



# THE LEONARDO-GAUSS MODULAR WAVE FUNCTION AND THE PEACE OF WESTPHALIA

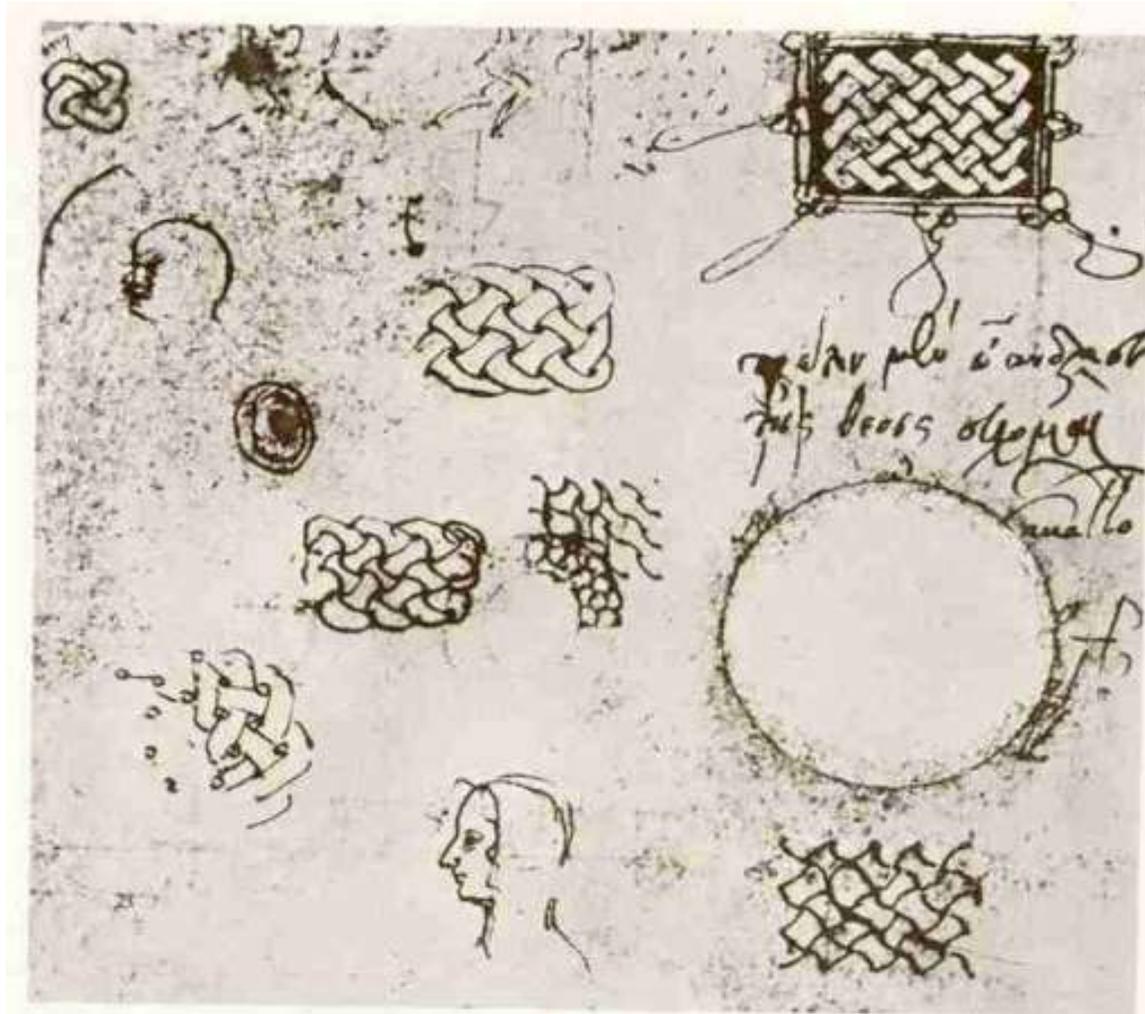
by Pierre Beaudry 8/13/2007



In first approximation, the original idea of a *modular wave function* is derived from the physical process of the fluid motion of water, air, or magnetic fields generally. The idea is to express such phenomena of physically well ordered processes by means of physical geometric constructions that display such characteristics as a fluid which makes loops and braided overlaps, but without obstacles, kinks, or singularities in them; that is, in such a way that they form harmonically ordered continuous closed curves of finite, or infinite lengths, that describe the least action, or *force-free* motion of a planet orbiting around the sun, or as the case of the blood-streams inside of a living being, or a magnetohydrodynamic plasma fluid inside of a torus. **Figure 1**

From a higher standpoint of LaRouche's idea of integrating economic science, physical science, and Classical Artistic Composition, a higher concept of *modular wave function* has to be derived from a Riemannian *Geistesmassen* whose Keplerian harmonic congruence is reflected into a higher Gaussian idea of power, which requires pedagogically a combined visual and a hearing experiment. Such a musical experiment is exemplified by what LaRouche has, for forty years, identified as the higher form of intervals of action notably expressed between the Ricicare of Bach, the Fantasy 475 of Mozart, and the Opus 111 of Beethoven.

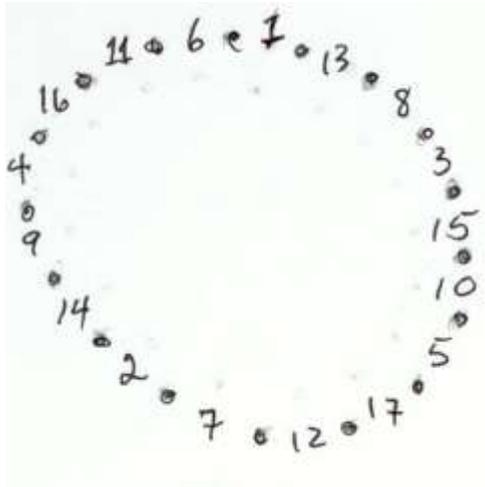
I will show later how the *Geistesmassen* of such *modular wave functions* can be grasped by three musical spiral actions of the Lydian modality underlying the system of the well tempered system as a whole and how they dominate these three pieces, in particular.



**Figure 1** Leonardo Da Vinci fluid motion studies and knots.

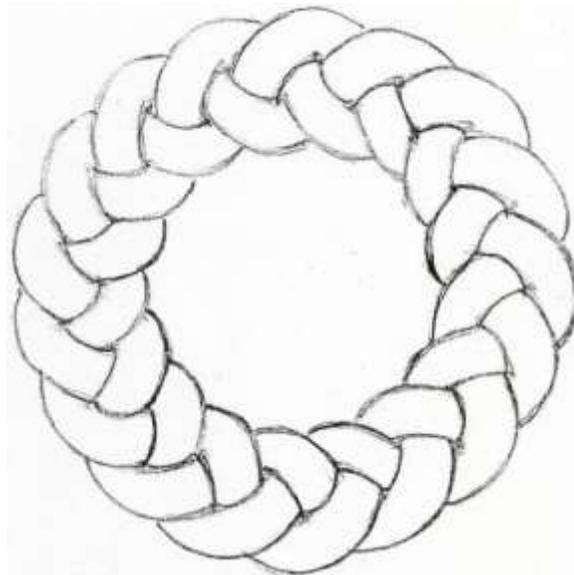
Do the following experiment inside of an imaginary torus. Place 12 intervals between twelve points covering the positive curvature surface of the imaginary torus. Consider these intervals as musical intervals representing the twelve-tone well-tempered system of Bach. Imagine, further, that you are attempting to fill each of the twelve intervals with a whole number that you count, in a clockwise manner, from 1 to 24.

Each interval of action will be filled as in the following repetitive form: 1, 12, 123, 1234, 12345, etc., jumping over as many intervals that are required until you reach 24.



**Figure 2**

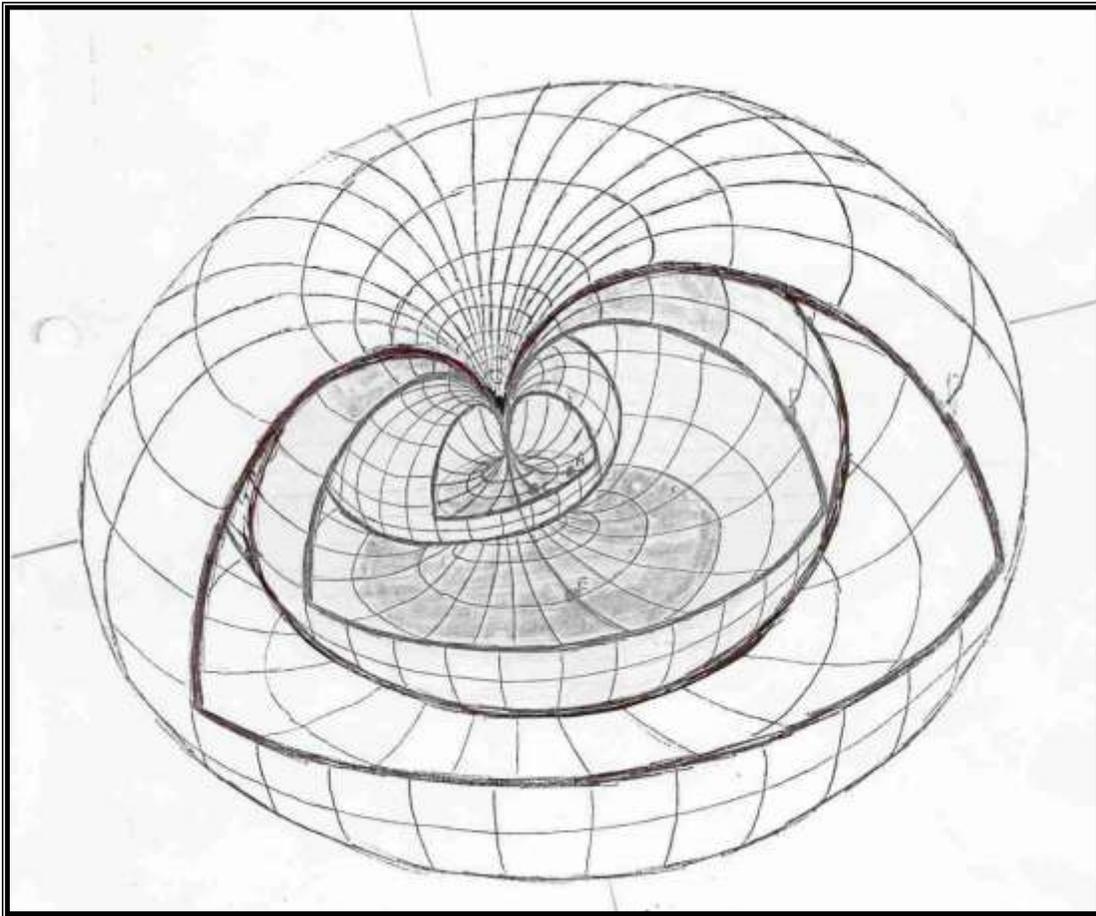
Each segment of such a curve is given a single so-called counting number, like 1, 2, 3, 4, 5... each of which corresponding to equal portions of one full poloidal circular action, defining the unit of action around the small circumference of the torus. This is maintained as long as the poloidal value is prime to the toroidal value of the module. It becomes even more convincingly clear, when one deals with primitive roots. See Figure 1.



**Figure 3** Modular wave function of 3 as a primitive root of 17.

Thus, from that vantage point of the {*modular wave function*}, numbers do not represent the result of counting things, like counting the loose change you have in your pocket, but represent *intervals of physical change* or *powers of physical change* within a fluid motion which is finite, that is, closed by a limited magnitude of toroidal circular actions corresponding to the value of the module.

However, when the value of the module changes while remaining prime to its poloidal circular actions, the toroidal circular actions will grow and vary accordingly, as in a living process similar to that of flowers in a garden. This can be represented as in a time lapse growth of a fruit such as an orange, for instance. **Figure 4**



**Figure 4** A zero-degree Torus geometry of situation showing the growth of poloidal-toroidal modular functions characteristic of primitive roots and oranges.



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Note the simplicity of the torus action:  $1 \times 3 = 3$  is the first wave,  $3 \times 3 = 9$  is the second set of 3 waves, and  $9 \times 3 = 27$  is the third set of  $3 \times 3 \times 3 = 27$ . However, since 27 is a multiple higher than the module of 17, then the toroidal least action pathway finds a short cut where 3 becomes congruent with the residual difference between its third power, 27, and the module 17. Thus,  $27 - 17 = 10$  waves. Those 10 waves represent the number of waves required for the next step, which is  $3 \times 3 \times 3 \times 3$ , and so forth. Therefore, the congruence between three numbers is established as Gauss required at the opening of his D.A.

Similarly, in 1647, during the Peace of Westphalia negotiations, Mazarin had proposed that the Ambassador to the Netherlands pledge to sign the peace with France only under the condition that France stopped the war with Spain. Thus, Mazarin proposed to the ambassador a way to enter into a permanent congruent agreement with the ambassadors of France and of Spain, providing that France eliminated her differences with Spain. Then and only then, the Netherlands could become congruent with the difference between France and Spain. The process actually failed to yield the hopeful result during the negotiation, but it was nonetheless the right process to adopt.

The reason the specific peace process failed was due to the fact that under the Thirty Years War special stamp of conditions, the negotiators recoiled and shied away from developing the new required cognitive powers to solve the problem; different from the ones they already knew and had been habituated to. The process was, thus, doomed, as Hamlet himself was, when he recoiled in the face of his own future and refused to adopt the necessary measure of change. However, on the other hand, if one lets these special social conditions be determined by a doubly connected form of toroidal action, whose universal characteristic is finite, yet unbound, then, one has a Riemannian surface function in the manner that Lyndon LaRouche had identified as the basis for his method of creativity.

## **THE METHOD OF THE GAUSSIAN MODULAR FUNCTION.**

In other words, consider that the relationship between the Perceptual Geometry of your eyes and the Harmonic Geometry of your hearing not only contradict but complement through that contradiction what your mind must discover. This forms a third type of Geometry which requires both a least action connection of the sensual traces of the visual phenomena, with an unseen mental image, a *Geistesmassen*, as if seen from a mental eye and the harmonistically heard singularities of the system must form a Riemannian surface function that always reflects such a doubly connected congruence.

The same applies to what could be called the *bird-school principle*. Ask yourself: "What principle makes a flock of birds fly all together in a single formation, and move like a single wave, back and forth, as if they were obeying the command of a complex wave function? Where do birds learn to fly the complex plane?" Leonardo da Vinci was fascinated by the negative curvature flights of birds, and this is still one of the great mysteries of nature that we must also now begin to try and figure out.

This is also the principled condition for establishing the unity of the Five Platonic Solids and their Archimedean derivatives from the spherical Chora of Plato (*Timaeus*). A way to gauge that is by observing the wanderers in the night-sky. As you look up to admire the wonders as separate from the motions of other stars within the inside surface of a very large sphere, think that what you are seeing is merely the shadows of a Sensorium which bounds the sense perception of the universe visibly and harmonically as a finite yet unbound universe.

What you see "up there", among other things, is a direct reflexion of what is going on "down here." It is like a deformed and darkened mirror image of your own mind. Thus, the relationship between the shadowy world of those wandering stars, and the physical principles of discoveries in Kepler's solar system harmonic ordering, which he has formulated as a physical law of gravitation, forms

The work that went into developing this time line of 316 years (1477-1793) of European history was not based, as it appears, on a linear chronology of events, but on the non-linear method that Lyndon LaRouche recommended we apply to the history of the cognitive development of mankind with the help of Karl Gauss. The most effective way I have found to imagine such a task was to use Leonardo da Vinci's method of observation of bird flight, and apply it to Gauss's method of understanding the underlying physical geometry of numbers.

Think of this in the following manner: Pay attention to how, sometimes, birds, in a group formation, fly together to form a single moving playful wave that twists and turns in the sky with the greatest of ease? This beautiful catenary quality of bird flight raises an interesting question: "What is the intention? What physically commands these birds to move with such ease, and perform together, in such perfect uniform ballet fashion?"

Next, compare this phenomenon with a Gaussian *modular wave function*, like the braided rings of Saturn, and apply it to a given historical context, such as the span of 300 years of the fight for the nation-state, starting from the Peace of Westphalia, in 1648, going back to Louis XI's unification of France, in 1477, and then moving back forward to the creation of the Constitutional Republic of the United States, in 1776, and then back to the 1756 Alliance Treaty between France and Austria, and so on, and so forth. See Figure 3.

On the one hand, the flock of birds behaves in the said manner because the birds respond to an objective determination of the physical universe upon them, that is, magnetic fields. On the other hand, the fight for truth and the *general welfare* in history operates in an opposite manner by responding to the determination of the sovereign subjective power of individual human reason over the universe, and for the common good.

### A PEACE OF WESTPHALIA MODULAR WAVE FUNCTION

The idea of a *modular wave function* is derived from the physical process of the fluid motion of water, air, or magnetic fields generally. The idea is to express such phenomena of physically well ordered processes by means of physical geometric constructions that display such characteristics of a fluid made up of loops and braided overlaps, but without obstacles, kinks, or singularities in them; that is, in such a way that they form harmonically ordered closed curves of finite, or infinite lengths, that describe the least action, or *force-free* motion of a planet orbiting around the sun, or as the case of the blood-streams of a living being, or a magnetohydrodynamic plasma fluid inside of a torus. The principle is one of reciprocity in which  $n(n-1)/2$  is required.

Each segment of such a curve is given a single so-called counting number, like 1, 2, 3, 4, 5..., each corresponding to a portion of one full circular action defined as the unit of action around the small circumference of the torus. Thus, from the vantage point of the {*modular wave function*}, numbers do not represent the result of counting things, like counting the loose change you have in your pocket, but represent [*intervals of physical change*] or *powers of intervals of circular action* within a fluid motion.

This method of modular function was described during an international conference of the ICLC, in 1996, when Lyndon LaRouche proposed to relate discoveries of principle to Gaussian biquadratic residues. I understood that then, as now, to mean that one could solve the famous three-body problem of Physics, in such a way that a *third is congruent with the difference between two others* as a derivation of what Karl Gauss prescribed in 1 Sec. 1 of his *Disquisitiones Arithmeticae*.

For instance, if I say that 5 is congruent to 8 mod 17 (or  $5 \equiv 8 \pmod{17}$ ), it means that  $5 \times 5 = 25 - 17 = 8$ . Similarly, in 1647, during the Peace of Westphalia negotiations, the Netherlands pledged to sign the peace with France only when France signed the peace with Spain. Thus, the Netherlands entered into a congruence agreement with France providing that France eliminated her differences with Spain.

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