MERRY CHRISTMAS AND DONA NOBIS PACEM

LEONARDO AND RAPHAEL: A PEDAGOGICAL ON LINEAR PERSPECTIVE AND THE GOLDEN SECTION OF DIVINE PROPORTION

By Pierre Beaudry, 12/23/2022

FOREWORD

The purpose of this report is to show how to create something as opposed to producing an effect; that is, to create the causal process for an effect to be produced as a thoughtful or beautiful object. That was the method of Leonardo Da Vinci and of Raphael Sanzio who both painted objects as if they were "beautiful." However, what was actually beautiful was not the objects they painted as such, but the process by means of which they showed how to make those objects appear to be "beautiful." What is beautiful about artistic composition is not the effect, but the cause of that effect. This is the difference that the Divine Proportion makes.

INTRODUCTION

Montreal ICLC member, Ilko Dimov, asked me an important question on this matter relating to the golden section of divine proportion and perspective, which had been provoked by Lyndon LaRouche's "***Power of Labor***" video. The question was: What is the unique relationship between the golden section and linear perspective in Leonardo, Raphael, and Rembrandt? This question requires an extensive public answer because of its importance for the axiomatic change of the Italian Renaissance, when both Leonardo Da Vinci and Raphael Sanzio explicitly treated the subject as a fundamental transformation process of artistic composition. As for Rembrandt, I don't think he ever found the need to use linear perspective, but his works are everywhere permeated with the divine proportion.

This is a very difficult question which requires extensive study which I began investigating about thirty years ago, when I began investigating Raphael's *The School of Athens*. At that time, however, I did not discuss the question of the relationship between the Golden section and linear perspective. In hindsight, I realize that I had omitted to discuss the crucial connection of linear perspective to the Golden Section of Divine Proportion with respect to binocular vision, which is the most important element of the complex relationship of artistic composition, geometry, vision, and the creative process that Leonardo and Raphael shared with each other and the spectator, because this is how to discover the solution to the paradox of the *One and the Many* through the left and right *Coincidence of Opposites*. First and foremost, the

two most significant models that Leonardo and Raphael shared on the subject of linear perspective were the triple point perspective and the Star of David model.

LEONARDO'S TRIPLE-POINT PERSPECTIVE AND RAPHAEL'S STAR OF DAVID MODEL

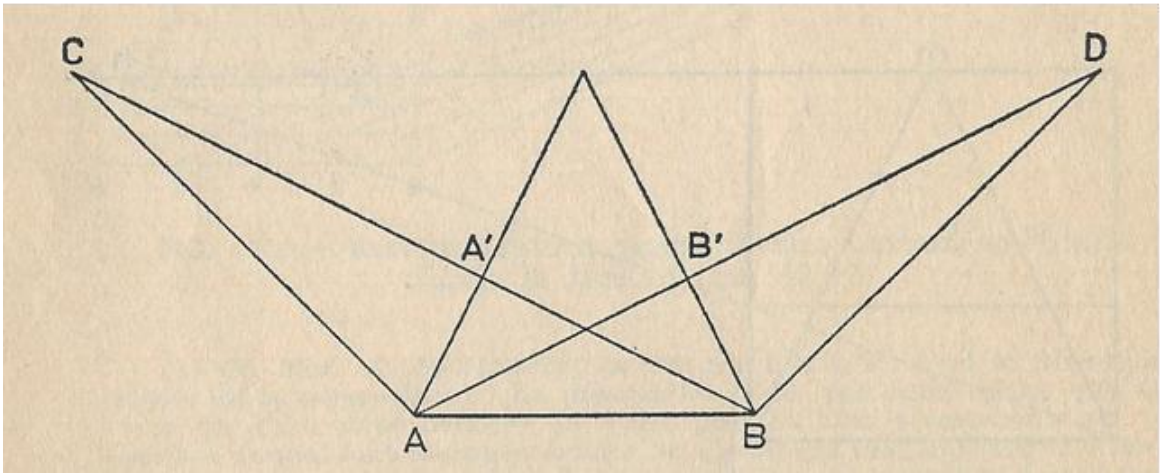

Figure 1. Leonardo Da Vinci's triple point perspective from Liliane Brion-Guerry, *Jean Pélerin Viator*.

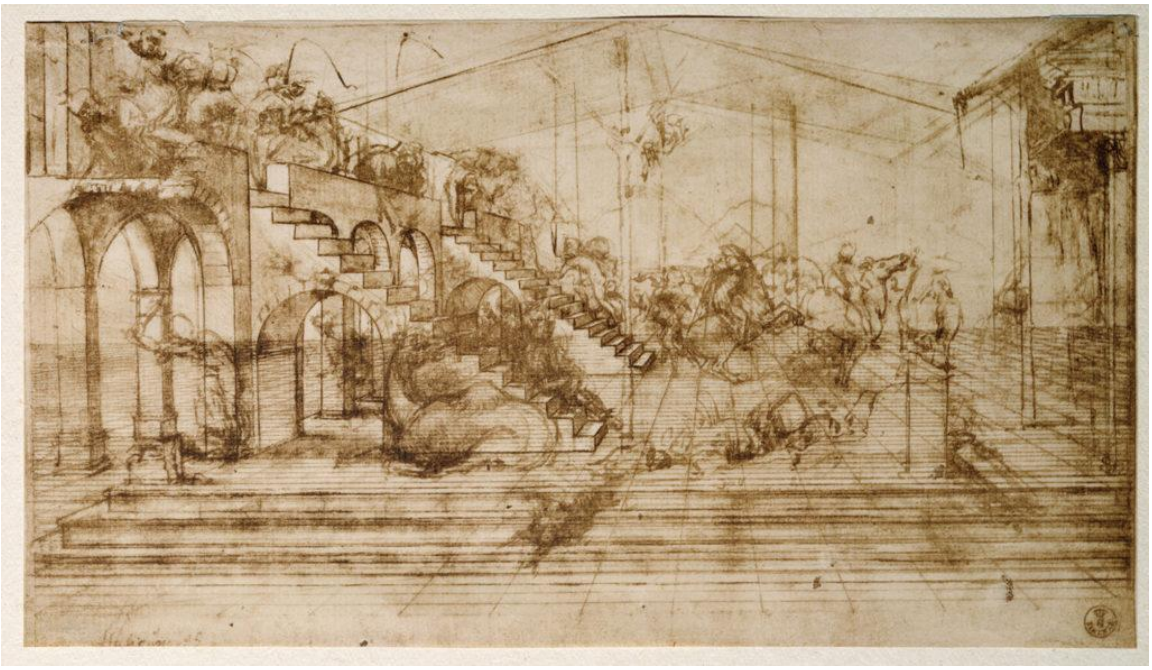

Figure 2. Leonardo Da Vinci, drawing for *The Adoration of the Magi*

For Leonardo, perspective begins with the art of showing what is in the mind of the subject that he is painting. The explicit purpose of perspective is then to have the observer discover the state of mind of the artist. Leonardo wrote in his notebook:

> "The most important consideration in painting is that the movements of each figure expresses its mental state, such as desire, scorn, anger, pity, and the like. In painting the actions of the figures are in every case expressive of the purpose in their minds. Every action must necessarily be expressed in movement. To know and to will are two operations of the human mind. To discern, to judge, to reflect are actions of the human mind. "[1]

Leonardo developed a form of composition which is similar to a musical well-tempered composition. His paintings can also be considered as solid bodies being overtaken and dressed with multiple light rays and shadows. The reason is because rays of light, and shadows themselves, generate shadows by intersecting and enveloping each other. Leonardo wrote:

> "Every body is surrounded by a limiting surface. Every surface is full of infinite points. Every point makes a ray. The ray is made up of infinite separating lines.
>
> "In each point of any line, there intersect lines proceeding from the points on the surface of bodies, and they form pyramids. At the apex of each pyramid there intersect lines proceeding from the whole, and from the parts of the bodies, so that from this apex one can see the whole and the parts. The air that is between bodies is full of the intersections formed by the radiating images of these bodies.
>
> "The images of the figures and their colors are transferred from one to the other by a pyramid. Each body fills the surrounding air with its infinite images by means of these rays. The image of each point is in the whole and in each part of the line caused by this point. Each point of the one object is, by analogy, capable of uniting the whole base of the other. Each body becomes the base of innumerable and infinite pyramids. One and the same base serves as the cause of innumerable and infinite pyramids turned in various directions, and of various degrees of length. The point of each pyramid has in itself the whole image of its base. The centerline of each pyramid is full of an infinite number of points of other pyramids. One pyramid passes through the other without confusion..." (p. 121) […]

[1] ***The Notebooks of Leonardo Da Vinci***, Oxford University Press, selected translation by Irma A. Richter, 1952. p.168.

Leonardo used the same method as Leibniz later used to develop a non-linear differential calculus. Leonardo's method was used to perceive shadows and lights in tune with the human mind; that is, as if the human mind were defining a calculus of artistic composition as a form of infinitesimal differentiations of secondary derived light and shadow reflections of ideas derived from primary principles. He further described the method of composition in the following remarkable manner as he made plans to write seven books about a non-linear caustic-field of Divine Proportion:

> "The scientific and true principles of painting first determine what is a shaded object, what is direct shadow, and what is light, that is to say, darkness, light, color, body, figure, position, distance, nearness, motion, and rest. These are understood by the mind alone, and do not entail manual operations; and they constitute the science of painting which remains in the mind of its contemplators; and from it, is born the actual creation, which is far superior in dignity to the contemplation or science which precedes it.
>
> "In the practice of perspective, the same rules apply to light and to the eye.
>
> "Shadow is the obstruction of light. Shadows appear to me to be of supreme importance in perspective, because without them, opaque and solid bodies will be ill defined; that which is contained within its outlines and the outlines themselves will be ill understood unless it is shown against a background of a different tone. Therefore, I state as my first proposition concerning shadows that every opaque body is surrounded and its whole surface enveloped in shadow and light. And to this I shall devote the first book.
>
> "Moreover, these shadows are of varying degrees of darkness because they have been abandoned by a varying quantity of luminous rays; and these I call primary shadows because they are the first shadows to form a covering to the bodies concerned. And to this I shall devote the second book.
>
> "From these primary shadows there issue certain dark rays, which are diffused through the air and vary in intensity according to the density of the primary shadows from which they are derived; and consequently I shall call these shadows derived shadows, because they have their origin in other shadows. And of this I shall make the third book.
>
> "Moreover these derived shadows in striking upon anything create as many different effects as there are different places where they strike; and of this I will make the fourth book.
>
> "And since where the derived shadow strikes, it is always surrounded by the striking of the luminous rays, it leaps back with these in a reflex stream towards its

source and mingles with and becomes changed into it, altering thereby somewhat of its nature; and to this I shall devote the fifth book.

"In addition to this, I will make a sixth book to contain an investigation of the many different varieties of the rebound of the reflected rays, which modify the primary shadow by as many different colors as there are different points from whence these luminous reflected rays proceed.

"Furthermore, I will make the seventh book treat of *the various distances that may exist between the point where each reflected ray strikes and the point whence it proceeds* (emphasis added), and of the various different shades of color which it acquires in striking against opaque bodies."[2]

Lastly, with the project of his seventh book, in which "*the various distances that may exist between the point where each reflected ray strikes and the point whence it proceeds*," Leonardo was pointing to the existence of a higher domain of enfolding the Divine Proportion, which he was investigating in Milan before leaving for France; that is, the domain of the self-reflective-doubly-connected circular and spiral action of torus geometry. I intend to go into this question in a future pedagogical.

On the other hand, the key to Raphael's construction of linear perspective can be found through the geometrical design of the Star of David that he had Euclid draw on the floor of *The School of Athens*. Here, Raphael is provoking the spectator with an amazing singularity which holds the key to the entire fresco. Project that hexagonal Star of David onto *The School of Athens* as a whole and the axiom busting Divine Proportion perspective will become clear, once you have integrated into it Leonardo's three-point projection with the perspective harmonic range included in it.[3]

The unique idea to be discovered, here, is how, in both cases of the visual and the cognitive domains, both circular action and self-similar spiral action are characterized by the Golden Section harmonics; that is, by those processes of action which functionally represent the boundary changes of Platonic Solids as well as the negentropic changes of human mental powers. Both processes exhibit changes similar to those differing elementarily between living and non-living processes. This is the reason why there is an irreconcilable axiomatic difference between Aristotle, Euclid, Thomas Aquinas, Descartes, Newton, Laplace, Cauchy, Clausius, Kelvin, Maxwell, Boltzmann, et al., on the one hand, and Pythagoras, Socrates, Plato,

[2] ***The Notebooks of Leonardo Da Vinci***, Oxford University Press, selected translation by Irma A. Richter, 1980, p. 121-124. See my 2009 report: **(Microsoft Word - 17- LEONARDO DA VINCI, THE LAST SUPPER AND THE CATENARY-TRA\205) (amatterofmind.org)**

[3] This harmonic range proportionality will be formally established later by Jean-Victor Poncelet and Jacob Steiner.

Eratosthenes, Saint Augustine, Cusa, Kepler, Leibniz, Monge, Carnot, Poncelet, Steiner, Gauss, and Riemann on the other.

The Vatican's *Stanza della Segnatura* demonstrates Raphael's genius in solving Plato's paradox of the One and the Many through Cusa's discovery of the *coincidence of opposites*. Therefore, everything in that room speaks of the differences between truth by myth, sense perception, or revelation, and truth by reason and the ability to resolve the differences among them through a unique conception which I would call Raphael's higher knowledge of epistemological geometry.

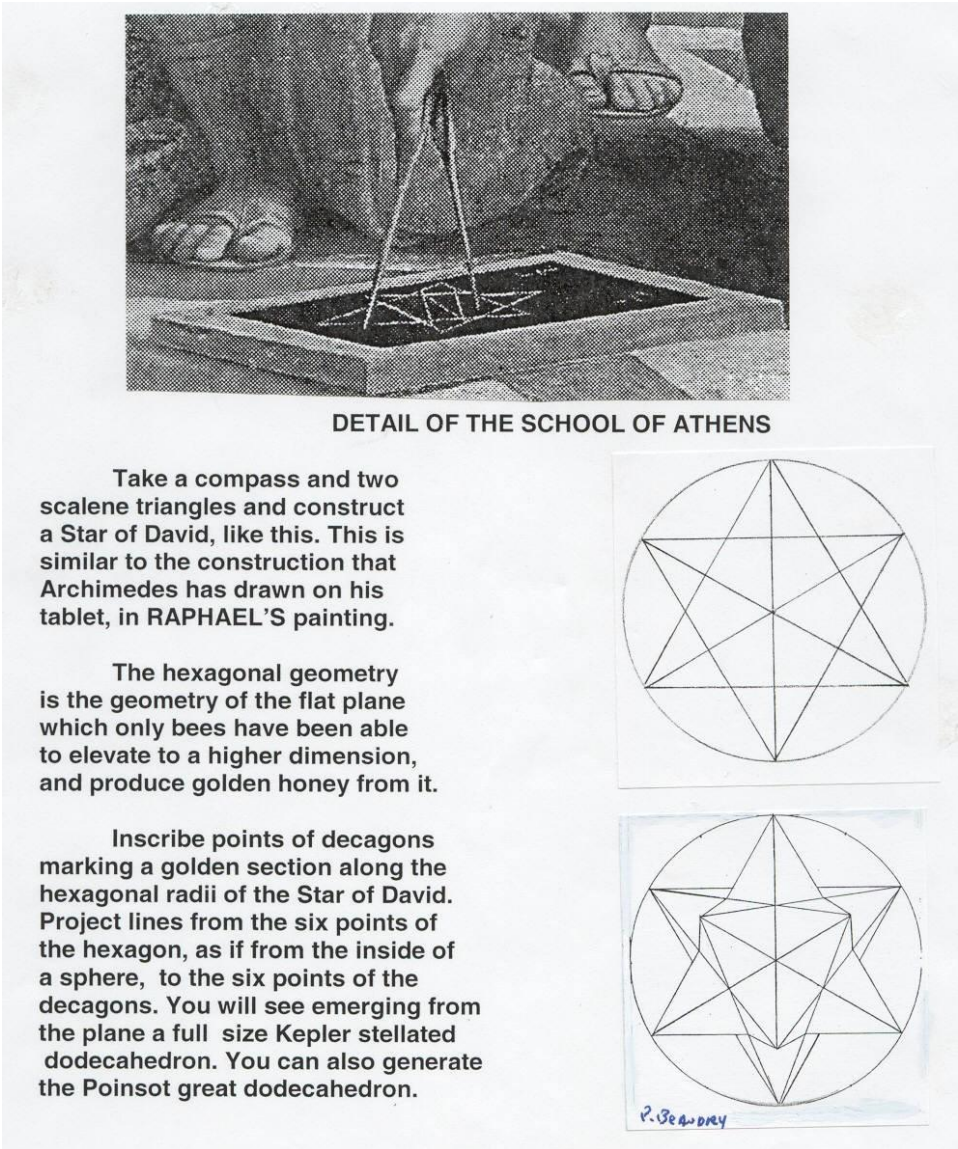

Figure 3. Illustration from Pierre Beaudry, **LANTERNLAND: CONSTRUCTIVE GEOMETRY OF THE FIVE PLATONIC SOLIDS**, Kindle Edition, 2018

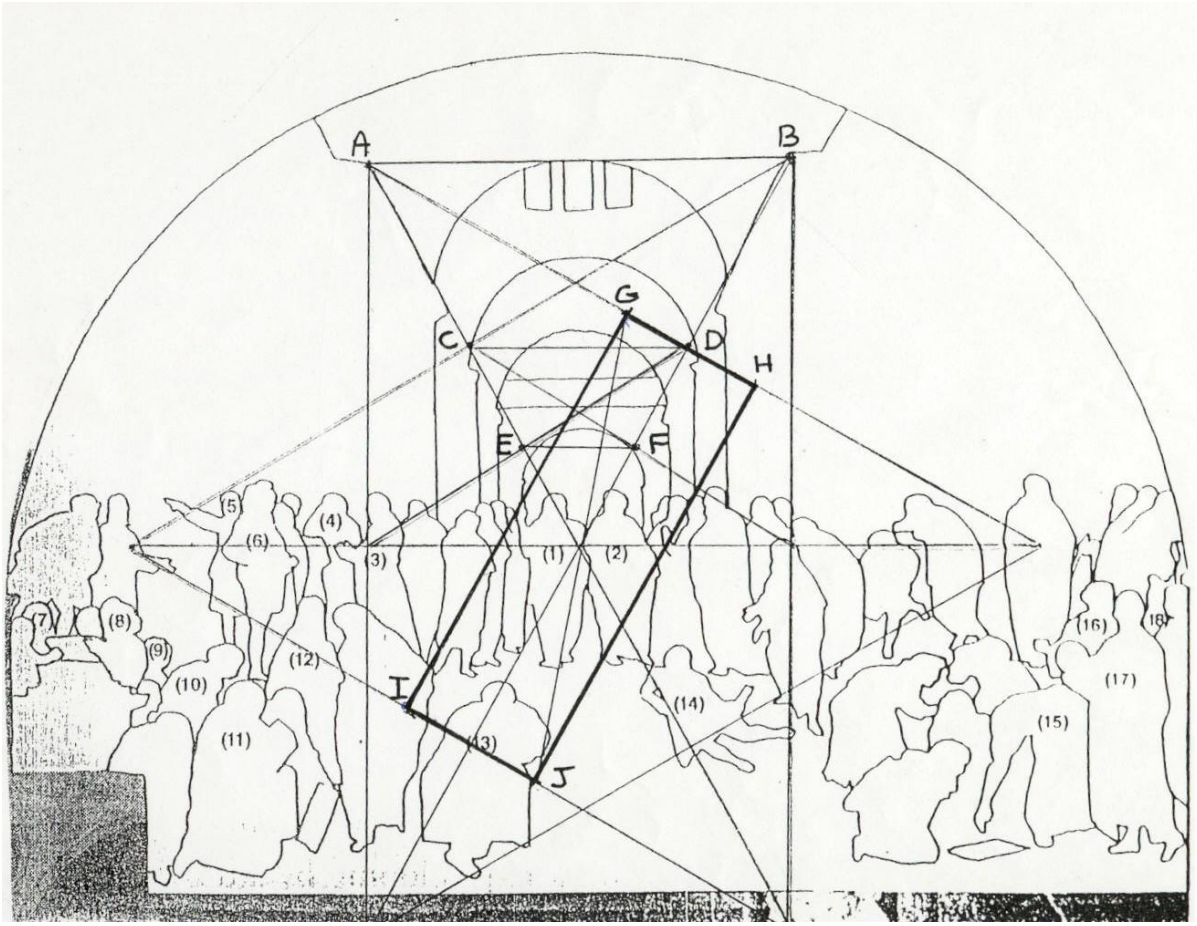

Figure 4. Approximation of Raphael's Star of David hexagonal perspective for The School of Athens

For Raphael, perspective has the same significance as for Leonardo, including for linear perspective which determines the unity of harmonic receding of straight and curved lines in the architecture as a whole; that is, in accordance with the natural human binocular vision, which produces the appropriate stereoscopic effects of changes by means of the Golden Section in the distance. In both the cases of Leonardo and Raphael, the purpose of such artistic composition is for the observer to make the discovery of a principle of artistic composition that lies behind such lines and objects. A true renaissance artist must be able to express these qualities of artistic composition.

THE GOLDEN SECTION, PERSPECTIVE, AND THE PLATONIC SOLIDS

The Parthenon is based on a very specific spiral progression which can be expressed in living processes with the Fibonacci series. However, the following cone is based on the musical scale of the logarithmic equal tempered system. This is the reason why the "living" temple of the Parthenon is expressed by the triglyph-metope relationship above the architrave of the temple which defines the intercolumnization of the entire temple in the same golden rectangle proportion as the front elevation and the floor plan of the Parthenon. But, the question is: How is that logarithmic cone constructed?

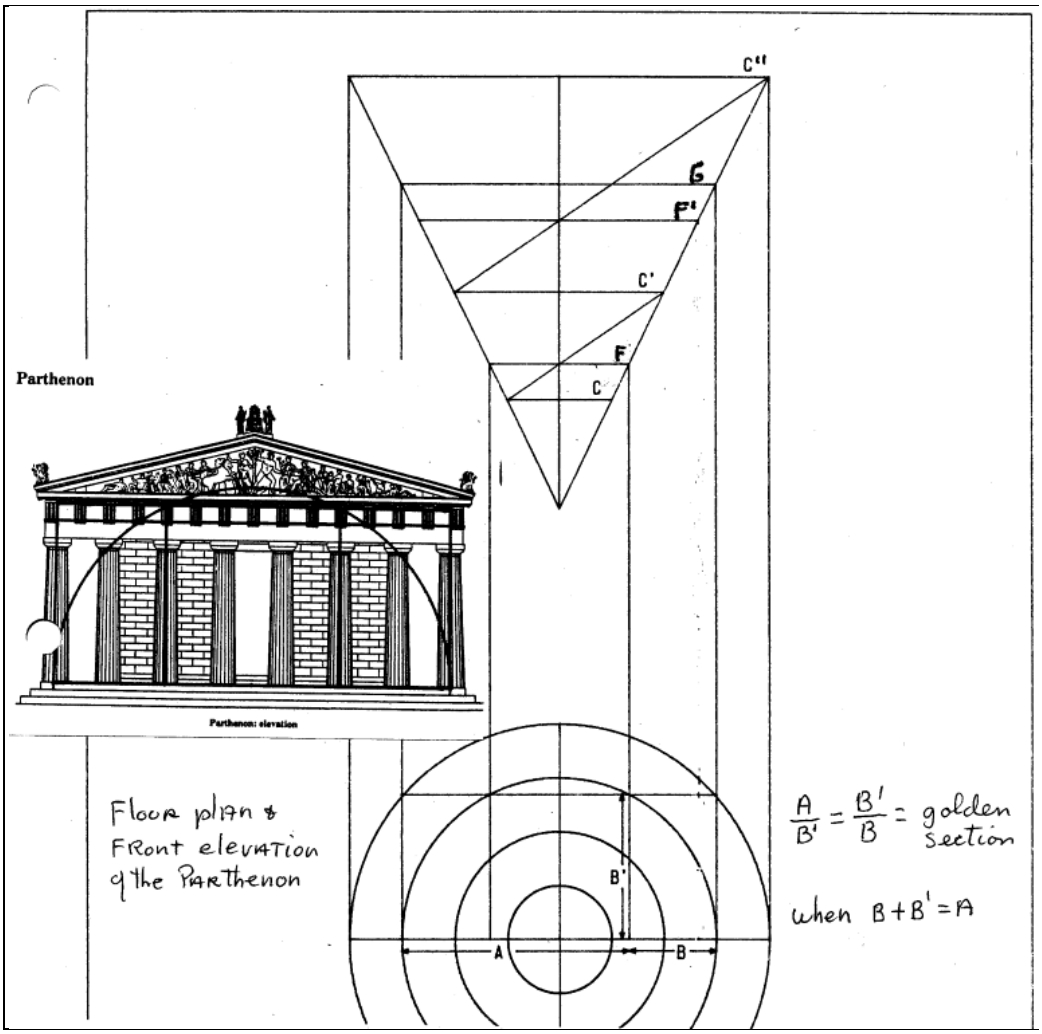

Figure 5. The musical scale and the golden section conical projection of Athens' Parthenon

How do you find the precise logarithmic location of each circular cut for each note of music inside of that cone? The answer is: ***at the point of intersection of each elliptical cut of two subsequent octaves with the apex of that cone.***

The elliptical cuts between the two octaves of an upside down cone are the key to the whole geometrical construction, because they locate all of the circular cuts. The intersections between the elliptical cuts of the two octaves (**C** to **C'** and **C'** to **C"**) and the axis of the cone gives you all of the notes that you are looking for in the inverse ordering of the Circle of Fifths: **C, F, Bb, Eb, Ab, C#, F#, B, E, A, D, G.** So, it starts with the placement of **F**, and the whole process ends with the placement of **G**. I found that relationship among the Tonic, Sub-Dominant, and Dominant absolutely fascinating; so, I investigated the matter further until I discovered that the construction gave a coherent logarithmic spiral of all of the 25 notes of two octaves at the intersections of the equally-spaced radii of the circular base and the twenty five circular cuts of the cone.

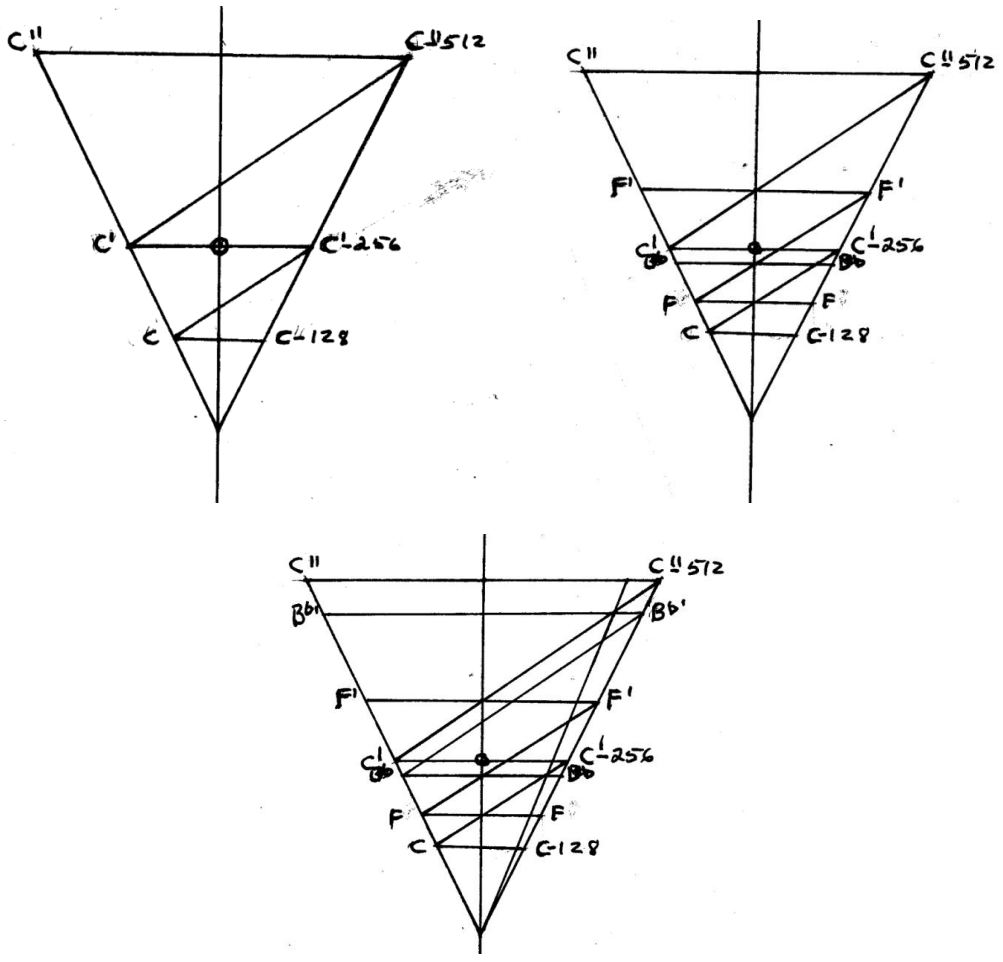

Figure 6. The three first steps showing the placement of the circular cuts of **C, F,** and **Bb** inside of the cone.

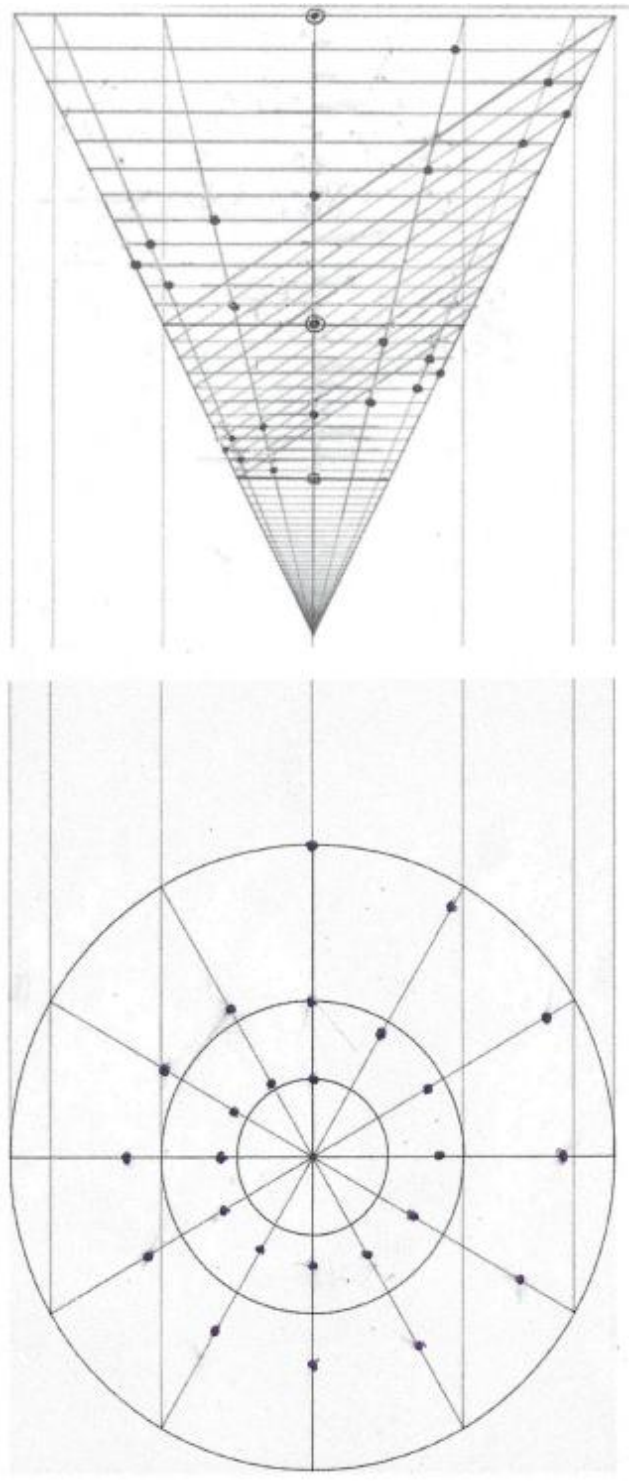

Figure 7.

All twenty five notes of the logarithmic spiral are first located at the intersections of the twelve equally-spaced radii and the twenty five circular cuts of the cone. Then, they are projected orthographically onto the circular plane.

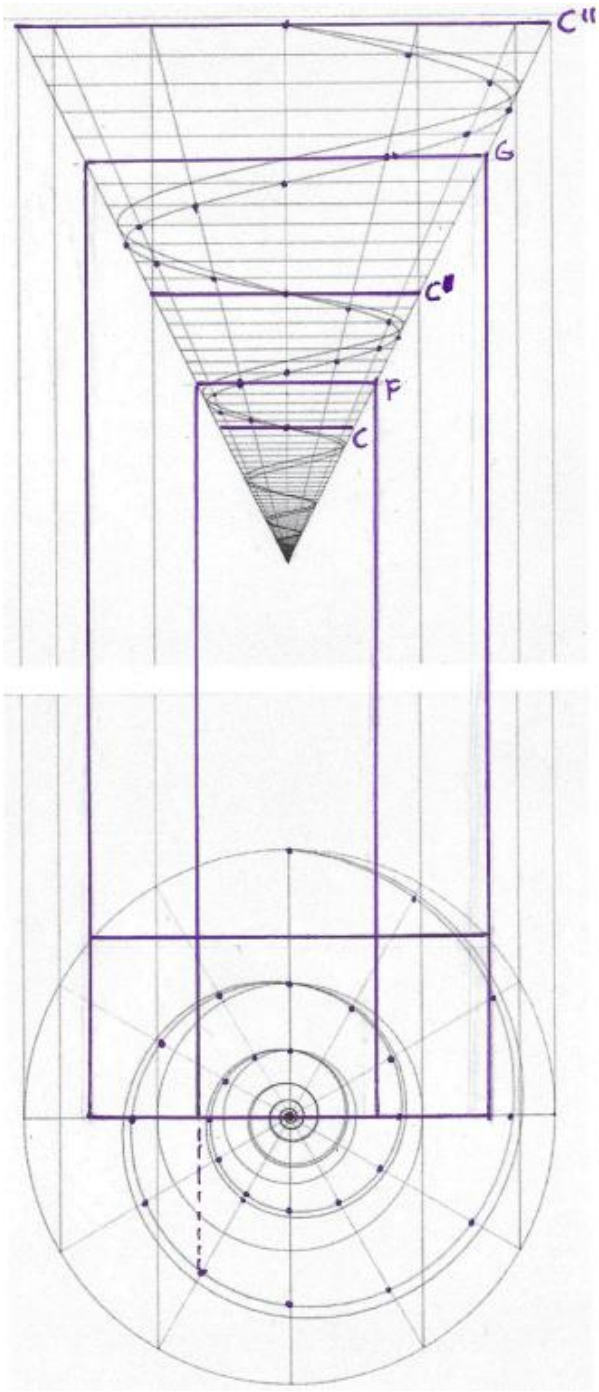

Figure 8.

This conical spiral action (Figure 7.) is such that all of the twelve radii projected from the apex to the base circle of the cone intersect all of the twenty five notes of the two musical octaves, while the boundary conditions of **C, F,** and **G** provide the logarithmic frame for the projection of the Golden Section. On this matter of constructive geometry, one must take into account what Lyn said about its appropriate use:

> "In simple constructive geometry, Cusa's circular action must at least act upon itself reciprocally in every interval. Circular action is constantly subject to a circular action, and, in the second aspect is also acted upon simultaneously by the first aspect. This is termed "doubly-connected circular action." In elementary constructive geometry, following the model of Jacob Steiner, the constructive elaboration of the Euclidean domain is accomplished by *multiply-connected circular action*.
>
> "So, everything which might be assumed to exist intelligibly within the deductive scope of *Euclid's Elements*, is constructed from Cusa's without axioms or postulates, and by prohibiting the employment of deductive method. *Multiply-connected circular action* suffices."[4]

The point here is that with sense perception and deductive reasoning, it is the "effect" which takes priority over causality. So, let's start with the hypothesis that the causality of the golden section is projected from a logarithmic conical spiral action and is determined within the cone by the musical ordering of the tonic, subdominant, and dominant relationship of composition within the expanse of two octaves.

If you play on your keyboard the series **C, F, C', F', G', C''** you will hear an echo of the well known French national anthem, "La Marseillaise."[5] When projected onto a floor plan, the series of notes generate the frame of the double golden rectangle of Athens' Parthenon floor-plan and front elevation. Here is how music, the logarithmic conical Golden Section, and linear perspective intersect one another, geometrically and musically, in self-reflexive intelligibility. The connections among music, Golden Section, and logarithmic perspective may not be obvious at first glance and hearing, but with a little bit of work and patience, you can discover how they fit together.

First, project the two conical octaves of **C, F, C', F', G', C''** onto the plane circle as if you were projecting a musical-architectural idea from the higher manifold of the sphere onto the lower manifold of the plane. The ancient Greek discovery of the golden section is, to this day, the highest form of change between manifolds that I know of, which is entirely coherent with

[4] Lyndon LaRouche, ***AGAPE INTELLIGENCE REPRESENTATION: A RE-SUMMATION***, unpublished report, 10/09/1987. P. 5.

[5] La Marseillaise is the French national anthem written in 1792 by Claude Joseph Rouget de Lisle and adopted by the French government on July 14, 1795.

Lyndon LaRouche's rediscovery of principle of what he termed a change of "Riemannian manifolds" between the three dimensional and two dimensional visual domains.

If you study closely the entablature of the Greek Parthenon with the alternating Metopes and Trigliphs, you will find that they represent a series of double golden rectangles similar to the floor plan of the building as a whole; thus, reflecting the golden section in the large as in the small.

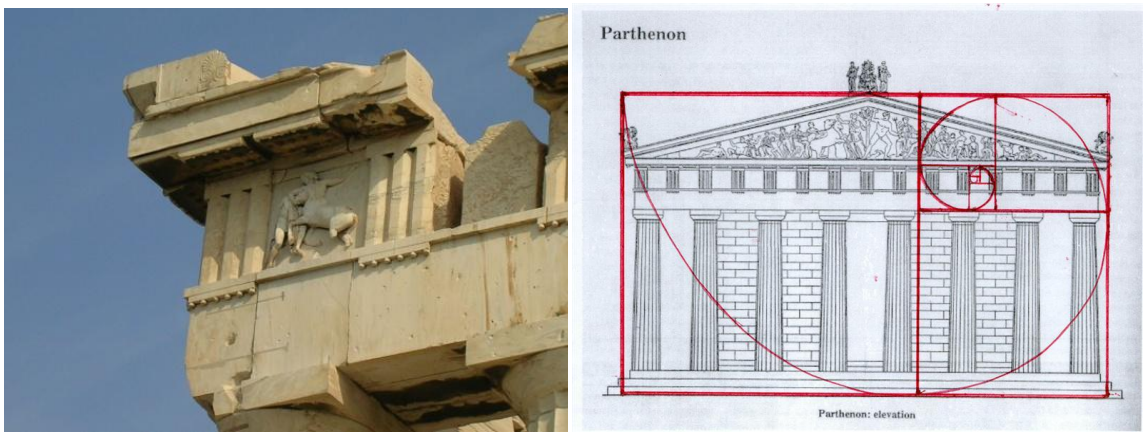

Figure 9. Metope, Trigliphs, and Parthenon facade

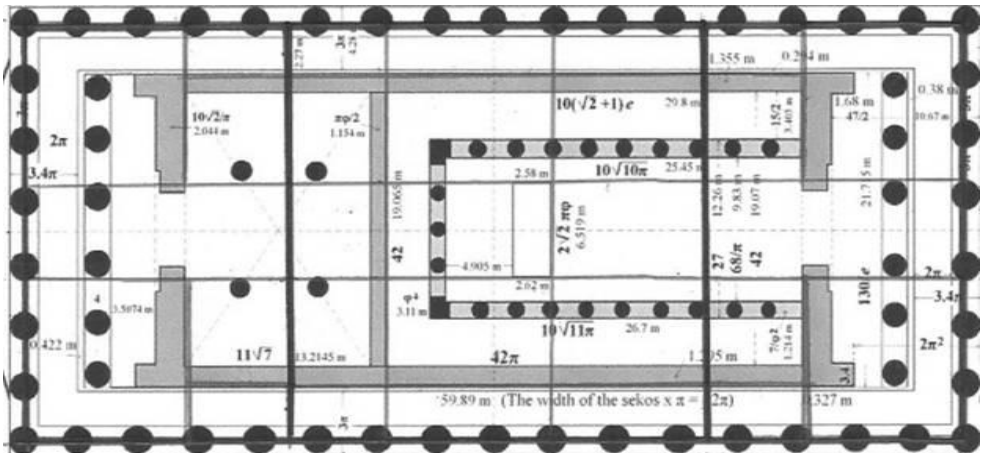

Figure 10. Parthenon floor plan

The question is: How does the projection of the golden section relate to perspective? The answer to that question was treated by Leonardo in *The Last Supper* and by Raphael in *The School of Athens*. Raphael centered the hexagonal flat Star of David on the back of Plato's hand holding the *Timaeus,* thus demonstrating that the Star of David is capable of generating the five Platonic Solids and the golden section as a performative living process of transformation by enfolding from the flat domain to the spherical domain.

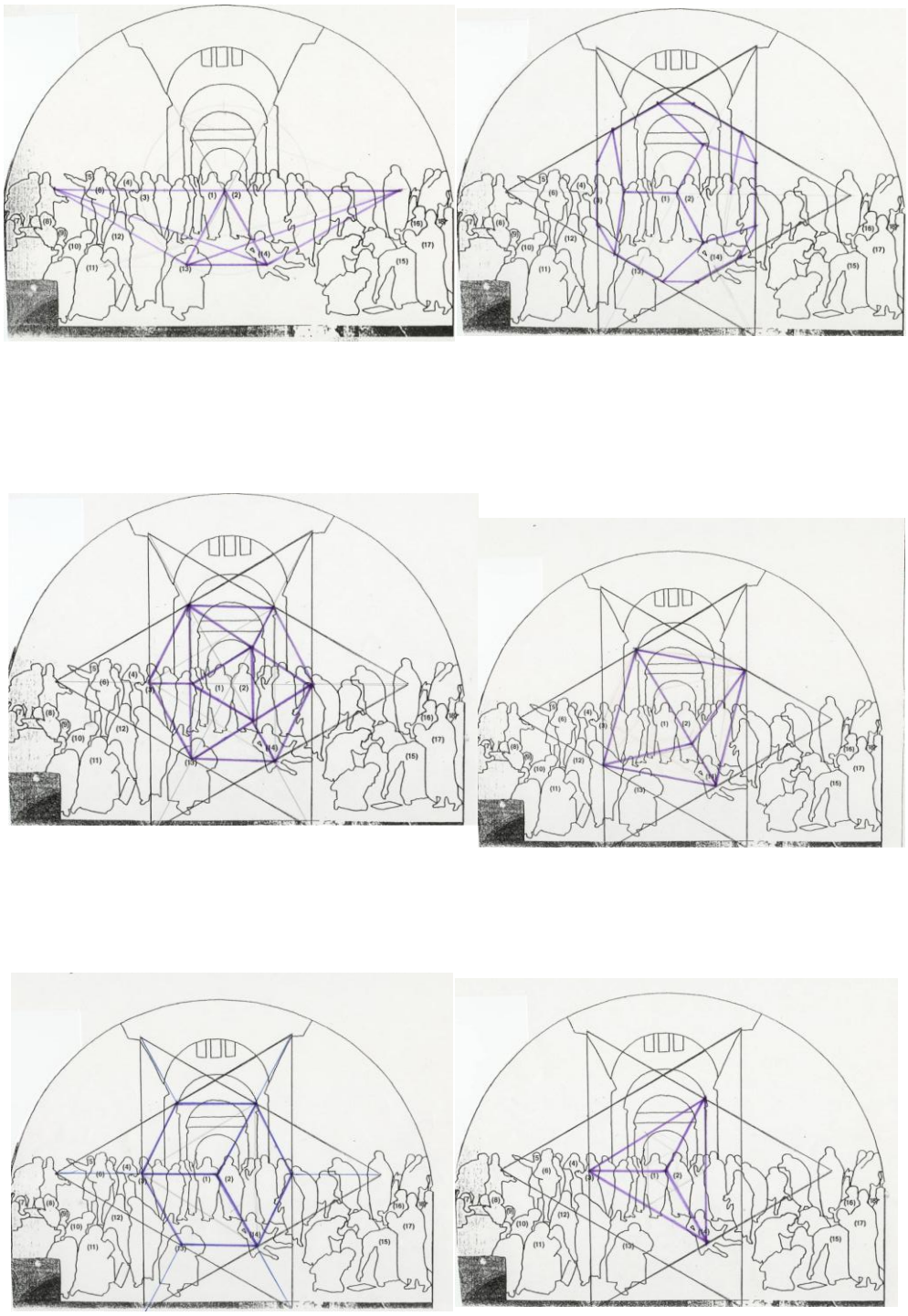

Figure 11. Platonic solids and The School of Athens.

The secret of this living perspective has been further expanded and improved historically in France through the works of the secretary of Louis XI, Jean Pélerin Viator, who was followed by Girard Desargues, Gaspard Monge, Jean-Victor Poncelet, and Jacob Steiner in Germany, all of whom extended the harmonics of the golden section through the harmonics of the complete quadrilateral as generated by Poncelet and Steiner.[6]

STEREOSCOPIC PROJECTION

It is the mental unity of composition that Raphael provokes the observer to discover in *The School of Athens*. In human binocular vision, a single eye generates a flat image of an object which is then projected onto the brain. However, with two eyes, the human brain merges two flat images together into a solid one by interpreting and translating the differences of the two opposite flat images into a single three-dimensional object. You can experience this effect by crossing your two eyes over Figure 12 below and you will see a third icosahedron floating in mid-air between the other two.

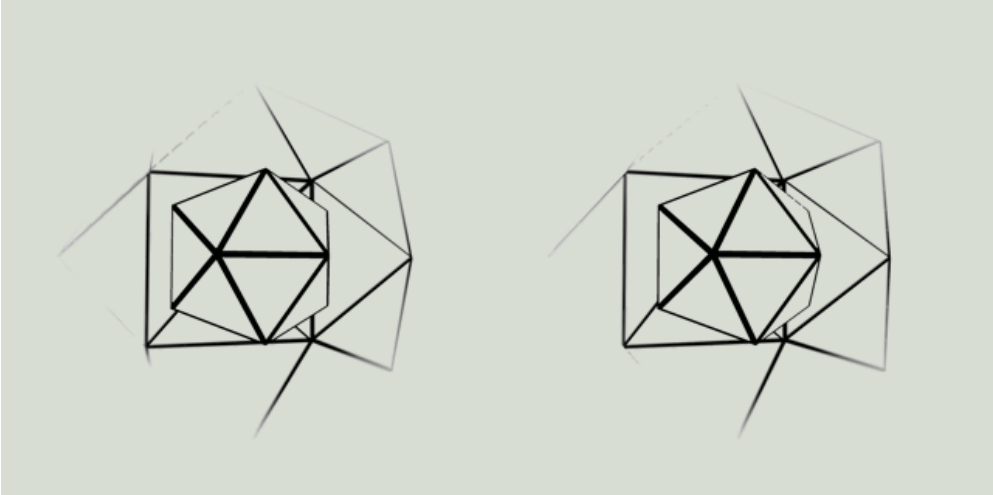

Figure 12. Stereoscopic projection of an icosahedron

Once the two images are locked together into a third one, you discover suddenly (*exaiphnes*), the importance and the significance of the *metaphor of the discovery of principle of an axiomatic change* between two different domains, and you are then able to examine the coincidence of the left and right opposites in all of its details. Moreover, you discover that the

[6] This was expanded extensively in my report: **THE GEOMETRY OF THE ONE AND THE MANY.**

two different axiomatic ways of thinking between Plato and Aristotle then become irreconcilable, because such a result is not achievable through Aristotelian deductive logic.[7]

The One of the Many and the coincidence of the left and right opposites is such that once you have seen this third "invisible" floating icosahedron between the other two, your mind can no longer unsee it, because the higher principle of this new domain has lifted your mind above the flat earth your mind had been living on.

The purpose of this pedagogical experiment is not to perceive the "effect" of rotation, but, rather to discover an axiomatic change in the human mind which brings it to a higher level of development. The purpose is to discover a principle, namely, the difference between the Aristotelian "effect" of sense perception, and the Platonic progress of human creative thinking. And, the only way to discover this is by constructing the proof of the axiomatic transformation, by and for yourself.

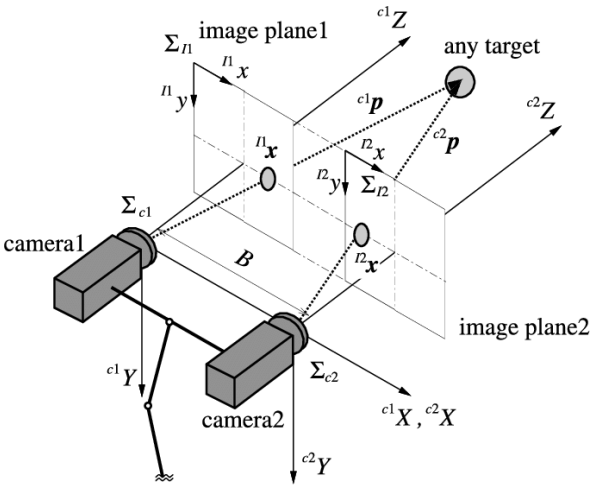

Figure 13. Model of parallel stereo camera | Download Scientific Diagram (researchgate.net)

The modern photographic stereo camera shows the angular differences of how such an axiomatic change occurs between two images of the same object, as if your eyes captured them separately, and then, projected them onto a single target area between them, thus replicating how human binocular vision works. What takes place, in vivo, is an axiomatic change in your mind as it goes from two to three dimensions. The three dimensional effect becomes real when the

[7] Lastly, I wish to warn the reader that there is a Delphic trap here that he should be careful not to fall into. The author of this stereoscopic projection (Figure 12.), whose name I have forgotten, has caused the two images of the figure to rotate separately, as opposed to fusing them together. That is a Delphic result, a fallacy of composition. It is not evil on his part; he just didn't realize that he made an axiomatic choice between the "effect" and the causal matter of principle.

stereoscopic projection of the brain fuses the differences of the two flat images into a single one. It is that effect which represents the *Aha!* of the discovery of principle that Raphael provokes the spectator to discover which I am replicating, performatively, with this pedagogical report.

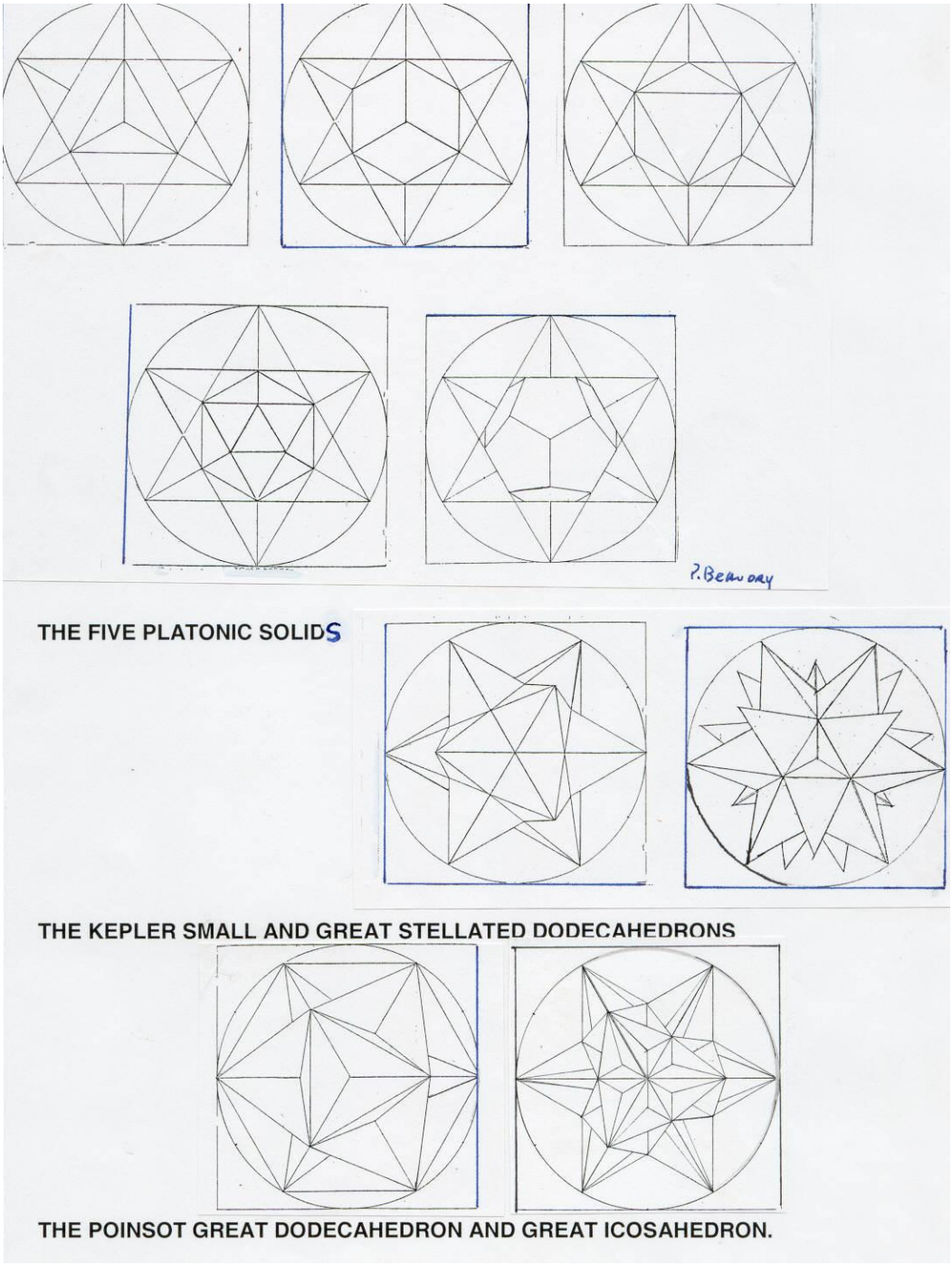

Figure 14.

The actual discovery of principle that Raphael is provoking the spectator to make is, therefore, nothing but the discovery of the underlying subject of *The School of Athens* itself, that is, not a rotation of the same dimension, but a replication of the epistemological difference between the two different dimensions between Plato and Aristotle, which is the discovery of the difference between creative thinking and deductive logic.

Lyndon LaRouche's principle of discovery works in the same way. Such is, in reality, the significance of the change of going from the tetrahedron to the cube, from the cube to the octahedron, from the octahedron, to the icosahedron, from the icosahedron to the dodecahedron, etc.

GENERATING THE EQUILATERAL-HEXAGONAL-GOLDEN SECTION PERSPECTIVE FROM THE SCHOOL OF ATHENS

How did Raphael discover that he could project the golden section from such an equilateral-hexagonal perspective framework? How do bees generate the sweetness of golden honey from their hexagonal beehive? Here is a conceptual beehive of that axiomatic change coming from the sphere. The irony, here, is that the non-linear singularity between the sphere and the dodecahedron is intelligibly constructible, although it is not formally deducible.

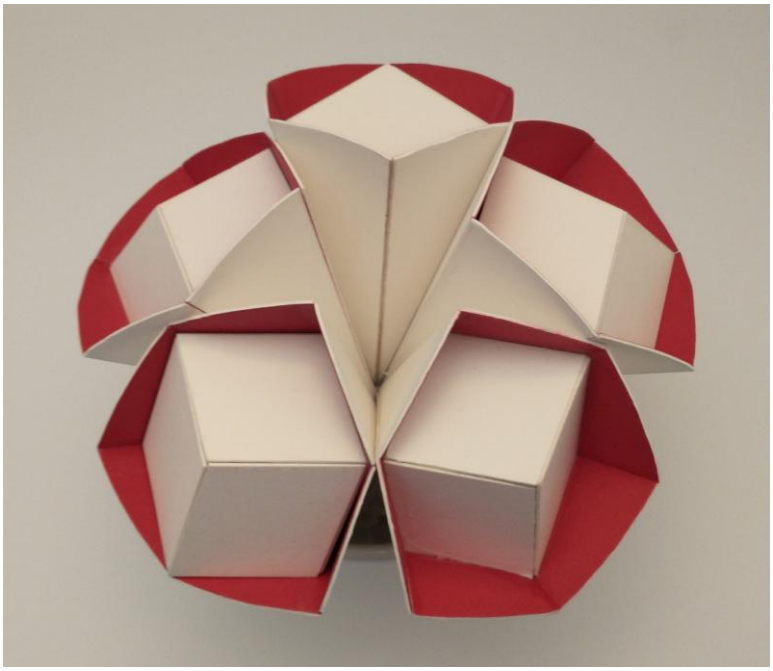

Figure 15. Axiomatic singularity of the connection between the sphere and the dodecahedron

In order to discover this singularity, the reader has to look for the spherical connection to the dodecahedron. The question that Raphael posed was such a higher Platonic principle: How can the sphere of your mind make the intelligible connection between the higher dimensionality of the sphere and the lower dimensionality of the dodecahedron? The hint that he gave can found near the entrance to the door of the s*tanza della segnatura*, where one can discover almost completely hidden, two of Leonardo Da Vinci's Platonic solids carved in the wood paneling of the wall: an icosahedron and a dodecahedron.

Figure 16. Leonardo's Platonic Solid designs near the entrance of the *Stanza della Segnatura:* icosahedron and dodecahedron

12 | TIMEO [wall piece] - A N N H O L Y O K E . O R G A methodological catalogue of works

RECONSTRUCTING THE ARCHITECTURAL PERSPECTIVE OF THE SCHOOL OF ATHENS

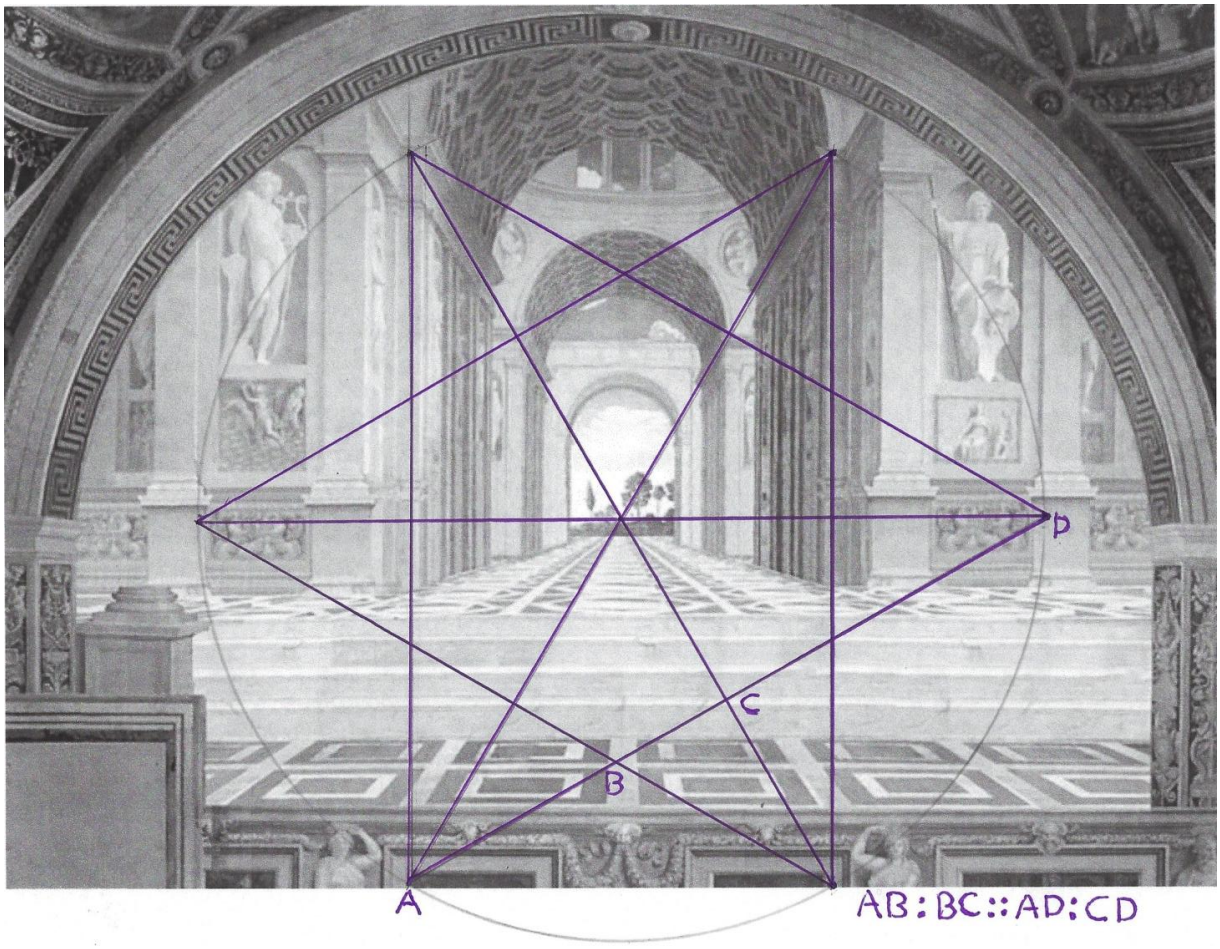

Figure 17. Raphael's The School of Athens without people. (Approximate projection). Note the Poncelet-Steiner perspective harmonic range.

This representation of the architectural structure of *The School of Athens* demonstrates the left and right symmetry of binocular vision that Raphael required the spectator to experience in his pedagogical unified conception of stereoscopic vision. Unfortunately, this reproduction is

inexact and should not be used for precise calibrating. But, it is the best that I could find on the internet. If you wish to reproduce a larger scale representation, a more accurate picture will be required.

The fascinating aspect of Raphael's use of the Star of David perspective model is that it captures the natural visual linear decreasing process in the three dimensional space as a binocular vision does by establishing a natural and non-artificial stereoscopic hexagonal pattern in connection with a point at infinity. It is the harmonic ordering of **AB : BC :: AD : CD** which captures the connection between the finite and the infinite. Thus, the connection among the finite points and the imaginary point **D** on the horizon at infinity is able to lift the tetrahedron and the cube from the flat Star of David into the third dimension as if their lines of hexagonal orientation were solid angles.

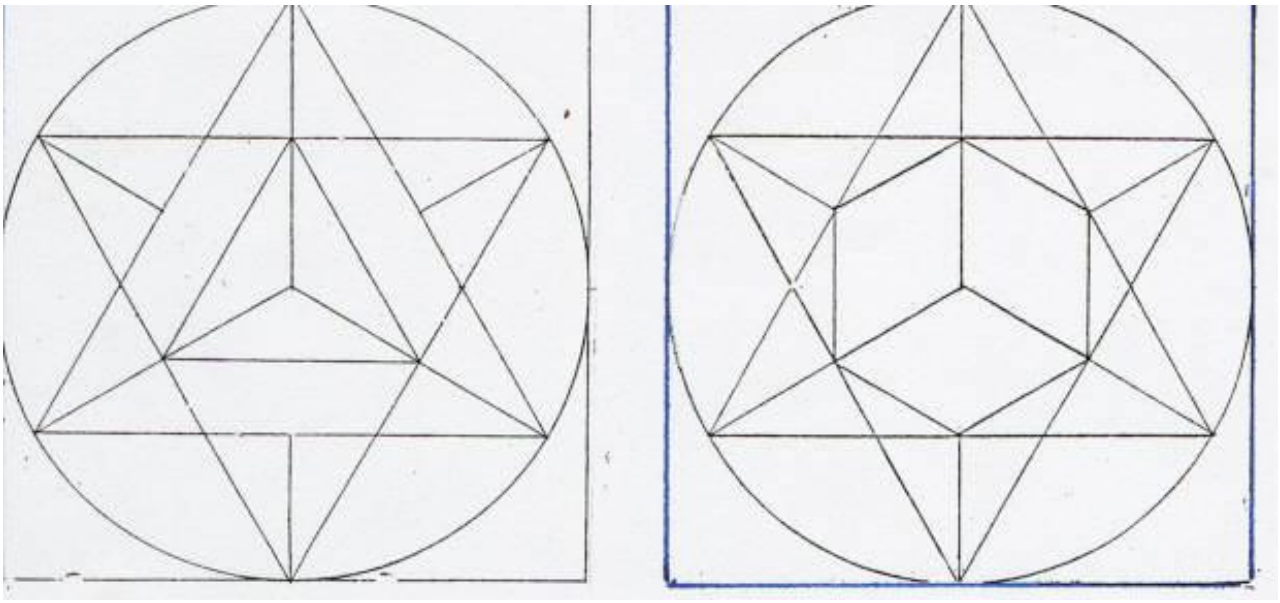

Figure 18. Projection of the Tetrahedron and the Cube

The projection of the infinite line **CD** (Figure 17.) is brought within the visual range of the stereoscopic capability of human binocular vision and provides the precise visual location to place the fourth side of the square in perspective at **C**. It was the placement of that fourth side of the square, discovered by Leonardo Da Vinci and Jean Pélerin Viator during the same period, which finally superseded the unnatural use of the Aristotelian-Alberti conception of artificial perspective.

A MORE ACCURATE PROJECTION

From the standpoint of the Platonic Academy, as represented by the tradition of Cusa, Leonardo, Raphael, Kepler, Leibniz, the Ecole Polytechnique of Monge, Carnot and Poncelet, and the Gauss-Riemann-LaRouche complex domain, the ordering-principle of the Golden Section is an intelligible representation of the mental and living domains of physical space-time

above and beyond the mere discrete manifold of sense perception; that is beyond the domain of simple self-similar circular action of binocular vision. Lyndon LaRouche stated the matter of principle as follows:

> "The Gauss-Riemann complex domain is entirely an intelligible representation, made so by means of a synthetic geometry of multiply-connected self-similar-spiral action. If this is recognized as the domain in which ontological reality of the physical universe is primarily existent, then the universe of vision is not the real universe, but is merely a faithful projection of the complex domain upon the discrete manifold of visual perception."[8]

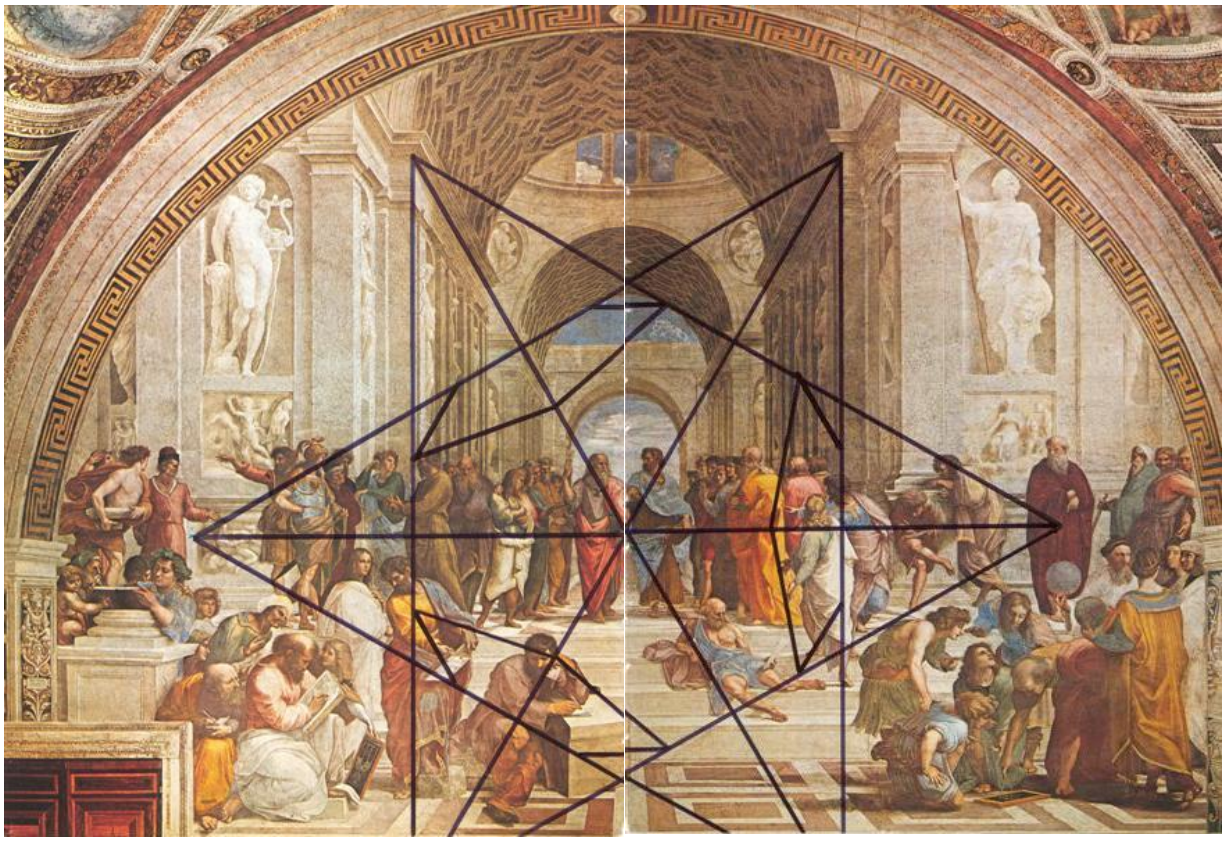

Figure 19. Dodecahedron projected from Raphael's *The School of Athens.*

In accordance with LaRouche's hypothesis, all of artistic composition and most emphatically painting, architecture, and music, represent expressions of the Golden Section harmonics which are shared with all creative processes of living and cognitive characteristics in the universe as a whole.

[8] Lyndon LaRouche, Lyndon LaRouche, ***AGAPE INTELLIGENCE REPRESENTATION: A RE-SUMMATION***, unpublished report, 10/09/1987. P. 7.

For example, I recently came across the art work of a contemporary Venezuelan architect and artist, Rafael Araujo, who succeeded in expressing the rarely understood Platonic unity of projection between artistic composition and scientific knowledge, as Raphael initiated with his perspective of *The School of Athens*.

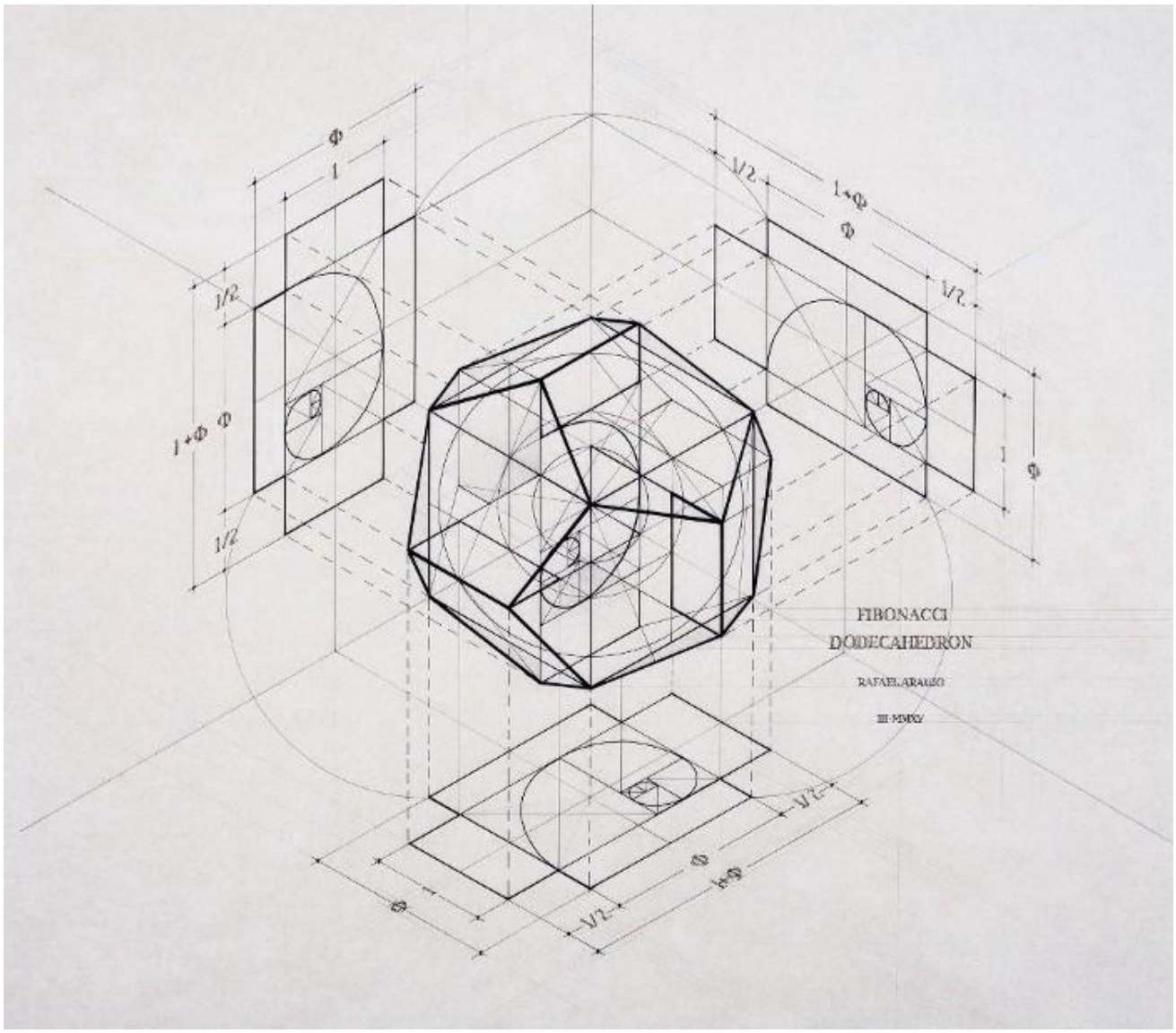

Figure 20. FIBONACCI DODECAHEDRON by Rafael Araujo. Golden Ratio | Rafael Araujo Art (rafael-araujo.com) rafaelaraujo2222@gmail.com

However, instead of generating perspective like Raphael did by projecting his fresco with a three point central perspective from the Star of David, Araujo integrated the Star of David's dodecahedron projection of the golden section with three different orthographic planes of the

inscribed cube as if it were projected from the heaven of Plato's *Timaeus*. Araujo wrote the following statement about his own work:

> "Directly related to the Fibonacci series, quotients 1/1, 2/1, 3/2, 5/3, 8/5, 13/8, 21/13..... converge progressively into PHI: 1.618. Also known as the **Golden Ratio**, PHI is used as the backbone of this hand-drawn artwork series where I try to show some of the harmony and perfection of this number, while understanding, of course, natural human limitations.
>
> "We are, obviously, before a Platonic idealization by attempting to encompass the entire world using just one figure or magical number that represents all the attributes mentioned.
>
> "However, we can find in nature repeated series of patterns that stubbornly appear, over and over. Like, for example, in the proportional relationship of anatomical limbs or in the frequency of elements that form the spirals of pine cones or how sunflowers seeds grow. We can also observe these patterns in microscopic plankton or macroscopic in the mighty spiral branches of galaxies.
>
> "But in reality, the search of beauty and the idea of a number capable of reflecting by itself the harmony of perfect proportions, the balance, the equilibrium and the materialization of optimum dimensions; that is, a number that embodies the paragon of all virtue, becomes, at the very least, a very tempting one."[9]

Araujo's dodecahedron is based on the same hexagonal construction of the Star of David that Raphael applied to *The School of Athens*, except that he chose to set it into the classical frame of a triple parallel orthographic projection normally used in architectural designs in accordance with the Monge tradition of the Ecole Polytechnique. Nevertheless, the spirit of his composition is precisely the same as Raphael's inspired moment of encompassing all of Greek philosophy in his fresco, in the simultaneity of eternity.

The connection not to be missed, however, is that Araujo's drawings have a fascinating resemblance to Leonardo's original drawings of the Five Platonic Solids.

[9] **Golden Ratio | Rafael Araujo Art (rafael-araujo.com)**

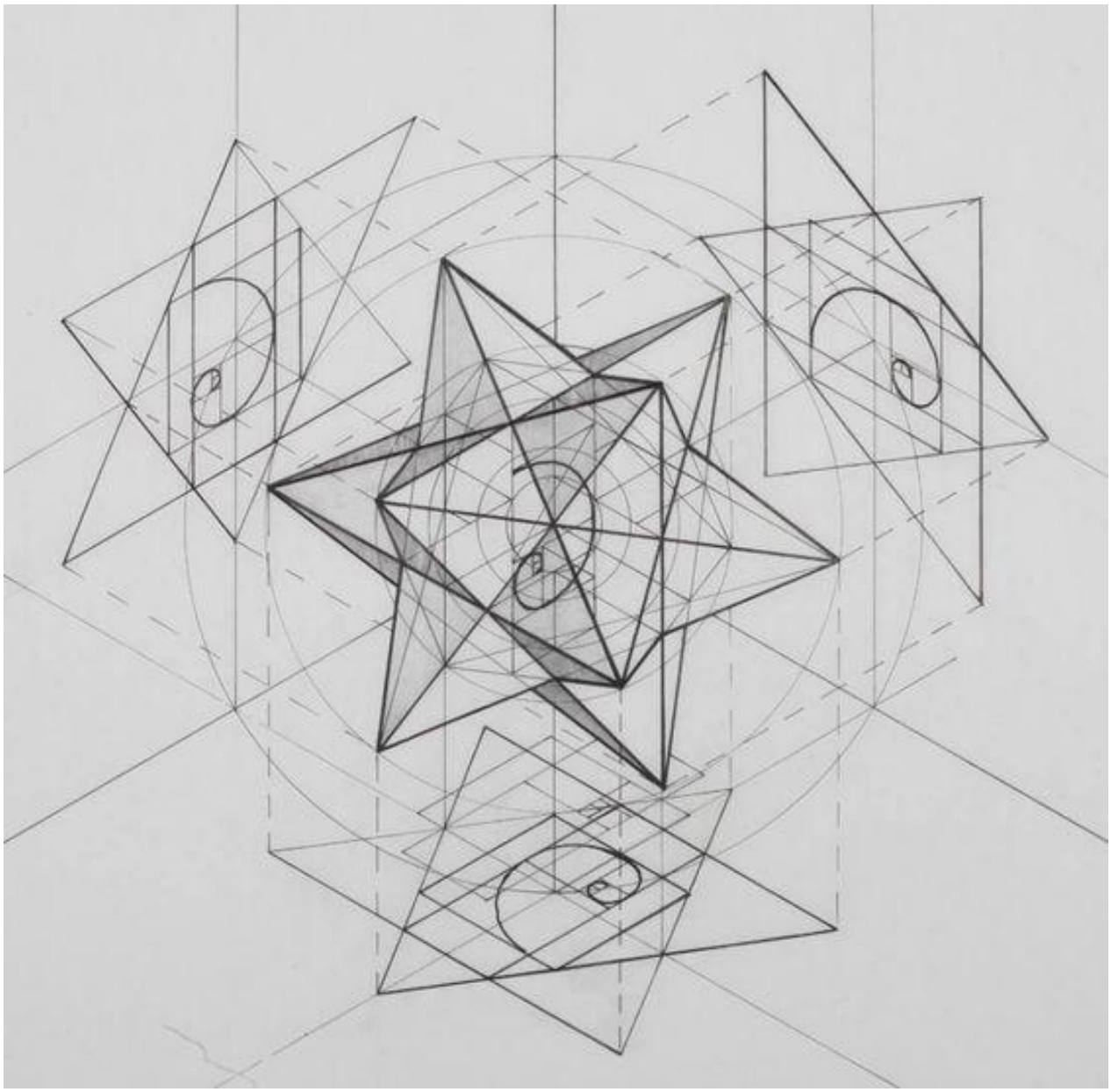

Figure 21. Stellated dodecahedron by Rafael Araujo. Golden Ratio | Rafael Araujo Art (rafael-araujo.com)

AN EXPERIMENT WITH THE HEXAGONAL THREE-POINT PROJECTION

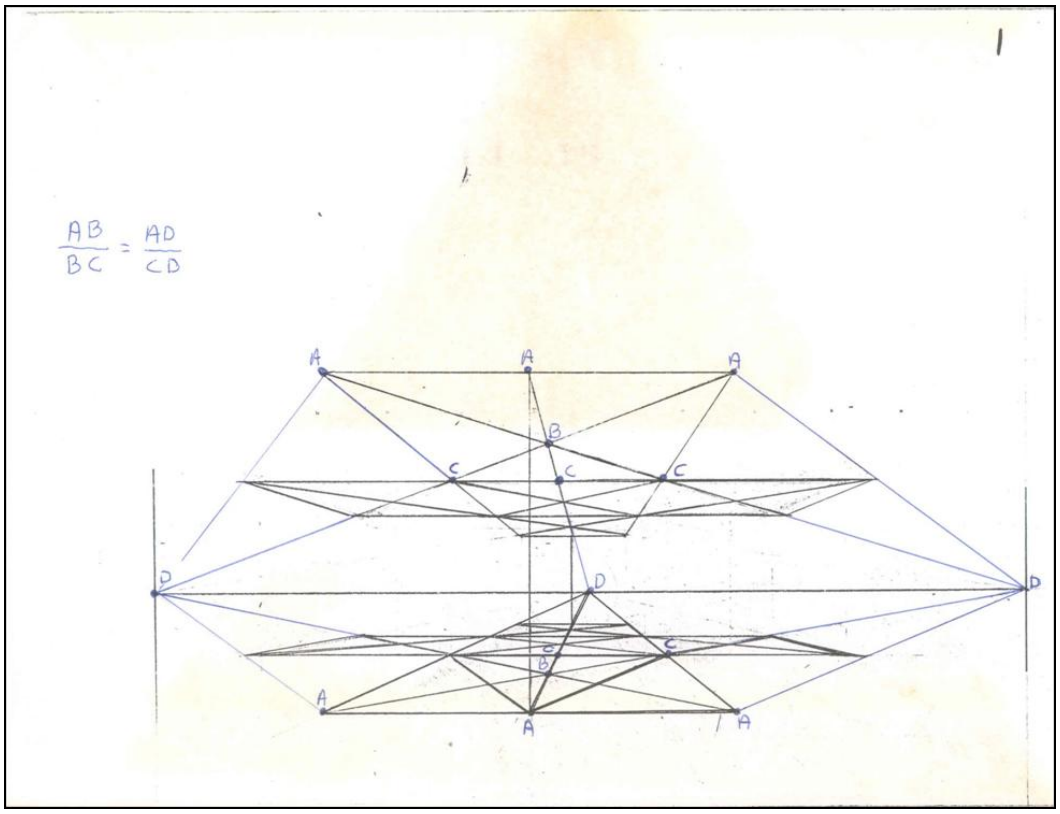

Figure 22. All harmonic ranges of **AB:BC :: AD:CD** have the same proportion as derived from the Golden Section

Consider the hexagonal grid reference in Figure 22 as a linear metaphor of harmonic relationships of underlying assumptions behind what you see and think of as being applied to be the real world. Then, consider what LaRouche said about the axiomatic nature of underlying assumptions:

> "To the naive person, the underlying assumptions which shape his or her judgments, even to the extent he or she is made conscious of their existence, are accepted as deserving of axiomatic authority. The Socratic proposition, that such assumptions might be susceptible of a rigorous, intelligible sort of examination of their truthfulness or falsehood, is rejected arbitrarily and usually, with hostility. The Socratic proposition that the search for hidden assumptions of the same efficiency ought to be made a subject of

consciousness is similarly despised. The assumption that greater truthfulness might be accessed in this way is angrily denied."

[…]

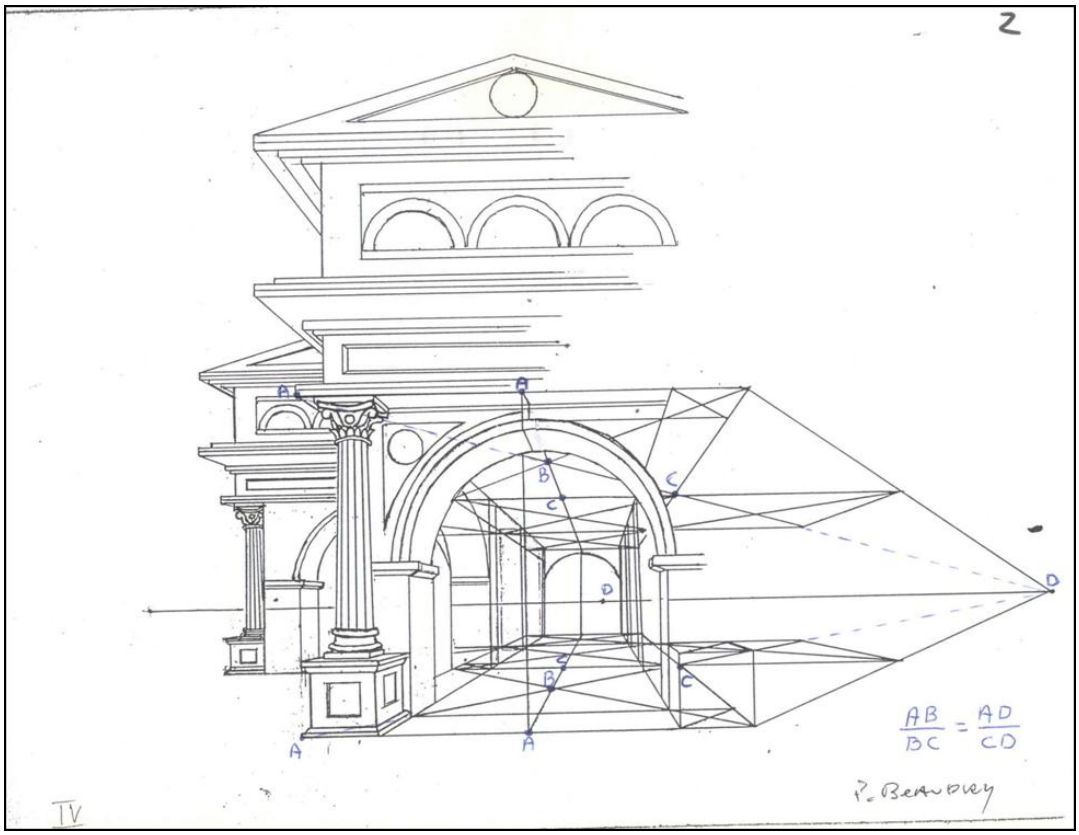

Figure 23. All parts of the building have the same proportion

"So, even from the formalist's standpoint, creative scientific work is made intelligible as a fruit of the Socratic method's application. The questioning of assumptions, with aid of employment of methods for testing their truthfulness, is the intelligible representation of those discoveries which correspond to valid scientific progress. The formalist must face the proposition, that if the Socratic method is susceptible of intelligible representation, the creative processes of mind are inherently intelligible, too. The question not yet resolved for him, is whether the intelligibility of creative processes of the mind is a model for showing the intelligibility of creation in the physical universe."[10]

[10] Lyndon LaRouche, ***AGAPE INTELLIGENCE REPRESENTATION: A RE-SUMMATION***, unpublished report, 10/09/1987, pages 8 and 11.

Figure 24. Portrait by Ilko Dimov

.

THE GOLDEN SECTION AND THE PARTHENON OF ATHENS

Figure 25. Picture of Pierre Beaudry's plaster model of Athen's Parthenon

Ilko made this important point of principle which should be remembered: "Visible Space is organized by the harmonic division or the five Platonic solids and the principle of the golden section. We are living in it. Our vision also has to be an integrated part of this universal principle in such a way that a painting, to be truthful, has to be a two dimensional projection of that same principle."

Figure 26. Picture of Pierre Beaudry's plaster model of Athen's Parthenon

Figure 27. Picture of Pierre Beaudry's plaster model of Athen's Parthenon

Figure 28. Picture of Pierre Beaudry's plaster model of Athen's Parthenon

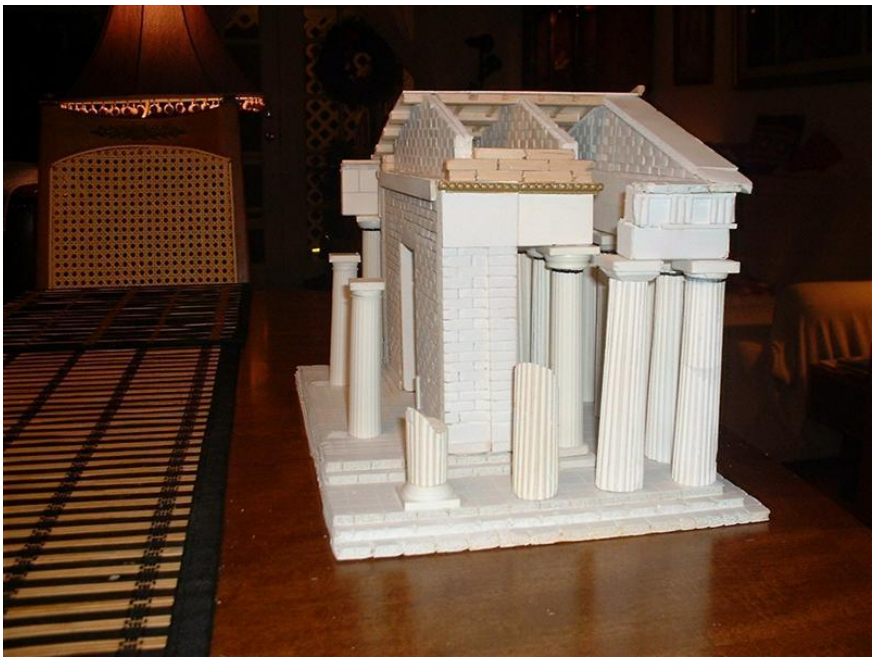

Figure 29. Picture of Pierre Beaudry's plaster model of Athen's Parthenon

MERRY CHRISTMAS!