusing the spectator on the young boy's transfiguration instead of the transfiguration of Christ? What is the difference between the two? What is the shape of the motion that he imposes on the spectator?

Here, the spectator is forced to follow a sort of figure eight circular motion starting from the kneeling woman at the bottom of the painting and moving toward the young epileptic boy on the right. Then, the motion goes upward toward the man in red, then turns toward the left side into the circular shape of the heaven where the deliberately shortened drawing of the figures of Moses, Christ, and Elijah goes around to the right before coming back down from right to left to the apostle located on the bottom left side of the painting, who is portrayed studying an open bible and is pointing his right foot outward in the face of the spectator, as if to warn him that there is a massive *discontinuity* inside of this painting. The full cycle of this motion is like the pathway of a negative curvature Moebius strip

⁵ [ANALYSIS SITUS OF WHOLE NUMBER RECIPROCITY AND HOW TO MAKE AN AXIOMATIC CHANGE, February 22, 2018.](#)

which completes and resolves an impossible transformation of two extremes within a holographic memory.



Figure 2. Raphael de Sanzio, *The Transfiguration*, 1520. Vatican Museum
en.wikipedia.org/wiki/Transfiguration. (Raphael)

Why did Raphael choose to make such a difficult transformation inside of his last and most important artistic composition? Everyone in the painting is pointing in different directions as if the scene represented a chaotic moment of transformation that only the spectator is capable of solving. Why is the spectator confronted with such an alternative between Christ and the epileptic boy? The reason is because the observer must stop being simply an observer; he is required to make the discovery of an axiomatic transformation inside of his own mind by discovering the domain of the higher emotion of love of mankind, as opposed to an animalistic feeling. The spectator cannot do that without making the axiomatic difference between “eros” and “agape.” How can he do that?

For example, how can you make the difference between simple circular action and doubly-connected circular action? How can you represent the holographic moment of memory of such an axiomatic change between those two opposite actions? First, locate the inversion gap of discontinuity between the inscribed and circumscribed pentagons of a circle (Figure 3.) and ask yourself: how do you *axiomatically change from simple circular action to a transfinite doubly-connected poloidal/toroidal circular action?* You can do it with torus geometry. (Figure 3)

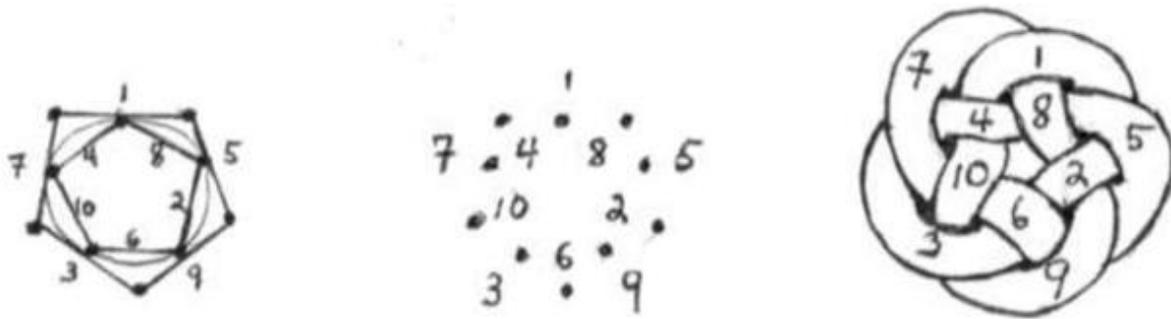


Figure 3. Holographic memory of an axiomatic change. Torus 3 mod. 5, where Toroidal is 5 and Poloidal is 3.

The two series of pentagonal numbers **1, 3, 5, 7, 9** and **2, 4, 6, 8, 10**, are separated axiomatically by the boundary limit of the circular trace of the circle. How do you find the coincidence of opposites or the reciprocal unity between those two series? How can you cross the boundary condition of the circle? How

can you jump over that discontinuity? You can do it by bringing the two series of odd and even numbers together into a different ordering process. How do you go beyond the limitation of the simple circular domain? What sort of bridge is required to go over the discontinuity between the inscribed pentagon and the circumscribing pentagon?

Considered only as an actual *geometrical memory hologram*, rather than an arithmetical formula, the torus **3 mod. 5** encapsulates only the idea of congruence that Karl Gauss identified at the opening of his *Disquisitiones Arithmeticae*, when he said: “If a number *a* divides the difference of the numbers *b* and *c*, *b* and *c* are said to be congruent relative to *a*.” Apply this same idea of congruence to the function of the “kneeling figure” at the bottom of Raphael’s *Transfiguration* and you will discover how the creative process is also a crucial *epistemological memory transforming function* for artistic composition. The idea is simply to discover how to change, how to make an axiomatic transformation.

Art historian Giorgio Vasari identified Raphael’s masterpiece as “*the most glorious and most inspired work*” because it teaches you how to make an axiomatic change. From this vantage point, it is crucial to identify the kneeling figure in the foreground as the “*principle*” figure of the entire scene, because it leads you to unravel the mystery of the connection between Christ and the epileptic child by looking for *what is not there*; which is the crucial role of the spectator.

The kneeling figure is not identified in the language of the Gospel, because the connection between the transfiguration of Christ and the epileptic boy is not in the bible; it is Raphael’s own invention. Following LaRouche’s lead in his paper on Gurwitsch, the actual subject matter of Raphael’s representation of *The Transfiguration* is on the subject of “*feeling*” expressed by the opposition between *eros* and *agape*. LaRouche stated in his [Remarks on Gurwitsch’s Method](#):

“The classical Greek recognizes two distinct qualities of “feeling.” This is typified by the use of two different terms, “*eros*” and “*agapē*,” to correspond to the domain of one English term, “*love*.” In reality, a purely contemplative form of knowledge does not exist. All thought pertaining to the quality of rational knowledge involves what are potentially extremely

strong degrees of emotion. All thought is a disposition either for action, or relative inaction. It is the “*feeling*” aspect of thought which supplies the quality of action or inaction. The most important feature of this connection of thought to “*feelings*,” is the proper discrimination among the two qualities of feeling available.”⁶

That difference between *eros* and *agape* is expressed by Raphael in the difference between the epileptic child and the glorious Christ. Such is the *reciprocal unity to be discovered between the finite and the transfinite for the spectator*.

Thus, the subject of *The Transfiguration* becomes the subject of *axiomatic change* between *eros* and *agape*; this is what the apostles have to discover if they wish to help the epileptic child recover: discover the *Reciprocal of the Extremes*, or the *Coincidence of Opposites*.

Raphael included the figure of a kneeling woman as representing the spectator inside of his composition, because this kneeling woman is the only one who can recapitulate the three different states of mind of the subjects inside of that painting. In fact, that kneeling figure represents the uniting principle among those three states of mind: 1) the tragic state of the possessed boy and family, 2) the incapacitated state of the Apostles, and 3) the sublime transfinite state of Christ going to heaven. That is the *biquadratic memory function* of the spectator. That is why the kneeling figure points to what has to be resolved, which is what the Apostles are missing in their ability to save the possessed boy. The spectator must, therefore, discover the blockages which prevent the Apostles from fulfilling their ministry. That's the message Raphael's *The Transfiguration* is conveying.

Raphael located what is missing by emphasizing that the source of light outside of the painting was for both this kneeling figure and for spectators outside of the painting. [Note the presence of three spectators in Figure 2.] The photographer of the painting is replicating Raphael's intention. That source of light is located in the upper left region behind and above the spectators who are standing

⁶ Lyndon LaRouche, Op. Cit., p. 49.

in front of the painting, as if to impress upon them the necessity to discover that they are directly involved in solving this conundrum of the creative process which is: *how do you make a transfinite axiomatic change?*

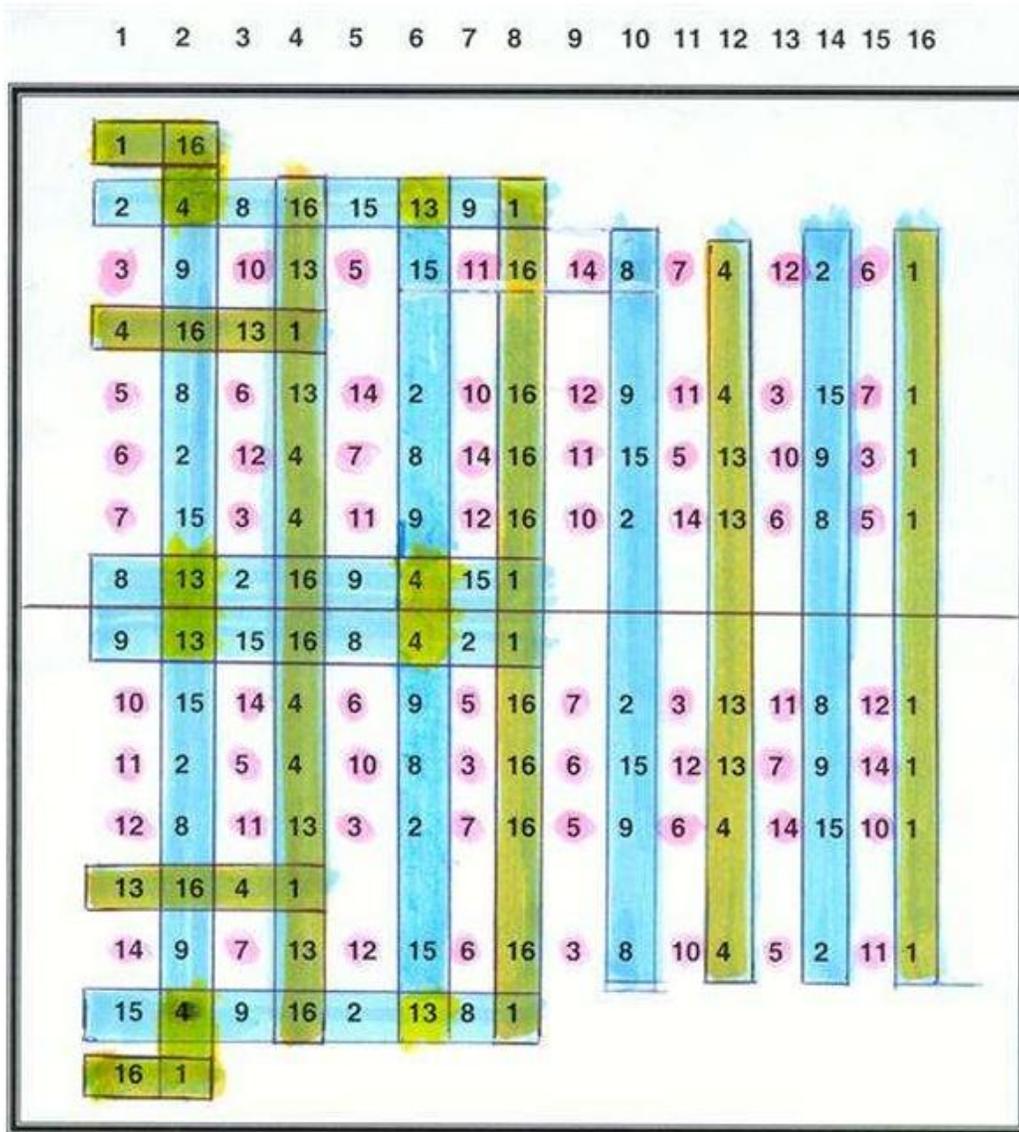


Figure 4. Eight Primitive roots (pink), four biquadratics (green) and four quadratics (blue) of modulus 17. Note the intervals of eight between all of the reciprocals!

Next, look at *what is not there*, again, within the distribution of all of the possible combinations of quadratic residues, biquadratic residues, and primitive roots of module 17. See Figure 4. Note especially the reciprocity of the entire

module. It is your discovery of the *biquadratic reciprocity* which holds the process of its elements into a unified whole, as if they were all knitted together from all directions and from opposite ends. All of the residues of the **8** primitive roots are vertically and horizontally reciprocal; and all of the quadratics, biquadratics, and primitive roots turn out to be mirror images of each other as if to express the chirality of a living process.

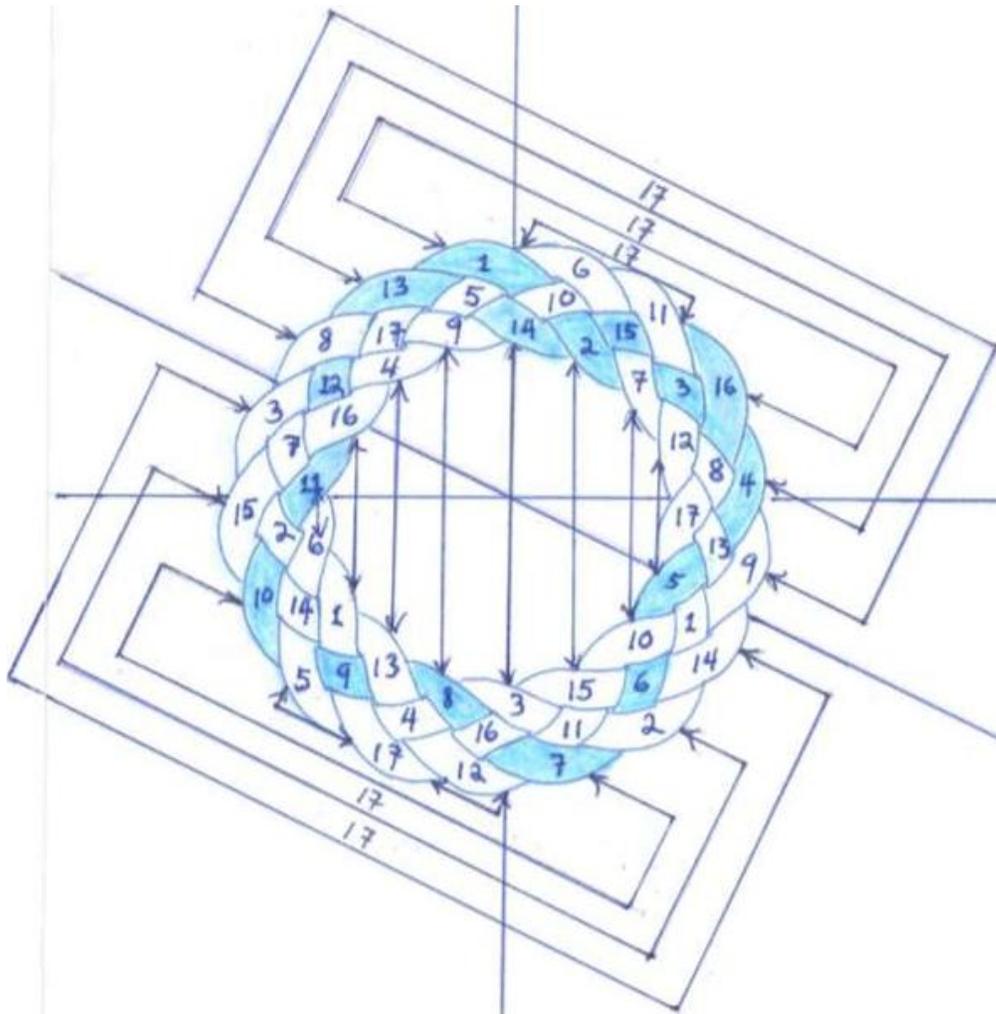


Figure 5. Reciprocals of 4 mod 17.

Figure 5 represents reciprocals of $P/T = 4/17$ with intervals of 8 between all reciprocals; clockwise: **4, 16, 13, 1**; counterclockwise: **15, 4, 9, 16, 2, 13, 8, 1**. The distribution of the four biquadratic residues of $P/T = 4/17$ shows the amazing

reciprocity between **1-16** and **4-13**; and reveals the knot they form (in blue) by holding the reciprocity of the entire module.

Lastly, I have included Figure 6 below as an exercise for the reader to follow the ordering underlying process of *analysis situs* of the geometry of whole numbers. Do the following theorem: Given a Torus whose **P/T ratio is 3/17**, (otherwise understood as **3 mod. 17**) find by construction alone the **16** continuous modular waves of **3** as the primitive root of **17**.

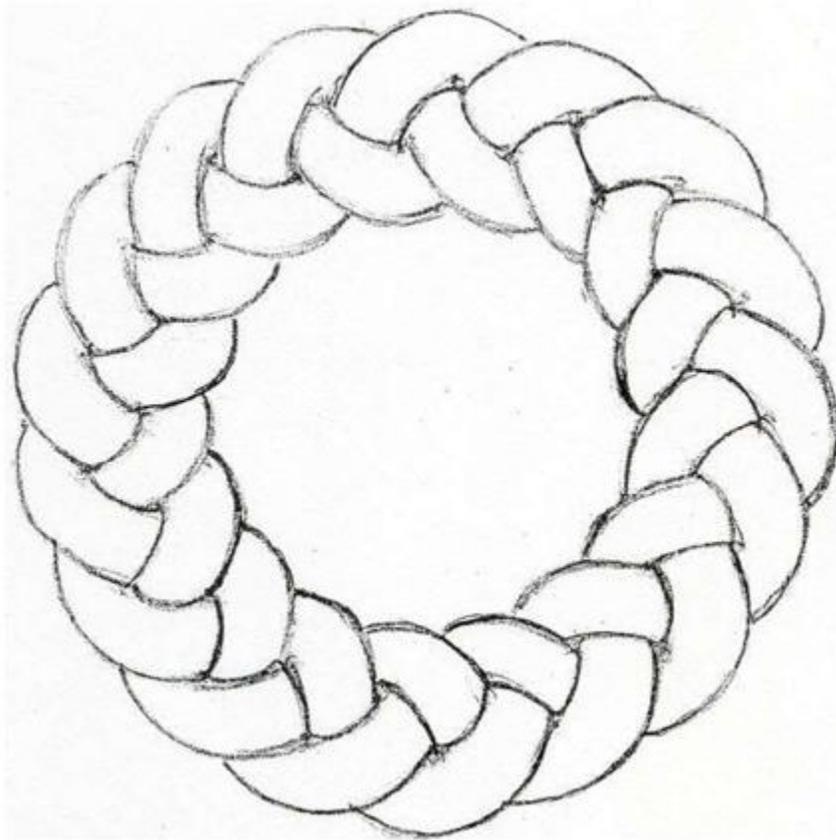


Figure 6. Torus of 3 mod. 17.

First locate **1** at **12** noon inside of Figure 6 and fill all of the empty spaces clockwise with two continuous sets of integers going from **1** to **17**. Secondly, discover *what is not there*; that is to say, find the following series of ordered modular waves which generate the following ordering of primitive root residues **3,9,10,13,5,15,11,16,14,8,7,4,12,2,6,1**, without relying on any form of calculation

whatsoever. Note that the residues are ordered following their reciprocals: [3-14], [9-8],[10-7],[13-4],[5-12],[15-2],[11-6],[16-1]. For centuries, mathematicians have missed *what is not there*, because it was not made visible to them as something worth discovering. True, if you don't do the construction yourself, you will never know what you have missed.

Thirdly, let your fingers do the counting around the toroidal circumference of the donut and let your mind demonstrate to you, by means of *analysis situs* construction alone, that the residues of primitive roots can be found without ever calculating them. Let the Poloidal waves express the increasing powers of the process of eliminating the differences between two numbers in such a way that a third is always able to discover where the position of the next residue is located. Here, the total number of Toroidal coverings will be $P[T-1]/2$; that is, $3[17-1]/2 = 24$ and the total number of Poloidal waves will be **136**.

The wave counting process is the long-handed process of arriving at the next residue. This is done by counting the number of Poloidal waves to be made from the number identified by the previous residue. Thus the "*situs*" of the next residue is already accounted for by the previous one as if it were its generator. That is *preestablished harmony*.

However, the short-handed way of arriving at the same result is the shortest route because all you have to do is to count the number of rim-intervals of the **17**-sided donut as far as you can go until the unknown residue you are looking for pops up as the one you have arrived at; simply because you have called its number without knowing what it was. That is how *what is not yet there* comes to be now.⁷

FIN

⁷ Should you have any problems understanding the underlying least action process of these constructions, just write to me at the following email address: pierrebeaudry@larouchepub.com