

THE POWER OF SELF-GENERATING THE FUTURE WITH THE THREE MUSICAL LYDIAN PREESTABLISHED HARMONIC SPIRALS

by Fred Haight and Pierre Beaudry, 11/9/22

FOREWORD

This report is the product of a collaboration which has been developing, off and on, between Fred Haight and Pierre Beaudry during a period of about forty years on the subject of Lydian intervals, as a musical principle of axiomatic change.

Otherwise known to medieval musicians as “The Devil’s Interval,” the Lydian interval has had a multiple role to play in Geometry, Astronomy, Music, and Architecture (GAMA). The rediscovery of such an important and controversial dissonance was prompted primarily by Lyndon LaRouche’s conception of the higher hypothesis of the C-Minor Series originated by John-Sebastian Bach, and further developed and completed by Amadeus Mozart and Ludwig van Beethoven. The following interweaving sections of this report are a reflection of the continuous dialogue between the two authors with those composers and the late Lyndon LaRouche.

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INTRODUCTION

Of all of the moments in a human life the ones that are the most significant, although shockingly sudden (*exaiphnes*) and unexpected, are those through which not only a handful of people increase their mental powers (*dynamis*), but, who also go through such axiomatic changes, that it becomes impossible for people worldwide not to become infected by them. The time has come for the world to be infected and uplifted by such Lydian singularities.

Musical Lydian moments of transformation are such exceptional moments that when their measuring force occurs at certain moments of history, their powers also affect the Galaxy and the Solar System as a whole, because they represent universal moments of axiomatic change.

When such axiomatic currents take place worldwide, thoughtful people become susceptible to axiomatic transformations, and the measuring yardstick of progress that they provide also become changed, to such a degree, that the transformations they bring about become permanent for mankind as a whole. As LaRouche demonstrated, man's proper use of such qualitative changes has the power to change the universe as a whole by transforming the planet, for example, from the lower level of the Biosphere, as it now exists, to the higher level of the Noosphere as it has already begun to do. This is how LaRouche forecasted such an axiomatic moment in the spirit of Vladimir Vernadsky:

*“A true discovery of any universal physical principle is a grasp of the power to make a willful change in the ordering of the universe. The universal physical principle discovered, existed, and functioned in the universe before man first discovered it. Nonetheless, when man not only discovers, but deploys such a principle, man's willful action in using that principle changes the universe. Hence, such discoveries are to be recognized as acting ‘powers’ for changing the world, in the sense of that usage by pre-Euclidean Greeks such as the Pythagoreans, Heraclitus, and Plato.”*¹

Although it is impossible to describe the process of causality which takes place at such Lydian moments of someone's life, it is, nevertheless, possible to capture the emotional density of such moments as being reflected in universal moments; that is, as if they were taking place in the *simultaneity of physical eternity*. This may be the best way to describe such an experience as a Leibnizian *preestablished harmony*, which composes with both dissonances and consonances. The reader should listen attentively to Marian Anderson's '[*They crucified my Lord*](#),' in order to experience such a sublime moment of Lydian power. It was Lyndon LaRouche who best characterized the forecasting nature of such an axiomatic moment:

¹ Lyndon LaRouche, [*When Even Scientists Were Brainwashed*](#), 21st Century, Summer 2004, p. 41.

“This superior capability of “insightful” forecasters and their like, is located, functionally speaking, in their apprehension of universal physical principles, as distinct from the disabled human mind’s reliance on what may be classed, for purposes of illustration, as statistical deduction.

“It is precisely that sense of a principle of an emerging future, which supplies some persons the power to apprehend the future: because they experience the principle which determines the future, rather than being limited to deduction from past-into-present sensory or like experience. It is the sense of the future, rather than being limited to deduction from past-into-present sensory or like experience. It is the sense of the future, which I just identified here, which is also the only possible principle which could govern mankind’s acceptance of a true principle of conscience. It is here, precisely here, that the possibility of checking the chain-reaction of endless warfare can be found.” Lyndon LaRouche, [*THE ANCIENT ROOTS OF CHRONIC MODERN WAR—On a Subject of Ancient Antiquity*](#), EIR, Vol. 49, No. 34, September 2, 2022, p. 26.

The *higher hypothesis* of the Lydian interval is the principle of the placement of the voice, where the mental act of hearing the future in the present, the self-generating process of Lydian intervals, and the *preestablished harmony* of natural law, from the top down, all come together as one, in the *simultaneity of physical eternity*. However, it is only when such actions are in accordance with universal principles that the universe will obey. Such is the characteristic method of Lyndon LaRouche’s science of forecasting.

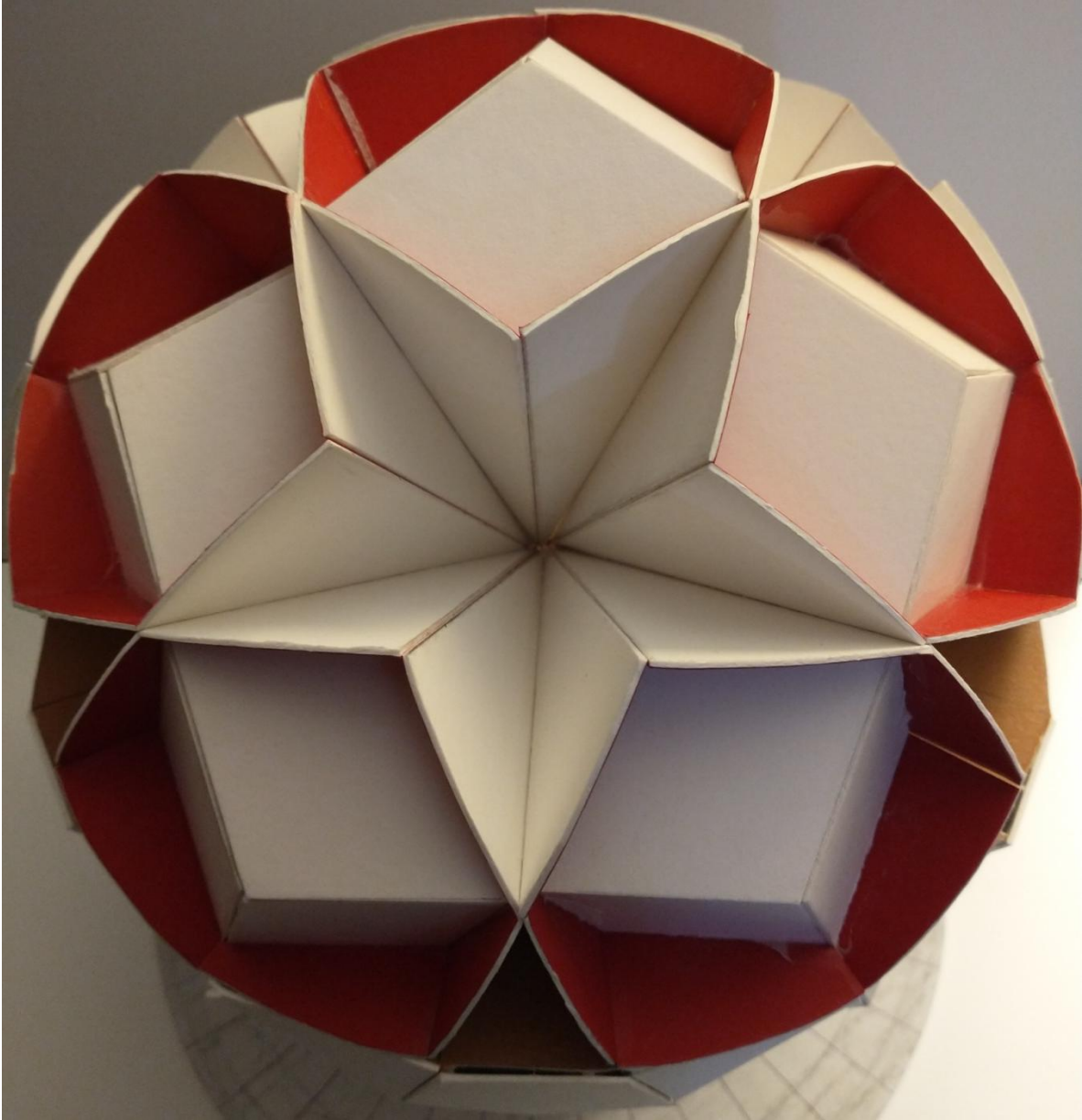


Figure 1. The enfolding of a future: the visual metaphor of the mid-point axiomatic change between a sphere and a dodecahedron.

1. HOW BACH DESTROYED THE ARISTOTELIAN FALLACY OF THE DEVIL'S INTERVAL

Now we come to the greatest concentration of musical creativity in history, which spans a little less than 200 years, despite the fact that music has been with us for millennia. Within that 200 years, the greatest revolution, the **C** minor series, took place within a short period of 75 years.

Why did the Lydian intervals have to wait for Bach in order to be seriously investigated? Lyndon LaRouche insisted that the Lydian interval (the Devil's interval) had been banned in formal music theory for centuries. This author decided to investigate, and found, that indeed that was the case. In order not to forget such an act of obscurantism by Aristotelian or Kantian teachers, students were told to memorize a little "don't touch" verse:

“Fa contra mi, Mi contra fa, Est Diabolus in Musica.”
(Fa against mi, Mi against fa, Is the Devil in Music.)

However, here is how Bach dealt with this obscurantism with the genial idea of the Lydian interval. Near the end of his life, John-Sebastian Bach composed a *7-part Canon* as a gift, perhaps a farewell gift, for his friends. It was to be played against a two measure repeating phrase of **F, A, Bb, E**. A Lydian interval **Bb** to **E**, moving out of and back into a major third **F** to **A**.² Bach stated the opposite to this fearful verse in order to make fun of it; and it was an axiom buster:

“Fa mi, et Mi fa, est tota musica »
(Fa mi, and Mi fa, is the totality of Music.)³

Bach obviously did not buy this “Diabolus” fear of God concoction against creativity. Bach's playful Latin inscription incorporates his own name, **B-A-C-H**, with reference to the repeated musical phrase **F, A, B, E**, and the fear of God was turned into a joyful puzzle that the creative reader was provoked to decipher as follows:

Domine possessor
Fideis Amicum Beatum Esse Recordari
tibi haud ignotum: itaque
Bonae Artis Cultorem Habeas

² It is not the Lydian (Tritone) intervals in and of themselves that are interesting, rather their interaction with other species of intervals. Music theory sees consonant chords as the building blocks of music, and dissonances, such as the Tritone, as “non-essential tones.” That is similar to an approach to language that locates nouns as the substantives. Shifting the emphasis to verbal action, does not mean stressing every verb, but rather, making **change** the subject. Locating dissonances as the substantives in music, also emphasizes change as primary.

³ If you wonder why these tones are called **mi** and **fa**, it comes from the ancient Guidonian hexachord system.

Lipsiae d. 1 Martii
1749
verum amicum Tuum

This rebus puzzle can be loosely translated into:

Sir, who masters this,
The blessings of a **FA**ithful Friend ought to **BE** Remembered.
That is not unknown to you:
Therefore, Create **B**eautiful **A**rt as a **C**ultural **H**abit.
Leipzig, March 1,
1749
Your friend **In** **T**ruth.

The capitalized letters, **FABER** and **BACH** are wonderful puns made by Bach himself. As in Shakespeare, the best such puns function on multiple levels. Such a playful sense of humor is essential to creativity. **FABER** refers to the musical notes **F, A, Bb, E**, with the last letter **R** meaning repeat. Indeed, those notes **F A Bb** and **E**, do repeat every measure. Faber also means maker, or creator, by which Bach refers to himself, as **FABER BACH**. Those 4 notes function as a pair of intervals, **F-A** and **Bb-E**, a Major 3rd, and a Lydian. They act as a musical memory function in many ways. A wealth of counterpoint is born out of the same simple, repeating motion. Hold onto that essential motion, and you will not get lost, or forget.

Most realizations of puzzle canons are timid, done like a connect-the-dots, and do not present its real beauty and significance. This canon is a unique gem in history. 4 Without changing a single note, except for the very end, I have taken Bach's demands *to be faithful to him*, and *habitually create beautiful art*, seriously, by letting it sing; adding one voice at a time.

Compare a connect-the-dots realization,

<https://youtu.be/-JrvRy25Kz0>

with an attempt to bring out its full beauty, without violating any of Bach's specifications:

 [Canon a 7.wav](#)

IV. CANON

zu sieben Stimmen mit feststehendem Bass.

A. Mitgetheilt von Marpurg „Abhandlung von der Fuge“; Zweiter Theil Tab. XXXVII Fig. 6 und 7.

B. Mitgetheilt von Spitta „Johann Sebastian Bach“; Zweiter Band Seite 717,
nach einer schönen Abschrift aus dem vorigen Jahrhundert.

Fig. 6. **A.**

Fig. 7.

B.
„Fa Mi, et Mi Fa est tota Musica“
F, A, B, E, Repetatur
Fa, Mi, Fa, Mi.

Canon
super Fa Mi, a 7. post Tempus Musicum.

Domine Possessor
Fidelis Amici Beatum Esse Recordari
tibi haud ignotum: itaque
Bonae Artis Cultorem Habeas
Lipsiae d. 1 Martii
1749.

verum amicum Tuum.

Auflösung.
(Siehe Spitta „Johann Sebastian Bach“; Zweiter Band Musikhilfage 5.)

(Basso ostinato)

B. W. XLV(a).

Figure 2. Seven Part Canon “Fa Mi, et Mi fa est tota musica.” Johann Sebastian Bach by Phillip Spitta 1880.

Bach's *7-Part Canon* is not a magical secret code for musical composition; it is an ironic memory function insight on the subject of how to think creatively, which Bach wrote for music students in 1749, the year before he died on July 28, 1750. It emphasizes to the music enthusiast that the Lydian divisions were "all of music. (*tota musica*)" Bach inserted inside of his first *Prelude No. 1 in C-Major*, the three Lydian spirals in their mutual self-generation corresponding to the dominant **G**, subdominant **F**, and tonic **C**. (See Figures 17.)

Bach chose to encode inside of his message a performative script where he recorded the spelling of his own name **B-A-C-H**. By doing so, he provoked the musical student into discovering how Lydian intervals have the power to change the way your mind works; that is, by establishing the performative truth of *what you say is what you do*.

If you wonder about **mi** and **fa** representing four different tones, it comes from the old Guidonian hexachord system. Notice that **Bb** is a half tone above **A**, and **E** a half tone below **F**. Note that Lydian intervals are not the totality of music; rather, what the *motion of change* in and out of them is. That type of motion is at the center of the C-minor series.

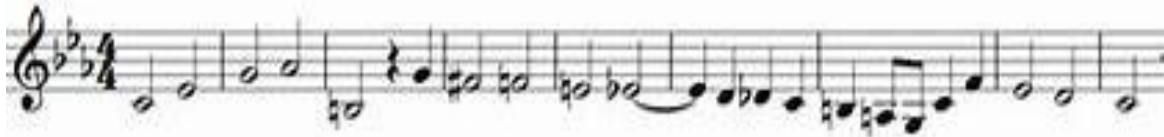
2. THE MUSICAL OFFERING

(Part 1 of the C-Minor Series: Bach)

Bach took up new challenges all of his life. He exploded the Lydian question onto the scene with his Chromatic Fantasy and Fugue. Not long after, he elaborated in his *Well Tempered Clavier*, composing preludes and Fugues in all 24 keys, something never done before (actually, the 24 keys had never really existed before, except in the minds of visionaries.)

In 1747, only three years before his death, J. S. Bach made an arduous journey to the Potsdam court of Frederick the Great of Prussia. Bach's son, Emmanuel was the musical leader at that court. Frederick was caught between the genius of men like Moses Mendelssohn, Lessing and Bach, and the destructive reductionism of French Enlightenment philosophers such as Voltaire. When "Old Bach" appeared, Frederick immediately presented him with a theme, and requested a 6-part Ricercar (or fugue) be made on it. Bach improvised a 3-part Ricercar on the spot, but demanded time for the 6-part challenge. There is no question in my mind that Frederick was coached by Emmanuel Bach, as to how to shape the theme. When Bach finished the 6-part Ricercar, he included several rigorous puzzle canons in his "Musical Offering". Why? They were there as a challenge for the King to solve! The King's Theme goes:

Ex 1



It examines several problems that Bach was investigating, not for the first time, but certainly for the first time with all of them in one place. The second half of the King's Theme is a descending chromatic scale, a scale that had been used in investigating the *pre-established harmony* of the Well-Tempered 24-key system for well over a century. However this chromatic scale includes a diatonic scale at the very end, thus addressing how the two scales combine. However the first phrase of the King's Theme is what concerns us most, here, in this report.

Ex 2



Bach had used some of these ideas earlier, in works such as the G minor fugue from his Well-Tempered Clavier Book 1:

Ex 3



In this fugue subject, he took the interval of a perfect fifth, and looked at a half-tone above (**D** to **E_b**), and a half-tone below (**G** to **F_#**). Here, **E_b** and **F_#** would form a diminished 7th interval, but Bach did not use it at the time. In the *Musical Offering*, he did. This large interval known as the diminished 7th, **A_b** to **B**, had been used by Bach in a different key before, in the **A** minor fugue in Book 2 of the *Well Tempered Clavier*, and Handel used it in the fugue, "And with his Stripes" in the *Messiah*, but before that, it is very rare. It's a large interval and a dissonant one. As such it was banned in the rules of strict counterpoint. But, what is its connection to the Lydian intervals?

The diminished 7th is the outside term of the Double Lydian, **A_b F D B** natural. Here we play the two separately, then together.

Ex 4

We know that since the work is to be fugal, that the second voice will enter on the dominant **G**, thus ending on a different diminished 7th interval, **E \flat** to **F \sharp** . This is the outside term of another Double Lydian **E \flat C A F \sharp** . First we play the King' Theme transposed to **G**, then the

Diminished 7th and Double Lydian together.

Ex 5

We might also anticipate that the theme will be transposed to the subdominant **F**, and it is. That gives us an outside term of **D \flat** to **E**, filled in by **D \flat B \flat G E**.

Ex 6

You may hear all of these examples on Audio 1. [Audio1cmbach.wav](#)

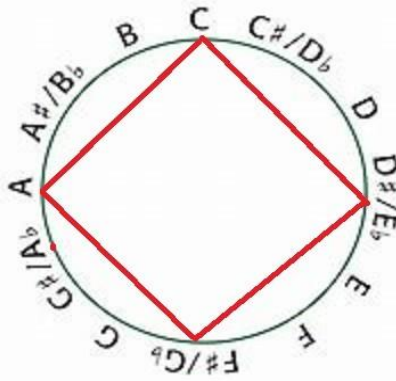
We know that as the composition grows, the other voices will fill in the interstices between these diminished 7ths in the theme, creating all three Double Lydians. Thus the potential of a mere two notes included in the theme, implies an unfolding into an entire new musical universe, provided two conditions are met:

1. A known musical form is adhered to, such as fugue that will utilize tonic, dominant and subdominant.

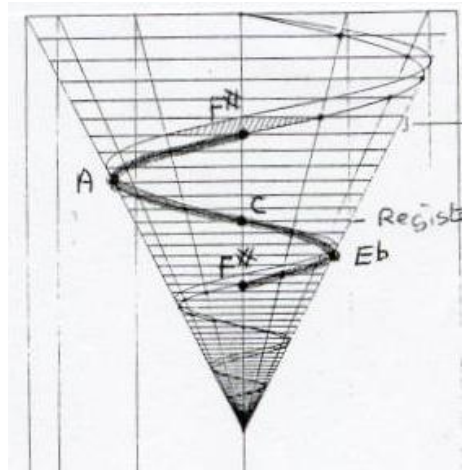
2. It is in the hands of a master. Could anyone but J.S. Bach have accomplished this at that time?

It is important to understand something about the Double Lydians. We have seen how a single Lydian interval divides the circle at the base of Pierre's equal-tempered spiral conical action by half, as the diameter, and only inverts onto itself. A Double Lydian has the same properties, which projects on to the circular base of the cone as a square.

Ex 7



Keep in mind, that on the cone, we would have a 360 degree rotation of an ascending spiral.



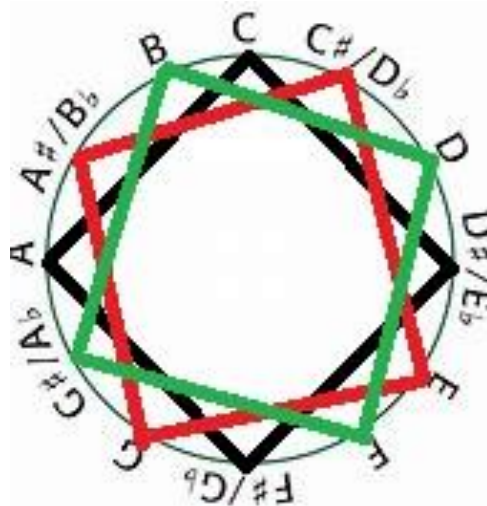
This configuration has two Lydian intervals **C** to **F#** and **A** to **E_b**, which form diameters, and minor thirds (sometimes expressed as augmented 2nds.) Like the single Lydian, the Double Lydian inverts only onto itself, and thus becomes a great source of both dissonant instability and change.

There are only three possible Double Lydians of this type in the whole musical system, and all three are self-generated from each other: **C E_b F# A**, generates the second, **C# E G B_b**,

which generates the third, **D F Ab B**, which generates the first **C Eb F# A**. The notes are the same, though the voicing may differ.

It might be simpler to add a half-note in each case, but what would be missed is the epistemological self-generating process. On the circle, we can visualize this as three squares of three different colors, black red, and green that cover all 12 tones. These three colors, black, red, and green (in that order), correspond to the three colors (red, blue, and yellow) that Pierre identified below in Figure 16.

Ex 8



Again, a mere two tones as potential imply all of this, not just as a model, but one of the greatest musical compositions ever, with the 6-part Ricercar as its apex. We prefer older, full-bodied performances of such a great work to the anemic HIP versions of today.
<https://youtu.be/OSm9LEYixvA>

INTERMEZZO: 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 known, therefore, 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” to the state of Anhalt-Cöthen.

The face he 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 3. John Sebastian Bach (1685-1750).



BachDM WTC
DL.wav

The Musical expression of this gesture

This sort of goodbye was not appreciated by his Pompous Excellency, Prince Wilhelm Ernst of Weimar, and Bach was forced to start composing *The Well-Tempered Clavier* in jail, without any instrument to play on, during nearly a month, until he was later 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 follows:

“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/>

3. THE HISTORICAL FIGHT FOR THE LYDIAN PRINCIPLE AND LYNDON LAROCHE’S C-MINOR SERIES

In 1980 Lyndon LaRouche shocked the world (neither for the first time nor the last), by commissioning a recording entitled “Masters in Dialogue”, featuring what he called the “C minor series.” This included the 3-part Ricercar from Bach’s Musical Offering. Mozart’s *C Minor piano sonata, K. 457*, Mozart’s *C Minor Fantasy, K. 475*, and Beethoven’s *C Minor sonata # 8, Opus 13*, the “*Pathétique*,” and though not recorded at the time, it emphatically included Beethoven’s last *Piano Sonata, Opus 111, number 32*.

This caused quite a stir. Romantic theory had created a situation where even serious musicians believed that the genesis of a great work of art came from an inner passion, from bottled-up emotions, *that the artist had to let out, in order to express his or her feelings!*

LaRouche replied to this that composers examine problems as would a scientist, from the top down, and happily pass unsolved problems down to future generations. To many, that seemed cold. While art is treated as impassioned, science is often seen as detached and calculating, in order to remain objective. In truth, a scientific discovery, whether in geometry or in music, not only invokes a higher level of passion than could any personal agenda, but in fact, depends on it.

In 1918, a young Albert Einstein wrote a short paper called *Principles of Research* as a gift to his friend and mentor, the great scientist (and musician) Max Planck on his 60th birthday. In it, he said:

“The supreme task of the physicist is to arrive at those universal elementary laws... There is no logical path to these laws; only intuition, resting on sympathetic understanding of experience, can reach them...Nobody who has really gone deeply into the matter will deny that in practice the world of phenomena uniquely determines the theoretical system, in spite of the fact that there is no logical bridge between phenomena and their theoretical principles; this is what Leibnitz described so happily as a "pre-established harmony.”

“The longing to behold this pre-established harmony is the source of the inexhaustible patience and perseverance with which Planck has devoted himself ... The state of mind which enables a man to do work of this kind is akin to that of the religious worshipper or the lover; the daily effort comes from no deliberate intention or program, but straight from the heart.”⁴

Intuition may seem like an unscientific approach, yet Einstein claimed that some of his greatest discoveries came from intuitions gained while playing his violin.

This *pre-established harmony* exists not only between phenomena and theory, but the laws of the universe, and the mind of man and woman, provided that mind is creative, and investigating the universe by what is sometimes termed the Socratic Method. The universe is constantly being created anew, and man’s creativity is in harmony with that universal creation-in-harmony with the mind of The Creator. The more the scientist discovers of that *pre-established harmony*, the more he or she knows where to look for it. “Chance favors the prepared mind”, said Louis Pasteur.

Would Einstein have gained the same insights playing square dances on his violin, as from playing Mozart? Mozart was a musical scientist investigating the very same *pre-established harmony*. It was not just pleasant sounds that inspired Einstein and Planck.

MINDS OR NUMBERS?

“In theory there is no difference between practice and theory. In practice, there is”

⁴ Albert Einstein, *Principles of Research*, 1918.

Music has always been scientific. The question is, is it good or bad science? What, you say, isn't science objective? Aren't science and truth the same? Well, yes, but humanity has often suffered from falsehoods presented as science. For many of the ancient Greeks and Romans, the musical intervals were determined by numbers, specifically rational numbers or fractions. This prejudice was so falsely ingrained, that musical intervals were not considered harmonic, unless that harmony was based on a rational number. For them, the musical harmonies were *caused* by the numerical ratios. The great astronomer Johannes Kepler challenged this idea, and said, in the introduction to Book Three of his 1618 *Harmonice Mundi*:

*"...the causes of the intervals have remained unknown to man. So much so, that before Pythagoras, they were not even sought, and after that they have been sought for 2,000 years...in the course of 2,000 years, the opinion has been reached that causes are to be looked for in the properties of the proportions themselves as they are contained within the boundaries of a discrete quantity, that is to say, of Numbers... I shall be the first, unless I am mistaken, to reveal them (the causes) with such accuracy."*⁵

He ridiculed ancient theorists who invented unsingable harmonies that originated in mathematical ratios:

"It is possible for strings to be tuned that way, since they are inanimate and do not impose their own judgment, but follow the hand of the foolish theorist without the least resistance." (Ibidem)

These rational numbers, derived from the abiotic (non-living) monochord, when presented as the cause of the intervals can be appealing. They are not wildly wrong, but they are wrong. Their values are actually fairly close, and they seem to be harmonically ordered. But, they are distorted enough (as through a glass darkly) that they do not work. They have to be tempered.

Bach is often referred to as the most mathematical composer. His son Emmanuel refuted that, saying that his father detested dry mathematical stuff. Bach was a scientific composer. We shall discover the difference as we go along.

This prejudice, this false axiom, of music being determined by mathematics, was re-enforced by Ptolemy, and music was set back for centuries, just as Ptolemy's false axioms vis-a-vis the solar system set astronomy and navigation back for centuries. The heliocentric nature of the solar system was known to Aristarchus in the 3rd century B.C. Eratosthenes estimated the circumference of the earth within a small margin of error, and motivated an attempt to circumnavigate the globe in that same century by Rata and Maui. Aristoxenus called to divide

⁵ Johannes Kepler, *Harmonici Mundi*, Book 3, 1618.

the octave into twelve equal parts in the 4th century B.C., saying that harmonic values had to be determined at least partly by hearing, and not just numbers.

Why did the world have to wait 1,700 years for Magellan to repeat the experiment of Rata and Maui? Why did we have to wait just as long for Kepler to establish a science of astronomy where the theoretical movements of the planets and their actual movements were not different? Or for Kepler to echo Aristoxenus, and say that since the intervals are continuous, human hearing (meaning the judgment of mind) and not mere discrete numbers, must play a role in establishing musical values?

Pierre referenced Leibniz on “being a citizen of heaven,” Kepler gave us all Birth Certificates as citizens of heaven, by *proving* that the divine harmonies of the music of the spheres and the harmonies of human music were not two different things. Earthly music used the same proportions that the Creator employed in fashioning the universe. Thus, we delight in these proportions. *This is to this as that is to that* is one of the most creative mental exercises ever devised.

The great composer Haydn celebrated this equivalence between divine and earthly harmonies in his chorus: “The Heavens are Telling the Glory of God.”

<https://youtu.be/OwqqfbinUDY>

This proportional unity of earthly and celestial music was not always there. Different ideas existed on the subject. Aristotle denied the existence of the Harmony of the Spheres because he could not *hear* them. The Roman philosopher Boethius followed Ptolemy in dividing music into three species:

Musica Mundana; the unheard Music of the Spheres / Celestial Harmony
Musica Humana; the Music of the Human Body, Soul & Spiritual Harmony
Musica Instrumentalis; the Music of the Instruments

Boethius identified three types of musicians, and in his *De Institutione Musica* made this most idiotic statement:

“There are three types of individuals versed in the art of music: one is the person who plays an instrument; another that composes songs; and the third is the individual who evaluates the work of the performer and the songs. But those who are in the instrumental class and spend all their time there...are excluded from the knowledge of the science of music and made servants, as said, devoid of all reason and destitute of all speculative thinking. The second class of individual involved with music is that of the poet who possesses not so much a propensity for thinking and reason as a natural instinct for song. And so this type of musician is separated from music as well. The third class is that which has the capacity to judge, so that the rhythm and the melody, indeed the entire song, can be evaluated. Because this class is steeped in reason and thought, it can rightly be esteemed as belonging to music. That person is a musician who applies the faculty of reason and thought to what is fitting and appropriate for music with regard to modes and

rhythms, of the genera of songs and the mixings of sounds [consonances] of all types, which will be explained later, as well as the faculty of judging the songs of the poets.”⁶

What is he saying? He has already told us that the Music of the Spheres is unknowable to man. Now he adds that performing musicians are slaves, “devoid of reason, and destitute of all speculative thinking”, and that composers and poets just have natural instincts for song. Only theorists are real musicians. But, his “theory”, my friends, is “ivory tower” speculation devoid of all *REALITY*, at its worst. How would these theorists ever know that their system of pure, mathematically determined intervals didn’t work, if it was never tested in the real world?

Boethius ruled as supreme musical authority for centuries. The denigration of actual musicians, combined with the Dark Age unleashed by the collapse of the Roman Empire, and the fact that all important works, including poetry, were written in Latin, which the people could not read, resulted in a dearth of music for many centuries. How many pieces of polyphonic music can you name that were composed before the beginnings of the Notre Dame Cathedral around 1153 A.D.? There may have existed, but there are no polyphonic works preserved from earlier.

PHILIPPE DE VITRY

It was only with that great bishop, diplomat, advisor to three kings, poet, but also composer, and music theorist, Philippe de Vitry, that Boethius’ false division of music into three functions of performer, composer, and theorist, was united in the same person. Who else could be a theorist but a composer, using advanced performance capabilities to discover new potential within the pre-established harmonies? Music could never be reduced to a set of fixed rules. Philippe De Vitry’s book, *Ars Nova Notandi*, circa 1322, revolutionized music theory, allowing for more use of dissonance, but also modernized musical notation, designed for the improvement of both composition and performance.

But, he was also a great poet. Dante (1265-1321), in his “*De Vulgari Eloquentia*” (On the Eloquent Vernacular), argued that the common everyday languages (*Vulgari*), were evolving, not fixed, and at least as capable as Latin of communicating profound ideas. He transformed Italian, mastered the poetic form called the Canto, or song, and gave the world some of its finest poetry, such as the “Divine Comedy”, in Italian. This revolution opened the door for many things, including music, which Lyndon LaRouche correctly cited as originating in “The Bel-canto vocalization of classical poetry.” Poetry is the well-spring of music. Boccaccio, Petrarch, and Chaucer all came out of Dante’s divine intervention. Later, Rabelais, Shakespeare, and Cervantes, also coming out of this tradition, carried the French, English and Spanish languages to the highest level they have yet reached.

De Vitry’s friend Petrarch called him “the unparalleled poet of France”, and “the keenest and most ardent seeker of truth, so great a philosopher of our age.” Unfortunately, very little of his poetry survived. Instead of de Vitry’s complex polyphony, we offer his haunting song “*Je qui paoir seule ai de conforter.*” (I who alone am able to comfort)

<https://youtu.be/fcJbGYs8hfY>

⁶ Anicius Manlius Severinus Boethius, *Institutione Music*, circa 490 A.D.

GUILLAUME DE MACHAUT

For the first time, the composer became celebrated as creator. The “*Messe de Notre Dame*”, written sometime before 1365, became inseparable from the name of its creator, Guillaume de Machaut (1300-1377), who was the leading composer of the Ars Nova, after its founder, Philippe de Vitry. Machaut was the head of the music school at the Cathedral in Rheims, where Jeanne D’Arc later led the Dauphin to be crowned as Charles VII, king of France. He composed this crab canon, “*Ma fin et mon commencement*” for three voices, about four hundred years before Bach’s crab canon in the Musical Offering. Notice how it emphasizes the tones C and F#.

[Machaut Rondeau 14, "Ma fin est mon commencement" \(crab canon over a palindrome\)](#)

We also offer this beautiful song “Douce Dame Jolie.”

[Guillaume de Machaut: Douce dame jolie](#)

Remember this comes from a century before the first Renaissance composers such as Dufay.

LATE RENAISSANCE EXPERIMENTS

In the late 16th century, musical experiments were made to try and establish a well-tempered system. They included:

1. The Circle of Fifths. The Greeks figured out that there had to be twelve different tones partially through geometric construction. Take a beginning tone and add successive fifths to it, using the ratio 3/2. It should return to C after twelve fifths, but it does not. It was sharp, and the gap was known as the “comma.” The ratio of 3/2 would have to be tempered for it to work. All of the so-called “perfect ratios” would have to be tempered.

John Bull, a contemporary of Shakespeare wrote a piece called **Ut re mi fa sol la**. It represents the first 6 notes of a major scale. He simply played them up and down, and repeated this on 12 different tones, mostly based on ascending whole tones: **G A B Db Eb F Ab Bb C D E and F#**, thus covering twelve keys. The piece is not that interesting. The most important thing is that *he required the creation of a well-tempered keyboard to play it*. Pythagorean and other such tunings, based on rational-number values for intervals, would have gone wildly out of tune. Here it is with score: [John Bull, Chromatic Fantasia on Ut Re Mi Fa Sol La. Robert Hill, harpsichord https://youtu.be/hpDkbRpxwKw](#)

2. A more common approach was the chromatic scale, of twelve half-tones. Bull composed one. So did his associate and Dutch contemporary Jan Pieterszoon Sweelinck, as well as others in Italy. The young Rembrandt would have reveled in Sweelinck’s improvisations in the Oude Kerke in Amsterdam. If you wish, listen to Sweelinck’s Chromatic Fantasy and remember that it was composed over 140 years before Bach’s *Musical Offering*.

[Sweelinck - Fantasia Chromatica d1 SwWV 258 \(string ensemble\)](#)

<https://youtu.be/d1SWThRakvs>

3. The Human Voice. Jacopo Peri was another contemporary of Bull, Sweelinck, and Shakespeare. He worked with the Medici Court in Florence. He was literally the first opera composer. You can hear his use of human voice registers here. Singers and composers would have been confronted with the evidence of human voice registers, which are organized by Lydian intervals and octaves, as bel-canto technique advanced.

<https://youtu.be/JbaL-RVwdbw>

Later, the salon of Fernando Medici in Florence investigated Kepler, as well as many other musical matters, such as commissioning opera, the invention of the pianoforte by Cristofori, and Stradivari's new string instruments. They worked closely with Leibniz and his work on Dynamics. Bach took great interest in Italian developments. His investigation of the Lydian intervals would have been aided by knowledge of voice registration.

4. The Lydian intervals. This is the key area of discovery in establishing the "Well-Tempered system." They were banned in music theory as "The Devil's Interval." Bach was the first to really tackle the problem. Before he composed his famous Well-Tempered Clavier, using all 24 major and minor keys, Bach exploded the question onto the scene with his *Chromatic Fantasy and Fugue*.

The work is dominated by Lydian intervals and goes through all of the keys without ever resting in one. He never composed anything like it again. Perhaps he realized that he had to introduce change in a more patient way, as in the Well Tempered Clavier. Perhaps it was a 1-2 punch. Historian David Shavin tells us that when scientists at Gottingen University asked Brahms and Clara Schumann for a work they could study to comprehend the nature of musical science, they gave them Bach's *Chromatic Fantasy and Fugue*. Please enjoy just the Fantasy, and appreciate it for the groundbreaking work that it is.

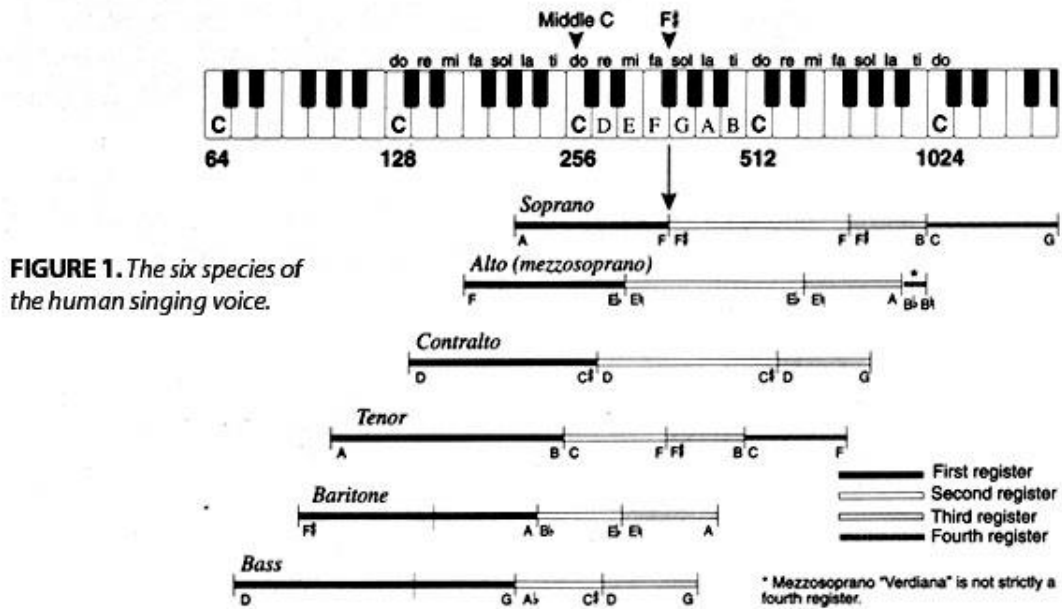
[Rosalyn Tureck Plays Bach - Chromatic Fantasia BWV 903 - YouTube](https://youtu.be/rZmfRM4WH8s)
<https://youtu.be/rZmfRM4WH8s>

4. THE HIGHER HYPOTHESIS OF THE LOGARITHMIC GOLDEN SECTION AND THE ASTRONOMICAL LYDIAN DIVISIONS

"Then God said: 'Let there be light'; and there was light. And God saw the light, that it was good;..." (Genesis 1:3-31)

One more step into this *higher hypothesis* of the well tempered musical system and Johannes Kepler would have been able to construct the Lydian dissonances of the voice register shifts in accordance with his own astronomical discovery of the "exploded planet" which he

found located within the dissonant orbits which strand the celestial region between Mars and Jupiter.



A Manual on the Rudiments of Tuning and Registration, Book I, Introduction and Human Singing Voice, Schiller Institute, 1992.

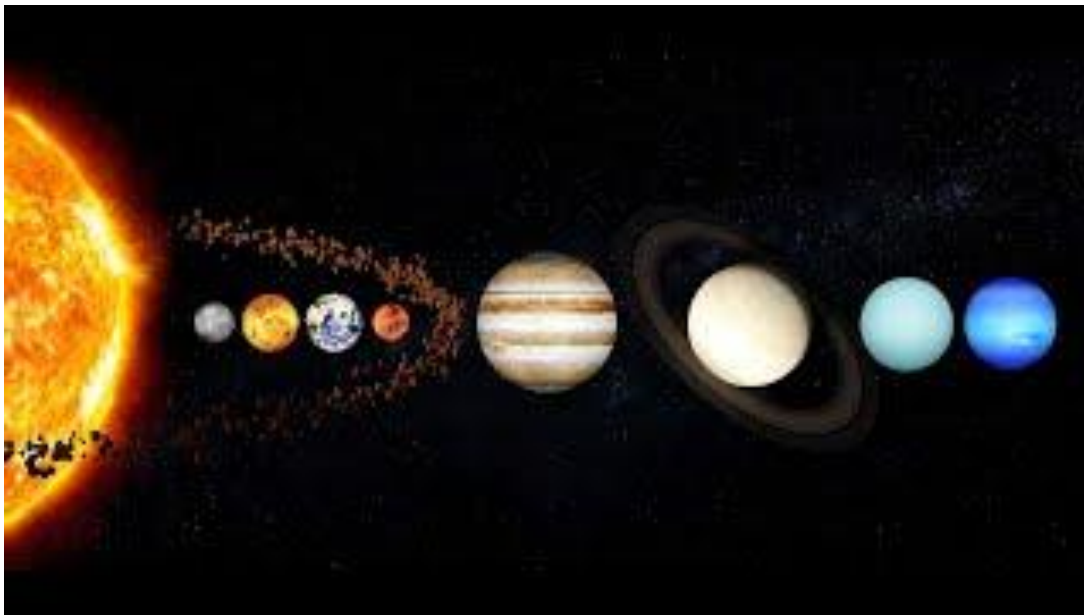


Figure 4. Asteroid belt between the inner small solid planets(C, D, E, F) and the outer giant gaseous planets (G, A, B, C).

But, it was Lyndon LaRouche who discovered such dissonances and their resolutions, thanks to the contribution of Carl Frederick Gauss. However, Kepler did introduce a hesitating note by adding: “For if they are knowable, then they can enter the Mind and into the shaping of the archetype; but if they are unknowable (in the sense which has been explained in Book I) then they have remained outside the Mind of the eternal Craftsman, and have in no way matched the archetype.”⁷

Using the generative principle of the three Lydian spirals as the archetype of a memory function of *higher hypothesis*, one might even be able to compose a Sonata in all of the twelve keys of the well-tempered system as a performative demonstration of a principle of double-biquadratic change. I will leave that task to others who are better equipped to accomplish such a project than I. Similarly, light and water are also memory functions which orient them to compose symphonies of motions throughout space-time, because they also know that they are to change wherever they are going with respect to where they are coming from.

THE ARITHMETIC-GEOMETRIC MEAN OF THE SOLAR SYSTEM AND OF THE SOPRANO VOICE REGISTER SHIFT

THE PLANETARY ORBITS AND THE EQUAL-TEMPERED MUSICAL SYSTEM							
<small>by WILLIAM BOHDAN</small>							
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 5. The Lydian divisions of the Solar System based on the arithmetic-geometric mean of the asteroid belt.

Figure 5 shows the preestablished harmonic positioning between the planets of the solar system and the Lydian divisions [C, Eb, F#, A, C] of the equal-tempered musical system based

⁷ Johannes Kepler, *The Harmony of the World*, Memoirs of the American Philosophical Society, Volume 209, 1997, p. 139.

on an octave range between **C-256** and **C-512**. This extraordinary congruence between human beings and the Solar System is based on the more than 400 year old discovery by Kepler of an “exploded planet” in the arithmetic-geometric center of the Solar System, which corresponds to the voice register shift of the Soprano well-tempered human voice; that is, where it naturally changes from the chest to the head registers between **G-384** cycles/sec., and **F#-362.04** cycles/sec., or within the same cyclical range of the Asteroid Belt. In other words, the Human Voice and the Solar System locate their axiomatic changes within the same cyclical range; the result of which reflects pure optimism for reaching into a higher domain of execution.⁸

This chart includes both the major and minor scale. Kepler found them as well, in the convergent and divergent series (one beginning with the perihelion of the starting planet and the other the aphelion.) The forms he discovered were also inversions: **G A B_{1/2} C D E_{1/2} F G** and **G F E_{b1/2} D C B_{b1/2} A G**.

Furthermore, as the Human Voice changes axiomatically from the chest register to the head register, so does the Solar System by changing from solid planets (Mercury, Venus, Earth, Mars) to gaseous planets (Jupiter, Saturn, Uranus, and Neptune). The question is: what are the epistemological and geometrical characteristics of this axiomatic transformation? The answer is the characteristic of Lydian intervals.

Finally, note also that the four Lydian intervals of action of the Soprano voice, **C, Eb, F#, A, C** of the equal-tempered musical octave of **C-256** to **C-512** reflect the cyclical action of the the five Astronomical-distance-equivalence of the perihelion of Mercury, to the aphelion of Venus, from the perihelion of the Asteroid Belt, to the perihelion of Saturn, and finally, connecting with the aphelion of Neptune.

If the Arithmetic and the Geometric means, **G** and **F#**, of both the human voice and the singing heavenly spheres are governed by a similar principle of Lydian interactive composition, this means that the Solar System and humanity are based on the same fundamental principle of *preestablished harmony*; thus, making us, as Lyndon LaRouche asserted, true creatures of the Solar System. This bodes well with Leibniz’s assertion of being a citizen of heaven:

“Although I have very frequently been employed in public affairs and also in the judiciary system and am consulted on such matters by great princes on an ongoing basis, I nevertheless regard the arts and the sciences as a higher calling, since through them the glory of God and the best interests of the whole human race are continuously promoted. For in the sciences and the knowledge of nature and art, the wonders of God, his power, wisdom, and goodness are especially manifest; and the arts and sciences are also the true

⁸ According to Lyndon LaRouche, “The Arithmetic-geometric mean, the geometric mean, and the Golden Mean (or Golden Section) are each distinct values for F#, depending on the construction of the scale.” See footnote 5 from: https://archive.schillerinstitute.com/fid_91-96/922_artistic_beautv.html#n5.

treasury of the human race, through which art masters nature and civilized peoples are distinguished from barbarian ones. For these reasons I have loved and pursued science since my youth. . . The one thing I have been lacking is a leading prince who adequately embraced this cause. . . I am not a man devoted solely to his native country, or to one particular nation: On the contrary, I pursue the interests of the whole human race because *I regard heaven as my fatherland and all well-meaning people as its fellow citizens*. . . To this aim, for a long time I have been conducting a voluminous correspondence in Europe, and even as far as China; and for many years I have not only been a fellow of the French and English Royal Societies but also direct, as president, the Royal Prussian Society of Sciences.”⁹

How do you discover if you are a citizen of heaven? How do you measure the change that transforms a generation of the past into an inspiring generation of the future? How can you measure the resistance between the two? As strange as the answer may appear to be, the measure is political in character; since the measuring rod lies in the caustic difference between the Party Interest of a political system and the General Welfare of the people under the governing control of the individual citizen of the heaven. Such is the Lydian principle of action inside of politics.

Associated with that, is the difference in identity, between a small-minded individual, concerned mainly with his own, and his family’s immediate survival, which is often assumed to be the “normal” state of a human being; and a world-historical individual personality, concerned with the universe, and the long-term survival of mankind, which should be the “normal” state of affairs of each and every human being. That happy change in identity from the former to the latter can often take place in the twinkling of an eye, *exaiphnes*. Once you understand that, your first battle for the improvement of mankind has been won. The difficulty arises when you have to apply this principle in the real world. The geometrical axiomatic change expression of such political action is as follows:

⁹ Leibniz letter to the Tsar Peter the Great of Russia, in 1712. Quoted by Maria Rosa, Antognazza, [*Leibniz: An Intellectual Biography*](#), Cambridge University Press, New York, 2009, pp. 470-471.

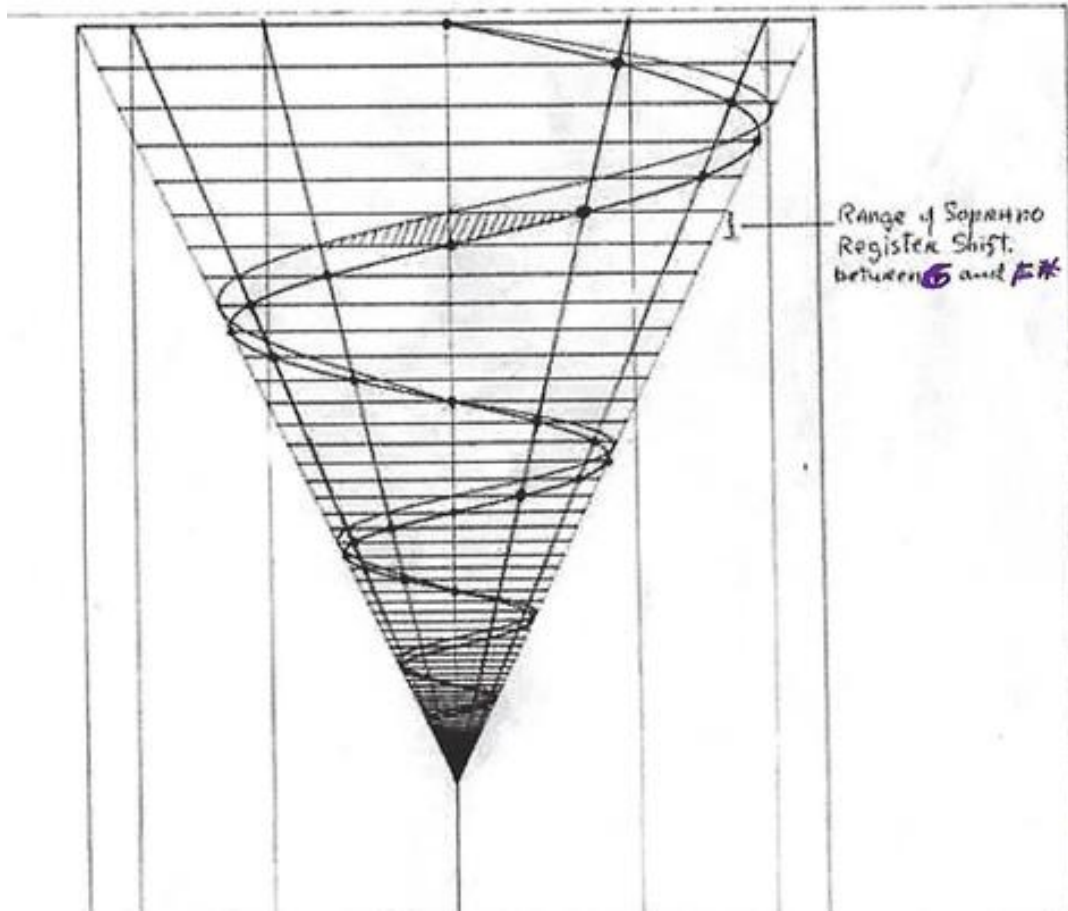


Figure 6. The Arithmetic mean **G** (upper spiral) and the Geometric mean **F#** (lower spiral) form the Lydian dissonance of the Soprano voice register shift in the cone. The range between the two corresponds to the Asteroid Belt planetary register shift, an axiomatic change.

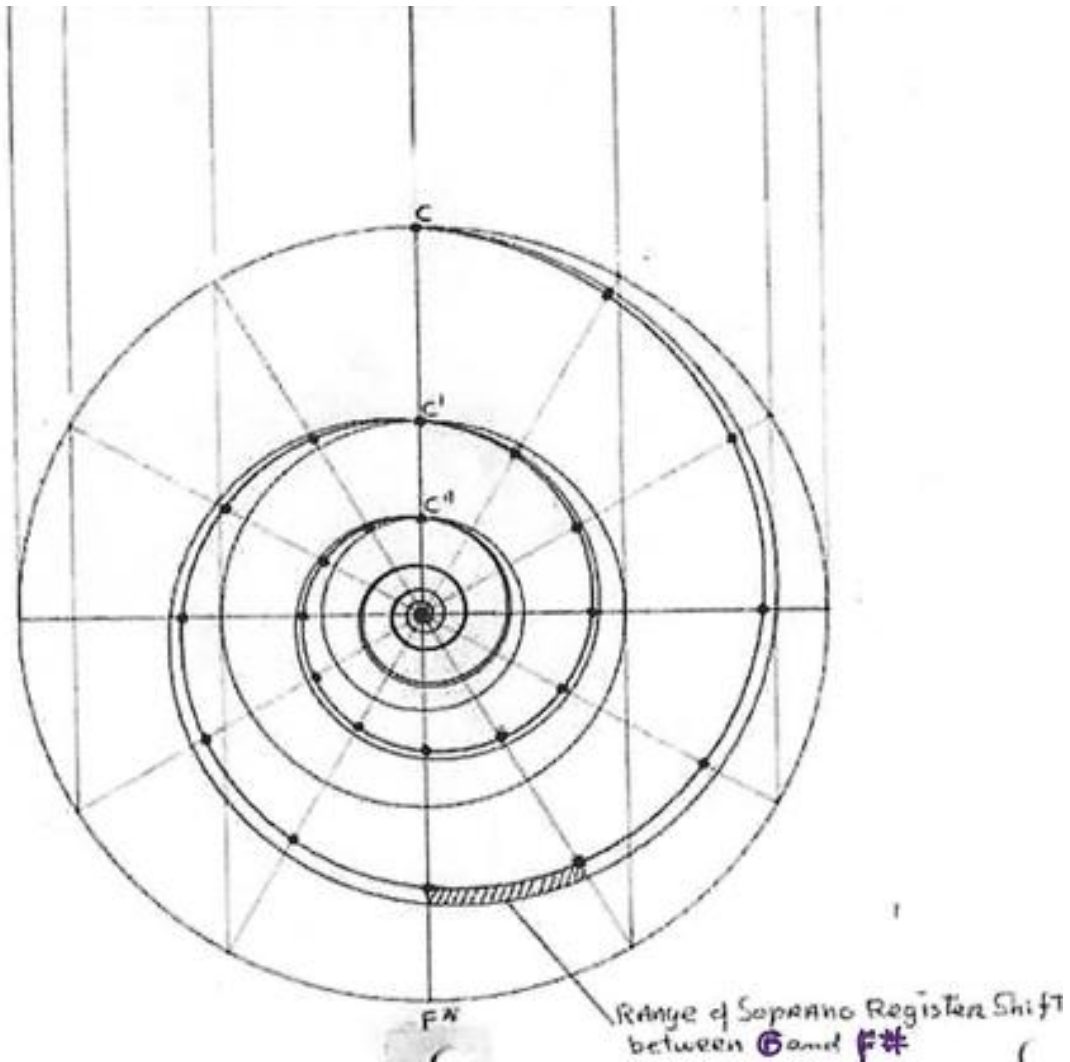


Figure 7. The range between **F#** and **G** forms the dissonance of the Lydian voice register shift of the Soprano voice in the plane.

5. MOZART'S *FANTASIA IN C-MINOR* K, 475

(Part 2 of the C Minor series)

No one should think that once Bach had established the Well-Tempered System that the long hard fight for music was over, and everything was smooth sailing. There were efforts to undermine him during his lifetime and after. Jean Philippe Rameau and Johan Joseph Fux put out reductionist works on harmony and counterpoint around the same time as Bach was releasing the Well-Tempered Clavier. Though neither author identified Bach by name, he was their target.

Rameau was a political operative who, with his friend Voltaire, promoted Rousseau's racist conception of "The Noble Savage".

Rameau published his *Treatise on Harmony* in 1722, the same year that Bach published his Well-Tempered Clavier. In it, he took the fluid conception of chords as passing, and horizontally derived, from the different voices, as developed in *Partimenti* and Figured Bass, and transformed them into vertical objects of fixation, fixation on finding the "suppositional root". This came from one of the worst ideas ever; that music theory could be based on the overtone series of an abiotic vibrating string.

On the other hand, Johan Joseph Fux produced his *Gradus ad Parnassum*, on strict counterpoint, three years later, in 1725. He was so freaked out that he wrote in his introduction: "My efforts do not tend ... to stem the course of a torrent rushing precipitously beyond its bounds. I do not believe that I can call back composers from the **unrestrained insanity of their writing** ... my object is to help young persons."¹⁰

He meant brainwashing young persons. Fux featured the verse on the "Devil's Interval" in this book. Some say it was the first time it ever appeared in print, suggesting that it originated with Fux. The man who coined the term, "Well Tempered Keyboard", Andreas Werckmeister, insisted that it was very ancient. Of course it was. Fux was freaking out that the ban was breaking down, and what piece might have triggered that freak-out better than "*The Chromatic Fantasia and Fugue*"? Fux sought to put a straightjacket on musical creativity, by invoking the authority of Palestrina, as fixed perfection in counterpoint, as if there ever could be such a thing.

Palestrina came out of the council of Trent's Counter Reformation, and was considered the ideal church composer in the late 16th century, at his post in the Vatican. His notion of counterpoint restricted the use of dissonance:

1. "Dissonances only came on weak beats
2. "Dissonances should be limited to suspensions and passing tones and resolved immediately.
3. "Leaps in a melodic line should be avoided, in favor of stepwise motion."

That is a straightjacket. Incredibly, this notion of the fixed perfection of Palestrina was reintroduced in the 20th century, as the Apollonian counter to the Jacobin excesses in "freedom" of the atonalists, et al.¹¹

Bach rejected both Rameau and Fux, as "too strict", though you have to look long and hard to find it. How about that! The most rigorous composer of the most rigorous forms, such as fugues, rejected fixed rules as "too strict."

¹⁰ Johan Joseph Fux, *Gradus ad Parnassum*, 1725.

¹¹ The leading text on strictly counterpoint was from Knud Jeppeson, *Counterpoint: The Polyphonic Vocal Style of the Sixteenth Century*, 1935.

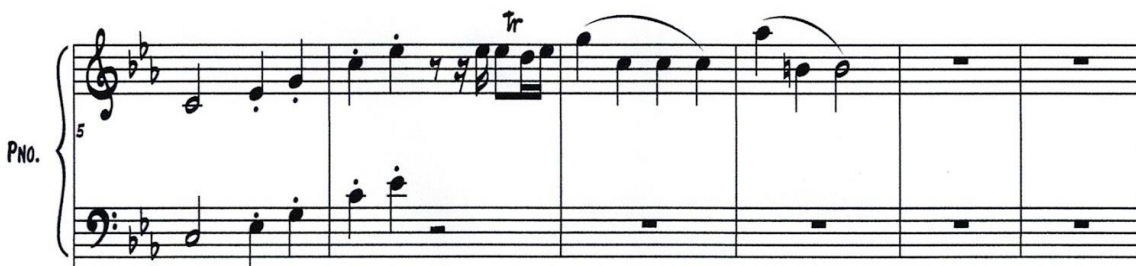
After Bach's death J. J. Rousseau in particular (yes, the author of *The Rights of Man*) claimed that complex polyphony, such as fugues, was too hard for ordinary every-day people to understand. They needed simple melody and accompaniment. Playing two melodies at the same time for the sake of clarity, he preached, was like trying to make two speeches at the same time for the sake of clarity. Listen to one of his sterile compositions. It is hard to believe that this comes 20 years after Bach. J. J. Rousseau: <https://youtu.be/Qi9vO5osN2c>

As a result of such anti-Bach interventions, even Bach's sons seldom played their fathers' music. It was considered to be against public opinion or "old style," though in reality, there was a political conspiracy to shut it down. In 1782, Baron van Swieten started a regular salon in Vienna for young musicians, to introduce them to Bach and Handel. This included a young Mozart, who knew the Bach sons, but not the father. Mozart grew enthusiastic. In 1783 he composed a fugue in C minor which clearly derives from the *Musical Offering* with its **Ab** to **B** interval.¹²

Ex 1 Mozart Fugue in C Minor, 1783



The next year, Mozart composed his *Piano Sonata #14* in C minor, K. 457, where he playfully adapted themes from Bach's Ricercar to sonata form. It opens like this, which should remind you of the opening of the King's Theme, with the opening triad of the descending **Ab** to **B**:



Ex 2

At measure 5 of that same sonata, first movement, he composed this section with a descending chromatic scale against a diatonic **C** pedal point. It should remind us of the 2nd half of the King's Theme. (see above) Slightly later, he composed this section with a

¹² Some skeptics think Mozart could not have known that work. Historian David Shavin has documented that Frederick the Great *sang the theme for van Swieten*.

descending chromatic scale against a diatonic C, should remind us of the 2nd half of the King's Theme.

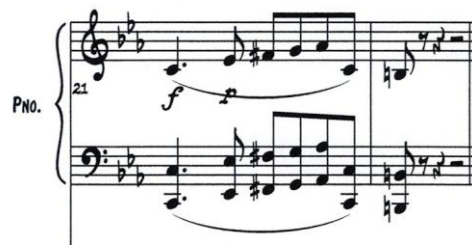


Ex 3

Throughout all three movements of this C Minor sonata, quotes like this abound, and are fun to find, but Mozart was not satisfied. Bach's genius could not be captured just by his themes or even writing fugues. The epistemological implications of his study of the lattice of Lydian intervals had to be advanced. He immediately followed up with his *Fantasia in C-Minor K, 475*.

<https://youtu.be/ct34rmS2Yg8>.

The first phrase is this:



Ex 4

The only differences between this and the first part of the King's Theme, are:

1. A dotted rhythm.
2. An extra C between Ab and B
3. An F# on the way up.

Lyndon LaRouche insisted repeatedly that adding the F# was revolutionary, and wrote that Mozart had imposed a paradox on formalists' keys and scales. Even those inclined to believe him had a hard time, and the difference had to be found partly in performance.

Formalists teach that chord tones are the essential tones in a melody and that dissonances are non-essential tones, such as neighbor notes and passing tones. Just look in any harmony textbook. In language, formalists believe that nouns are the substantives and the verbs are passing; but the great Sanskrit scholar Panini saw verbal action as primary, with nouns being like

eggs laid by the process. That does not mean merely stressing verbs instead of nouns; it is the action that is primary. Try reciting Hamlet’s “To be or not to be” soliloquy out loud, twice, once from each standpoint.

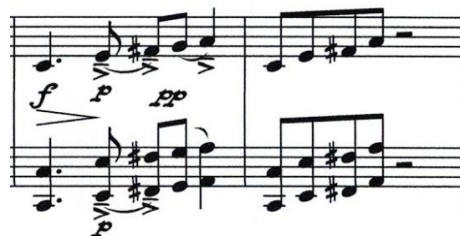
So, a victim of musical formalism would look at the first four notes and see a **C** minor triad, **C Eb G**, and perhaps treat the **F#** as a sort of lower appoggiatura, thus bringing out the triad.

Ex 5



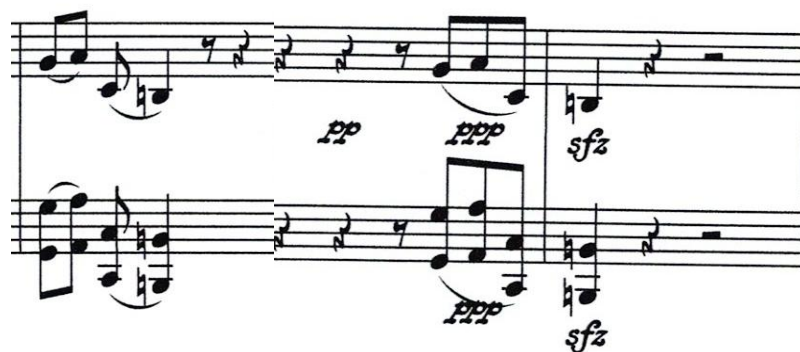
What if the **F#** was treated as an essential tone, and **G** as an appoggiatura upwards to **Ab**? Hear the difference.

Ex 6



The last 4 tones of the theme would seem like the type of paired half-tones we have seen before, but I remember LaRouche discussing that we should act as though **C** was in the same register as **G** to **Ab**, thus saving the register change for what he called the “shocking **B**.” Mozart’s phrasing slur certainly indicates that. Again, hear the difference.

Ex 7



We are slowly changing this opening from a big yawn to something that keeps us on the edge of our seats. Let's hear it now, with the next measure. (Audio only)

What is that little “pixie-like” thing in the high notes? Well, it's two double-Lydians resolving to two consonant triads, by contrary motion (up and down.) Shades of **F A Bb E** from Bach's *Canon*, or **D-Eb** vs. **G-F#** from the **G**-minor fugue we cited, and many others. *All feature half-tones in contrary motion, and all are related to the Lydian intervals.* It sounds more like a question though, doesn't it?

But wait a minute! Where is the chromatic descending scale from the King's Theme? Mozart has, in an act of genius, located it in another higher dimensionality. We experience the rotation of the earth as a day. The earth's rotation around the sun, in a year, introduces another harmonic dimension into those days, creating seasons! Though we associate those seasonal changes with the year, only science has taught us the higher rotational cause of them.

With Mozart, we now experience a higher domain than with Bach, at least in this one question. The celestial year is a whole other story, because it is an entirely new higher dimension, a Solar dimension added to the Earthly dimension. Wait until Beethoven brings in the Galactic dimension. This is what the geometry of the torus and of the spherical domain reflects with respect to simple circular action.

The bass pedal point series in a piece of music is such a slower moving higher cycle, that gives order to the themes and passages, but is not really heard itself, certainly not as a melody. As John Keats wrote in his *Ode to a Grecian Urn*: “*Heard melodies are sweet, but those unheard Are sweeter; therefore, ye soft pipes, play on, ...*”

A great example is Bach's *Prelude # 1* from the *Well Tempered Clavier* Book 1. A great example is Bach's *Prelude # 1* from the *Well Tempered Clavier* Book 1. Here, Fred and Pierre have two different *higher hypotheses*; Fred's higher hypothesis is based on pedal points, while Pierre's hypothesis is based on having the Lydians defining the ordering of the dominant, subdominant, and tonic of *Prelude 1*.

Chromatic scales are common though, so the next challenge is how to make them not seem predictable, but so that every tone is a surprise, like the “Shocking **B**.” But Mozart's innovation goes even beyond that. These types of what are known as “Ground Bases” almost always descend from the tonic to the dominant and back, either diatonically or chromatically. Ex 8 shows both a diatonic, and a chromatic “ground bass.”

Ex 8



Mozart takes it down to **Gb (F#)** and leaves it there for three measures. Now, he has imposed the **C** to **F#** interval on both the theme and the longer pedal point series.

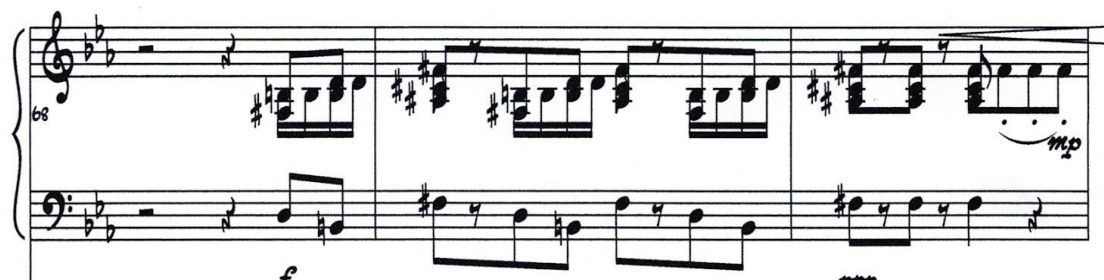
Ex 9. Mozart's ground bass. C to F#



The theme starts with **C** and arrives at **F#** 3 notes later. The pedal point series starts at **C** and arrives at **F#(Gb)** 15 measures later! He has made this such a natural process that when, after 3 measures of **Gb (F#)** he suddenly pops up a half-tone to **G**, it sounds like a surprise, rather than the familiar dominant.

Fantasias are supposed to go through a lot of keys and use a lot of diminished 7th chords (Double Lydians), but usually in a fairly standard order. The key changes here are ordered by the Lydian interval. The pedal "pops up" to **G** after 3 measures on **G#(F#)**. After another 4 measures, it goes back to a pedal point on **F#**, but this time **F#** is the dominant (5th) of **B** minor. That **F#** is repeated as the top note in a passage marked *calando*, until it changes, wonderfully, from the 5th of **B** minor, to the 3rd of **D** major. That **F#** has certainly fulfilled a lot of functions.

Ex 10





Please listen to all of the examples on Audio 2. [Audio2CminorMozart.wav](#)

6. THE PARTHENON OF ATHENS: A CLASSICAL IDEA OF BEAUTY

When you divide the conical spiral action into four equal partitions by half, and by half of the half again (both arithmetically and geometrically), you apply the most effective least action partitioning there is in the universe, because the relationship of opposites are all self-reflective at right angle to each other, by generating one another; however, the span of action is not equally divided. This only appears to be the equivalent of an equal amount of elementary circular action generating the straight line and the point, as on a monochord; except, in the case of conical spiral action, the least action partitioning is not divided into two equal parts. The Lydian interval is constructed around the cone and not along a linear string; that is to say, through a spiral division by half, and by half of the half again; that is, through an uneven and dissonant double spiral action which comes from the *higher hypothesis*. Look at the tension caused by the Lydian dissonance as being similar to Leibniz's "delta," or Gauss' arithmetic-geometric mean.

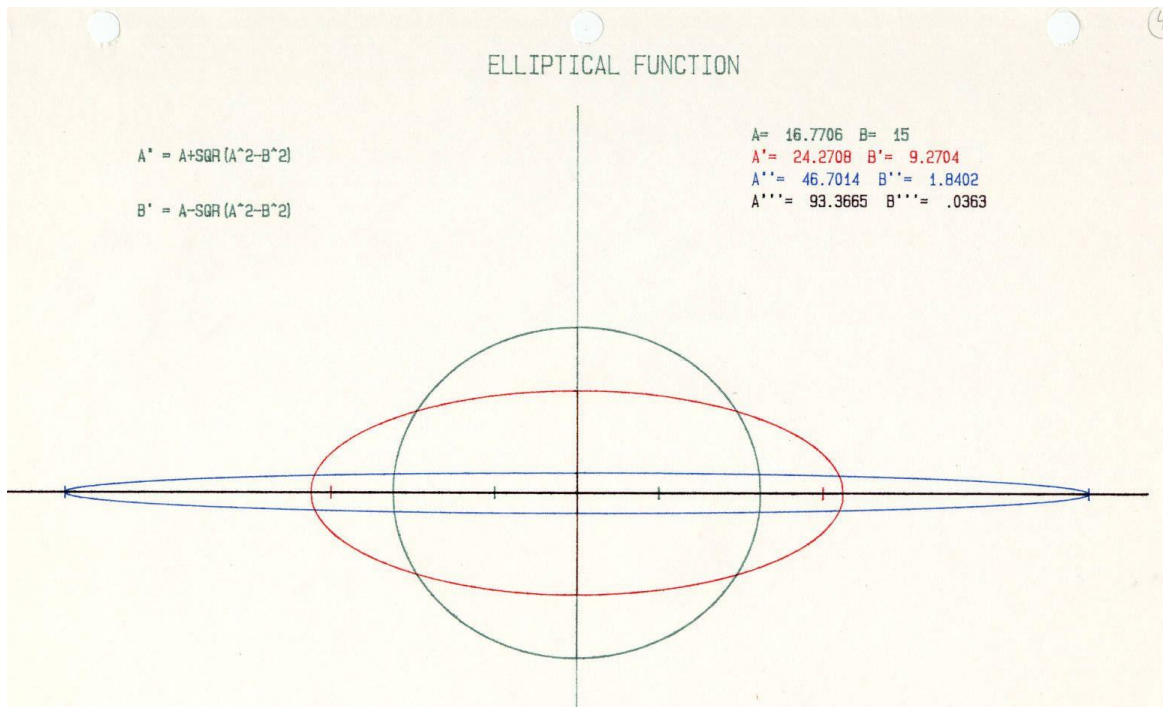


Figure 8. Lydian elliptic function of arithmetic-geometric mean by Pierre Beaudry and Mark Fairchild.

In 1985, I constructed a problem that Lyndon LaRouche had asked me to tackle on the matter of a logarithmic conical spiral. I constructed this *higher hypothesis* with the Jacob Steiner constructive geometrical approach that Lyn recommended and encouraged me to publish in *The New Federalist* of June 24, 1988: **THE ACROPOLIS OF ATHENS: THE CLASSICAL IDEA OF BEAUTY.**



Figure 9. Scale model copy of the Parthenon by Pierre Beaudry.

LaRouche recommended the construction of a conical logarithmic spiral and to apply it to the Golden Section and the construction of Athens's Parthenon floor-plan, which I did by constructing the logarithmic conical values for the fifth $3/2$ (Dominant) **G**, the fourth $4/3$ (Subdominant) **F**, and the Golden Section with respect to a double octave of the octave (Tonic) **C**. The result was the geometrical construction of the equal-tempered conical spiral system

where the interval between **G** of one octave to **F** of the next higher octave corresponds to the two sides of the Golden Rectangle floor-plan of the Parthenon, with respect to a double octave of **C**.¹³

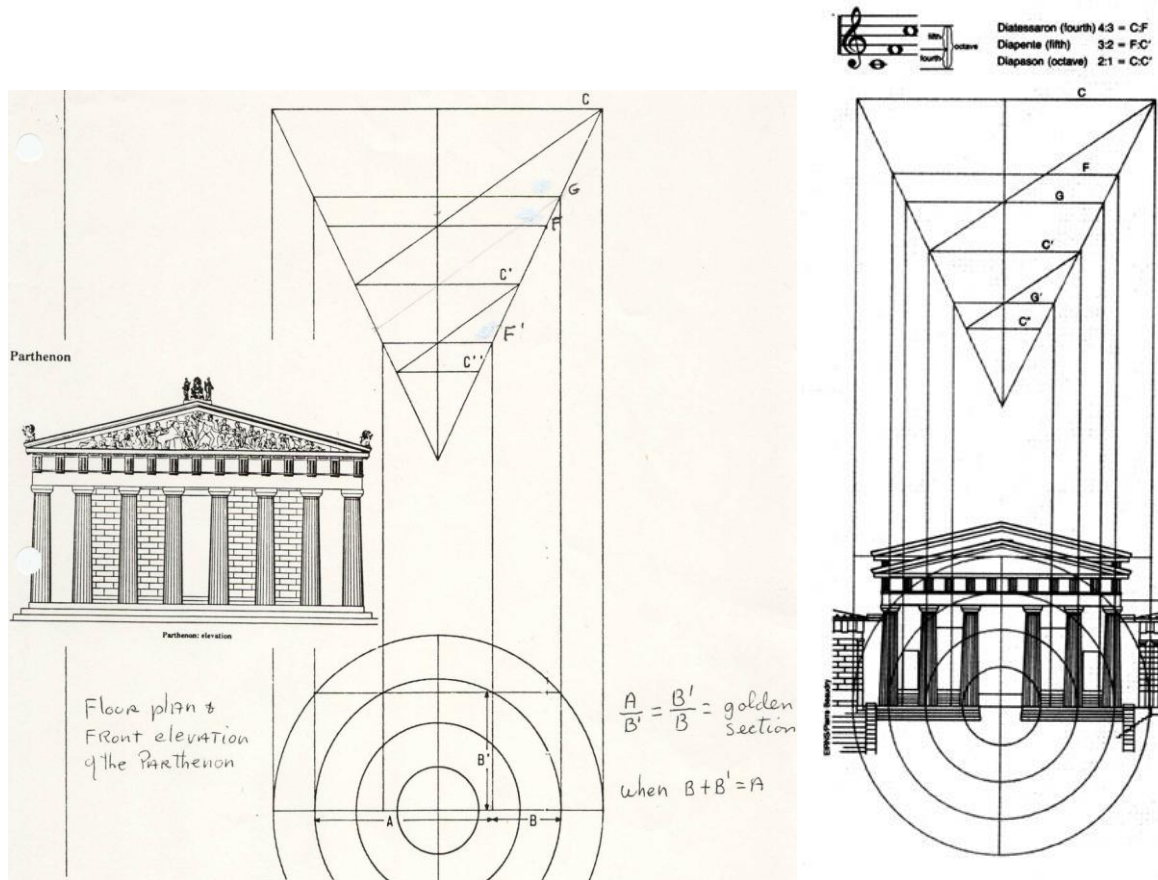
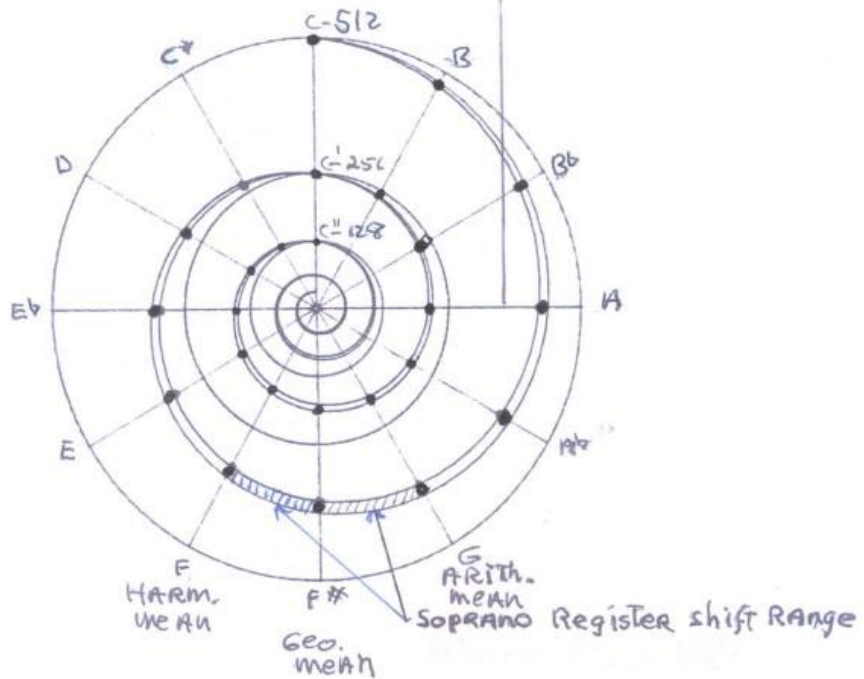
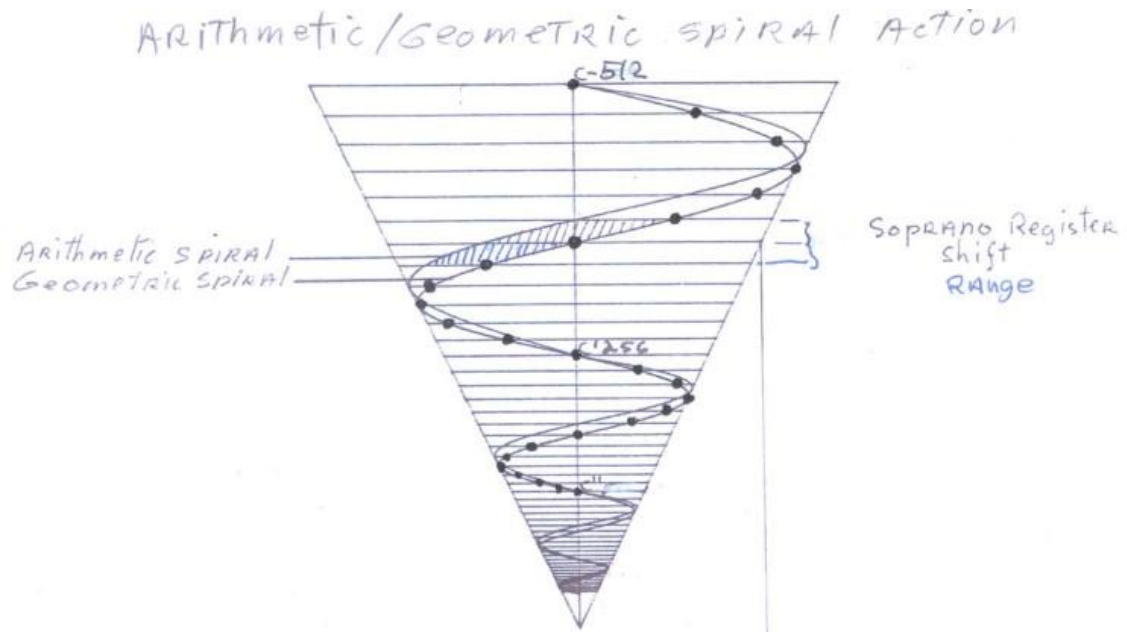


Figure 10. Parthenon golden rectangle floor plan. Figure 9. Acropolis Propylaia by Pierre Beaudry and Mark Fairchild.

The conical projection of the Dominant **G** of an octave and the Sub-dominant **F** of the next higher octave with respect to the Tonic **C-C'** of that double octave, is in the Conical Golden Section ratio; that is, the connection between the Dominant, Sub-Dominant, and Tonic represent the spiral location where the three Lydian Spirals of the Golden Section are born. There is a fascinating connection, here, between architecture and musical composition. In both cases, the conical spiral action of the golden section reflects the highest form of God's *preestablished harmony*.

¹³ Pierre Beaudry, [THE ACROPOLIS OF ATHENS THE CLASSICAL IDEA OF BEAUTY PART II](#)



BEAUDRY. 1985.

Figure 11. The arithmetic-geometric mean of conic self-similar spiral action. Composed by Pierre Beaudry and Mark Fairchild.

7. BEETHOVEN AND THE PREESTABLISHED LYDIAN ORDERING

Thank God the human mind is always able to discover the higher domain of *simultaneity of physical eternity*, as Lyndon LaRouche expressed the idea with respect to Raphael’s painting, *The School of Athens*. Raphael depicts the moment of agapic universality in which the inversion of a discovery of principle takes place. It is that inversion which leads you to discover the principle of *preestablished harmony*, as Leibniz understood it and as Plato initially began to examine it with his geometrical number.

For instance, the fourth song of Brahms’s *Four Serious Songs* identifies the crucial point: “*But then shall I know even as also I am known.*” Such is the power of the Lydian principle. However, such an inversion of universal simultaneity of time duration can only exist in the human mind as a temporal intermediary between absolute time and divine eternity; just as a universal truth can exist in the human soul, because for the many, there is always a One, as Beethoven’s Lydians are the proof of it, as too with Brahms.¹⁶ Look at the Lydian principle as the unifying principle of the One of the Many in musical composition which makes knowledge self-subsisting. It is as if the cause of change were to come eternally and simultaneously from the past, the present, and the future at the same time, as does a principle of *preestablished causality*.

The image shows a handwritten musical score for Beethoven's Piano Sonata Opus 27, No. 2, in C minor, measures 31-36. The score is written on two staves (treble and bass clef) with a key signature of three sharps (F#, C#, G#). The music is annotated with blue circles and handwritten text. In measures 31-32, the bass line has two orange circles around notes, and the treble line has a blue circle around a group of notes. Below these are the handwritten annotations "LYDIAN Cluster" and "Resolution of DISSONANCE". In measures 33-36, the treble line has three blue circles around groups of notes, each annotated with "LYDIAN Cluster".

Figure 13. Beethoven’s Piano Sonata Opus 27, No. 2, in C Minor measures 31-36.

¹⁶ See Lyndon LaRouche, [The Truth About Temporal Eternity](#), The Schiller Institute, Part I, March 14, 1994. As LaRouche stated: “The natural principle which was responsible for this sudden upward turn was not new. That ancient principle, called into play to produce this Renaissance effect, is that characteristic of the individual person which has always set the human species absolutely apart from, and above all other known creatures existing within Temporal Eternity.”

Saint Augustine refers to a similar form of universal timeliness of creative action when, in [*The City of God, Book XI*](#), Chapter 21, he explained Plato's conception of the completion of the universe at the moment of God's Creation:

“Plato, indeed, was bold enough to say that, when the universe was completed, God was, as it were, elated with joy. And Plato was not so foolish as to mean by this that God was rendered more blessed by the novelty of His creation; but he wished thus to indicate that the work now completed met with its Maker's approval, as it had while yet in design. It is not as if the knowledge of God were of various kinds, knowing in different ways things which as yet are not, things which are, and things which have been. For not in our fashion does He look forward to what is future, nor at what is present, nor back upon what is past; but in a manner quite different and far and profoundly remote from our way of thinking. For He does not pass from this to that by transition of thought, but beholds all things with absolute unchangeableness; so that of those things which emerge in time, the future, indeed, are not yet, and the present are now, and the past no longer are; but all of these are by Him comprehended in His stable and eternal presence.”¹⁷

This expression of power is the highest form of completion in which the human mind is able to access the concept of divine and eternal time, that is, where those Lydians are the highest human expressions of the power of change in forecasting a preestablished changeless form of artistic composition which reflects the *simultaneity of physical eternity*. The Lydians are an expression of such a paradox of change and no change. We have to discover where such expressions of Lydian compositions have been written by musical and other composers and study their mode of composition. Felix Mendelssohn has a treasure chest filled with them.

For example, pay attention very closely to the “Lydian clusters” in Figure 13 and play those Lydians, incessantly, on a keyboard, as if you were practicing scales. Do it nonstop, until you turn grey in the face; and then, do it some more, forward-backward, again and again; then, the creative process of your mind will be provoked. This is what I did at least twice during my lifetime, once in New York, and once in Baltimore, because, each time, I had forgotten completely how to play Beethoven's Sonata Opus 27, which I had learned at the age of 14 by watching the placement of my mother's hands on the piano. To this day, I can barely read a sheet of music and I have reconstructed the entire first movement, twice, out of the memory of the fingers and from the dual memory of what I now call the *Lydian memory function of measures 31 to 36*. This is what I also call completion in the sense of Saint Augustine.

My question is: how was it possible to reconstruct the entirety of the first movement of Beethoven's Sonata with only that Lydian memory function and without reading the score? The answer, I know, can be found in the Lydians; but how it happened, I don't know. Figure 14 is

¹⁷ Saint Augustine, [*The City of God, Book XI*](#), Chapter 21.

another view of how the cluster of such Lydian actions actually works as a closed Leibnizian monad in the *simultaneity of physical eternity*.

The Lydian divisions have in their ordering, as composed by Beethoven, a quality of completeness of musical resonance which is constantly dissonant, unresolved, and which keeps searching for a resolution through the *division by halves and half the halves*, again. When you simply hear the incessant repetition of minor thirds of the Lydian cluster in Figure 14 going up and down the scale, it is as if they are leading somewhere and you don't know where they are going to land. That's precisely what you have to figure out, patiently, while you listen and try to recall where to go next for the reconstruction of each part of the entire movement.

There are four key changes where the Lydian monad of Figure 14 can lead you to generate the next spiral, and those four keys make up the next series of similar Lydian divisions; that is, where the **C, Eb, F#, A** spiral generates the **C#, E, G, Bb** spiral.

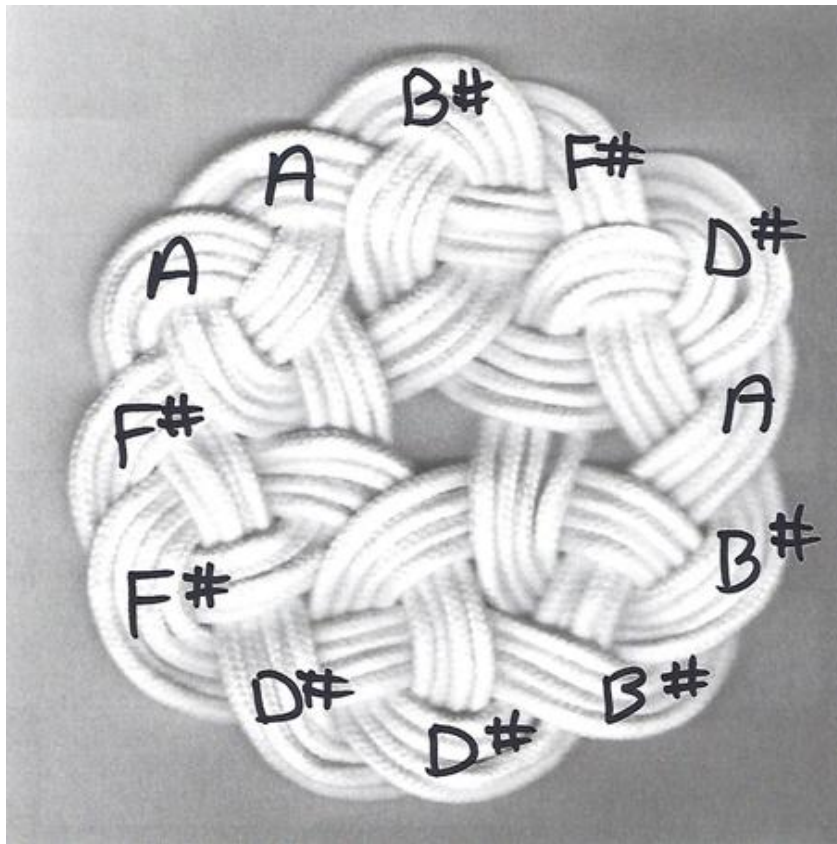


Figure 14. Poloidal-Toroidal spiral action of Beethoven's Lydian principle for Piano Sonata Opus 27 No.2. Measures 35-36.

So, when you discover that completeness, then you know you are in the right direction, because the whole process of the triply-connected Lydian memory function is self-generating and cannot lead you anywhere else but where you wish to go; that is, discovering the geometry

of change. What is that? You don't discover something; you discover how to change. Is there some geometrical construct to express that? What does it mean, if there is? What is the epistemological significance of such a geometrical monad? How can such a musical modality have such a geometrical shape and circular definition? Where does that continuous multiply-connected motion come from? Is it just an accident of nature, a coincidental fancy, or are we witnessing a *true geometrical form of coincidence of opposites in the simultaneity of physical eternity*? That's the question that has to be answered.

While you are trying to find answers to these questions, I am sure you can find those four keys changes by yourself, as I did, "by ear:" They are: **C#, E, G, and Bb**. I have not found any other key generation from the Lydian cluster of **C, Eb, F#, and A**, (or **B#, D#, F#, A** for Opus 27), and they don't seem to be generated in any other succession either. The question is: Why not? Why is it that I cannot just make any change I want to, and go anywhere I want to go in music, and by any pathway I wish? No. The musical scale is already composed with such a built-in *preestablished harmony*, and its principle of self-change is Lydian.

The reason this is true is because in music, as in life, there is a preestablished harmonic ordering of how to resolve dissonances, and there is no other pathway to do it. This is the geometrical pathway of the Lydians, and in that sense only, this is how the pathway of morality works in music, because it helps other people to know themselves.

Wagner, List, Ravel and other so-called "modern" musicians may have tried to prove the contrary, by hiding behind a different "rule of law," but they failed miserably. There is a profound reason for this failure; that is what makes the difference between a true discovery of principle and a Delphic operation.

THE GEOMETRY OF THE THREE LYDIAN SPIRALS

Here is how I understand the ordering of the opening Lydians in Mozart's *Fantasy Sonata, K, 475* in **C** minor as expressing a similar completeness of *preestablished harmony*. As far as I can understand, measures 2, 4, 161, and 164 identify the preestablished forms of generating all of the six human voices in the following order of their register shifts: Tenor-Soprano, Baritone-Alto, then measures 161-164, identify Tenor- Soprano and Contralto-Bass. This ordering of the six human voices, two by two, reflects the ordering of how the Platonic solids are also generated by construction according to the Lydian register shifts of the six human voices from the 10-circle sphere.¹⁸ (See Figure 15.)

¹⁸ See my report:

[LYNDON LAROUCHE'S CONCEPT OF THE HIGHER HYPOTHESIS AND THE GENERATIVE PRINCIPLE OF THE PLATONIC SOLIDS](#)



Figure 15. Mozart's Lydian opening of *Fantasy Sonata K, 475* Measures 1-4 and 161-164.

How do you go from a lower to a higher manifold when there is no pathway between them? The answer is that you must create that pathway. Compare the above process of transformation of Figures 13 and 14 to the Mozart Piano *Fantasy K, 475 in C-minor*, especially the opening measures 2, 4 and 164.

Here is how I understand the ordering of the Lydians in Mozart's *K, 475*. Mozart was rediscovering the preestablished harmonic form of generating the voice register shift of all six human voices. Those six human voices can be represented by a 10-circle sphere which looks like the one below. (Figure 16.)

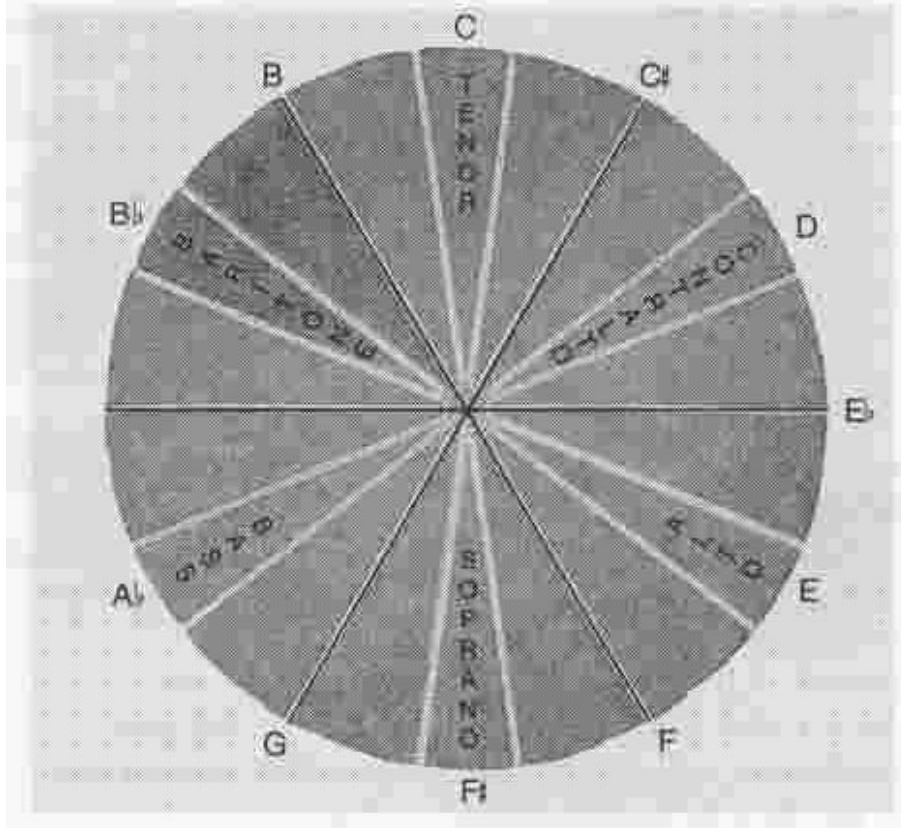


Figure 16. The spherical geometry of placement of the register-shifts of the six human voices.¹⁹

Here is how I conceive of the Lydian “Poloidal and Toroidal actions” as the measure of change of our spherical Universe: The spherical generation of the three Lydian spirals simply rotates like a triply-colored monad memory function around a torus of *preestablished harmony* with both positive and negative curvature. (Figure 18.) This preestablished ordering of change is such that it can never change, yet it changes internally. The three sets of Lydians generate each other in that order, and only in that preestablished order; that is to say, the **C** spiral (Red) [**C, Eb, F#, A**] generates the **G** spiral (Blue); similarly, the **G** spiral (Blue) [**C#, E, G, Bb**] generates the **F** spiral (Yellow); the **F** spiral (Blue) [**D, F, Ab, B**] generates the **C** spiral (Red) [**C, Eb, F#, A**]. (See Figure 18.)

Play them on a keyboard to hear what they sound like. The three Lydian cylindrical spirals are: [**A, C, Eb, F#**] (yellow); [**G, Bb, C#, E**] (red); and [**F, Ab, B, D**] (blue). The spirals are generated in accordance with their natural descending order, from the **Dominant G**, to the **Sub-Dominant F**, to the **Tonic C**.

¹⁹ See my report: [LYNDON LAROUCHE'S CONCEPT OF THE HIGHER HYPOTHESIS AND THE GENERATIVE PRINCIPLE OF THE PLATONIC SOLIDS.](#)

Prelude 1, C Major

Moderato $\text{♩} = 112$

The image displays a page of musical notation for J.S. Bach's Prelude 1 in C Major. The score is written for piano in C major, 4/4 time, with a tempo marking of 'Moderato' and a metronome marking of 112 quarter notes per minute. The piece consists of 24 measures. The notation is presented in six systems, each with a treble and bass clef staff. The first system contains measures 1-4, the second 5-8, the third 9-12, the fourth 13-16, the fifth 17-20, and the sixth 21-24. Three specific sections are highlighted with colored boxes: a blue box covers measures 13-14, a yellow box covers measures 15-16, and a pink box covers measures 21-22. The highlighted sections represent three Lydian spirals that are mutually self-generating.

Figure 17. J. S. Bach, Prelude 1 in C-Major. The mutually self-generating three Lydian spirals

- C-E \flat -F \sharp -A
- C \sharp -E-G-B \flat
- D-F-A \flat -B

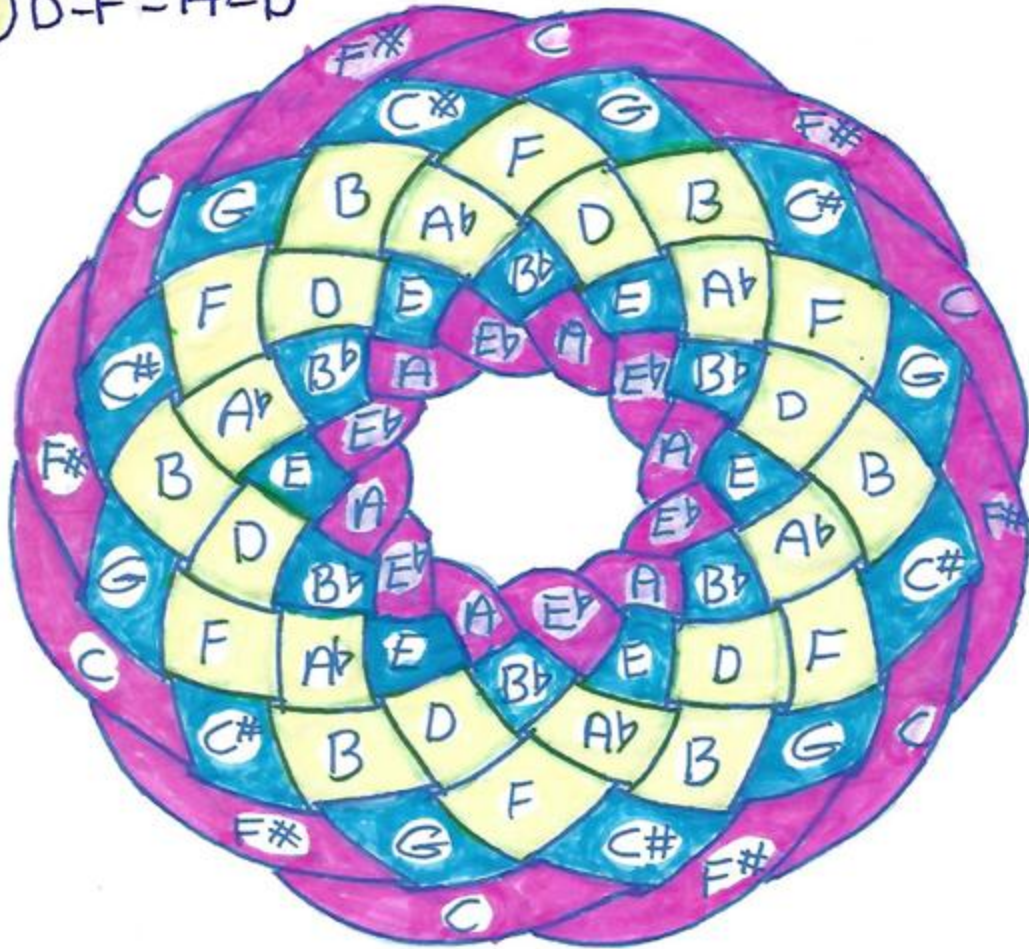


Figure 18. The mutually self-generating three Lydian spirals. Red C-E \flat -F \sharp -A generates Blue, Blue C \sharp -E-G-B \flat generates Yellow, and Yellow D-F-A \flat -B generates Red C-E \flat -F \sharp -A.

8. BRAHMS' FOUR SERIOUS SONGS: AN EMAIL DIALOGUE BETWEEN FRED HAIGHT AND PIERRE BEAUDRY ON LYDIANS

Starting in mid-sentence:

Fred: When I said "elusive", I meant not approaching Lydians like a bean counter (there are a lot of them), but rather, we have to identify how they actually function from the higher standpoint, in the music, as we have been discussing.

As you know, if one has had extensive academic training in an area, then the fight to "bust" your former axioms is never really over, no matter how long you have been working at it. Every time one encounters something new, the tendency is to try to fit it into a known category that comes up. You have to fight it. Thanks to your prodding I have begun to do that. I will give you one beautiful example.

Take the 1st 2 and 1/2 measures of Brahms' Song 3, "*O Tod, O Tod.*" Analyzing it in **E** minor is like constructing the solids by lines and points. It can be done, but it does not account for its existence. That opening is governed from above by the Lydian intervals. Those two measures pit **C** against **F#**. It does what Lyn once said about Mozart's use of **F#** in the **C** Minor Fantasy; it imposes a paradox on the formalist's system of scales and keys. THAT is the source of the power in that opening.

Pierre: Thank you my friend for this reminder. I knew the source of the power had to come from a paradox of the coincidence of opposites: **C** and **F#**. But, I didn't know how it unfolded with Brahms.

However, why is it that I feel you are not telling me half of what you know about those two and a half opening measures of Brahms' Song 3? Are the four minor thirds descending merely the footprints of setting the stage for the coming sudden and unpredictable (*exaiphnes*) higher discovery?

I am happy that you said that "*Analyzing it in e minor, is like constructing the solids by lines and points. It can be done, but it does not account for its existence*", because we have to be looking for the higher form of measure which expresses the transfinite causal change which takes place; and that higher measure is not simply the passing from **E** minor into **E** major.

Indeed, the "lines and points" footprints which go from the first bitter "*O Tod*" to the second accepted "*O Tod*," are not sufficient to identify the higher domain. How do you go from the first to the second when there is no pathway between the two? There is a revolutionary jump here. The point is to reach to the higher level that Lyn identified when he changed the Riemannian metric from the n-fold manifold to the n+1/n manifold. Even though the footprints may not

express the actual emotional power of transformation that is involved, here, they do cause the change by also changing the measure which causes the change. That's what we also have to do. In other words, when you want to describe a change to someone, you also have to cause his mind to make that change, not simply give a description.

Isn't that what Raphael does in his "Transfiguration?" You did pose this problem before, with the "Transfiguration" (I don't remember where, but you should try to recover your argument) and you were right to point to the axiomatic discontinuity between the two different scenes which are derived from two seemingly different and disconnected biblical subjects. Who, in his right mind, would connect those two biblical events unless there was a moment of transfinite transformation involved? That is precisely the paradoxical state that we must identify with the Lydians in Brahms's *Four Serious Songs*.

I keep going back to Marian Anderson's '[They crucified my Lord](#),' in order to experience (hear) the perfectly sublime moment of such Lydian causality within the perfectly "bitter" and yet "accepted" expression; and all I find is: "Not a word, not a word!!"

Fred: You are right. That was just a portion, so I will give you a bit more.

1. Here is something new for you.

Lyn excluded the discussion of chords. I know why, and I agreed with him. Most musicians take them as self-evident a priori existences that dropped from the sky, or are carved in stone like the Ten Commandments. But, he also said that "for the time being" we cannot discuss chords. I can discuss them because I am learning more and more what they are, and what they are not.

You have long emphasized the arithmetic, harmonic, and geometric means of the octave as, respectively, the dominant, subdominant, and Lydian intervals.

If you divide a **C** scale at **G**, the arithmetic mean, you will have an ascending 5th and 4th. If you divide it at **F**, the harmonic mean, you will have a descending 5th and 4th. So, as you know, they are inversions, and give us the tonic, dominant and sub-dominant. This 5th-4th principle is an important source of modulation (key change), as seen for example in the circle of 5ths. **F#** of course is the Lydian, and geometric mean.

Take the interval of the fifth, and find its means. That means your terms are 1 and $\frac{3}{2}$ (or 1.5), rather than 1 and 2 for the octave. The simple formulae will show you that the arithmetic mean is 1.25 or $\frac{5}{4}$. The harmonic mean is 1.2 or $\frac{6}{5}$. Those are the Pythagorean ratios for the major and minor thirds.

Now try the same thing we did with the octave with the 5th, say **C** to **G**. Divide it at the arithmetic mean **E**, and you have an ascending major 3rd and a minor 3rd. Divide it at the harmonic mean, **Eb**, and you have a descending major third and minor 3rd. This gives you

another sort of change. **CEG** is the major triad, and **C Eb G** is the minor triad. So, a change from major to minor is a sort of inversion. (I could say more but it's a lot to absorb for now).

Notice that there is no tone representing the geometric mean. Where do we find it? Well, the diminished triad is **C Eb F#** (or **Gb**). In this case we are dividing a diminished 5th (**C** to **Gb**). I believe **Eb** is the geometric mean. It divides it in half into 2 minor 3rds. If I am right, the double Lydian spiral is all geometric means. **F#** the **GM** of the octave, **Eb**, the **GM** of **C** to **F#**, and **A** the **GM** of **F#** to **C**.

Would an augmented triad, **C E G#** (**C**) also be a division at the geometric mean Pierre?

Now, your point about Kepler not finding a continuous cause for the dissonances. That has bothered me for a long time, (although you are the first to have the courage to say it), knowing the emphasis Lyn put on dissonances. Look at any theory book and you will see the major and minor triads described as consonances, and the diminished and augmented as dissonances (Kepler learned a lot from musicians, and that is what he would have encountered. at the time.)

The idea is that the former are stable and the actual substance of music, while the latter are altered and unstable (the very names diminished and augmented suggest alteration from what is normal). What if it's the other way around, at least in terms of substance? It strikes me very much like Lyn's emphasis on verbal action and change, rather than nouns as the substantives of language. (Notice he said verbal action, not verbs. A concept of Lydian action may be more to the point than just Lydian intervals.)

But I want to know how these discoveries match with the spherical generation of the Lydian intervals. Then we can discuss the third song.

A VERY SIMPLE REPRESENTATION

clockwise
C _____ 5th _____ **G** _____ 4th _____ **C**

counterclockwise
C _____ 4th _____ **F** _____ 5th _____

major 3rd minor 3rd
C-----**E**-----**G** *clockwise*

minor 3rd major 3rd
C-----**Eb**-----**G** *counterclockwise*

Pierre: As for Brahms' Song 3 paradox, my sense is that we are also dealing precisely with a Leibnizian *preestablished harmony* in the sense that Lyndon LaRouche stated:

“A true discovery of any universal physical principle is a grasp of the power to make a willful change in the ordering of the universe. The universal physical principle discovered, existed, and functioned in the universe before man first discovered it. Nonetheless, when man not only discovers, but deploys such a principle, man's willful action in using that principle changes the universe. Hence, such discoveries are to be recognized as acting ‘powers’ for changing the world, in the sense of that usage by pre-Euclidean Greeks such as the Pythagoreans, Heraclitus, and Plato.” [Lyndon LaRouche, [When Even Scientists Were Brainwashed](#), 21st Century, Summer 2004, p. 41.]

This unique statement by Lyn must be fully internalized as the cornerstone of this entire report and must be applied to the paradox of Brahms’ *Four Serious Songs*, the essence of it being posed in Song 3 by the two contradictory statements:

“O Tod, wie bitter bist du, and “OTod, wie wohl tust du!”

(O Death, how bitter is thy sentence) (O Death, how acceptable is thy sentence.)

The question is: How can such an untenable paradox be resolved? Are the end notes of Song 3 extended simply “until they die away” or does the singer hold his breath until it is over? Is there something else, which must come from the outside to solve this paradox? What have you accomplished with your life which justifies that you can die in peace with such positive resolution? Isn’t it the answer to that question which decides if your death is “acceptable” or not? This is the issue of the sublime.

The crucial axiom busting moment of discovery seems to be elusive here until the moment of death, but, if you believe like Leibniz does, that there is a *preestablished harmony* underlying all axiomatic changes, then, you have a chance to understand the reason for such a sublime moment. Welcome to the domain of monadology where such axiomatic transformations are the rebirths that each monad can go through from the ashes of its previously dysfunctional previous life’s axioms.

Similarly, what if the death that is made to be “acceptable” were to also be the death of previous axioms which no longer function and whose joyful loss is to be compensated by the birth of new axioms, or no axioms at all, giving the mind’s new powers, including most significantly, the mastery of a new measuring power to change the universe as a whole? What if such an axiomatic change were simply an expression of the death of the old self through the birth of a new and improved self in the course of the development of mankind? That is what I was trying to find in <http://www.kellydeanhansen.com/opus121.html>. But I could not find it.

The response by Dietrich Fisher-Dieskau (baritone-Bass) and Daniel Barenboim (piano) [DG 449 633-2], dedicated to Max Klinger, reports the following concluding statement where I need you to tell me if such a comment, at the end of Song 3, implies what I think it does; that is

to say, an axiomatic change from a dying manifold to the birth of a new improved one, in order to give form to immortality.

“The meter shifts back to 3/2 for the extended closing, which is a meditation on the first words of Verse 2 (“*OTod, wie wohl tust du!*”) The same pitches as at the opening are used for a twofold statement of “O Tod,” but the chain of descending thirds undergoes directional change to become two highly beautiful rising sixths, and the notes are inflected to the E-major mode. Although the music is back in 3/2, the hymn-like accompaniment makes a return, complete with the suspended harmonies and syncopation.

“**3:27 [m. 33]**--The phrase is completed with a long line on “wie wohl tust du.” It begins with a downward leap of a sixth, then a long note and a slow, broad descent. The cadence is lovely, if incomplete, and the hymn-like accompaniment provides a bridge with some chromatic notes.

“**3:48 [m. 37]**--The leap on “wie wohl” is heard again, this time widened to a seventh. Instead of a long note, the words “wie wohl” are repeated again before the final “tust du.” This slow, broad descent is similar to the previous one, but it now leads decisively to the keynote E for the beautiful major-key cadence. The hymn-like accompaniment, slowing slightly, reaches back upward, and after the singer’s last note, the E on “du,” it melts into a rising E-major arpeggio in the bass, supported by upper harmonies that lead to the last transfigured chord. The left hand leaps up from its low bass octave to echo the chord in a different vertical orientation. These chords are usually held until they die away. [<http://www.kellydeanhansen.com/opus121.html>]

4:29--END OF SONG 3 [40 mm.]²⁰

“I tend to agree with Kelly Dean Hansen’s analysis, but she falls short of making the leap upward that is required. As you said, I keep hearing the effects and not the causal process, the points and the lines and not the full reason for the existence of the solid. [End of dialogue]

Dear Pierre,

Sat 8/13/22

Just a quick note for now. These are my own thoughts, which I believe to be correct based on my current knowledge. There may be more to be discovered.

²⁰ Quoted from Kelly Dean Hansen, [*FOUR SERIOUS SONGS \(ERNSTE GESÄNGE\) FOR BASS VOICE AND PIANO, OP. 121.*](#)

I think it is a mistake to identify a tonic, dominant and sub-dominant as Lydians. That's a bit like mapping from the solid to the sphere, instead of the other way around. Just because **B** of **D F A b B** can resolve up to **C**, that does not make it the tonic Lydian.

Remember that even though **C** at 256 is not arbitrary, the term **C** is. In the 11th century, Guido of Arezzo created *solfège*. He named the tones **ut** (later **do**) **re mi fa sol la** on the syllables that began the first lines of a poem. That is about as arbitrary as you can get! The original *solfège* was at least a partially moveable **do** system. Guido had three hexachords, the natural, beginning on **C**, the soft beginning on **F**, and the hard beginning on **G**. Thus **ut (Do)** can be **C F** or **G**. When science assigns a Roman or Greek letter to a variable, or a constant, it is chosen arbitrarily. Let us name this variable **x** the note **do**; what matters is the internal geometry. What was the absolute pitch for **do** in the 13th century? 256? Not likely; Bel-Canto had yet not been adequately discovered.

Italian, Spanish, and French came to represent **C D E F G A** with **do re mi fa sol la**. English and German chose the alphabet. Therefore the first tone is **A**. That is the only reason you have both **C** and **A** as the tones you tune by. Tonic, sub-dominant and dominant apply to every key. There are 12 sets of them, based on every half-tone. Why should one be the starting point? As the well-tempered system developed, **C** or **do** was chosen as the key with no sharps or flats. That again is arbitrary. It could have been **A**.

How can such a rigorous system be arbitrary? It is necessary!

In the spherical determination of the Lydians, what is the starting point? Is it not the sphere itself? Does not the spherical division co-determine all the Lydians? That is what Beethoven is getting at with the opening of Opus 111.

The determination of **C** at 256 (or **A** at 432) only comes with discovery of the human voice and its registers. What else could fix the value? (Although I recall you found something to do with the orbits. Please remind me.)

Fred

My dear Fred,

Sat. 8/13/22

Yes, please correct me when I'm wrong. The ordering of the dominant, sub-dominant, and tonic works differently according to three different ways each Lydian spiral generates them. As to which one has priority over the other in music, I don't know. As far as I am concerned, I give a greater universality to the Lydians. But, you might have a different view. I think the prize should go to the triply-connected form of whichever is able to generate the other.

To me, what defines the Lydian is not the sphere or the voice; it is the divisibility by half and by half the half again. I have always found it fascinating that each one of those three Lydian Spirals led to the other two as they were leading tones and the only way that I have been able to

use leading tones is through Lydians. I need more light of your Lantern on this question. I just don't understand the triple-connectedness between tonic, sub-dominant, and dominant.

On the other hand, there are only three Lydian spirals that I know very well and which I thought we had both recognized as generating all of the twelve keys, depending on how they are ordered among each other. I know of no other ordering principle in music. As a result of such an ordering, you can hear coming from the future a tone which does not yet exist. Lydians act like a forecasting modality of what is yet to come but does not yet exist. For me, in a nutshell, that is the LaRouche method of forecasting. However, the point that I have never made before is that each note of each Lydian spiral relates to one another in accordance to the ordering of dominant, sub-dominant, and tonic; each Lydian generates its own notes accordingly. Here, I see an order of preestablished harmonic dependency like Leibniz's *preestablished harmony*.

As far as I know, it is the ordering of the Lydian spiral which generates the ordering of dominant, sub-dominant, and tonic, in that order. Take the example of the key of **C**: First, the spiral of **A, C, Eb, F#** generates the key signature **G, B, D, G**; secondly the spiral of **G, Bb, C#, E** generates **F, A, C, F**; and thirdly, the spiral of **F, Ab, B, D**, generates **C, E, G, C**. That is all that I meant to say from the beginning, about the relationship of the Lydians to the dominant, sub-dominant, and tonic; but there is more.

In my mind, this first Lydian spiral generates only the key signatures of **C, Eb, F#**, and **A**. If I take another key, say **F**, for example, then the same three Lydian spirals will determine the dominant, sub-dominant in the following order: 1) **D, F, Ab, B** generates **C, E, G, C**; 2) **C, Eb, F#, A** generates **Bb, D, F, Bb**; and 3) **Bb, C#, E, G** generates **F, A, C, F**. Am I wrong in saying this?

This is how I see the sphere generating the Platonic Solids. If you don't agree with that, then let me know, because we have a serious problem to solve. As far as I can understand, I consider the Lydian ordering to be of a higher order geometry than the tonic, sub-dominant, dominant ordering, because that is the only generative order I know which generates such preestablished reciprocities; but is there a similar order in reverse? Can you show me an inverse ordering from the dominant, sub-dominant, tonic generating the Lydian ordering?

As for the Lydians and the Solar System, I have used my own version of the Gauss idea of Kepler's broken planet at the asteroid belt arithmetic-geometrical mean **G** to **F#**, which an old Canadian contact of mine, Bill Bohdan calculated for me. I have chosen arbitrarily **C, Eb, F#, A, C** as the Lydian spiral. The logarithmic cycle value is accurate to a 1.28 difference. (See Figure 5.) Only this power of two of the C-256 series generates this sort of preestablished reciprocity.

I guess my question to you is: which triply-connected musical ordering is able to generate an axiomatic change in the mind of the listener?

Pierre

Dear Pierre,

9/11/22

Here is something that will complement the Bach canon. It is something you have been looking for, all three Lydians in a specific context in a composition.

The introduction to Beethoven's *String Quartet, Opus 59, #3* (I have attached a piano reduction of the first page), is a revolutionary investigation into the very nature of the well-tempered system. It has no theme, no rhythm, never rests in a key, and changes only through minimal motion. It's stripped of all the predicates of a musical work, and investigates the change that the motion of a single interval can introduce into the whole (like a small change in the boundaries of a cell?). It investigates whether the substantives of music are the noun-like chords and scales, as usually described, or whether the actual substantives are not so much Lydian intervals, but Lydian change (like verbal action.)

It does not begin and end with a major or minor chord, as stable harmonic entities, but begins and ends with a double Lydian interval, and treats harmonious chords as passing. The main theme then follows in a lively section that is about as self-evidently C major as you can get. Usually, the connection between an introduction and the main theme is susceptible to analysis- it can be derived somehow motivically, rhythmically or tonally. That does not work here. The challenge is to discover how what seems like a simple theme in a self-evident key can emerge from that prelude. Beethoven is posing the idea that what we usually consider the fixed axiomatic qualities of theme, key, scale and chord, though not unimportant, are derived entities, derived from a PROCESS OF LYDIAN CHANGE.

You can play this easily on the piano. Play the following chords, and hold them for as long as you like: The first one has middle C as the second note, and the others the closest to it (see diagram)



F# C Eb A. Then change one note **F(nat) C Eb A.** Change two notes **E C E A**
Continue with **D C F# A** **CD F# A** **B D F# D** **A F# C D** **Ab D F C D**
Ab D F Cb D
Ab goes up an octave to **AB Bb EB Eb** **G Bb Eb G** **F B D Ab** **F G Db Bb** **E G**
Db Bb E G C Bb **Eb G C C**
D Ab F# C **D F Ab C** **D F Ab B** **C F Ab C** **B F Ab D** **B Ab D F.**
Then on to the piece **C G C E** **G B D F.**

QUATUOR 9.

INTRODUCTION.

L.v. Beethoven, Op. 59. N° 3.

Andante con moto.

f *pp* *sempre pp* *f* *pp*

tr *tr* *tr*

Allegro vivace. *p*

pp *cresc.* *f* *f* *f*

ten. *ten.*

Handwritten annotations: *F#CEbA* (red), *AbDFC* (blue), *EGbBb* (green), *1* (blue)

Figure 19. I include a recording of the quartet. https://youtu.be/Hi_9Wx7Nxf

My dear Fred,

9/12/22

This *String Quartet Opus 59, #3* is fascinating, but the dissonances of the first opening measures are too extreme for me to make any sense of at this time. I must listen to them more closely and more often.

When I play **F#, C, Eb, A**, on the keyboard and then I change one note to **F(nat), C, Eb, A**, I get a resolution into **Bb, D, F, Bb**. But, I fail to hear what comes next, which is **E C E A**. (See page 49) The fact of dropping two notes here seems arbitrary; it is like Beethoven saying: “My result is negative.”

Beethoven is obviously breaking all of the rules by creating a new ordering principle by causing a minimum change to get a maximum effect. However, he is not using the right ordering for generating the three spirals in succession. Here, I stick with Cusa; generation goes from cause to effect (unfolding) but not from effect to cause (enfolding). Instead of going 1, 2, 3, 1, as the generating unfolding of the three spirals requires, Beethoven goes 1, 3, 2, 1. In other words, the normal generative ordering is 1) **F#, C, Eb, A**, which generates 2) **E, G, Db, Bb**, which generates 3) **Ab, D, F, Cb, D**, which in turn generates back to 1) **F#, C, Eb, A**, thus forming a closed self-generating cycle of *preestablished harmony* in the best of all possible worlds. (See Figure 16)

Beethoven obviously has something else in mind, but what? Even though he used the right spiral of **B, F, Ab, D** to generate the piece in C-Major, he must have had some reason to jumble the ordering of the three spirals like he did at the beginning. I hope you can figure it out. The way you approach the question, however, is extremely valid and important and must be further investigated, because “It investigates whether the substantives of music are the noun-like chords and scales as usually described, or whether the actual substantives are not so much Lydian intervals, but Lydian change (like verbal action.)” That is the essence of the matter.

Your understanding of the Lydians as verbal action is crucial and is getting closer to my idea of *performative verbal action* in which the action of change that is called for becomes the action which is produced; that is, creativity. Think of it as God’s creativity: once he thinks about something, it is created. For the same reason, I love your idea that this piece is derived from the **PROCESS OF LYDIAN CHANGE** as opposed to some descriptive Lydian relationship, or some other school rule, because it is the Lydian process itself which causes the change in accordance with preestablished harmony; that is, when you are able to confirm the ordering process by reciprocals. Your idea of a small change in living processes like the boundaries of a cell is also very important, because the whole is transformed by something which appears to be insignificant, which goes totally against public opinion.

Pierre

P. S. Lydian intervals are a subjunctive mood which actually sings of the coming future.

Afterthought by F. H. Your surprising reaction to the quartet, Pierre, has made me rethink it a bit. Beethoven was impatient with people who praised his earlier works, because he had surpassed them. The opening of *Opus 111* addresses the same question as the opening of *Opus 59 # 3*, but I believe in a better way. Beethoven may have seen problems in the latter, which leaves no bridge between the continuous domain and the discrete theme, whereas *Opus 111* does, because it investigates the ordering of the continuous domain in a better way.

9. THE PREESTABLISHED HARMONY OF THE LYDIANS

The best way that I can express these Lydians in the form of a unified monad is by showing their *preestablished harmonic order* inside of a torus. (See Figure 18.) The positioning of the Lydian intervals in the torus is merely showing how the tonic Lydian spiral of **C, Eb, F#, A** is located; however, this geometrical composition is valid for any the three spirals. You can do an exact similar geometrical model for the other two sub-dominant and dominant Lydian spirals and they would not be any different. The significance of this is that they are mutually self-generating, which means that they are unique, closed like a monad, and completely self-sufficient within the musical domain of composition. There is nothing like this ordering process anywhere else in the world and that is why it should be considered as the *preestablished harmonic order* of music. Beethoven shows the cycle of how one spiral generates the other in his *Piano Sonata No. 29 in B-flat Major, Opus 106*, measures 5 to 13. To my knowledge, this *Opus 106* and *Opus 111* are the only two known musical example which generate all three Lydian spirals together.

Both geometrical models are constructed for the reader to follow the pathway of the torus with a finger as follows: Start with middle **C** at twelve o'clock and rotate your finger clockwise by following the poloidal cycle which goes from **C to C#, D, Eb, E, F, and F#**. You have reached 7 o'clock. Continue with a second poloidal cycle and go from **F# to G, Ab, A, Bb, B, to C**. You have done a full toroidal cycle with two poloidal cycles of six steps each and you have arrived at 2 o'clock. If you continue like this five more times, you will have gone through the six octaves of an electronic keyboard. The ordering of the torus on the right shows that the Tonic Lydian Spiral (yellow) overlaps the Dominant Lydian Spiral (red) which overlaps the Sub-dominant Lydian Spiral (blue); in fact all three spirals can overlap one another, wherever you wish to start from and whichever direction, clockwise or counterclockwise.

In the third movement of his *Grand Sonata for the Piano Forte Opus 106*, Beethoven established a self-generating process of the three Lydian spirals as if he knew they were in such a *preestablished harmonic order* as represented in measures 5 to 13, (Figure 20.) Beethoven has the first Lydian spiral (yellow) – **D, F, Ab, B** generate the second spiral (red) – **C, Eb, F#, A**,

which in turn generates the third (blue) – C#, E, G, Bb. The composer managed to arrange an ordering of the cycle in such a manner that it generates the most soul-searching emotional experience. (Figure 21.)

14 Third Movement

Adagio espressionato e con molto Sentimento. $\text{♩} = 92$.

mezzo voce

* P(u.c.) Ped

Measure 5

E# (F) G# B D G# B D E# B# (C) D# (Eb) F# G# (not A)

Poco Cres

B E# D# G# A B# D# F# B D# B# (C) D#

Cres

Measure 13

C# E G Bb

Figure 20. Beethoven, *Piano Sonata No. 29 in B-flat Major, Opus 106*, Third Movement, (measures 5 to 13).

Suddenly, in Figure 21, the entire page becomes filled with a Lydian recitative-like series of a densely packed emotion which cries out unceasingly as if the composer had to share with the listener the suffering for all of the sins of the world. The slow expressiveness of Schnabel's interpretation is extremely dense and relentless as Beethoven suggested the section to be played *molto espressivo*. I have never heard such a heart-wrenching piece in my entire life. Note that the song, in the right hand, in 32nd notes, includes drops of an octave or more, as part of the song.

18

smorz

pp

espressivo

cres:apoco

poco due e lora

r.c.

ligato sempre

Sempre Cres: dim:

Cres

molto espressivo

dim

Cres

dim

p

Cres

220

Figure 21. Beethoven *Piano Sonata No. 29 (Hammerklavier)*, Opus 106, Third Movement.

[Piano Sonata #29 In B Flat, Op. 106, "Hammerklavier" - 3. Adagio Sostenuto - YouTube](#)

The only way I can have those three Lydian spirals affect each other is with the following exercise in which the Tonic Lydian spiral **C, Eb, F#, A**, generates the Dominant spiral: **C#, E, G, Bb**. The same arrangement is applicable to the other two Lydian spirals.

P. BEALONDY *PERFORMATIVE LYDIAN CYCLE* oct. 2013

Figure 22. Generating spiral **C#, E, G, Bb, C** from **C, E, F#, A**.

I have not yet found a way to generate all three in succession as Beethoven did; however, I propose that musicians think of different ways to self-generate these three Lydian spirals by overlapping them forward and backward.

10. RAPHAEL, THE TRANSFIGURATION



Figure 23. Raphael, *The Transfiguration*.

Raphael's *Transfiguration* reflects the transformation between two axiomatically different domains that Lyndon LaRouche discussed extensively for more than fifty years: the lower tragic level of *simple hypothesis* where human beings are prisoners of their animalistic impulses, and the superior sublime level of *higher hypothesis* where the human mind can be transfigured into the Image of God. Friedrich Schiller identified such an axiomatic change as the step of going upward from the tragic to the sublime. In musical terms, the passing from the first level to the second is called the Lydian interval.

This author was first exposed to the ironies and metaphor of classical painting by Pierre Beaudry about 45 years ago. His ideas were so clear that I remember them today. Can we rely on our senses? Great Renaissance artists presented impossible scenes to the senses that could only be resolved through reason. Though the insight into this painting has been generated by Pierre, I have accepted his challenge to present it.

The Transfiguration of Christ is described in the Bible, especially in Matthew 17:1-8. Many paintings of the scene exist, but Raphael's is the only one that disrupts it with a huge scene of madness that threatens to undermine the main subject. Though almost all commentary has disagreed strongly with his inclusion of that scene, whenever the phenomenon of *The Transfiguration* is cited, this is the painting shown. That is its power.

The upper part portrays the scene where Jesus led three of his most advanced Apostles to a mountain-top. Their senses were overwhelmed when Jesus' face shone like the sun, his clothes became as white as the light, Elijah and Moses appeared, and the voice of God emerged from the clouds. Yet, they were seeing Him for who he really was: not just a man, but the Son of God. They fell to the ground in fear and confusion, until Jesus calmed them. The scene below is described in Matthew I:17-20. Jesus and the Apostles came down from the mountain. A man approached him and said:

“Lord, have mercy on my son. He has seizures and is suffering greatly. He often falls into the fire or into the water. I brought him to your disciples, but they could not heal him.’ Jesus chastised his Apostles: ‘You unbelieving and perverse generation, how long shall I stay with you? How long shall I put up with you? Bring the boy here to me.’ Jesus rebuked the demon, and it came out of the boy, and he was healed at that moment.

“Then the disciples came to Jesus in private and asked, ‘Why couldn’t we drive it out?’”

“He replied, ‘Because you have so little faith. Truly I tell you, if you have faith as small as a mustard seed, you can say to this mountain, ‘Move from here to there,’ and it will move. Nothing will be impossible for you.’”

The scene in the painting though, comes a bit before the Biblical passage of the Transfiguration, and depicts where the boy's father said the Apostles could not help him. It was actually another form of transfiguration which Raphael made to coincide with Christ's Transfiguration. In that second scene, confusion spreads. Only two Apostles even look at the boy, Phillip and Andrew. The others turn their heads. Look at the detail though, and while one of the two puts his hand on his heart, the other seems to caution not to get too involved.



Figure 24. *The Transfiguration*, detail of St. Andrew and St. Philip.

One figure points to the simultaneous scene on the mountain-top. He seems to point not at Jesus so much as the fear-stricken Apostles. I am not wrapping up an easy answer like a sandwich for you. It's up to you. The dilemma is as follows: What is the difference between a

well-meaning person who, instead of acting, freezes out of fear, not fear of getting personally hurt, but out of pessimism about whether his or her actions will actually make a difference, versus proceeding with absolute faith. Not just Faith in a particular leader, but Faith that the Universe is governed by The Good. Even a mustard seed understands that! Jesus then let his Apostles know of his impending death, but never faltered. Keep this image in mind when reading the passage from Schiller's "On the Sublime."

11. BEETHOVEN'S C MINOR SONATAS (Part 3 of the C Minor Series)

THE IDEA OF THE PATHETIQUE EMOTION [Audio3Pathetique.wav](#)

Now we come to the third and last chapter in the C minor Series, Beethoven. There are many other composers who have contributed to this series as it expanded into other keys, but we have limited ourselves to the three (Bach, Mozart, and Beethoven) who made the greatest contributions. It should be no surprise that they are also the three greatest composers in human history.

Creativity of the type displayed by these three composers has a certain quality of perfection to it. If you listened to Bach, having never heard Mozart or Beethoven, you might think it could not get any better; it is the same if you listened to Mozart without knowing Beethoven. But, it does get better.

If perfection is a process, rather than some sort of ideal place, then these three are three composers who took that process in music further than anyone else had ever done, further than anyone else thought possible, and they built on each other's work. All three were committed to the cause of human freedom, but Beethoven came at a time when great things were being done about it. He was five years old when the Declaration of independence was signed, and he expressed his support for the American cause. Like the slightly older poet Friedrich Schiller, his optimism was unbridled. Both artists felt that now, all human beings really could be brothers.

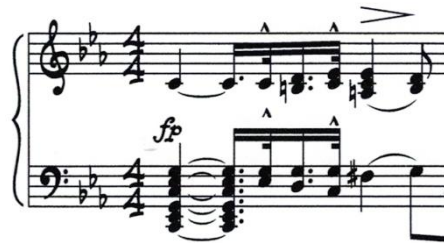
Beethoven composed the *Sonata No. 8 in C Minor, Opus 13, "Pathétique"* at the age of 27. Nothing like it had ever been heard. Even if the capability of the piano had advanced since Mozart's time, its emotional power and level of virtuosity were unprecedented. Though it was the publisher who chose the French title "*Grande Sonate Pathétique*," it is a good title. "Pathétique" did not mean "Pathetic" as it does today. *Pathos*, or suffering, is not portrayed in order to evoke sympathy for the one who suffers, but in order to demonstrate one's courage in the face of such pain. As Schiller put it in his "*On the Pathetic*":

"It is not art, to master feelings which only lightly and fleetingly sweep the surface of the soul; but to retain one's mental freedom in a storm, which arouses all of sensuous nature,

belongs a capacity of resisting that is, above all natural power, infinitely sublime. Therefore, one attains to representation of moral freedom only through the most lively representation of suffering nature, and the tragic hero must first have legitimized himself to us as a feeling being, before we pay homage to him as a being of reason, and believe in the strength of his soul.”²¹

In **Aural example A**, we listen first to the opening of Mozart’s *Sonata Fantasia in C Minor, K.475*, and second to the allegro in Beethoven’s *Sonata No. 8, Opus 13 (Pathétique)* that comes after his slow introduction. Both pieces start on a low octave of C, and rise.

This first higher degree of the “fundamental emotion” of *agape* is filled with polemical reactions directed against Kantianism and his forms of reductionism, as LaRouche identified in many of his writings. The final “sublime” level which may be termed a Leibnizian view of human creative power is aimed at a much higher level of human emotions to which Beethoven later bring the listener much beyond Kantianism, especially with the *Ninth Symphony* and its agapic implications as opposed to the mystical irrationalism of Kantianism.²²



Ex 1 Beethoven Opus 13 opening

Beethoven’s slow introduction, marked Grave, is our main focus. Just compare his first phrase to the opening of Mozart’s *Fantasy Sonata K.475*



²¹ Friedrich Schiller, [On the Pathetic](#), 1794. The publishing of this 1794 writing on the “fundamental emotion” was later accompanied by a more mature piece “*On the Sublime*,” published in 1780. With this heroic sonata, Beethoven is developing the same subject matter in a dialogue with both Bach and Mozart. Some musical examples (Aura Examples) are presented without the score. It is important to go back and forth from typing to follow a score, to identifying ideas by ear only.

²² See Lyndon LaRouche, [Leibniz From Riemann’s Standpoint](#), Schiller Institute, July 14, 1996, Part I.

Mozart K. 475 opening

Also Ex 1

Beethoven's opening measure begins on a triple octave of **C** with middle **C** as the highest tone. Those are the same three octaves with which Mozart starts his Fantasia. Beethoven ends on the Double Lydian **F# A C Eb** resolving to **G B D**, and Mozart on something very close, the so-called German sixth, **C Eb F# Ab**, resolving to **G B D**, as seen in Ex 2.



Ex 2.

Mozart

Beethoven

Next, look at the first two phrases in both pieces.



Ex 3

Beethoven



Mozart

Both men keep the tension growing. In his second phrase, Mozart bases the theme on the Double Lydian **Bb E G Db**. Beethoven instead chooses the other available Double Lydian, **Ab B D F**. He only employs those two in the beginning. Beethoven is, in a way, already advancing over Mozart. In others ways, he is trying to catch up to him. You can find a wonderful dialogue between Beethoven and Mozart throughout the two sonatas. In case anyone missed that dialogue, Beethoven opens his slow movement, in **Ab Major**, with a loving quote from the middle of Mozart's slow movement, also in **Ab Major**. [Aural Example B](#)

Beethoven is also in a clear dialogue with Bach, especially the opening of Bach's *Partita # 2, in C Minor*. Both share strong Lydian dissonances, and a dotted rhythm using 32nd notes. That is the style of a French Overture, which Bach also used in the Goldberg Variations. Beethoven is honoring that aspect of Bach. Listen to a bit of the Bach Partita in [Aural Example C](#).

We have heard, in [Aural Example A](#), a comparison between Beethoven's and Mozart's Allegros. Now, let us add Bach's Allegro from this *Partita*, and compare his transition into a fast tempo with Beethoven's, in [Aural Example D](#).

At the end of the first movement, Beethoven goes back to the beginning, the Grave opening, and makes a point of sounding all three possible Double Lydians, resolving into the Dominant **G**, the Tonic **C**, and briefly, the Sub-Dominant **F**.

The image shows a musical score for the ending of Beethoven's first movement. It consists of two staves, treble and bass clef, with a grand staff bracket on the left. The music is in a key signature of two flats (Bb and Eb). The score is divided into three measures, each with a chord label below it: *F#ACEb to G*, *BDFAb to C*, and *BbEGDb to F*. The notes are written in a style that includes many accidentals and complex voicings, characteristic of Beethoven's late style.

Beethoven

Ex 4 (mistakenly called ex 3 in audio)

However, we cannot finish without putting Ex 3 in context; the rousing end of this movement. [Aural example D](#) will play that ending. That is the end of the discussion on the *Pathétique*. Beethoven has created something new here, but he could not have done it, without standing on the shoulders of giants, and if not pursuing the *preestablished harmony* of the Lydian-ordered musical system.

PIANO SONATA NO. 32, OPUS 111 IN C MINOR: THE SUBLIME

Now we approach, hopefully with awe and reverence, but also joy, something humanity seldom experiences, a taste of the sublime, of the highest beauty which must rule on earth, as it does in Heaven.

Once again, do not think that the long hard fight for music was over with the “*Pathétique*.” Beethoven had established a heroic world-historical identity with the composition of *Fidelio* and the *Eroica* (3rd) Symphony. However, in the wake of the 1814-1815 Congress of Vienna, Europe was gradually becoming a police state. The “Conservative Order” intended to make sure that no republican movements would ever be founded in Europe again. By 1819 the Carlsbad Decrees were in effect, and several works by Beethoven and Schiller had been banned. Universities were policed, and the press was heavily censored. So much so, that the following satirical cartoon of a thinkers’ club wearing muzzles was circulated in 1819.

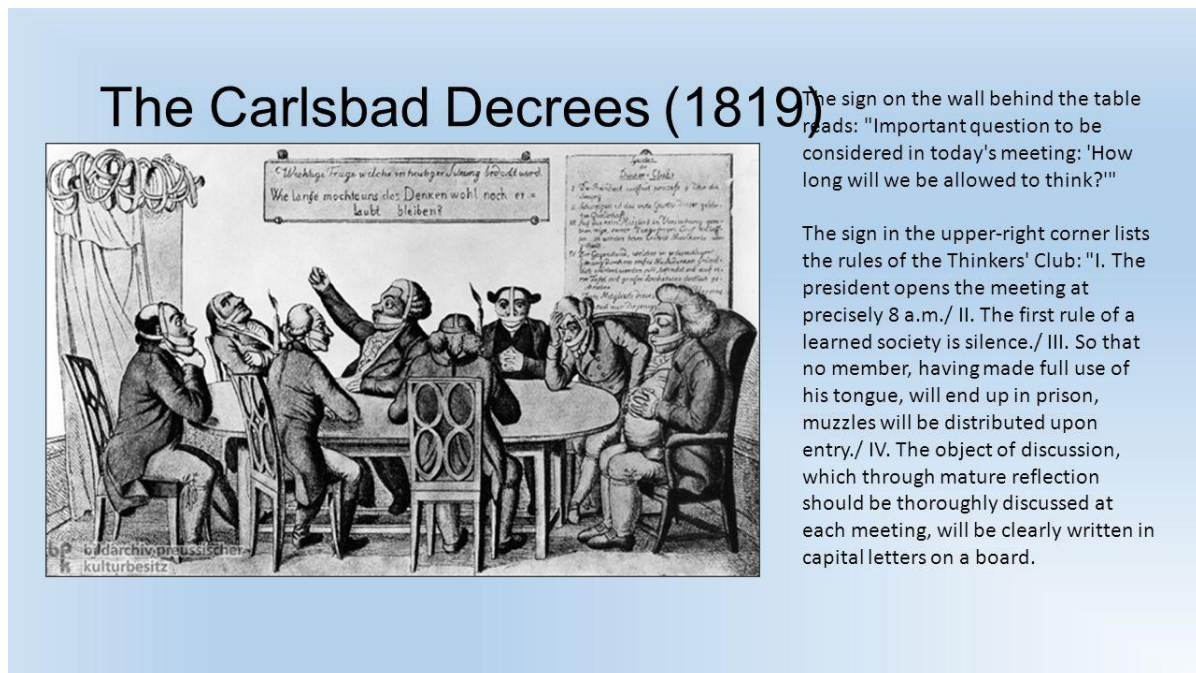


Figure 25. Carlsbad Decrees (1819)

This led to a withdrawal from political life by a fear-stricken population. In the “*Biedermeier*” period, furniture, and home decoration became art. Poetry avoided politics and concentrated on nature. Family values came above all else (sound familiar?), and tastes in art shifted towards banality and light entertainment. The majority of the people were not under immediate physical threat. They willingly shackled their own minds so they could “go along to get along.” It did not hurt, that they were well off. Polite Society had become a Police State.



Figure 26. A Sunday walk by Carl Spitzweg, 1841.

Beethoven defied this dumbing down of the people, by developing his creative powers to an unprecedented degree. If Schiller's "On the Pathetic" was necessary to characterize the earlier sonata, only his "On the Sublime" will do for this one.

"There are two genii, which nature gave us as companions throughout life...In the first of these genii one recognizes the feeling of the beautiful, in the second the feeling of the sublime..."

"Let us imagine a man who finds his delight in practicing justice, beneficence, moderation, constancy, and good faith...Who would not be charmed with such a delightful harmony between the instincts of nature and the prescriptions of reason, and who could help admiring such a man? Nevertheless, though he may inspire us with affection, are we quite sure that he is really virtuous?"

"Let us imagine that this same man falls suddenly into misfortune. He is deprived of his possessions; his reputation is destroyed; he is chained to his bed by sickness and suffering; he is robbed by death of all those he loves; he is forsaken in his distress by all in whom he had trusted."

"Let us under these circumstances again seek him, and demand the practice of the same virtues under trial as he formerly had practiced during the period of his prosperity. If he is found to be absolutely the same as before, if his poverty has not undermined his benevolence... or adversity his joy in the happiness of others...we must give up all natural explanation...of the reason for his acts; we must of necessity go beyond the physical

order, and seek the principle of his conduct in quite another world, to which reason can raise itself with ideas, but the understanding cannot."²³

Ludwig van Beethoven was such a man. Investigate the circumstances of his life: his deafness had become complete. That, and the policing of free thought led to his increasing isolation. His hopes of finding an ideal wife diminished. He lived in one paltry apartment building after another. Rossini intervened with Prince Metternich to help relieve Beethoven's poverty. The Prince said no. He did not mind music, as long as it remained "amiable chatter"!

Look at those depressing circumstances, and try to find what inspired him to compose music that has inspired millions. If you look at only his circumstances, it's not there! Schiller was right.

*"We must of necessity go beyond the physical order, and seek the principle of his conduct in quite another world, to which reason can raise itself with ideas, but the understanding cannot...Thus the sublime opens to us a road to overstep the limits of the world of sense, in which the feeling of the beautiful would forever imprison us."*²⁴

Even Schiller though, spoke of a man who maintained his moral identity while enduring outrageous misfortune, and not one who took arms against a sea of troubles, and by opposing them, transformed his identity into something higher.

Beethoven responded to adversity by developing his creative powers to an unprecedented degree. That requires a science of universal principles. One does not compose an *Opus 111* out of willpower alone. Beethoven investigated not just the discrete elements of music, such as themes, keys, scales, and meter, but the continuous domain of where their underlying principles resided.

Lyndon LaRouche once described the Introduction that opens this sonata, as Beethoven establishing the Riemannian space within which he would compose the *Sonata Opus 111*. Pierre's sections of this report takes such geometry much further than can this author, but I do wish to share with you a very simple example of such a space, which encompasses the axiomatic jump between the three dimensional curvature of the spherical domain and the two dimensional domain of the flat plane. This singularity is the same as the transformation between the sphere and the dodecahedron in the opening page of this report; that is, how the sphere gives birth to the dodecahedron.

²³ Friedrich Schiller, *On the Sublime*, Fidelio Magazine, Vol. 13, No. 1-2, Spring-Summer 2004.

²⁴ Friedrich Schiller, *Ibidem*.

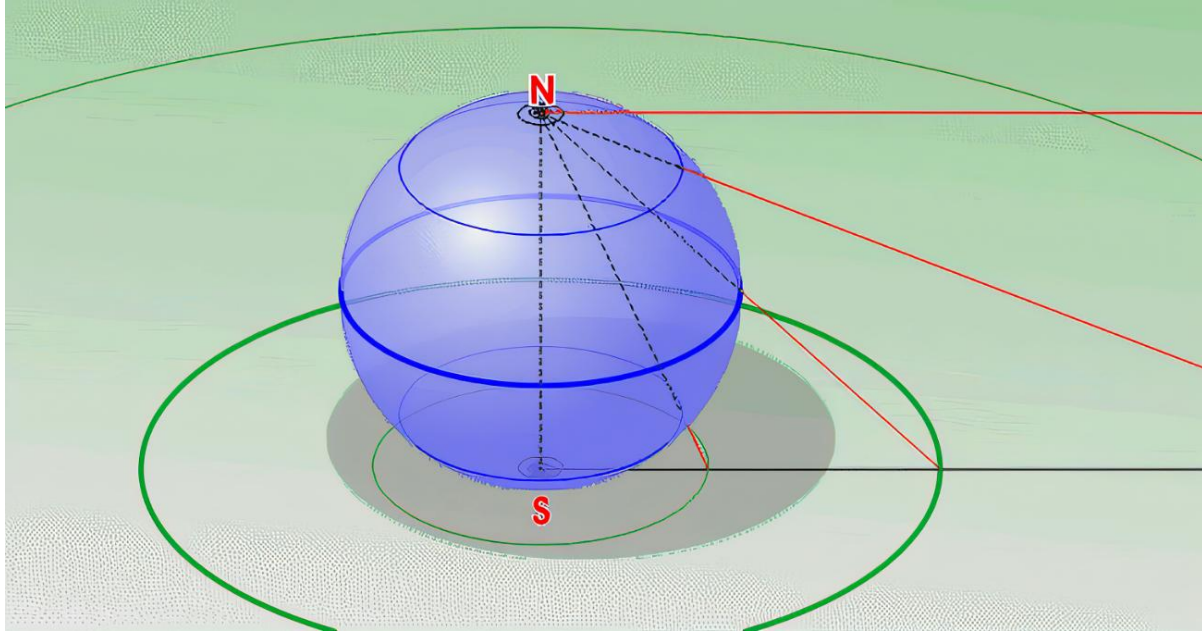


Figure 27. Axiomatic change from the sphere to the plane

In this simple example a sphere is projected onto a plane surface. The South Pole maps onto the point on which it sits. Lines extending from the North Pole intersect the surface of the sphere at specific points, and map onto the plane surface at specific points. The North Pole itself maps onto infinity. Thus we proceed from a point mapping on to another point, to a point mapping onto infinity. Can a human being proceed from being a point, a mere speck in the universe, to participating in the infinite? Such investigations are not esoteric. They have helped humanity accomplish many things that might otherwise have seemed impossible.

The term “introduction” comes from the Latin words “to lead into”. The Introduction to this sonata is 17 and 1/2 measures long, and it does indeed lead us into the secrets of the composition. Beethoven composes, in tones, *how* he composed. This means that what he composes also includes the reason and purpose for composing it. He does it to such a degree that all of his musical compositions become pedagogical on how creativity works. No-one else could, or did accomplish such a transformative task. And because this process of composition is so rare, it is rather difficult to explain. Beethoven concerts of his own music were very long, and he called them Academies.

For example, in the first 5 measures of the Introduction to *Opus 111*, Beethoven identifies, in principle, the entire musical universe, as determined by the three Double Lydian spirals, and their relationship to the ordering of the tonic, the dominant, and the sub-dominant. In this introduction Beethoven is investigating the continuous domain, and consciously eschews the discrete elements of his creative process.

1. There is no melody, unless you can sing this or hum it.

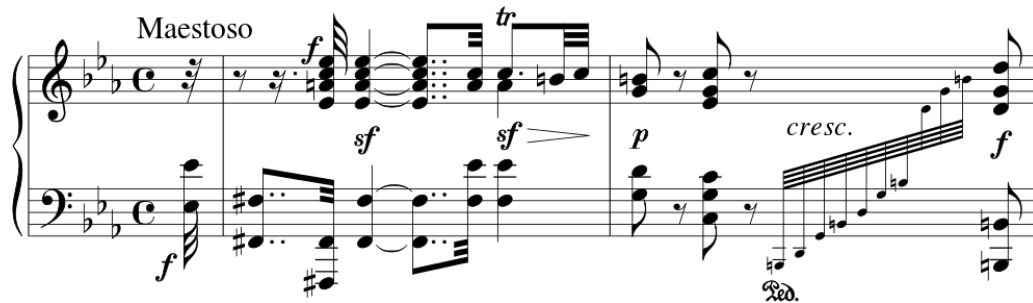
2. It is not in a specific key, and has no scale.
3. It is basically without meter.

Whereas meter refers more to the shape of an entire line, rhythm is more related to the shape of a motive. This introduction does have a rhythmic motive, similar to that of the introduction to the *Pathétique Sonata* (both use a dotted rhythm followed by a 32nd note). So, he may have used that motive, 23 years later, so that the careful listener could identify the evolution of his approach to the same subject matter.

One might expect such an abstraction of musical time and space to be stated somewhat tenuously. Not so. Beethoven marks it “*Maestoso*” (majestic). When Beethoven makes a discovery, he shouts it from the rooftops. And, this “*Maestoso*” is not just the results of his discovery, but the discovery itself, and *how he made it*. He really wants to share his transformative process with you (as he does in the opening of the *Ode to Joy* movement in his 9th *Symphony*).

Let’s take this slowly, step by step:

Here are the first two measures of *Opus 111*:



Ex 1

This is not quite your normal theme. It begins with the diminished 7th interval **E \flat to F \sharp** in the left hand. We saw that interval, in the second voice of Bach’s *Musical Offering*. Mozart also used it in the *C Minor Sonata*.



[Bach

Ex 2

Mozart]

Beethoven has taken the interval out of the context of these musical phrases, and isolated it. He then follows with the full Double Lydian spiral, or diminished 7th chord, with **E \flat A C E \flat** in the right hand, and **F \sharp** in the left. On the very last note of this opening, he arpeggiates a **G** major chord, thus suggesting the resolution of this spiral to the dominant.

However, instead of placing **G** as the lowest tone, he uses **B**. What does this accomplish? It changes it from a statement to a question, from static to moving. Nevertheless, that opening does resolve the opening Double Lydian into the dominant. Then, look at the next two measures:



Ex 3

In this Ex 3 we see an almost exact transposition, up by a fourth. Beethoven begins with another diminished 7th interval, **A \flat to B** in the left hand, following it with the next full Double Lydian spiral **A \flat D F A \flat** in the right hand, and ending with an arpeggio on a tonic **C** major chord, only with **E** as the lowest note.

We now have two out of three possible Double Lydian spirals and their resolutions: **F \sharp A C E \flat** resolving to the Dominant **G**, and **B D F A \flat** resolving to the Tonic **C**. Is he going to examine all three Lydian spirals and their relationship to the Dominant, Tonic, and Sub-dominant, with the last one being **E G B \flat D \flat** to **F**?

It would certainly seem so. He begins the third question with the relevant Diminished 7th, **D \flat to E**, and moves to the expected sub-dominant **F** in the bass (though he truncates the process), but instead of the expected 3rd Double Lydian spiral, **D \flat G B \flat D \flat** with **E** in the left hand, he plays **D \flat F B \flat D \flat** , a slight but devastating change. This is how Beethoven discovers the future before it comes to the present.



Ex 4

What is he doing? Why has he upset our nice little schema? Beethoven was not comfortable with fixed knowledge. If someone praised one of his earlier works, he would chastise them, citing how he had gone much farther. The *preestablished harmonies* of the world include not only discoveries, but creativity, a harmony between the mind of man and his or her Creator. However, creativity cannot be arbitrary; it must find new potentials in the preestablished harmonies. That is exactly what Beethoven does here. When **E** resolves to **F** in **Ex 4**, it should be in the key of **F**, if it followed the example of the first two statement-questions.

The image displays a musical score for piano, marked 'Maestoso'. It consists of two systems of music. The first system begins at measure 32. The second system continues the piece, with a red rectangular box highlighting a specific passage in the final measure of that system. The score includes various dynamics such as *sf*, *p*, *f*, and *cresc.*, as well as articulation like *tr*. There are also performance markings like 'ped.' and an asterisk.

Ex 5

What Beethoven demonstrates, is that the tone of resolution need not be the tonic. It could be the dominant! What does that mean? It means that a change is followed by another change! Here, he treats **F** as the dominant of **Bb** Minor, although he does not stay there. Chopin realized what Beethoven was doing, and drew its potential out in his sonata in **Bb** minor (another discovery of Lyndon LaRouche.) **Aural example A**. This one measure has completed the cycle, and introduced something new at the same time.

If Beethoven had been predictable, and made all three resolutions of Double-Lydian spirals resolve to tonic, dominant and sub-dominant in the same manner, and used the stable tones **G C** and **F** as the lowest tones of the resolution, it might have sounded like this. **Aural example B**. How boring compared to what he actually wrote!

Where is the descending chromatic scale that forms the second half of the King's theme in Bach's *Musical Offering*, and the pedal point series in Mozart's *C Minor Fantasy*? Beethoven begins with that surprise resolution in measure 5 (See Ex 4) and continues as the more difficult ascending chromatic scale. This had been attempted over 200 years earlier by John Bull, in a work dedicated to Sweelinck.

Beethoven pauses on different harmonies on the way up. Here is just the bass line (please forgive the mistaken 64th rest after the opening **Db**).



Ex 6

Now, please listen to the entire passage [Aural example C](#) while watching Printed Ex 6. Next he settles on a long dominant pedal point **G**. Please listen to the 8 measures on a pedal point of **G**, [Aural example D](#). Finally Beethoven distills a theme from the process, and what a theme it is.



Ex 7

It is an unsettled jarring theme in octaves in the low bass. However it is part of the **C** Minor Series. If you take the first three notes of the theme (in measure 2), they comprise the first two notes and the last note of both the Bach King's theme, and the opening of Mozart's Fantasy. In the next example, we represent that by playing the notes in between softly, in the soprano voice.

Ex 8

It also features the diminished 7th **A \flat** to **B** which we have seen so often, except it is ascending instead of descending. Mozart used that in the third movement of his **C Minor** sonata.

Beethoven Opus 111

Mozart sonata 14 Third movement

Ex 9

So, Beethoven has distilled a theme, though a highly unusual one, from the continuous domain, and, unlike the opening of *Opus 59, #3*, we have some idea of how he did it. Franz Schubert was aware of what Beethoven had accomplished here. When he set Heine's poem "*Der Atlas*", about the Titan having to hold up the entire world, he used the same intervals (**Aural example D**).

Later a fugal passage changes the diminished 4th interval, to the Lydian. The fugue enhances the theme, through one of Bach's favorite transformations, diminution, or halving the note lengths. One theme begins in half notes, **D E \flat A**, while another begins in quarter notes **G C F \sharp** .

Ex 10

Here they are together

Ex 11

The most amazing thing happens. Beethoven exits this section, by playing the first three notes of the theme, using all three Double Lydians, 13 times! It is as if he is saying, “It’s the Lydians dummy!”

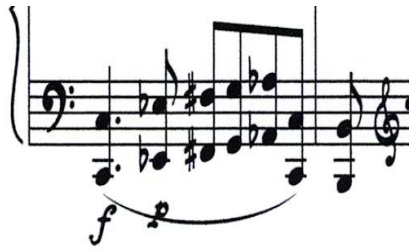
Ex 12

In order to clarify certain things, I have not presented this section in its full power. Please listen to [Aural example E](#)

For our Grand Finale we present what Lyndon LaRouche termed one of the greatest moments of “*simultaneity of physical eternity*” in music.

The divine second movement is a theme and variations in C Major. It would seem to be a world away from the C Minor series, but at one point Beethoven returns to the key signature of three flats, and produces a loving testimony to Mozart’s C Minor Fantasy, as shown in this image (the measure number is wrong).

Ex 13



Mozart K 475.



Beethoven Opus 111

You can hear it in [Aural example F](#).

But Beethoven does not just introduce it out of nowhere. Fourteen measures earlier, the music seems to become frozen. The theme stops. The rhythm stops, and a series of trills just grows, and even reaches a static triple trill, accompanied by only the first three notes of the theme. I know of no better way to represent a moment in the *simultaneity of physical eternity*.

Ex 14



Beethoven's *Opus 111*. Again, the measure numbers are wrong.

Now, please listen to the entire process of transformation in [Aural example G](#).

As beautiful as that is, we cannot leave you there. How to end? Beethoven did that for us. We leave you with something, [Aural example H](#), which can only be described as heavenly, though he brings it back down to earth. So, we must all share this beautiful culture with those in need of it.

You can hear all of the musical examples, both printed and aural, in Audio 4. Meanwhile, please enjoy a great performance of the entire sonata.

[Audio 4 BeethovenOpus 111.wav](#)

CONCLUSION

There is something uniquely human about Lydian intervals and that is, they never relate strictly to personal emotional states, but rather, to the universal emotional states of a citizen from heaven. And the reason for this is because of the preestablished self-generating harmonic nature of Lydian problem solving.

Considering that the inversion of an axiomatic change always takes place through a coincidence of opposites, you will be able to discover that the geometry of Lydians is what accounts for the inversion of, for instance, the Peace of Westphalia, the inversion of *agape* in Corinthian 13, “to know as you are known,” and the inversion of the tragic into the sublime, as Schiller and Brahms have demonstrated.

Lydian intervals represent the very soul of music because each Lydian spiral promotes the creative power of others in an unending cycle of human progress. (See Figure 18): Red **C-Eb-F#-A** generates Blue, Blue **C#-E-G-Bb** generates Yellow, and Yellow **D-F-Ab-B** generates Red **C-Eb-F#-A**. Remember Bach’s *7-part Canon*: “Third to Lydian, Lydian to Third.” Imagine how harmonically ordered the world could become if, for instance, nations such as the United States, Russia, China, and India were to form a Lydian spiral promoting self-development around the world for the benefit of mankind.

The three Lydian spirals would act on each and all human minds, as a fusion process should work inside of a Tokomak torus, and as this is best expressed by Beethoven’s *Sonata Opus 111 No. 32 in C Minor*. <https://youtu.be/WGg9cE-ceso>

Like a Galactic self-generating process, the three Lydian spiral system expresses a 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 it.

Once the soul has captured the significance of this peaceful self-generating process, it has acquired a most exquisite taste of immortality. For those who wish to construct the 10-circle dodecahedral sphere which reflects such a Lydian process of change, just follow the five following steps: (See Figure 1.)

Material and patient actions required:

1. Construct 8 cardboard circles of the same size (10 inch diameter). Divide each circle in half twice to produce 4 equal quarter circles of 90 degrees each.
2. Divide each 90 degree quarter circle into two halves again to obtain two 45 degree fans divided into two 22.5 degrees feathers each.
3. Use a total of 120 feathers to produce 20 hexagonal cones.

4. *Make 20 triple rhombic dodecahedron vertices of 108 degrees each and insert them inside of the 20 spherical hexagonal cones. This is where the axiomatic singularity resides.*
5. *Glue two sets of 10 hexagonal cones onto two separate circles to form a complete sphere.*
- 6.

Tools required:

10 (ten-by-ten) inch framing cardboards (red and white sides); 4 (ten-by-ten) inch framing cardboards (white both sides).

1 cardboard cutter; 1 pair of scissors, compass, divider, ruler, 360 degree protractor.

Elmer's school glue, pencil and eraser.

P. S. The hidden irony of this Platonic axiomatic change singularity lies in the fact that all of the angular measures used in it are inverted reflections of each other; that is reciprocals. Indeed, like the resolutions of the musical Lydian dissonances of this report, ***all of the halves of the 45 degree quarter circles forming the 22.5 degree feathers of the spherical hexagonal cones of three rhombic are axiomatically reflected by inversion into all of the 108 rhombic degree angles of the dodecahedron's vertices formed by doubling all of the 54 degree partitioning.*** When you add up all of the digits forming these numbers, the result of the ***45/54 degree inversion*** is always the same total of **9**; that is, ***(4+5 = 9), (5+4 = 9), (2+2+5 = 9), and (1+0+8 = 9).*** Note that **999** is the inversion of **666**; that is, the echo-opposite of the number of the beast.

FIN