
J. S. BACH AND THE KNOTTY GEOMETRY OF LYDIAN INTERVALS

A pedagogical exercise in constructive geometry

by Pierre Beaudry, 11/9/2022

INTRODUCTION

If you go back to what I have been writing on the geometry of the torus, you will find there the connection between geometry and the Lydian modality in music. My last report, for instance, is precisely on that subject. Although I barely used the term of “Lydian” in it, I used the same knotty epistemological performative action in composing it.

<https://www.amatterofmind.us/wp-content/uploads/2022/09/64. THE 3N+1 CONJECTURE AN INTRIGUING PROBLEM TO INVESTIGATE-2.pdf>

This Lydian musical process has to do with Leibniz's *preestablished harmony* of numbers and the geometrical construction of torus knotworks based on the power of two series of C-256; that is, the Fu Xi, *I Ching Book of Change* approach that Leibniz used. [FUXI'S AND LEIBNIZ'S I CHING PUZZLE](#)

If you think of the Double Lydian ‘Pinch Effect’ method of J. S. Bach, you will get the gist of its epistemological power; that is, the idea of *an arithmetic-geometric process of inversion by expansion and contraction*. This is what the two arithmetic and geometric spirals accomplish in changing the voice register shift in conical spiral action.¹

THE BACH ‘PINCH EFFECT’ OF THE DOUBLE LYDIAN INTERVAL

John Sebastian Bach (1685-1750) had a very stormy beginning with *The Well-Tempered System*. It should be acknowledged that as a Badge of Honor, at the age of 32, on November 6, 1717, Bach was thrown in jail for having made a famous farewell face to Wilhelm Ernst, Prince of Weimar, who refused to let him resign in order to accept a better offer as “Kapellmeister” in the state of Anhalt-Cöthen.

¹ See the report on Lydians jointly written by Fred Haight and Pierre Beaudry:



The face Bach made was the musical equivalent of a “pinch effect” in plasma physics, which is known as being caused by a high electrical discharge passing through a body of plasma surrounded by a strong magnetic field.

Figure 1. John Sebastian Bach (1685-1750). The



BachDM WTC
DL.wav

Musical expression of this gesture

Such a farewell was not appreciated by his Pompous Excellency, Prince Wilhelm Ernst of Weimar, and so Bach was forced to start composing *The Well-Tempered Clavier* in jail, without any instrument to play on, during nearly a month before he was released on December 2, 1717, and let free to resign his old job as “Konzertmeister” for the city of Weimar.

The record of the Weimar Court Secretary is reported as stating the following: “On November 6 [1717], the concertmaster and court organist Bach was arrested and held at the County Magistrate’s house of detention for obstinate behavior and forcing the question of his dismissal. Finally, on December 2, [Bach] was informed by the Court Secretary of his unfavorable discharge and simultaneously freed from arrest.”

See: <https://robertgreenbergmusic.com/music-history-monday-j-s-bach-jailbird/>

See also: <https://www.classical-music.com/composers/why-did-bach-go-to-prison/>

Considering that the inversion of an axiomatic change always takes place through that sort of coincidence of opposites, you will be happy to discover that this geometry of the Lydians is also what accounts for the inversion of the Peace of Westphalia, the reciprocity of the benefit of the other; similarly with the inversion of agape in Corinthian 13, “to know as you are known,” and the inversion of going from the tragic to the sublime, as Schiller and Brahms have demonstrated.

Here, I am simply using the multiplicity of the power of two series and the division of the same series by half and half the half in the torus spiral action to get to a geometrical equivalent of the double musical Lydians; that is, by accelerating and slowing the process at the same time. Take the following example: What is the principle underlying the following ordering of space-time motion? (See Figure 2.)

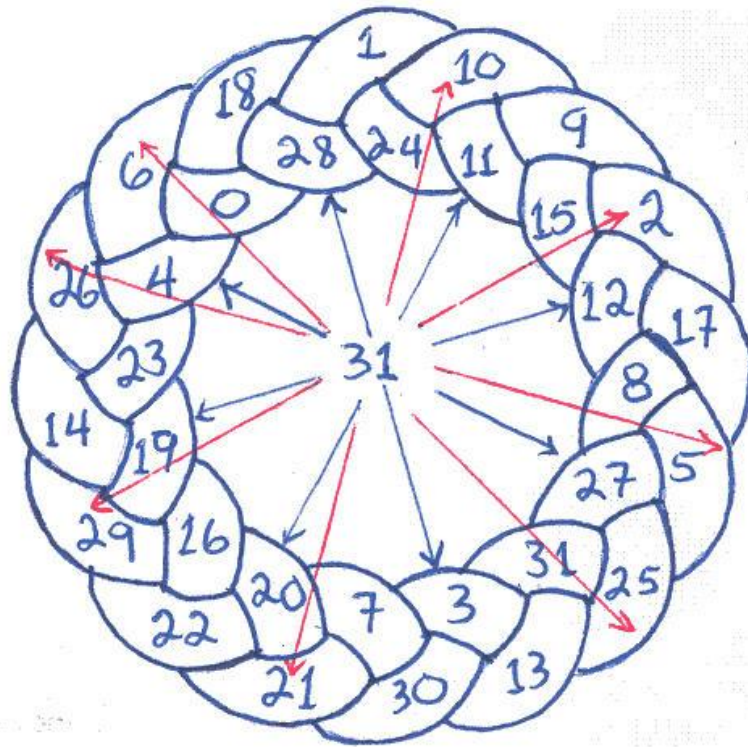


Figure 2. Discovering the principle behind the preestablished reciprocal positioning of numbers.

Once you have inserted the first half of the 32 intervals of action, you can then add in the reciprocals in order to complete the rest of the empty units, because the halfway mark will make you discover the true *underlying principle of action* behind the whole process.

However, instead of hearing a form of *preestablished harmony*, you will be determining the geometrical *preestablished harmony* of numbers as if they were simply the expression of motion inside of a torus. All you have to do is to count your steps around the torus starting with 0 as your starting point. *You will discover that this doubly-rotating process is nothing but the natural geometrical pathway of physical space-time. In other words, knotworks are nothing but the configuration of the motion of change, expressed by numbers.*

CONSTRUCTING THE KNOTTY PRINCIPLE OF RECIPROACITY

Although you could start from anywhere around the torus, put 1 at twelve o'clock on the outer rim of the torus in Figure 3. Instead of counting your steps, unit by unit, accelerate the pace of space-time by adding an additional step to get to the next number. Think of it as going to Mars by constant acceleration.

The motion of the numbered steps must follow the ordering of the braids over and under each other as if you were rotating clockwise in and out around the torus. You are actually going around two circles: the Poloidal circle and the Toroidal circle.

So, if you are ready to start, put 0 one step before 1, which is a 12 o'clock, and skip one interval of action clockwise to get to 2, then skip two intervals to get to 3, then skip three intervals to get to 4, and so forth and so on. Follow that process of change until you get to number 16.

Then, stop and pause at this halfway mark in order to think about the *reciprocal principle* which will make you fill in the rest of the empty spaces in a new and much more efficient way; that is, by positioning two numbers each time you add a new one. *The additional number is the reciprocal Lydian step half way around the torus.* The last number to be found must be 31, because it is the reciprocal of 0, which is where you started from. All numbers must be well ordered such that they are all reciprocals of each other from halfway across the diameter of the Toroidal circle.

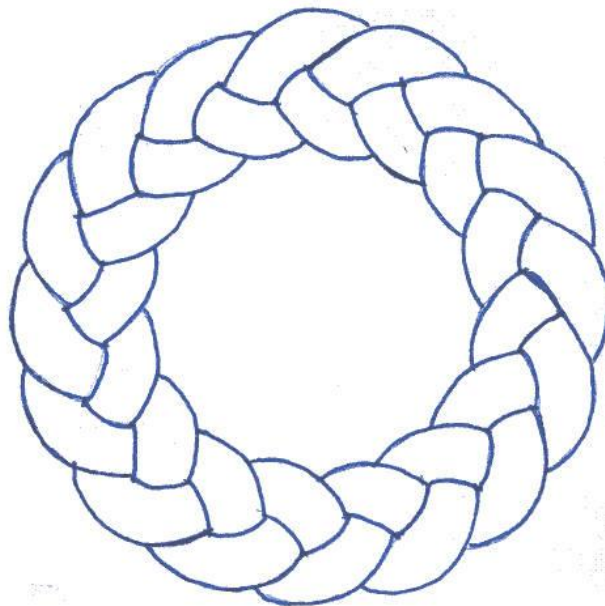


Figure 3. Poloidal/Toroidal ratio of 3/16

Such Lydian intervals (halfway intervals) represent the very soul of music because each Lydian spiral promotes the emergence of a dissonant opposition (reciprocal) within an unending cycle of human progress. Imagine how harmonically ordered humanity could become if the U. S., Russia, China, and India were to form with other nations, as Lyndon LaRouche proposed, a Lydian spiral belt around the world promoting self-development for the benefit of all of mankind.

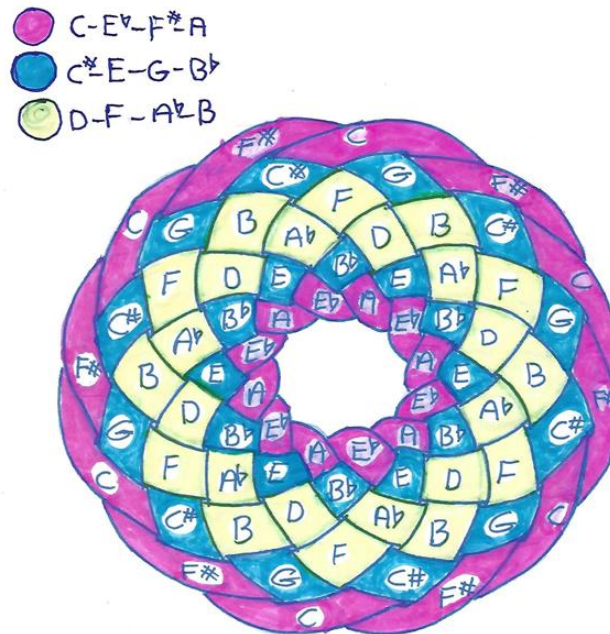


Figure 4. The mutually self-generating three Lydian spirals. Red **C-E \flat -F \sharp -A** generates Blue, Blue **C \sharp -E-G-B \flat** generates Yellow, and Yellow **D-F-A \flat -B** generates Red **C-E \flat -F \sharp -A**.

Like a Galactic self-generating process, the three Lydian spiraling system expresses the completely self-sufficient and autonomous principle of the Well-Tempered Clavier; because it depends on nothing outside of itself and requires no other form of musical principle to completely fulfill the objective of artistic composition required of the creative process itself. Once the soul has captured the significance of this peaceful self-generating process, it has acquired a most exquisite taste of immortality.

After he was released from jail on December 2, 1717, Bach wrote his famous Prelude in C-Major, opening the series of the *Well-Tempered Clavier*. This was the first of his 24 compositions in "circular temperament" for the benefit of mankind.

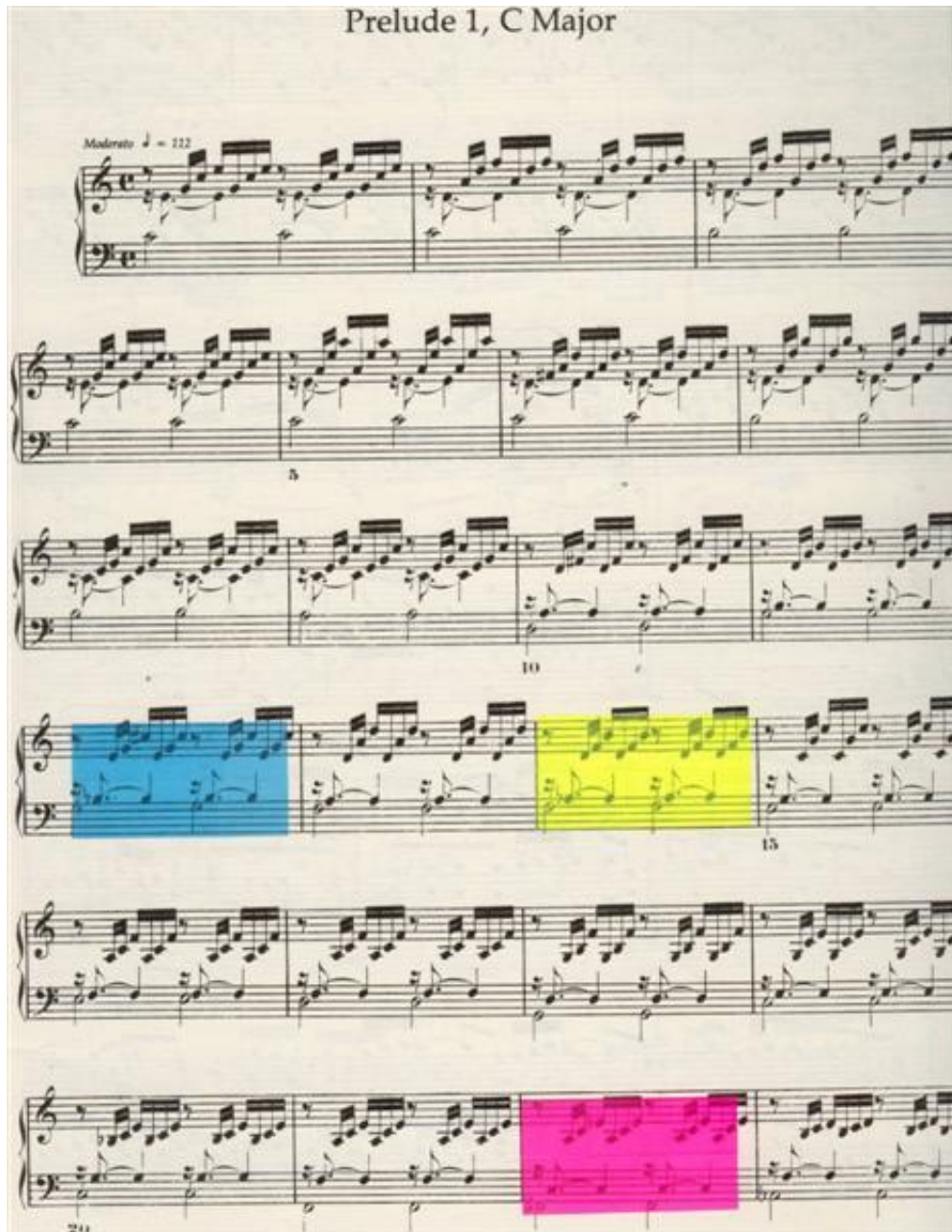


Figure 5. J. S. Bach, Prelude 1 in C-Major. The mutually self-generating three Lydian spirals

For the complete report, see:

https://www.amatterofmind.us/wp-content/uploads/2022/11/THE_POWER_OF_SELF-GENERATING_THE_FUTURE_WITH_THE_THREE_MUSICAL_LYDIAN_PRE-ESTABLISHED_HARMONIC_SPIRALS-1.pdf