THE KHYBER PASS KNOT AND THE RECIPROCAL PRINCIPLE OF THE LYDIAN MODALITY
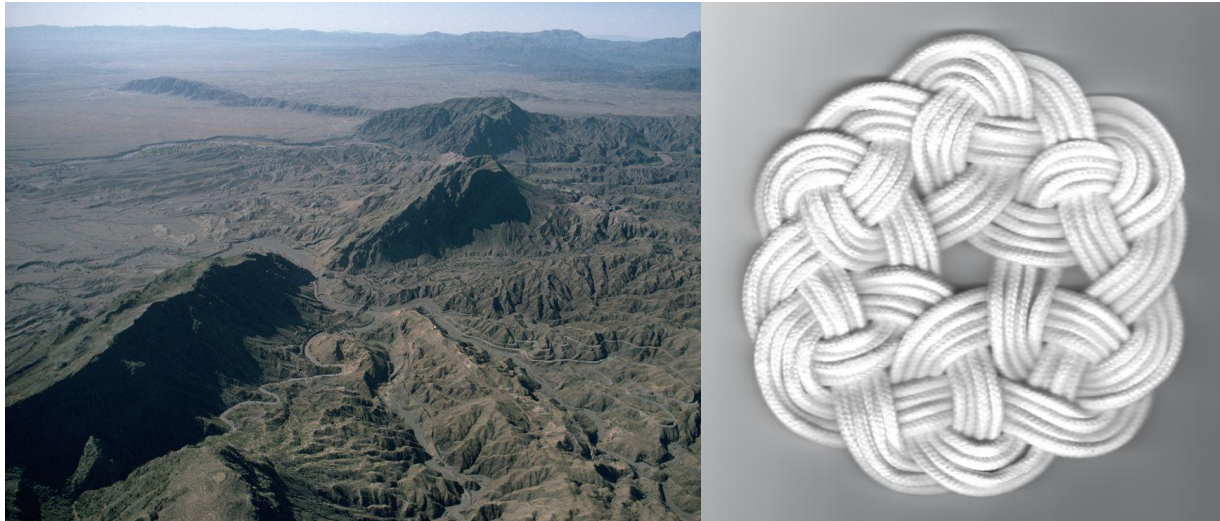
by Pierre Beaudry, 8/3/2021

FOREWORD

How do you generate a well ordered form of axiomatic changes? You can do it by bringing together the common heritage of the most ancient human cultures alive again today through the Khyber Pass Knot; that is, through the principle of benevolent reciprocity.

Since the wealth of a nation is not based on money but on the creative powers of reason of its people, it has become urgent to understand Lyndon LaRouche's forecasting method as one of the most important and necessary forms of constructive knowledge that should be mastered around the planet for the purpose of forming a new type of multiply-connected human culture, which can span the entire world today and secure the future for the whole of mankind.

In fact, it has become essential to understand that the science of forecasting change, in a well ordered form of pre-established harmony, is the science of rediscovering how mankind was able to improve his future very early on in the remote past. This report is aimed at learning how to construct change by reinventing the future with some of the most ancient celestial calendars which were able to capture the future ahead of time, as it were, before it came to be.

In order to demonstrate this hypothesis, I will show, with a certain amount of daring, that the next future world change is to be based on the dissonances of Lydian leading tones, which can only be resolved by stealing them from the future; that is, by showing how to catch the future which comes to be by hearing musical tones in your mind ahead of time, when they are mixed within double Lydian dissonances before coming into existence; that is, when a light of discovery comes on inside of your head and the future coincides with the past in the simultaneity of eternity.

The Khyber Pass Knot: Three steps forward and one step back, three steps forward and one step back … etc. **Eb, A, F#, C; A, Eb, C, F#; Eb, A, F#, C;** etc., is an isochronic knot that is constantly present, past, and future. Knot construction by Pierre Beaudry

I have recently demonstrated that the ordering composition of the six human voice register shifts have a common principle of generation with the spherical generation of the Five Platonic Solids[1]; that is, with the six-sidedness of the living process as expressed by the spherical generation of the honeycomb rhomboids, the same six-sidedness that the geometry of primitive roots also requires to be ordered and accounted for in the complex domain. However, I have never shown how such an ordering of change could be constructed successfully as an axiomatic change of doubly-connected circular action, in the way that a sailor might have done during lonely nights on board of an ancient transoceanic ship.

Look at the present strategic situation in Afghanistan as a historical double Lydian dissonance, which gives the world the greatest opportunity for peace and development that the Anglo-American Imperialist Synarchy has been preventing from happening since the death of Franklin Delano Roosevelt at the end of World War II. Do Americans need to be reminded that when the Soviet Union was defeated and left Afghanistan in February 1989, it took merely three years before their empire collapsed? Will world leaders recognize today's disastrous Anglo-

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[1] Se my report: **LETTER_TO_MUSICIAN-GEOMETERS**

American failure as the most optimistic sign that the time has now come to implement quickly a decisive new paradigm change in strategic thinking in that same location of the world by applying the LaRouche method of forecasting? Let me remind you of an exciting statement that Lyndon LaRouche made on this matter by calling the future of the complex domain into existence:

> "**How Musical Ideas Become**: The relevant special significance of the [Beethoven String Quartet no. 14] Opus 131,[2] is that its organization, as a whole, around transitions, forces the musician to attend to the reality, that the idea of the composition as a whole, is nothing other than a platonic 'One,' for which the ordering of the 'Many' according to nothing but a constant notion of change is the crucial feature of the development. Compare this with the case of our now-much-cited case of the Eratosthenes' estimate of the curvature of the Earth. It is the manifest inconsistency among a series of astronomical observations, which is the experiential referent for Eratosthenes' idea of the curvature of the Earth. It is the process of reducing that series of errors to a notion of ordered change, which leads to the idea of curvature. So, in a musical developmental process, it is the adducing of the existence of an ordering principle which subsumes a series of developmentally ordered changes, which implies the idea of the composition as a whole.

> "Thus, if one states the formal expression of the developmental ordering of the entirety of the Opus 131, the idea of the composition as a whole is implicitly stated as the platonic idea of a unified process of Becoming. This implies the corresponding attempt to generate the notion of a Good."[3]

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[2] Beethoven - *String quartet n°14 op.131 - Amadeus SQ 1963*

[3] MORNING BRIEFING, Wednesday, July 21, 2021, September 14, 1995, memo by Lyndon LaRouche titled "*Comment On Renée Sigerson's Memo On Opus 131.*"

# CONSTRUCT A TRANSFORMATIVE LEONARDO DA VINCI KNOT AND DISCOVER HOW TO MAKE THE FUTURE COME TO YOU
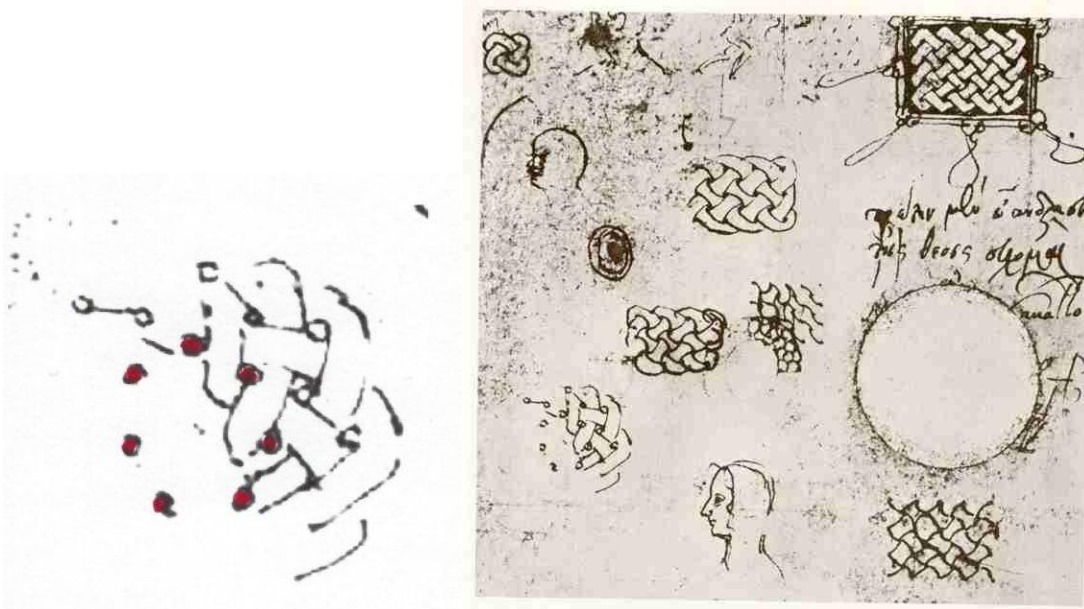

Leonardo da Vinci knots.

Such Leonardo knots were probably made by sailors during ancient times as a means of forecasting and remembering the pathways of moving bodies in the night sky. Look at the knot coming out of the 7 circular points in the lower left corner of Leonardo's drawing and ask yourself the question: "How can I find, in such few geometrical details, the means to reconstruct an ancient calendar of the heavens which has been lost in the depth of time and which calls upon us to restore its principle for the common future of mankind?" That is the way to tackle and solve the Cusa problem of the coincidence between the minimum and the maximum. That's foresight, that's forecasting, that is also remembering the future of a curious Lydian memory function known in the complex domain as Poinsot's geometry of primitive roots and the Gauss/Dirichlet solution to the geometry of whole numbers.

If you wish to make a discovery of principle in world history, look in the complex domain for what is not there, look for something that nobody else would dare pay attention to, because it has no apparent significance, no public opinion

value, and it is meaningless unless you are looking for what is missing. Imagine that without such a discovery, the truth of an axiomatic moment of change in human history could not be explained. The irony of such a discovery lies in the fact that after you have found what was missing, you will realize that it is so truthful that it will forever be imprinted in your mind as the footprint of a new discovery of principle.
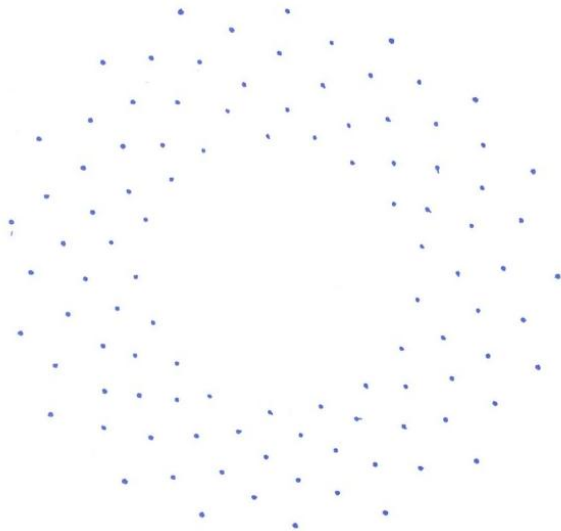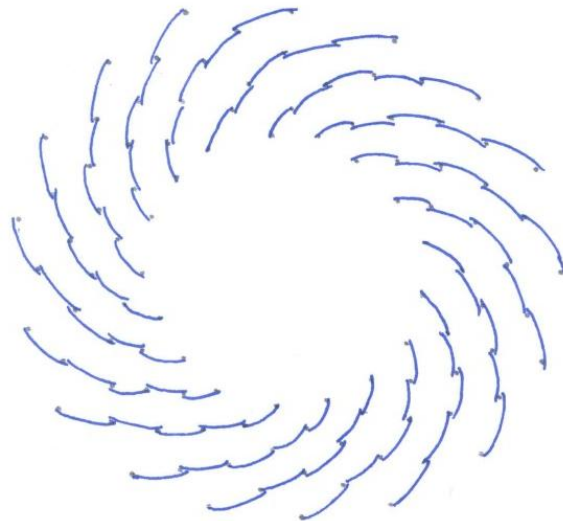
1 2^4

1. Construct a series of 6 expanding concentric circles, each of which is made up of 17 points forming a two dimensional rotating surface of simple circular action called Toroidal action.

2. The second circular action, the Poloidal action, transforms the first concentric action into a Riemannian n+1 manifold in which the 6 circles of points from the two dimensional domain become changed into 17 poloidal

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[4] Several mathematicians have discovered the spiral nature of whole numbers but not one of them has discovered the appropriate axiomatic geometry for them yet. See the puzzling questions & answers regarding numbers and spiral action: ***Why do prime numbers make these spirals? Dirichlet's Theorem***. See how radians come in clumps of four and a total of 20 spirals for prime numbers while they come in 44 spirals for even numbers. Interestingly, in the series of even numbers, all of the multiples of six (6k) form one arm of the spiral and the next arm is formed by the series of 6k+1, then 6k+2, etc. Why is every numbered spiral related to six? Remember that 2π radians = 6.2831853... which relates to a full circle. Remember also that the rational numbers 44/7 are a close approximation for 2π. The discovery, here, is that primes are not random.

waves of a three-dimensional cyclical knot rotated clockwise. (Visible in figure 6)

This will not make any sense to you unless you construct it, yourself, by connecting all of the 6 series of 17 points together, as if they were as many arms of a spiral galaxy rotating counterclockwise in the night-sky of your mind. In so doing, you will give your mind a single form of contradictory rotation which can be identified as a Poloidal/Toroidal circular action.

3   4
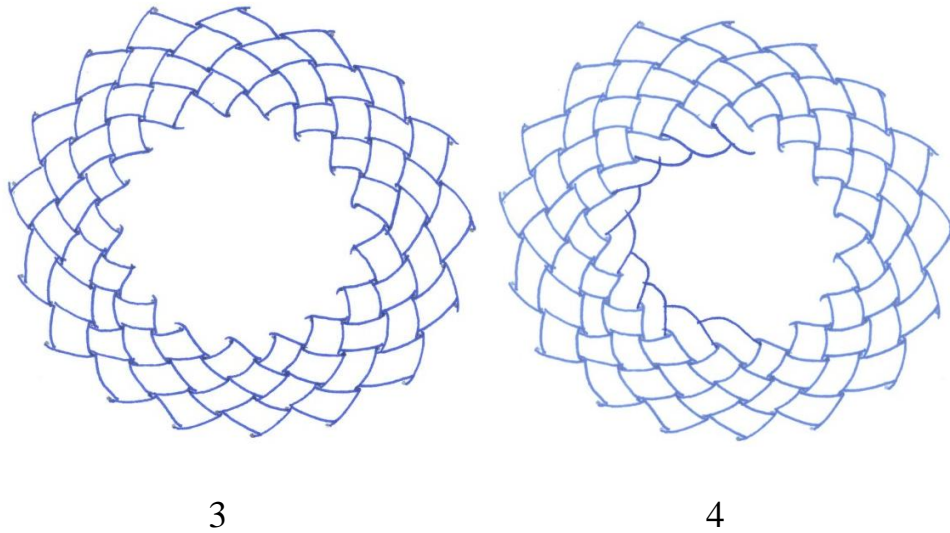
3. Overlap all of the intervals between each and all of the points such that the whole space becomes braided as if you were weaving a single self-developing strand twisting around a closed and empty center. Thus, you discover how to go from a lower manifold to a higher manifold. This is probably the simplest expression I know of passing from a Riemannian n manifold to an n+1 manifold. All you have to do is to find a way to have a single strand of the Leonardo knot go under and over itself as if it were taking itself into a higher dimensionality. This is how small things are perceived when you look for an apparently insignificant axiomatic singularity that might have the most profound implications for world affairs, as in the case of saving mankind from a potential blowout disaster being

prepared by the British Oligarchy, at this present moment of conflict in the Knotty Khyber Pass on the border of Afghanistan and Pakistan.

4. Close the inside of the torus in a clockwise manner such that each braid segment goes under and over the next following perpendicular braid segment, thus creating a flattened-three-dimensional knot. You have just entered into a higher dimensionality by creating a flat-three-dimensional Leonardo knot.
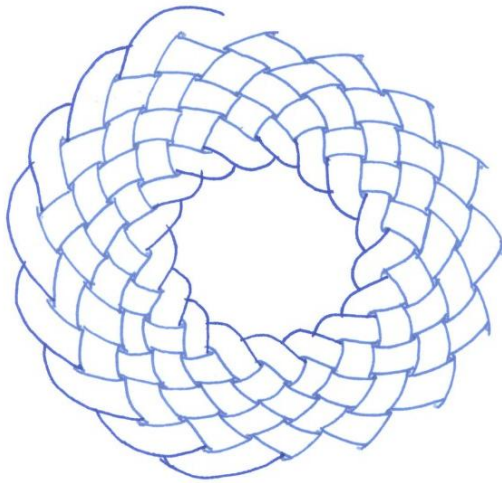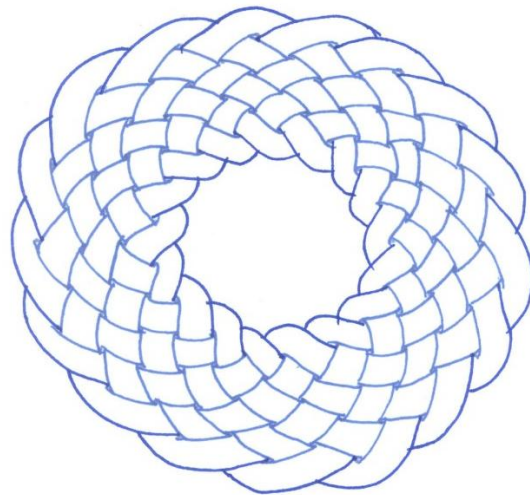
                    5   6

5. Close the outside of the three dimensional torus in a clockwise manner such that each braid segment goes under and over the next following perpendicular crossing segment while the single strand is continuous and closes on itself. This higher dimensionality is no longer fit to look for cohesion among, for example, nationalist tendencies inside the lower manifold of our poor world; the time is for a dialogue of civilizations in a higher level of understanding.[5]

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[5] For example, Uzbekistan's President, Shavkat Mirziyoyev, addressed some aspects of this higher manifold during the July 15th and 16th meeting of the Central and South Asia Regional Connectivity conference in Tashkent, where he stated: "…Thanks to the spread of Islam, Buddhism, Hinduism and the unique traditions of different peoples in Central and South Asia, a great ethnocultural commonality has been established, and a rich and colorful culture of the East has been formed […] It is time to harmonize the existing intellectual potential and our joint efforts, given the great historical, scientific, cultural and educational heritage of our peoples and the ability of our economies to complement each other." Morning Briefing, Wednesday, July 28, 2021, p. 6 of 13.

6. After having completed this construction, you will discover that you have created a single weaving strand going over and under itself like a planet rotating on itself and orbiting around the Sun, as the Solar System does inside of the Galaxy.

Starting from any point around the rim, clockwise, the motion of that single continuous orbiting strand knows where it is going and will cover 17 complete poloidal rotations, before getting back to its original starting point and start all over again, indefinitely. The rotations and orbits will be partial or complete depending on the Poloidal/Toroidal ratio of the doubly-connected circular motion.
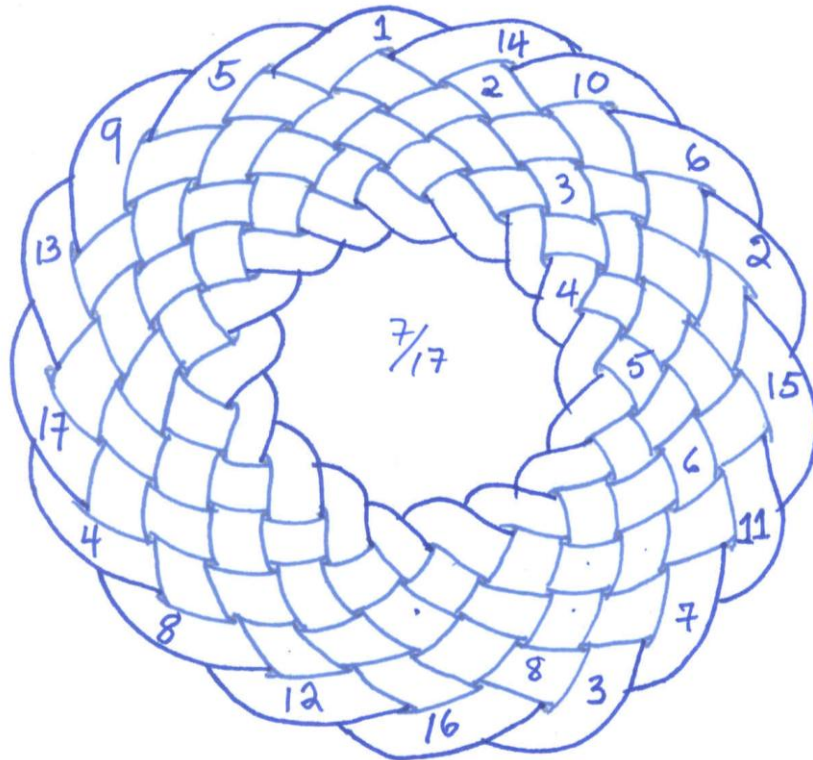

Figure 6 with the numbers of all of the residues of 7 modulo 17 around the outside rim

In Gaussian modular arithmetic, 7 modulo 17 means that the P/T ratio of 7/17 identifies the geometrical nature of the memory function known as a primitive root. This also means that Euler was wrong when he claimed that such geometry could not exist for primitive roots. In the higher manifold, you can easily locate the

place of the following series of residues on the clockwise rotating outer rim of the Leonardo knot. The 16 residues of 7 modulo 17 are ordered as follows: 7, 15, 3, 4, 11, 9, 12, 16, 10, 2, 14, 13, 6, 8, 5, 1. See how this geometrical construction generates the ordering of all of the residues of 7 modulo 17, clockwise, without the need of a calculator.

How could I forecast, geometrically, all of the residues of 7 modulo 17 without doing any calculations? How could all of the residues of powers for the P/T ratio 7/17 have been established beforehand, as if by some pre-ordained pattern or pre-established harmony? What is this strange and uncanny form of forecasting? What do primitive roots have to do with a doubly-connected Poloidal/Toroidal circular action? How can the entire series of powers of 7, with respect to 17, that is, from n^1 to n^{17}, be represented in such dynamically ordered motions on the outside rim of a knotwork without having to do the math to find them? What is the significance of such a modular wave function? Is it some sort of memory function? The only answer I can provide to these questions at this time is that the ordering of the residues is determined by a higher principle of reciprocity, a common principle of human interconnectivity.

Take the second residue of 7^2 which is 49/17 = 2, with a remainder, or residue, of 15. In order to get to 15 from 7, you have to count the number of waves. For example, 1 to 7 is one wave, and 7 to 15 is 7 waves, that is, 7 poloidal waves, clockwise around the torus; then, the last wave, the 7th, will end on 15. Next, take the second residue, 15, and count 15 waves, clockwise around the torus, and the last wave, the 15th, will end on 3, and so on and so forth, until you have reached the end of the series. All of these residues of powers can easily be found in this manner because the knotwork is merely a succession of 6 series of numbers going from 1 to 17.

Therefore, you don't need to calculate anything in order to forecast each and every one of those residues; all you need to do is to count the number of "power waves" inside the torus or on the outer rim, one after the other, and stop when you have reached the number you have anticipated in the list of the 16 residues of 7 modulo 17. (See above)

For instance, start at 14 immediately after I and count the waves until you reach the number 7. Then, after 7, count 15 waves on the outside rim to get to 15, and then, count 3 waves on the rim to get to 3, and so forth until you get back to 1. Each action is the anticipatory means to discover the next residue as Lydian spirals do in the well-tempered musical system.

In other words, starting from 1, the forecasting process of this modular wave function requires you to go to from one residue to the next by counting blindly the number of waves that are required to be found until you come upon it. This is the visual equivalent of the Lydian leading tone that you hear coming next in a classical artistic composition. What you see here is the geometry of Lydians; that is, the geometry of making the future present by anticipation.
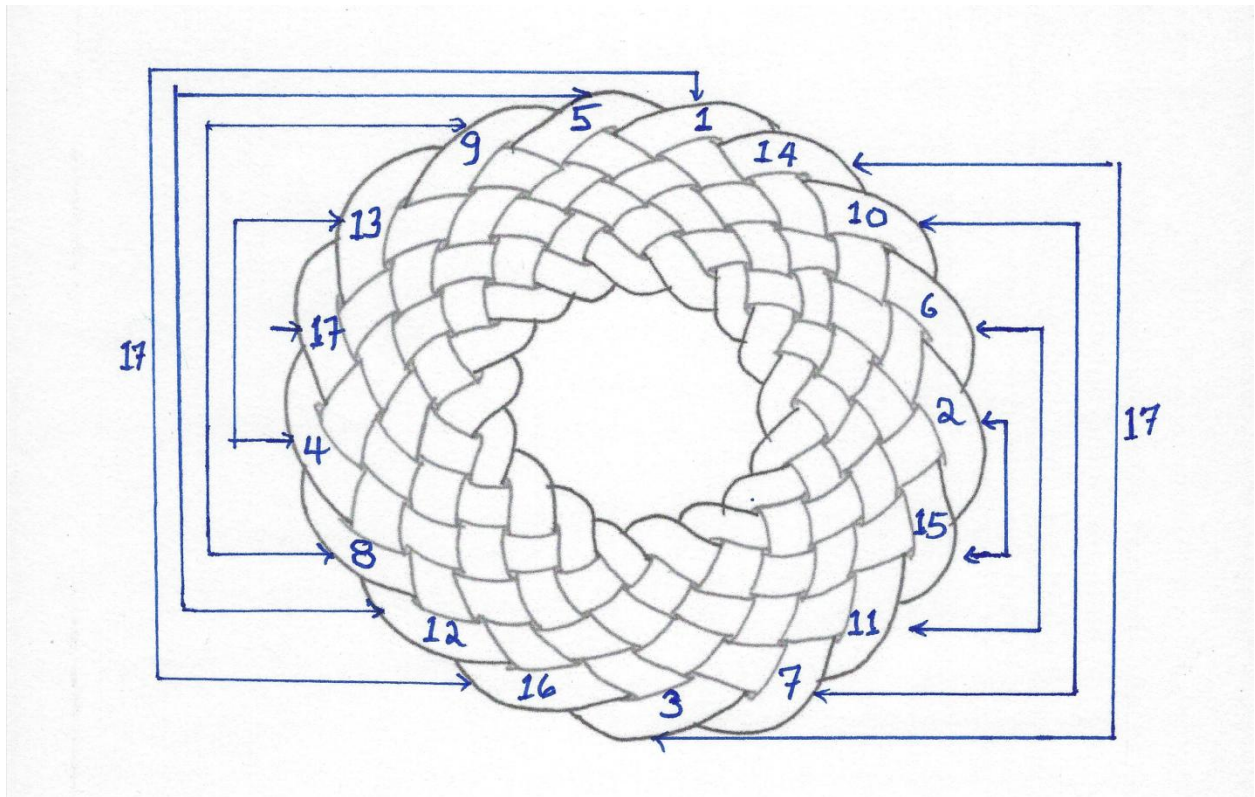
All of the well-balanced pairs of residues are reciprocals of 17

You don't know which number you are going to get next just like you don't know which future you are going to get next. So, how do you know which numbers you are going to find and how do you know they are in the right order? You can

only know that after you have found all of the residues because they were pre-ordered two by two as reciprocals of 17 by pre-established harmony. In other words, your ability to forecast is based on the principle of reciprocity among numbers as among all human beings; therefore, it is impossible to forecast anything truthful unless it is based on the principle of pre-established reciprocity. This is how you can do and undo the Khyber Pass Knot.

AN ADDITIONAL CHALLENGE: CONSTRUCTING FUXI'S YEAR CALENDAR AS A LEONARDO KNOT

When Leibnitz rediscovered Fuxi's numbers in the {I Ching} ({The Book of Change}), he also discovered a well-balanced pre-established harmony among the reciprocal numbers of this ancient changing modular memory function.[6] Leibniz further implied that there might have existed an ancient Fuxi calendar, which was in accordance with the {I Ching} principle, but no trace of such a calendar seems to have been made public. Here, I propose a new challenge to the reader, which is to construct such a calendar with the Leonardo method of making knots shown above.

The idea behind this calendar is that it must be based on the power of two and it must contain 365 spaces to be filled with the days of the year. This might require a little bit of cogitation; that is, the formation of a doubly-connected circular action Leonardo knot calendar based on six alternating multiples of 4 and of 2 as follows: $1 + 4 \times 1 + 2 \times 4 + 4 \times 8 + 2 \times 32 + 4 \times 64 = 365$.

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[6] See my report: **FUXI'S_AND_LEIBNIZ'S_I_CHING_PUZZLE**.

$$
\begin{aligned}
1 &= 1 \\
100 &= 4 \\
1000 &= 8 \\
100000 &= 32 \\
1000000 &= 64 \\
100000000 &= 256 \\
\hline
101101101 &= 365^{18}
\end{aligned}
$$
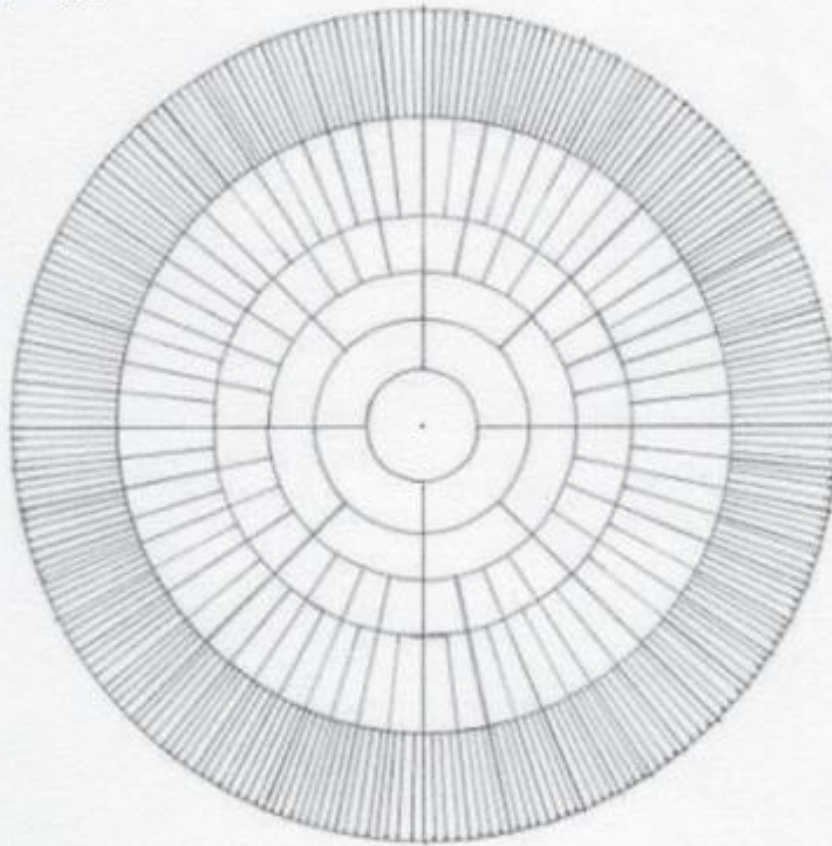
Replica of the original Fu Xi idea of a circular 365-days calendar calculated from the C-256 series. Drawing by Pierre Beaudry

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[18] Note the mirror image chirality of number 101101101

THE ORDERING OF THE DAYS OF THE WEEK

Take one 4 millimeters cord about 4 meters long and start making knots describing the motions of the Sun and the Planets as they are moving across the sky and count each day of observation as a poloidal cycle. The Poloidal/Toroidal ratio is 3/7. This will make you discover a lawful ordering of our solar system in accordance with the following reasonable form of cyclical change.
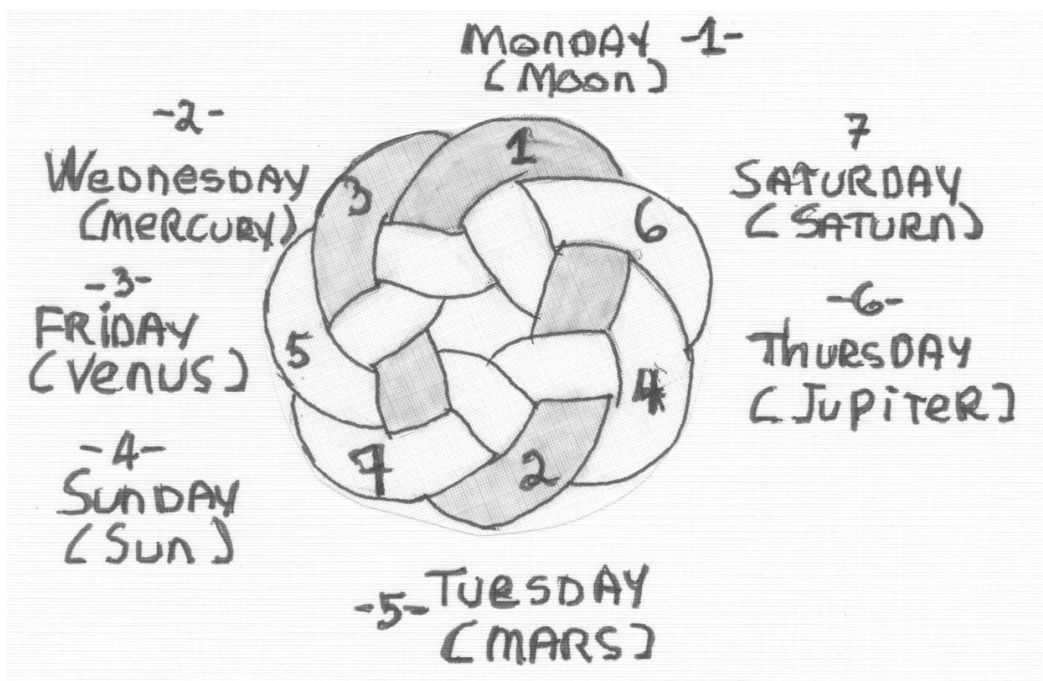
The seven heavenly bodies representing the seven days of the week

How do the minimum and the maximum coincide? The ordering of the days of the week and the daily revolutions of the seven heavenly bodies of our solar system coincide with ancient calendars of China, India, and Egypt; and, therefore, such an ordering of cyclical change must have originated around the discovery of a common calendar of mankind in very ancient times. Note how two different planetary orderings are projected into a single one! The days of the week are in a clockwise motion and the daily revolutions of the heavenly bodies are in an opposite counterclockwise motion, where the Moon (28 days) is the minimum and Saturn (10752 days) is the maximum.

Consider the motion of this 56 week Leonardo Knot as expressing a coincidence of opposites (minimum-maximum) between the visibly moving heavenly bodies and the days of the week, in accordance with the yearly observations of their increasing number of apparent daily revolutions around the Earth, during a period of 392 days:

A seven day Leonardo da Vinci Knot with a single string twisting 4 x 14 loops during 7 days a week for 392 days. The P/T ratio is 3/7. Construction by Pierre Beaudry[7]

1) Moon: 28 days.
2) Mercury: 88 days.
3) Venus: 225 days.
4) Sun: 365 days.
5) Mars: 687 days.
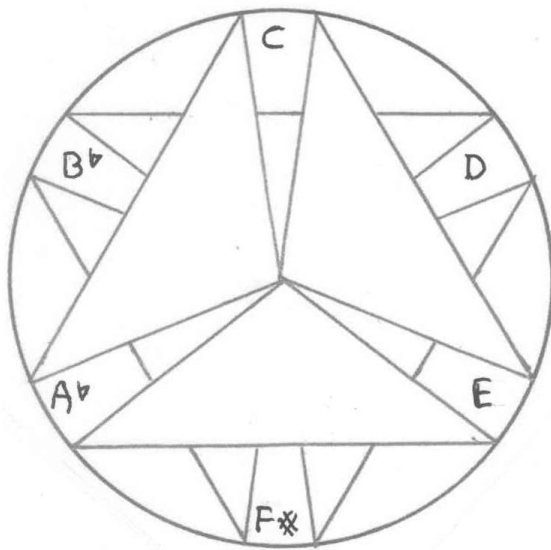6) Jupiter: 4385 days.
7) Saturn: 10752 days.
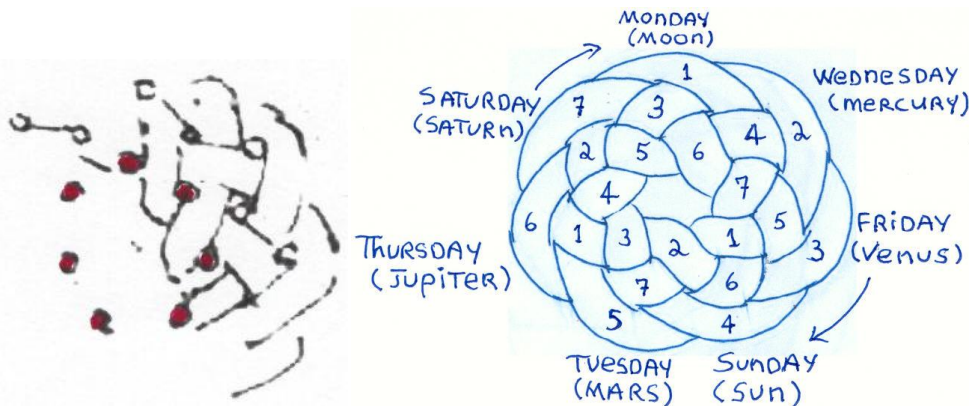
Leonardo's knot as the replica of an ancient sailor's knot forecasting a calendar with an inverse ordering of change between the daily observations of the seven moving bodies in the heaven and the succession of days of the week on Earth. The P/T ratio is 4/7.

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[7] Follow instructions on this video: **https://www.youtube.com/watch?v=lW6laaBmDTE&t=313s**

If you follow the waves of this knot clockwise, while counting four intervals between every two observed heavenly bodies, in accordance with the inverse series of Saturn, Jupiter, Mars, Sun, Venus, Mercury, and Moon, you will get exactly the ordering of change associated with the days of the week as we know them in their chronological succession: Moon, Mars, Mercury, Jupiter, and Venus, Saturn, and Sun. The musical Lydian cycles function in a similar ordering form of change. The difference will be found in the axiomatic nature of the cycles.

TRANSFORMATIVE LYDIAN CYCLES

The Lydian modality is a principle of ordering change in the six human voices in Bel Canto singing. The most fascinating power of this Lydian modality is its ability to cause an axiomatic transformation of the individual human singing voice and the individual human mind; that is, a change of dimensionality both in the physical and in the mental domains of the singer. Two good examples can be found relating to such an axiomatic change: the asteroid belt of the Solar system and the self-reflexive process of change of the individual human mind. The three musical orderings of the Lydian spirals can be used to reflect such self-generating pathways for both mental and physical creative processes.

The six voice register shifts.

Consider the following illustration of the process, where the three spirals below are ordered as generating each other from **C** (Tonic), **G** (Dominant), **F** (Sub-Dominant); that is, **C, Eb, F#, A** generates **G, Bb, C#, E,** while **G, Bb, C#, E** generates **F, Ab, B, D,** and **F, Ab, B, D** generates **C, Eb, F#, A** in that unique cyclical manner and in no other manner. This generating process is exemplary of the generating process that Lyndon LaRouche established as the basic principle of his science of forecasting. As LaRouche stated:

"During all of that time, from 1951-1952 to the present, my treatments of economics and long-range economic forecasting, have been consistently premised upon the following axiomatic specifications:

"1. The sole source of increase of the human species' potential relative population-density, per capita and per square kilometer of the Earth's surface, is 'anti-entropic' changes in the physical characteristics of the outcome of human social behavior, changes which depend upon continued scientific and technological progress. Not only is such progress the sole source of increase of the productive powers of labor; without such progress, human cultures inevitably degenerate, 'entropically.'

"2. Those discoveries of principle of artistic composition, which are prompted by the defining function of metaphor in Classical modes in poetry, tragedy, music, and plastic art-forms, have an even higher degree of significance than discoveries of physical principle."[8]
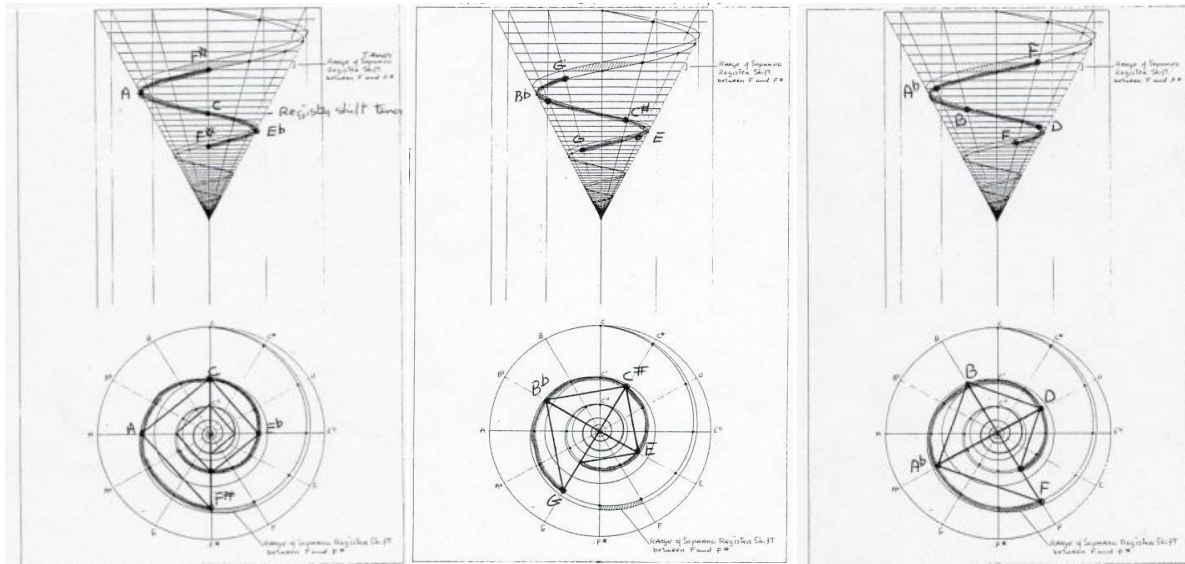
| Tonic | Dominant | Sub-Dominant |

The three Lydian Spirals of the well-tempered system moving counterclockwise.

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[8] Lyndon LaRouche, *The Principles of Long-Range Forecasting*, EIR, Vol. 45, No. 45, November 9, 2018, p. 62-63. Originally published in EIR, Vol. 25, No. 16, April 17, 1998.

The first Lydian spiral of **C** (Tonic) **C, Eb, F#, A** generates the second spiral **G, Bb, C#, E.**
(Dominant)

When you play on a keyboard any of these three Lydian spirals in the indicated order, you can hear three unresolved notes in the same succession inside of your head, which come from the future. Such an ordering of the octave partitioned by half and by half of the half will produce a different tone in that ordered direction and only in that direction, as if you were creating that note ahead of time through the dynamics of dissonant residues inside of your head. It is in that sense that forecasting the future within a classical artistic composition will help increase your mental powers. Play the above exercise on the keyboard and listen for the notes coming from the future by anticipation.

CONSTRUCT A TORUS WHOSE P/T RATIO IS 7/12 CONTAINING SIX OCTAVES OF TWELVE NOTES EACH.
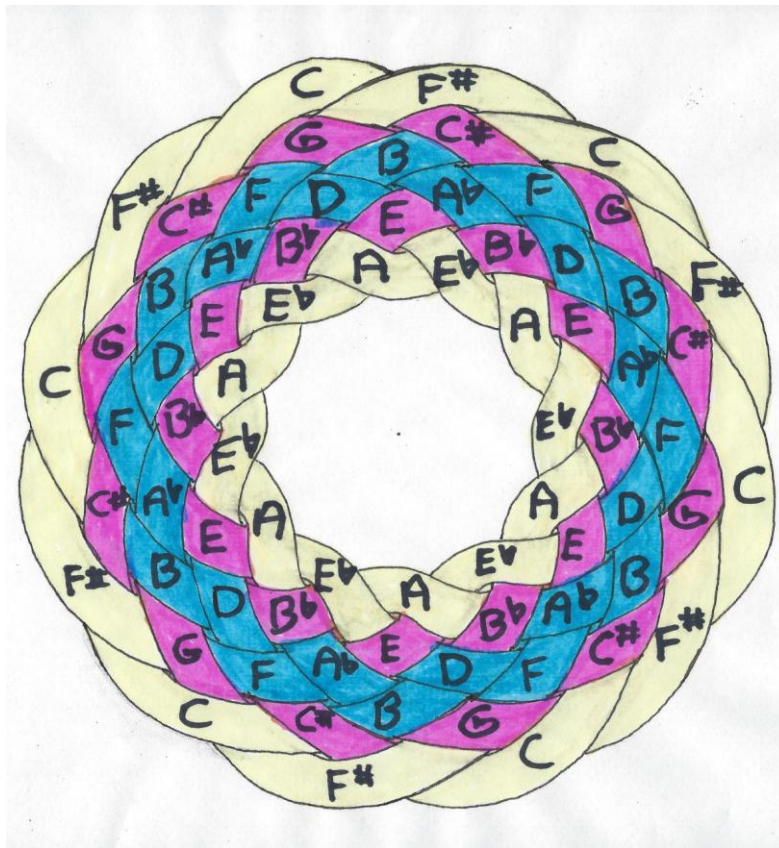
Six continuous twelve note octaves. The three colors identify the three Lydian spirals.

Fill in the six octaves of empty spaces of the Leonardo knot with notes starting with **C** and move up the scale, clockwise, inserting one note per interval.

Observe that the outer and inner rims of the torus are covered by the first Lydian spiral of **C** (Tonic) **C, Eb, F#, A** (yellow) which generate the second spiral **G** (Dominant) **G, Bb, C#, E** (purple).
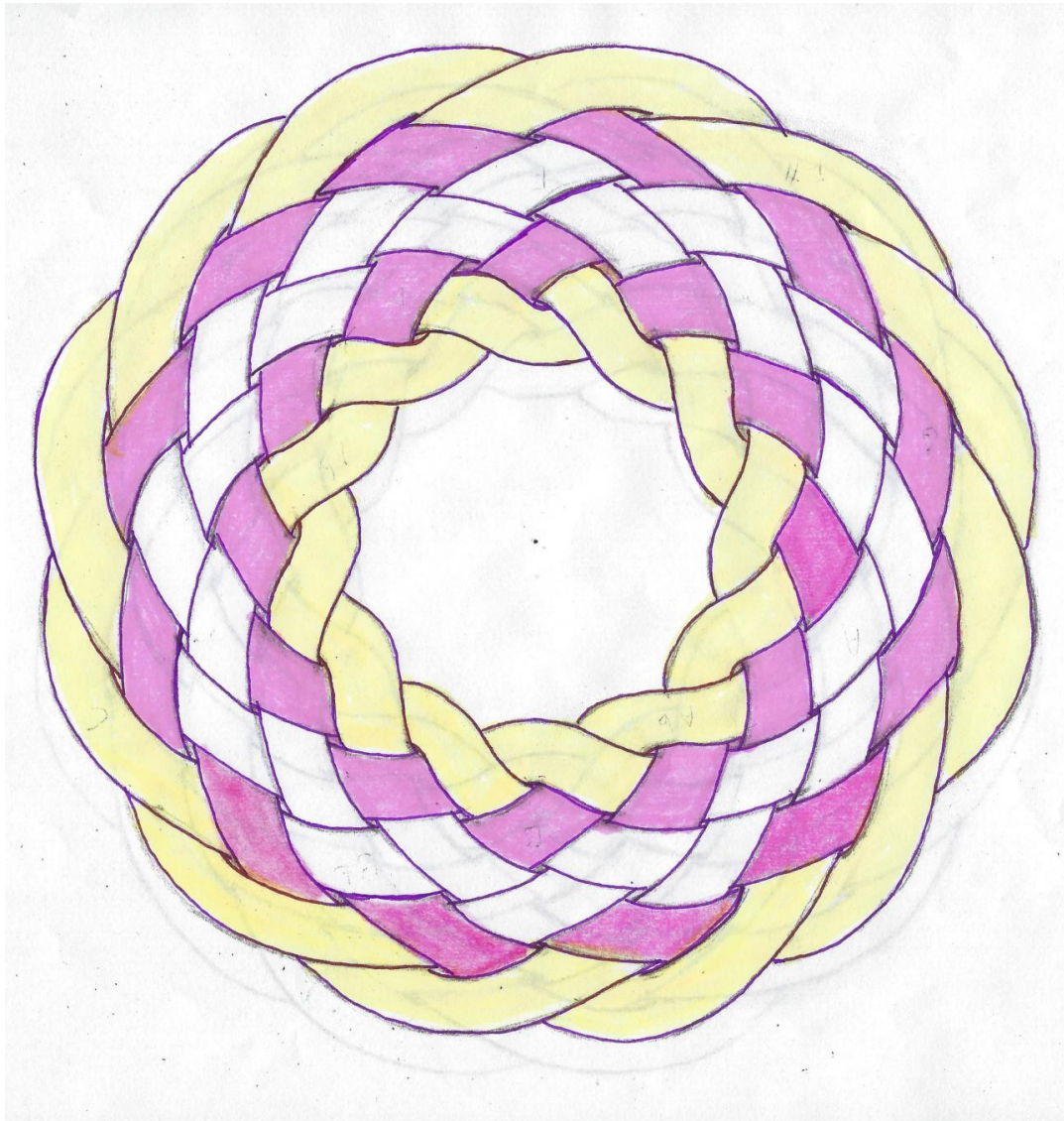
The yellow Lydian spiral **C, Eb, F#, A** generates the purple Lydian spiral **E, G, Bb, C#**

Play the above musical exercise (page 14) on a keyboard and you will generate spiral **E, G, Bb, C#** (purple). Play the same idea again starting with this newly generated second spiral **G, Bb, C#, E** (purple) and you will generate a third spiral **F, Ab. B, D** (blue). Play the same idea a third time starting with the last

generated spiral **F, Ab. B, D** (blue) and you will generate the original spiral you started from, that is, **C, Eb, F#, A** (yellow). Thus, the three Lydian spirals are generating each other through the ordering of the Dominant, Sub-Dominant, and Tonic, which is the only reasonable ordering.
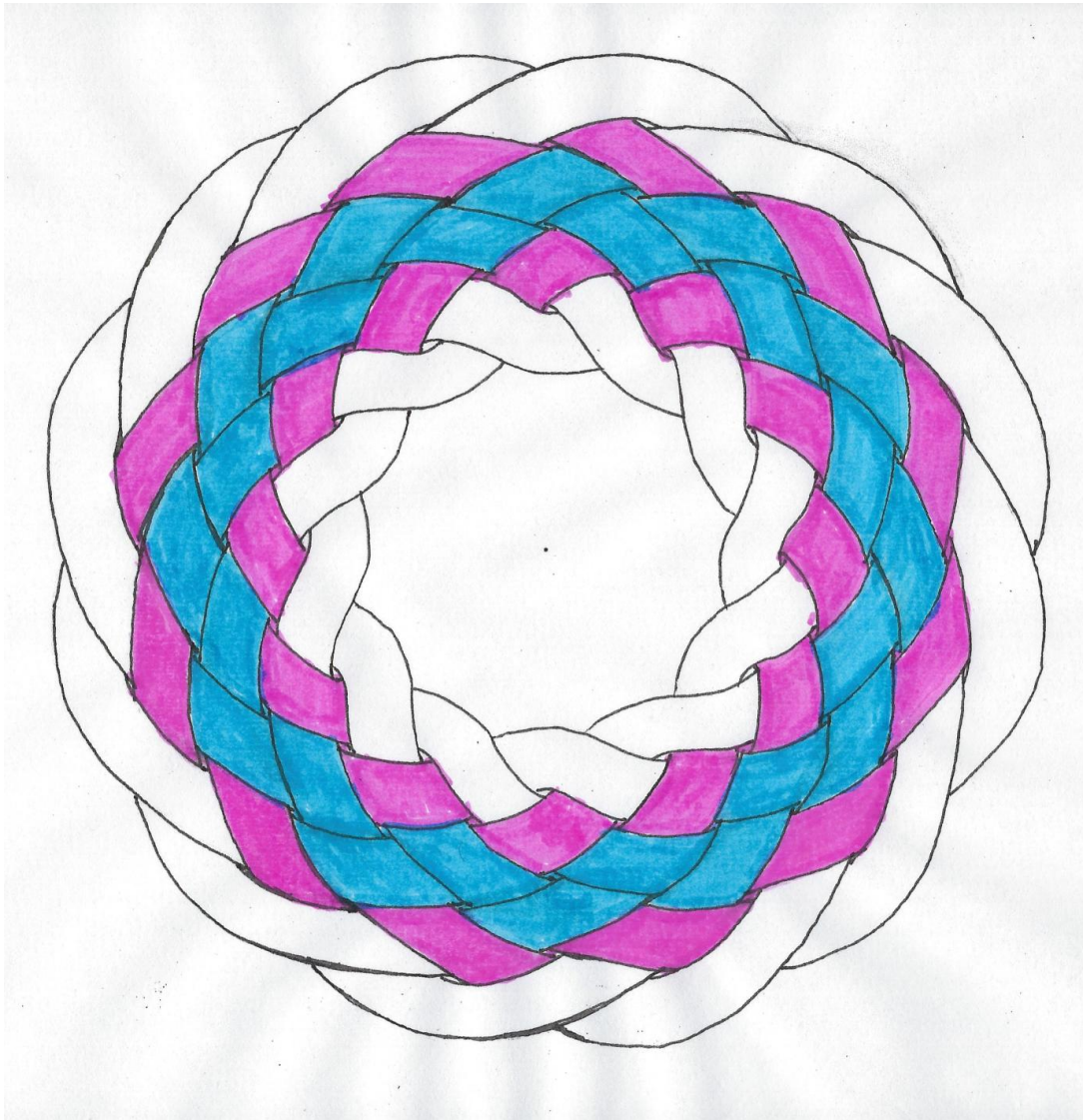
The purple Lydian spiral **G, Bb, C#, E** generates the blue Lydian spiral **F, Ab, B,**

As LaRouche often reiterated the point in different ways: "The actual, strategic purpose and function of competent economic forecasting, is not to attempt

to predict what will happen, but to cause it to happen."[9] This is what I call the Lydian transformative principle. It causes an axiomatic change in your mind to such a degree that your mind can no longer come back to its previous state.
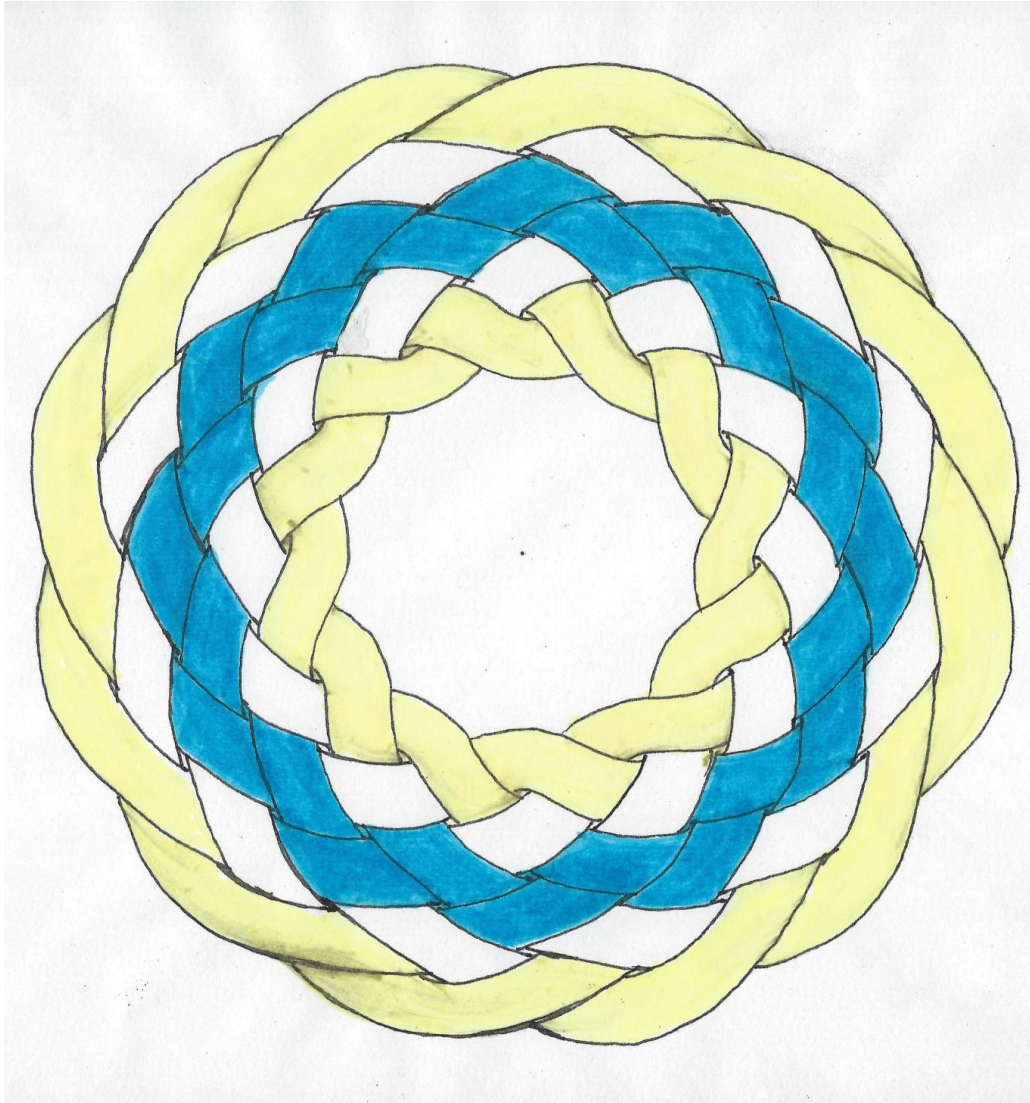
The blue Lydian spiral **F, Ab, B, D** generates the yellow Lydian spiral **C, Eb, F#, A**

KNOTS OF FUN

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[9] Lyndon H. LaRouche, Jr., *LaRouche's Method of Forecasting: Science vs. Statistics: When Fate Hangs on a Forecast,* EIR, Vol. 46, No. 25, June 28, 2019, pp. 41-49.